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REASONS FOR LOW GIRL CHILD ENROLLMENT IN ADVANCED PHYSICS IN SECONDARY SCHOOLS OF PALLISA TOWN COUNCIL IN PALLISA DISTRICT.

BY

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BU/UP/2021/0907.

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APROJECT REPORT SUBMITTED TO THE DEPARTMENT OF PHYSICS IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE AWARD OF BACHELOR'S DEGREE OF SCIENCE EDUCATION OF BUSITEMA UNIVERSITY.

JULY 2024.

DECLRATION

I MPYANGU BENARD of registration number, BU/UP/2021/0907, hereby declare that this work is out of my effort and to the best of my knowledge; I greatly affirm that it has not been presented in any other academic institution for any study program.

Signature:..... Date: 25-September-2024

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APPROVAL

This project report on the causes of low girl child enrolment in advanced physics in Pallisa town council has been produced under my supervision and is worthy for examination.

Signature..... Date...25/09/2024

Supervisor: **Mrs. LAYILA NAMAKULA**

DEDICATION

This project is dedicated to my beloved mother Mrs. Nanteza Joyce Nyemera who has been there for me in all ways including advice and University tuition. Appreciation also goes to “big brother” Kimbapawo Julius plus, Kanya Abubakarand Linga Benjamin including my sisters Mudondo Joy, Nyemera Brenda and finally Namajja Grace. I also dedicate to my friends especially from the physics department and Busitema University from the faculty of science and education in that all your good advice and effort has made me reach a successful journey.

ACKNOWLEDGEMENT

I wish to acknowledge the almighty God for the knowledge, confidence and ability both financial and others that He has availed, enabling me have this successful study. Secondly, I acknowledge and sincerely thank my supervisor Mrs. Layila Namakula, her guidance has kept me on the right truck while putting together this project on stand. Thirdly, to all scholars whose ideas and works I have cited in this project, without your ideas it would not have been possible to put it together. In addition, I acknowledge the academic and administrative staff of Busitema University, faculty of science and education for the great work they have done towards the success of this academic program. Lastly, to my family which has provided all the finances required while writing this project and I pray the almighty God rewards them abundantly.

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ABSTRACT

This study investigated the reasons girls enroll in Advanced Physics at lower rates than boys in secondary schools of Pallisa Town Council. The research was conducted using responses of 300 scienceadvanced level students, including 176 females and 124 males students. Results were analyzed using independent samples tests and the iterative process. The data suggests five key differences between girls and boys. Girls perceive physics as less interesting, have lower physics self-efficacy, perceive physics as hard, less fun, and less applicable. One key recommendation derived from the survey is that parents, teachers, and counselors need to do a better job showing girls the importance of physics.

Keywords: Females students and advanced physics and low enrollment.

CHAPTER ONE: INTRODUCTION.

1.1 Background of the study.

Physics is known to be one of the oldest and most developed of all science subjects offered in the Ugandan curriculum(Lubangakene, 2018). Physics answers most of the fundamental questions regarding the nature of the physical universe. For example, answers what matter is made of and the fundamentalnature of the universe. Since physics provides the study of these basic questions, it has provided the foundation for other physical sciences(Council, Engineering, Sciences, Physics, & Universe, 2003). In almost every aspect of life, we encounter basic concepts such as matter, heat and pressure. The knowledge from these concepts cannot be ignored since it has helped to improve people's lifestyle. The greatest worry is when the female students shy away from the subject(Thomas, 1990). In order to achieve the Millennium Development Goals (MDGs) and realize the 2030 vision, learning of physics by more young ones irrespective of gender has to be more critical(Banerjee, 2020).

Female underrepresentation in Physics is a growing concern in the Physics and Science education communities(Abel, Barakat, Kc, & Lutz, 2016). In this survey, three visions were offered from the literature regarding the beliefs of Physicists as to why there is a deficiency of females in Advanced Physics(Hazari & Potvin, 2005). These viewpoints assigned different causes to the problem such as inherent and socialized differences between males and females(Rosa & Mensah, 2016). These two viewpoints were limited because they found differences associated with the students' gender to be at the root of the problem(Oon & Subramaniam, 2011). Neither biological predisposition nor socialization of the gender can easily be changed. Lastly the modes of research and understanding in Physics were invented by its practitioners rather than the vice versa(Archer, Moote, Francis, DeWitt, & Yeomans, 2017). Thus, in order to include more females, the structure of the Physics community has to be reinvented with its input.

The girls have a completely negative attitude towards physics, the main reasons for these problems being that up to the late 1970s nobody chose to go to the university to study education as a profession(Dare & Roehrig, 2016). The good physics students studied engineering, medicine, accounting or any other course but not teaching. Many of those who failed to meet the minimum requirements for their preferred careers became teachers(Byers & Williams, 2006). Such physics teachers tended to scare learners to cover up their lack of content knowledge and their inadequate preparation to teach the lessons. Girls who

participated well in physics were discriminated and men feared to marry them thinking they were tough(Sonnert & Holton, 1995). Such attitudes led to poor enrollment of female students at advanced physics.

Students' high school decisions always impact efforts to achieve gender parity in STEM at the university level and beyond(Corrigan, Williams, & Wells, 2023). Without a comprehensive understanding of gendered disparities in high school subject combination selection, it will be more challenging to close completely gender gap in many STEM disciplines(Corrigan et al., 2023).

After the approval of the Uganda's first national gender policy in 1997, there has been a battle for gender equality in physics where some progress has been observed but not nearly enough(Namatende-Sakwa & Longman, 2013). Physics is very vital and paramount at secondary school level; it is compulsory at Uganda Certificate of Education (UCE) and a core subject leading to lucrative professions(DAN, 2020).Despite a general increase in enrollment in secondary schools, girl child enrollment in advanced physics has remained low all over the country. Out of the many schools registered for Uganda Advanced Certificate of Education (UACE) in Pallisa district, some schools may not present any female candidate for physics. With the trend like this, the question comes up as to why girls are enrolling in advanced physics at lower rates than the male counterparts.

By addressing the causes of low girl child enrollment in advanced physics, this study contributes to the development of policies and interventions that can promote the participation of girl children in STEM education and ultimately improve their education and career prospects (Pilotti, 2021).

1.2 Problem statement.

Thefemale enrollment in advanced physics has been persistently poor. Very few girls join Universities and other lucrative careers and the participation of women has been impended in the national development especially in the Science, Technology Engineering and Mathematics field.

This study will therefore look into the factors that are associated with the enrollment of advanced physics in Pallisa district which will be assumed to be a replica of many other schools in rural areas in the country.

1.3 Aim.

To investigate the reasons for low girl child enrollment in advanced physicsin secondary schools of Pallisa town council.

1.4 Specific objectives.

1. To analyze the enrollment levels of the female students in the advanced level of education in Pallisa town council.
2. To examine the causes of poor enrollment of girls in advanced physics.
3. To assess the parents' attitudes towards the girl child education specifically at advanced level of education in Pallisa town council.

1.5 Research questions.

1. What are the enrollment levels of the female students in Pallisa town council?
2. What could be the causes of poor enrollment of the female students in the advanced physics class?
3. What are the parents' attitudes towards the girl child education in Pallisa town council specifically at A' level?

1.6 Scope.

The study will be limited to the geographical area of Pallisa town council, Pallisa district focusing on three schools within the town council approximately 38km from Mbale city in Eastern Uganda. The high schools of focus are the oldest in the district, except one high school that was established in 2019.

The schools offer both arts and sciences within the last 5 years and they have adopted a personal learning approach to teaching. As a result, the schools are finding an increase in student attendance and increased grade point averages.

1.7 Significance of the study.

The findings of this study will help educational counselors and policy makers to address the problem of low enrollment of female students in advanced level and promote gender equity in STEM fields leading to more inclusive and diverse learning environments.

CHAPTER TWO: LITERATURE REVIEW.

2.1 Introductions.

Motivating girls into taking advancedphysics should be an important issue to be understood since every field has nearly seen women engagement in parity with men(Eisenhart & Finkel, 1998). This discussion will therefore show what the current research has shown to work and not work at motivating girls in taking advanced physics(Carlone, 2004).

So the following issues will be reviewed: how developing girls' self-efficacy can affect their persistence within the subject, female specific strategies that can increase a girls' self-efficacy through learning experiences, collaborative strategies and instructional strategies(Kalender, Marshman, Schunn, Nokes-Malach, & Singh, 2019). And lastly, how parents influence a girl's likelihood to take and persist in advanced physics.

2.1 Physics self-efficacy.

Self-efficacy is defined as a set of 'self-prescribed standards' that can lead a person to get goals and persist to achieve them. Not only can perceived self-efficacy have directive influence on choice of activities and settings, it can affect coping efforts once they are initiated through expectations of eventual success(Ceci, Ginther, Kahn, & Williams, 2014).

Efficacy expectations determine the magnitude of effort people expend and time taken to persist amidst obstacles and adverse experiences(Bullough, Renko, & Myatt, 2014). The stronger the perceived self-efficacy, the more active the effort.Since self-efficacy has a direct effect on how much effort a person is willing to put forth during setbacks, it is vital and paramount for students to develop strong self-efficacy in learning complex concepts for example in physics(Bandura & Wessels, 1997).

Self-efficacy has a bigger role in putting students in the physics class than the students themselves may be willing and has also been identified as a main measure of a student's likelihood to take and achieve in physics(Bandura, 1990). This is an important consideration for advanced physics teachers and counselors because students must feel that they can be successful in an elective subject before they can choose to register for one(Schunk, 2023).

Although physics self-efficacy mediates a student's ability to perform well in physics, the reverse is not shown to be true(Sawtelle, Brewe, & Kramer, 2012). That is, being good at

physics is not enough to make a girl identify positively with physics, but identifying positively with physics does mediate better understanding of the subject. In order to increase a girl's self-efficacy in conjunction with performance ability, girls must see the relevance to their interests and goals(Ardura & Galán, 2019). One method to accomplish this is to provide authentic learning experiences, that is, to provide learning experiences that directly relate to an individual's own interests(Fink, 2013).

2.2 Female specific physics instruction.

There were three main themes that attribute to girls' success in physics and these were how students see themselves in relation to the subject, both now and in the future; their "physics self-concept", their experiences of ordinary physics and a personally supportive physics teacher(Archer et al., 2017). The connecting component for this theme is experience. The authentic learning experiences impact the students' engagement with physics. This theme describes three female specific instructional strategies; vicarious learning experience, collaboration and conceptual focused instruction(Zambrano, Kennedy, Aguilera, Yates, & Patall, 2022).

2.2.1 Vicarious learning experiences.

Females have a much larger correlation between their success in physics and their self-efficacy in relation to vicarious learning experiences(Lindstrøm & Sharma, 2011).

Vicarious learning experiences were originally described byreferring to learning by watching. This is critical for girls to see themselves as physicists if they are to persist in physics(Nissen & Shemwell, 2016).

The influence of vicarious experiences on the self-efficacy of women is a major motivator for pursuing and persisting within the field of physics.

2.2.2 Collaboration

Collaboration describes a teaching style that highlights interaction with other students and emphasizes lecture as a successful method for retaining female students in physics(Hazari, Tai, & Sadler, 2007). This is in agreement with other research that has shown females prefer collaboration and not competition.

Grouping girls in homogeneous groups to prevent male domination in the group and to foster more equitable roles increases female participation in the classroom.

2.2.3 Conceptual focused instruction

The conceptual focused instruction shows that when college students are asked about their O' level physics experience, the differences in perception between what males and females experience differs greatly(Hazari et al., 2007). For example, females report O' level physics requiring more rote memorization than males (Ngetich, 2014). This is problematic because girls prefer developing conceptual understanding over rote memorization(Ngetich, 2014). This perceived difference indicates that O' level teachers need to do a better job stressing the importance of conceptual knowledge over the memorization of facts(Musyoki, 2020). One way to accomplish this is by providing tasks that cannot be completed by rote memorization; however, these tasks need to include more than just exams and quizzes(Mayer, 2002).

The challenge is in providing assignments that allow students low risk environments to develop new learning and studying techniques to be successful with conceptual learning without adding to homework for which females already report spending more time on males.

2.3 Discussing Representation and Issues of Gender Equity in Physics

Female students were more likely to participate if their teachers discussed how women were underrepresented in careers in physics(Lock & Hazari, 2016). This explicit underrepresented conversation motivates females to see this as an opportunity to pursue physics as a subject and career(Kelly, 2016).

Facilitating conversations about who is and is not represented in physics can be a catalyst for discussing equity and inclusion in physics knowledge construction(Rodriguez & Morrison, 2019). Recognizing the lack of representation and discussing issues of equity can be a catalyst and motivation for change.

Inclusion of these conversations in high school could impact enrolment in courses as well as who pursues physics careers.

2.4 Parental Influence.

Parents play a major role in the classes and career paths that A' level students consider. Parents can increase their child's physics self-efficacy by providing praise when appropriate, helping their child cope with setbacks, or by simply talking to their children about how their physics class is going(Morales-Doyle, Varelas, Segura, & Bernal-Munera, 2021). These

simple strategies can be used by parents of any educational background to help their child identify more positively with physics(Germann, 1994).

Much of the literature also suggests that the gender bias starts far before high schooland females start to disconnect from physical science at an early age(DiPrete & Buchmann, 2013). While there are many possible reasons for this, factors that show high correlation including parents' perceptions and expectations, interests in science at higher levels, teacher influences during high school, and hobbies outside of formal learning. It is important to acknowledge that parents and adults close to the students play an important role in their education and future. Parental influence become part of the students' sense of self and ultimately influence subject choice(Fan & Williams, 2010).

Parental perceptual influence on a girls' self-efficacy shapes the socialization structure of the child and result in shaping the child's self-perceptions and activity values(Jacobs & Eccles, 2000). There is a direct relationship between the parents' perception of their daughter's abilities in physics and the likelihood the girls would go on to study physics after graduation regardless of the daughter's actual performance within the subject(Chohlis, 2014).

CHAPTER THREE: METHODOLOGY.

3.1. Introduction.

This chapter detailed the methods used in collecting data and these included the research design, participants, procedures and data analysis.

3.2. Research Design.

A two-stage sampling procedure was used that is, in the first stage schools were selected based on their representation of diverse socio-economic backgrounds. While in the second stage, a random sampling technique was used to select students, parents, teachers, and the school administrators from the selected schools and these represented others in the town council. This was intended to get the best possible results since all schools and respondents stood an equal chance of being picked.

The studywas developed that provided both qualitative and quantitative questions where interviews and questionnaires were used for measuring student's responses for not choosing advanced physics. In addition, face to face interviews were conducted with both students, parents, teachers and school administrators. All these various questions provided a measurable effect of student's self-efficacy towards advanced physics content and other factors the study identified for student persistence in advanced physics.

The qualitative questions helped in learning more about the students' personal perspective in their own words and provided additional reasons for students' possible persistence or avoidance of advanced physics.

3.3 Participants.

The study was designed for three secondary schools focusing on only advanced level. The schools' total enrolment was about 5,254 students with 4,856 students enrolled in lower secondary school and only 398 students in advanced level. The research focused on advanced level students because they have selective subjects. The survey was administered to 323 students with 23 student responses disqualified for erroneous errors, leaving 300 valid student responses. A summary of the responses was provided in the table 3.1 below.

Table 3.1: shows student responses

Category	Number of students

Valid responses	300
Invalid responses	23
Total	323

3.4 Research procedures.

The survey data collection includedkey steps prior to analysis as in appendix A, B and C.

3.5 Data analysis.

All data for example, in the open-ended questions, if a student refers to a person or school when describing the advice received in regards to selecting advanced physics or not then the name of the person or school was removed prior to analysis.

Data was cleaned up for data analysis for example; some students included multiple subject grades when providing their previous subjects offered and the students first input was considered. For instance, if a student said they offered Physics and obtained a credit and a pass, a credit was recorded.

CHAPTER FOUR: RESULTS AND DISCUSSIONS.

4.1 Data Presentation

The survey addressed three key components: demographics, how students decided on their science elective subjects and the students' perception of physics.

4.1.1 Demographics

The survey collected data including gender identity and class level. A summary of gender data is available in Figure 4.1.

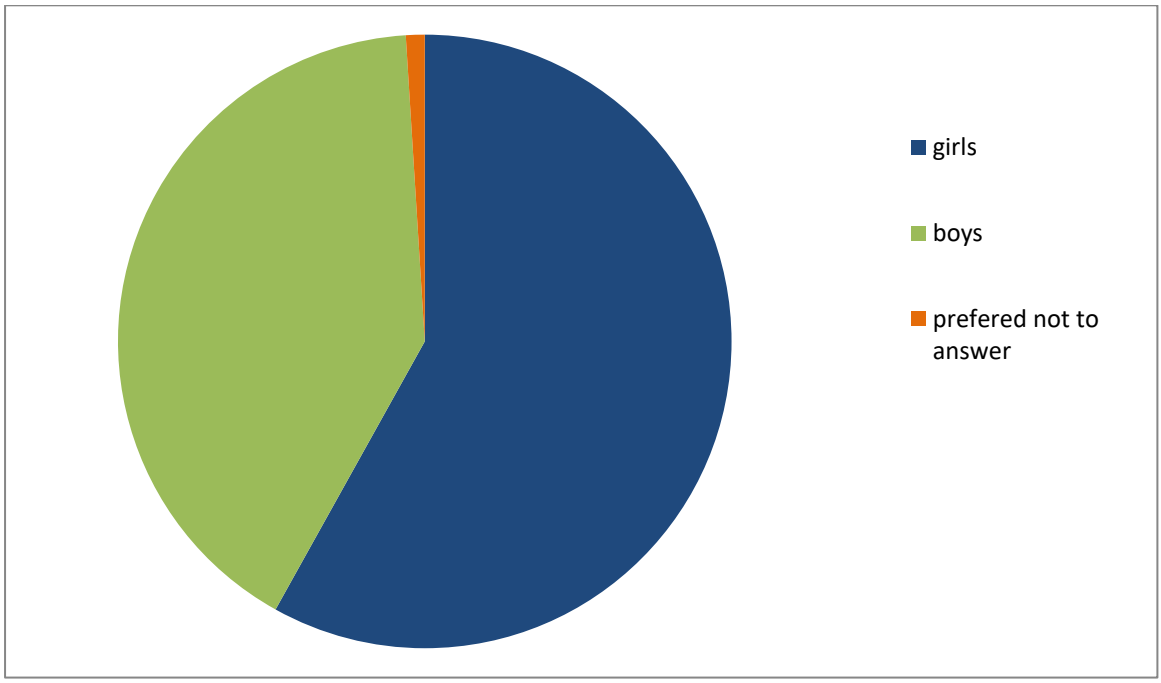

Figure 4.1: a pie chart for student gender identity.

There were 300 students in total that took the survey, including students enrolled in S.5 and S.6. 2 students omitted their class level (0.7%). A summary of grade level is as shown in Table 4.1.

Table 4.1: the students' enrollment

Class	Number of students	Percentage(%)
S.5	194	64.7
S.6	104	34.6
Totals	298	99.3

4.2 Subject Background

Students provided a snapshot by providing a list of subjects currently enrolled in. The study presents the results of science subjects already taken and reviews the current science subject enrollment.

Table 4.2: Science subjects' results.

Subject	Distinction(1&2)	Credit(3,...,6)	Pass(7&8)	Othergrades
Physics	11	82	152	55
Biology	39	113	115	33
Chemistry	41	109	126	24
Mathematics	64	121	98	17

The number of students who enrolled in physics compared to other science subjectsis as shown in Table 4.3

Table 4.3: shows the summary of the subject enrollments.

Science Subject	Number of students.	Percentage(%)
Physics	43	14.3
Mathematics	162	54.0
Chemistry	97	32.3
Biology	102	34.0

4.2.1 Favorite science subject.

The qualitative questions were read and categorized based on themes and these included: students' interest in the subject topics,teacher influence, and subject was "hands-on", subject was fun and subject was easy. Asummary of subject selections is available in Table 4.4.

Table 4.4:Shows a summary of subject selections

Subject	Number of students.
Physics	23
Mathematics	96
Chemistry	68

Biology	105

4.3 Insights for selecting most favorite science subject.

Students provided many insights into what they found important for a subject to be their favorite. The most cited reason is personal interest in the subject content. Some students take time in homework but enjoy class work, class discussions, labs and projects as they knowthis leads into knowing the globe and the universe. Some students find the subject interesting and entertaining.

The second most common reason is related to the teacher. Most students identify the teacher as being fun or cool.

The third response refers to the subject being hands-on. Most students identify hands-on as laboratory based, but some students provide other modes such as projects and activities.

The fourth most common positive feedback is that the subject was “easy” or “simple.” Often times, these adjectives were used in conjunction with other identifiers such as “the teacher was fun and the class was super easy”. Figure 4.2 provides a summary of student responses.

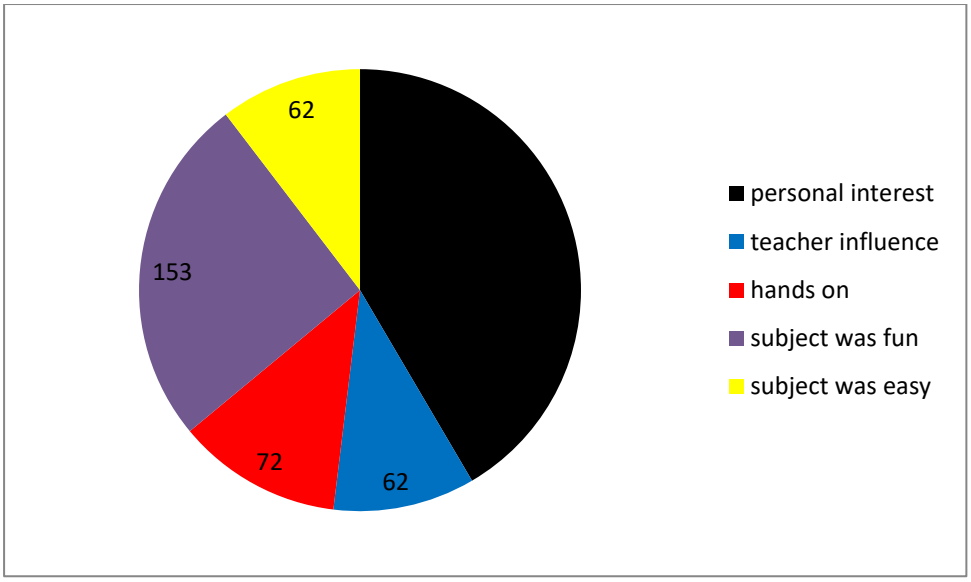

Figure 4.2: Insight for selecting most favorite science subject

Students’ selection of their favorite subject was also analyzed by subject type and gender. One major result of this analysis showed that only 2 outof the 43 students that selected physics as their favorite subject were girls. Both of these comments identified the subject as being “interesting”.

The results for selecting physics as their most favorite were very different from the results of chemistry and biology where both were identified as a favorite subject by girls more often than boys. There were 77 girls and 61 boys that selected chemistry as their favorite subject making 138 out of 300 students. The teacher was identified by 82 students as the reason they found chemistry interesting.

There were a total of 171 students that selected biology as their favorite subject of which 96 were girls and 75 boys. For biology, 102 students identified the subject as interesting, 72 girls. A summary of student selections of favorite science subjects by gender is shown in figure 4.3.

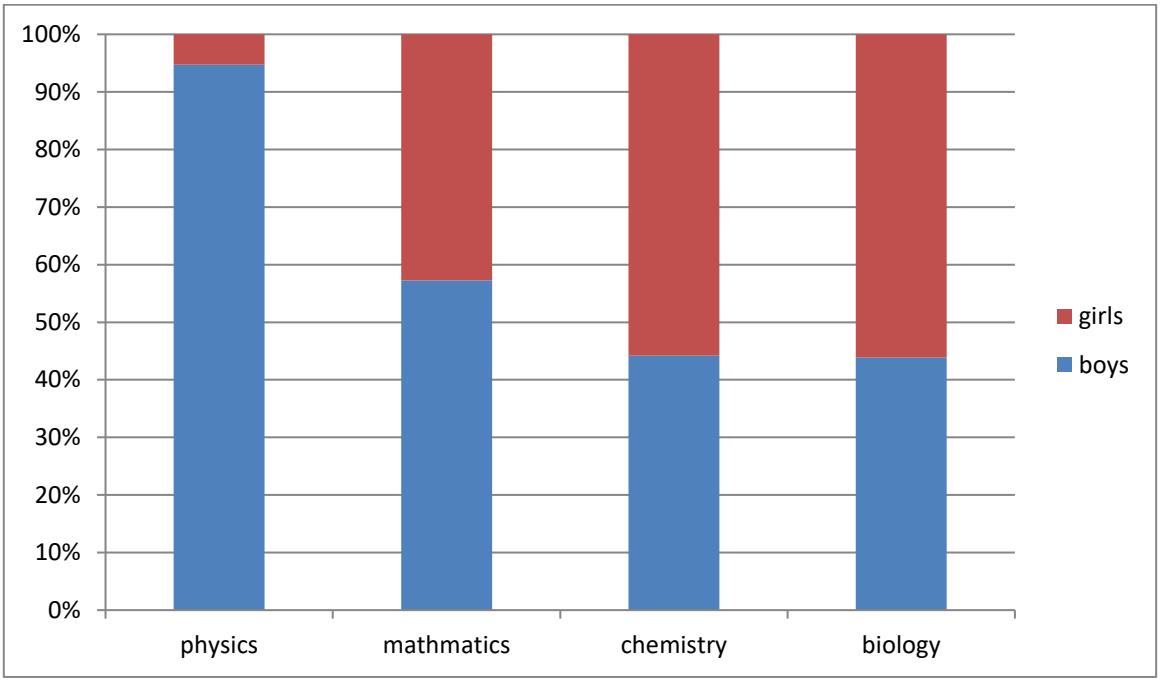

Figure 4.3: Favorite subject by Gender.

4.4 Least favorite science subject.

A summary of the least favorite science subject chosen is provided in table 4.5 below.

Table 4.5 shows the least favorite science subjects.

Science subject	Number of students	Percentage (%)
Physics	123	41.0
Mathematics	71	23.7
Chemistry	63	21.0
Biology	34	11.3

Total	291	97.0

There were 7students that omitted the question, 2 students identified multiple favorite science subjects.

The top 5 reasons students identified for selecting a subject as their least favorite science subject included: difficulty of the subject with its contents, lack of interest with subject topics, the teacher influence, lack of hands-on activities, and the amount of math involved.

There was a significant number of students that did not identify any science subject as their least favorite; some students made additional comments such as “I do not have a least favorite subject”.

Students who cite difficulty identify the hardness of the subject than expected as well as unappealingteacher’s methods of assessment.

Those students who cite lack of interest in a subject suggest that the content did not excite them and a lot of mathematics was involved.

While forteacher influence, students simply state “bad teacher” or “Not very good teaching” or “the teacher didn’t teach” without any further explanation, lack of engagement by students and too much lecture without actually doing anything seemingly productive. A summary is as seen in figure 4.4.

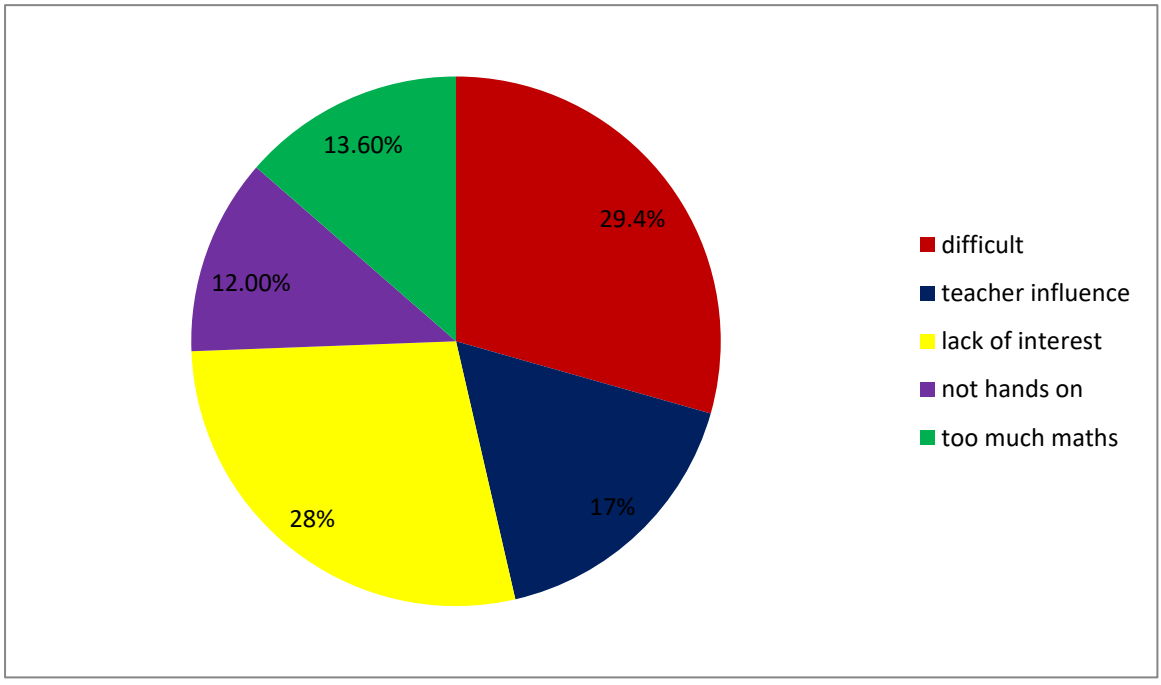

Figure 4.4:Insight for selecting least favorite science subject.

Student selection of their least favorite science subject is also analyzed by subject type and gender. For physics, there are 123 students that find the subject to be their least favorite. The most cited reason is the difficulty of the subject. Of the 58 students that identified difficulty as a reason they did not like the subject, 15 are boys and 43 are girls.

4.5 Counselor Influence

A few students stated that they talked to their counselors about what subjects to take. In total, 85 out of the 300 students surveyed said they have talked with their counselor about what subjects to take. Student responses about counselor advice mostly indicate suggestionsfor students to take subjects that prepare them for future, stick to subjects that interest them and take subjects that they performed best.

The other common advice given to students is to think of their future and to take subjects that will help them reach their goals. Some students are told to take subjects that will lead them to honors courses. Additionally, some are specifically told to take over subjects that deal with life being over mathematics and physics. Finally, there are few students told specifically not to take physics while very few were told to take physics. See Table 4.6 for a summary of counselor advice by gender.

Table 4.6: Shows a summary of counselor advice by gender.

Advice from counsellor	Number of girls	Number of boys
Think of future	9	13
Subjects leading to honours' courses.	21	14
Subjects that deal with life being.	6	4
Not to take physics	5	3
Told to take physics	2	15

4.6 Student Perceptions of Physics

Table 4.7: provides a summary of students' perceptions of physics.

Students perception of Physics	Mean		Standard Deviation	
Questions	Boys	Girls	Boys	Girls
Physics as easy	2.68	2.10	1.52	1.45
Physics as hard	4.25	4.40	1.50	1.42

Physics as interesting	3.86	2.88	1.64	1.58
Physics as fun	3.08	2.96	1.30	1.34
Physics as applicable	4.56	3.98	1.24	1.62

4.7 Limitations of Research

- One limitation to the research was that purely arts subjects were not included in the research. While the exclusion of these subjects was not intentional, it did prevent about 50 students from participating in the survey.
- The research analysis included limited statistical analysis of the data. With the depth of data collected and the strict time restraints, I was not able to fully analyze the data to its maximum potential.
- There was also a source of potential error and limitation to the survey. For example, some students clearly did not take the survey seriously and were removed from the data set.
- Another drawback of the survey was not knowing who students were and having no way to follow-up with more in-depth interview style questions. For example, it could have added more contextual understanding to interview the 2 girls that identified physics as their favorite subject.
- The length of the survey, 10 questions and about 15 minutes long, was also a limitation on the research. Limiting the survey to such a limited amount of questions and timeframe also limited the depth and scope of questions that could be asked. It would have been beneficial to include more questions specifically related to what students enrolled in physics found beneficial in an effort to learn differences between boys and girls. Furthermore, it would have been beneficial to ask more questions about parental influence.

CHAPTER FIVE: CONCLUSIONS AND RECOMMENDATIONS

This chapter provides a summary of study findings, a conclusion for the study conducted and finally gave recommendations based on the study findings.

5.1 Study findings:

Nationally, girls enroll in advanced physics at almost the same rates as boys. But as the physics courses become more challenging the differences in enrollment grow. For some Physics courses, the national average for girls taking the exam is as low as 25%.

5.2 Conclusion

- Girls have lower physics self-efficacy compared to boys. For example, girls perceive physics as less interesting, harder, less fun, and less applicable.
- Girls' future is less likely to involve physics (non-physics majors).
- Girls perceive physics as harder, less interesting, less fun and less applicable.
- Girls are more likely to take subjects that prepare them for college and are more likely to want to major in biology and medical related fields.

5.3 Recommendations.

- Further analyses of the data already collected should be done in order to learn about relationships between gender, grades, and preferred subject combination.
- Another direction would be to look at student's physics perception and gender in order to see if girls that have taken physics view it differently than girls that have not taken the subject.
- Future research should specifically address the question related to parental and family influence more closely to learn if girls are affected differently than boys.
- Future research may also try to answer the question of when girls start deciding on their college or University goals to help find out why so fewgirls are interested in majors related to physics. The question may address when girls start building negative correlation with physics. In the current generation where the teacher-based curriculum has been shifted to the new competence based curriculum that is, it is possible that by implementing this new approach of teaching in schools, girls' and boys' interests in physics may shift positively over the coming years.
- Other science teachers (excluding Physics) should identify when physics is involved in their own subjects in order to spark girl's interest in physics. That is, my study shows that girls are more interested in biology. If biology teachers had resources to assist in making stronger

connections between the relationship of biology and physics, learners might be more interested in trying physics.

- More research has to be done in identifying why girls tend to have lower self-efficacy so that possible solutions can be developed.
- Teachers of Physics should work hard in helping students learn physics conceptually before going deep into concepts that require the applications of mathematics. My experience suggests that girls tend to think of the equations in physics as memorization, even though there is no explicit memorization required.
- Also Physics teachers should provide better connection between the physics being done in the classroom and all students' personal experiences**.** It is my experience that physics is often connected to the male experiences. Teachers need to do a better job in learning the female experiences and drawing problems and examples that directly relate to experiences girls have and enjoy.

RESEARCH INSTRUMENTS.

APPENDIX A:

QUESTIONNAIRE FOR STUDENTS WITHIN PALLISA TOWN COUNCIL.

I Mpyangu Benardhave formulated this research instrument to collect data for the purpose of research meant to create greater understanding on the reasons girls enroll in advanced physics at lower rates than male counter parts. Please note that your response will be confidential and shall be used for the purpose of this research only.

INSTRUCTIONS.

Please tick where appropriate and for explanation, please be brief.

PART A: Background Information.

1) What is your gender (specify)?

Male Female Others

2) Which class are you in?

S.5 S.6

PART 2: Subject Performance.

3) How did you perform in the following subjects at UCE (S.4)?

Subject.	Specify by putting a tic on what you obtained			
	Distinction (D1,D2)	Credit (C3…C6)	Pass (P7,P8)	Other grades
Physics				
Biology				
Chemistry				
Mathematics				

PART 3: Subject Choice.

4) What science subjects are you currently enrolled in? For example, Physics, Biology, Chemistry, Mathematics.
5) What has been your favorite science subject at ordinary level?
6) Please describe why this was your most favorite subject at ordinary level?
7) What has been your least favorite science subject at ordinary level?
8) Please describe why this was your least favorite science subject?
9) When selecting your subject combination, have you spoken to your counselor about what science combination to take?
YesNo
10) If yes, please describe the advice you received from your counselor.
11) Have you ever tried to talk to your science teacher about which science subject to take?
12) Please describe the advice you received from your teacher.
13) Please rate the following statements on the scale provided.

	1	2	3	4	5
I think of physics as an easy subject.					

I think of physics as a difficult subject.					
I think of physics as an interesting subject.					
I think of physics as a fun subject.					
Physics matters in the real-world.					

1- very true
2- less true
3- true
4- not true
5- I totally disagree

APPENDIX B

QUESTIONNAIRE FOR THE DISTRICT EDUCATION OFFICER.

Dear sir, I am Mpyangu Benard a student of Busitema University Uganda carrying out a research on the factors leading to low girl child enrollment in advanced secondary physics in schools. I have decided to conduct the study in advanced secondary schools within Pallisa Town Council. I therefore request you to assist me fill these questions so that I can be able to gather relevant information that will make it more credible.Please note that your response will be confidential and shall be used for the purpose of this research only.

Questions.

1. What could be the enrollment levels of students at advanced secondary level in terms of boys and girls?
2. What do you think are the causes of poor enrollment of girl children at advanced secondary level physics in your district?
3. In your opinion, what could be the attitudes of parents towards education of the girl child in this district?

Thanks for your cooperation.

APPENDIX C

QUESTIONNAIRE FOR HEAD TEACHERS WITHIN PALLISA TOWN COUNCIL.

Dear Sir, I am Mpyangu Benard a student of Busitema University Uganda carrying out research on the possible causes of low girl child enrollment in advanced secondary physics in schools.I have decided to conduct the study in your school. Therefore, I request you to assist me fill this questionnaire so that I can be able to gather relevant information that will make it more credible.

Questions.

1. What are the enrollment levels of girl children at advanced physics in your school?
2. On average, how many more boys are enrolled in advanced secondary physics compared to girls each year?
3. What could be the major noticeable causes of poor girl child enrollment in advanced physics in your school?
4. In your opinion, what attitudes do parents/guardians have towards the girl child education?

Thanks for your cooperation.

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