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GENDER IMBALANCES IN SCIENCE DISCIPLINES AMONG STUDENTS IN KYAMBOGO UNIVERSITY OF UGANDA AND EDUCATION IMPLICATIONS

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Abstract

Kyambogo University (KyU) is one of the nine government universities in Uganda experiencing gender inequalities in science disciplines with glaring education implications in country with 34.6 million people in which women are the majority. The central aim of the paper is to establish the science gender imbalances in KyU and education implications with a specific focus on policies and practices for students and then provide the way forward. This study used a mixed methods approach that combined desk review and interviews. The findings indicate that the nature is reflected in the Admissions, and Completion, and the causes are patriarchy, gender stereotypes and roles and mentoring while the education implications are colossal in terms of low enrolments, self-esteem, academic staff recruitment and education returns as well as low Higher Degree Achievements. The study concludes that science gender imbalances in KyU is a reality, socially constructed and can be deconstructed. Therefore this paper recommends creating science awareness in schools, providing scholarships for females, affirmative action through STEM Programme, strengthen the KyU Gender policy and Gender Mainstreaming Directorate, and Gender Monitoring & Evaluation which will lead to gender equality in sciences disciplines.

Key Words: Gender Imbalances, Science Disciplines, Kyambogo University, and Education Implications

Introduction

On the 18th of July 2003 by statutory instrument No. 37 of 2003 as provided in section 22(1) of the Universities and Other Tertiary Institution Act 2003 as amended, established Kyambogo University as a Public University from a merger of three institutions namely: Uganda

Polytechnic Kyambogo (UPK), Institute of Teacher Education Kyambogo (ITEK) and the Uganda National Institute of Special Education (UNISE). KyU is now 16 years old with the vision of being a centre of academic and professional excellence which should be manifested in gender equality in terms of science disciplines admissions, enrolment and completion at both undergraduate and postgraduate levels.

Additionally, The Universities and Other Tertiary Institutions Act 2006 as amended, The National Council for Higher Education (NCHE) established in 2001 and The Education (Pre-Primary, Primary and Post Primary) Act 2008 all provide for the provision of equal education for all (females and males) in disciplines including sciences. This is further buttressed by the 1995 constitution of the Republic of Uganda article 21 which provides for equal and fair treatment of all persons in Uganda without discrimination in all spheres of life including education as well as article 30 which provides for the right of education for all females and males. According to the Universal Declaration of Human Rights, 1948 article 26 provides that all people should receive education. The 17 Sustainable Development Goals (SDGs) of 2015-2030,agreed upon by 193 countries including Uganda on 25th of September 2015 at the United Nations, goal number four is quality education and five is gender equality which goals were equally found in the Millennium Development Goals (MDGs) of 2000-2015 number two and three respectively. The National Gender Policy (NGP) of Uganda 2007 provides for equal treatment of females and males in Uganda in terms of education attainment of all disciplines. In the same line, Kyambogo University Admissions Policy, and Gender Policy 2014 both provide for equal treatment of females and males in terms of education attainment of all disciplines. All the above imply fair treatment of both females and males in Uganda in general and KyU in particular in terms of no discrimination, equal rights and opportunities for all to access education of all disciplines including sciences which would translate into gender balance among students in all programmes and faculties.

However, Kyambogo University (KyU) is one of the nine government universities in Uganda experiencing gender inequalities in terms of students enrolment and completion of science programmes which in creating huge education implications in KyU and the nation

at large in such a populated country of 34.6 million people (UBOS, 2016) in which women are the majority (50.7%). In 2018, the population was estimated 39,041,200 million with women still in the lead (UBOS, 2018). Girls in Uganda are disproportionately discriminated against boys in terms of education; they face tougher barriers when trying to gain any education and it has left the female population disenfranchised, despite government efforts to close the gap (Hasaba, 2014). Uganda's enrollment stands at 563913 in Pre-Primary, 8,655,924 in Primary, 1,284,008 in secondary, 258,866 at Universities (MoES, 2019) and the completion rate stands at 359,725 (51.7%)girls and Boys at 336,068 (48.3%) at Primary leaving Examinations(PLE), Boys at 169,984(50.4%) and 166756 (49.6%) girls at Uganda Certificate of Education (UCE), boys at 53,359 (53.5%) and girls 41,296 (46.5%) at Uganda advanced Certificate of Education (UACE),(UNEB, 2020, 2019) and this pattern continues up to universities. This is evident from the National Council for Higher Education (NCHE) 2019, it is estimated that there are 2000 Ph.D. holders in Uganda of whom 76% are male while 24% are female which is a big gender disparity. There are 152(36.2%) females against 267(63.8%) males employed in KyU by 2019 of whom 43(32.5%) females against 89(67.5%) males have Ph.Ds of which 15(33%) women have Ph.Ds in sciences disciplines against 30(67%) men(Kyambogo University Employment Records, 2019) and with students it stands at 457(22%) and 1621(78%) in science disciplines who graduated in 2019 which is a clear manifestation of gender imbalances at this 16-year-old university.

This paper therefore attempts to provide an insight into the nature of gender imbalances science disciplines at KyU among students, causes and education implications on the development spectrum of the institution and beyond with clear presentation of the way forward for gender equality at this higher education learning institution in terms of science disciplines.

Literature Review

The National Gender Policy (NGP) of Uganda 2007 is to raise women to the status of men. The focus of women in Uganda is majorly three-fold: Raise the status of women; Increase their influence and participation in politics, economics, social issues, and education and Reduce

culture/other factors or conditions that inhibit the progress of women (NGP, 2007). Despite the National Gender Policy of Uganda 2007, 23 years of its implementation inception of the 1997 Gender Policy, there are still glaring gender imbalances in the nation as evident. There are 6193 medical doctors of whom 2291(37%) are women against 3902(63%) men and the same pattern is found in engineering and architecture.

The Gender Mainstreaming Programme of 2007 at Makerere University (Mak) now boasts of scholarships that have increased female enrolment into Mak through scholarship programs, engendering the curriculum; conducting and encouraging gendered research; developing gender-sensitive policies and budgets; making campus space safe for all; enabling women to access management positions and inspiring student to respect one another's femininity and masculinity without any biases (Gender Mainstreaming Division, 2007). Makerere University has achieved this through its Gender mainstreaming programmes in two ways namely: The access and teaching-learning division which majorly addresses three major strategic issues namely: scholarships; engendering university curriculum and university outreach programs. Secondly is the welfare division which makes it possible to work towards the improvement of policies and practices that are related to the general wellbeing of male and female members of the university community like; gender sensitization among staff and students; gender-friendly human resource policies; housing and accommodation; recreation and sports facilities; campus security; staff recruitment, promotion and retention; and a wide range of social support services. Such innovations continue to enhance the enrolment and completion of students

Kyambogo University Gender Policy of 2014 aims at mainly achieving /ensuring: understanding of and sensitivity to gender issues among university members, gender equity, equality and empowerment in leadership and management, review and engender the curricular in the university programmes, mainstream gender in research and innovations, institutionalize gender-responsive planning and budgeting, secure environment for students and staff and review and mainstream gender in existing and future policies and plans of the university (KyU Gender Policy, 2014).

Gender issues are not only women issues (Lubaale, 2020). There is a misconception that gender issues are only women's issues, which is

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false. Gender seeks to get rid of unfair traditional marginalization and exploitation of both women and men. There is a need to involve both men and women to change society, such that the abilities and potentials of both male and female gender are maximally exploited and fairly rewarded.

Materials and Methods

This paper used a mixed-methods approach that combined desk reviews and interviews (Creswell, 2017;2009). Quantitative data was derived from documents while qualitative data was from the interviews. Kyambogo University has a total of 6234 Students pursuing sciences in the faculties of Science and Engineering (Kyambogo University, 2019) who were the target population, from whom 62(1%) were interviewed thus reaching data saturation (Mugenda and Mugenda, 1999). Validity of the instruments was ensured by giving to 10 experts in education to judge their appropriateness. From this rating, the Content Validity Index (CVI) was calculated and approved. The CVI for each item was calculated and all items whose score was below 0.8 were modified (Amin, 2005). Reliability of the items was determined using the test-retest method. The Cronbach Alpha test score of 0.6 was obtained (Amin, 2005). Data was analyzed using descriptive statistics for quantitative data and content analysis for the qualitative data by identifying themes, summarize the findings (Pope et al., 2007) and thereafter researchers' interpretation. Ethical Considerations were ensured through the confidentiality of participants, ethical approval and the use of informed consent (Bean, 2005).

Results and Discussions

Nature of Science Gender Imbalances

The nature of science gender imbalances among students in Kyambogo University is manifested in the following ways:

Admissions: KyU being a public university, the law requires that an advertisement is placed in the newspapers for the public to view and respond accordingly. KyU has been compliant to this since inception and many girls/boys have been responding to it. In the process of admissions, girls are given 1.5 additional Marks which indeed enhances

the enrolment as statutory requirement, (Gender Policy; 2007). However, imbalances are seen in the admitted students in terms of science undergraduate and postgraduate programmes in which more boys are admitted than girls in the percentages of 75 to 25 respectively.

Completion Rates: After thousands of boys and girls are admitted, studying starts with hope of completion. On the way a good number of student's boys and girls do not complete majority being girls who drop out due to various reasons.

Table 1: Showing Gender Imbalances in Completion Rates at Kyambogo University

S/N	**Programme**	**Male**	**Percen -tage**	**Female**	**Percen-tage**	**Total & %**
2019	All Programmes	4810	54.5	4011	45.5	8821=100%
	Science	693	73.1	255	26.9	948=100%
	Engineering	928	82.1	202	17.9	1130=100%
	Postgraduate	143	64.2	80	35.8	223=100%
2018	All Programmes	4119	53.8	3827	46.2	7646=100%
	Science	557	73.3	202	26.7	759=100%
	Engineering	932	82.2	201	17.8	1133=100%
	Postgraduate	80	71.4	32	28.6	112=100%
2017	All Programmes	4139	56.6	3165	43.4	7304=100%
	Science	494	74.6	168	25.4	662=100%
	Engineering	839	85.6	141	14.4	980=100%
	Postgraduate	153	72.1	59	27.9	212=100%
2016	All Programmes	3174	54.4	2655	45.6	5829=100%
	Science	351	74.5	120	25.5	471=100%
	Engineering	695	87.5	99	12.5	794=100%
	Postgraduate	39	54.9	32	45.1	71=100%
2015	All Programmes	3673	50.9	3529	49.1	7202=100%
	Science	406	68.6	185	31.4	591=100%
	Engineering	662	87.6	93	12.4	755=100%
	Postgraduate	60	60	40	40	100=100%
2011	All Programmes	4192	55	3409	45	7601=100%

Source: Graduation Booklets of Kyambogo University 2011-2019

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The above table 1 indeed shows the gender imbalances in terms of completion with engineering programmes being worst represented as evident in 2015 with 12.4% females against 87.6% males. Gender imbalances in all programmes is illustrated in which females are at the bottom. This indicates that in spite of the affirmative action programmes of 1.5 additional marks, female scholarships, private scheme, KyU Gender Policy, 2014 and the National Gender Policy, 2007 as well as the constitutional and international conventions of attaining education for all in all disciplines, gender imbalances remain real hence this study to establish the nature, causes, implications and the way forward for gender balance in science disciplines.

Table 2 A: Showing Gender Imbalances in Science Disciplines of Students by 2019

	FACULTY OF SCIENCE			
S/N	**PROGRAMME**	**MALE**	**FEMALE**	**TOTAL**
1	Bachelor of Science in Chemical Engineering	93	23	116
2	Bachelor of Science with Education	149	41	190
3	Bachelor of Science Technology (Biology)	35	10	45
4	Bachelor of Science Technology (Chemistry)	25	14	39
5	Bachelor of Science Technology (Physics)	17	4	21
7	Bachelor of Science in Food Processing Technology	32	16	43
9	Bachelor of Information Technology and Computing	97	27	106
10	Bachelor of Information Systems	30	11	41
11	Bachelor of Science in Sports and Leisure Management	4	2	6
12	Bachelor of Science in Textile and Clothing Technology	14	5	19
13	Bachelor of Environmental Science Technology and Management	31	20	51
14	Bachelor of Oil and Gas Production	15	8	23
15	Bachelor of Science in Statistics	36	28	64
16	Diploma In Computer Science	21	5	26
17	Diploma in Ceramics Science and Technology			

18	Diploma in Food Processing Technology	17	21	28
19	Ordinary Diploma in Science Technolgy(Biology)	19	1	20
20	Oedinary Diploma in Science Technology(Chemistry)	16	9	35
21	Diploma in Physical Education & Sports Management	17	2	19
22	Diploma in Textile Design & Technology			
23	Ordinary Diploma in Science Technology(Physics)	9	2	11
24	Certificate I Food Processing Technology	3	2	5
25	Certificate in Laboratory Technology	13	4	17
	TOTAL	**693**	**255**	**948**

Source: Graduation Booklets of Kyambogo University, 2019

From the table 2A above, gender imbalances in all science programmes is illustrated in which females are at the bottom in numbers in all programmes. This indicates that in spite of the affirmative action programmes of 1.5 additional marks, female scholarships, private scheme, KyU Gender Policy, 2014 and the National Gender Policy, 2007 as well as the constitutional and international conventions of attaining education for all in all disciplines, gender imbalances remain real hence this study to establish the nature, causes, implications and the way forward for gender balance in science disciplines.

Table 2 B: Showing Gender Imbalances In Science Disciplines Of Students By 2019

S/N	FACULTY OF ENGINEERING			
	PROGRAMME	MALE	FEMALE	TOTAL
1	Bachelor of Engineering in Civil and Building Engineering	152	22	174
2	Bachelor of Engineering in Telecommunications Engineering	40	12	52
3	Bachelor of Engineering in Mechanical and Manufacturing Engineering	83	6	89

4	Bachelor of Electrical Engineering	41	1	42
5	Bachelor of Architecture	8	5	13
6	Bachelor of Science in Building Economics	27	13	40
7	Bachelor of Science in Surveying and Land Information Systems	39	19	58
8	Bachelor of Science in Land Economics	25	23	48
9	Bachelor of Vocational Studies in Technological Studies With Education	12	6	18
10	Bachelor of Engineering in Environmental Engineering and Management	52	12	64
11	Bachelor of Industrial Engineering and Management	47	11	58
12	Bachelor of Engineering in Automative and Power Engineering	48	3	51
13	Higher Diploma in Mechanical Engineering	5	0	5
14	Higher Diploma in Civil and Building Engineering	52	15	67
15	Diploma in Architectural Draftsmanship			
16	Ordinary Diploma in Civil and Building Engineering	18	4	22
17	Higher Diploma in Electrical Engineering	13	2	15
18	Ordinary Diploma in Civil and Building Engineering(Kabale)	15	5	20
19	Ordinary Diploma in Electrical Engineering	39	2	41
20	Ordinary Diploma In Water Engineering	17	8	25
21	Ordinary Diploma in Mechanical Engineering	35	1	36
22	Ordinary Diploma in Architecture	31	9	40
23	Ordinary Diploma in Computer Engineering	16	3	19
24	Ordinary Diploma in Telecommunications Engineering	17	4	21
25	Diploma in Education Secondary(Technical Studies)	7	3	10
26	Diploma in Biomedical Engineering	20	8	28
27	Ordinary Diploma in Automobile Engineering	27	0	27
28	Ordinary Diploma in Refrigeration and Air Conditioning	42	5	47
29	Certificate in Printing Technology			
	TOTAL	**928**	**202**	**1130**

Source: Graduation Booklets of Kyambogo University, 2019

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From the table 2B above, gender imbalances in all engineering programmes is illustrated in which females are at the bottom in numbers in all programmes. This indicates that in spite of the affirmative action programmes of 1.5 additional marks, female scholarships, private scheme, KyU Gender Policy, 2014 and the National Gender Policy, 2007 as well as the constitutional and international conventions of attaining education for all in all disciplines, gender imbalances remain real hence this study to establish the nature, causes, implications and the way forward for gender balance in science disciplines.

Causes of Gender Imbalances in Science Disciplines

It was important to find out from the respondents their perspective on the causes of gender imbalances in science disciplines at KYU through interviews.

Patriarchy: Patriarchy is the rule of the father. It originally had a narrow meaning referring to a system, historically derived from Greek and Roman law, in which the male head of household had absolute legal and economic power over his dependent female and male family members, and male and female slaves. More recently, the term patriarchy has come to be used to describe male dominance over women and children within the family and the extension of this dominance in all other areas of society like in the; government, military, education, science disciplines, industry, business, health care, advertising, and religion (Julia, 1994; Tuyizere, 2007). The reason why it is often so hard to challenge gender roles is because most societies in the world are patriarchal KyU inclusive and through this power structure, traditional gender roles in which women are subordinated are upheld and perpetuated. It does not imply that women are totally powerless, or totally deprived of rights, influences and resources, rather that the balance of power to pursue sciences in is in the favour of men.

During the interviews, a number of respondents identified patriarchy as one of the key causes of gender imbalances in science disciplines as explained:

> *In our community, culture has really spoilt things. Everybody thinks that it is men to do sciences and become engineers, Doctors, technicians etc all the time while women*

are for arts. Even in the university, such philosophy is reflected in the admissions, completion rates and even staff composition, a female academic staff said.

A male student staff said that women cannot be equal to men in pursuit of science disciplines because it is male pre serve. Another female student said that patriarchy controls women by excluding them from access to necessary economically productive resources which would facility their purist for sciences.

Traditional division of labour which largely places women at home to do domestic work indeed denies many young girls of the time and courage it demands to pursue sciences hence opting for arts which look less laborious.

Patriarchy is rule of the father which keeps women dominated and subordinated by men in all spheres of life (political, economic and social) including education attainment in science disciplines, promotion and staff recruitment hence the current science gender imbalances in KyU, a female students said.

The above statements mean that patriarchy is a reality to the extent that even when people go to school and reach university levels, patriarchal manifestations, features and dynamics particularly of male dominance over female are alive up today in society including KyU. This sad reality continues to be reinforced as a result of history, perception and practice which perpetuates male dominance over female in sciences disciplines. Understanding patriarchy therefore gives the readers more understanding to why most women in KyU have limited access to higher education and excellent achievement in science disciplines.

The above is further reinforced by the Archaeologists who have traditionally assumed that male activities in all societies represent power, prestige, and spatial segregation, whereas females are associated with subordination, domesticity, the burden of childcare, and the use of tools that are technologically inferior hence justifying why men should purse sciences disciplines because they are more demanding than arts that should go for women hence perpetuating gender imbalances.

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Gender Stereotypes and Roles: Gender Stereotypes refer to the characteristic of masculine or feminine as defined/determined by culture i.e. illustrates the gender pattern of male and female behaviours as determined by culture. (Lubaale, 2018, Ssali, et al., 2007, Julia, 1994).

Table 6(a): *Shows General Gender Stereotypes In Uganda.*

Men are:	***Women are:***
Public	*Private*
Active	*Passive*
Leaders	*Followers*
Independent	*Dependent*
Strong	*Weak*
Courageous	*Timid*
Risk takers	*Avoid risks*
Aggressive	*Polite*
Rational (reason)	*Intuitive/ emotional*
Sciences	*Arts*
Tough	*Tender*
Assets	*Liabilities*
Superior	*Inferior*
Handsome	*Beautiful*
Rulers	*Ruled*
Dominants	*Subordinates*

Source: Lubaale, 2018

The above gender stereotypes (Table 6a) in Uganda are useful in comprehending the gender imbalances in KyU.

Gender Roles refer to a set of particular behaviour, roles, functions carried out just because we are male or female or to reflect/show our masculinity or femininity like in dressing, attitudes, personality, work; both within and outside the home, sexuality, family commitments, etc. Gender roles are learnt from childhood. They sometimes differ from culture to culture although many cultures agree to them in common. They are strictly determined by culture therefore socially constructed.

Table 6(b): *Shows General Gender Roles In Uganda.*

Men are	***Women are***
Dominants	*Subordinates*
Husbands	*Wives*
Head families	*Members*
Inheritance	*Less*
Decision makers	*Follow*
Provide security	*Enjoy*
Marry	*Get Married*
Not their work	*Cook (domestic work)*
Assist	*Bear / rear children*
Accounting officers	*Assistants*
Bread winner	*Assist*

*Source**:** Lubaale, 2018.*

The above gender roles (Table 6b) in Uganda are useful in comprehending the gender imbalances in KyU.

During the interview, respondents in the university affirmed that Gender Stereotypes and Gender Roles as one of the causes of gender imbalances in society as well as in KyU as follows:

> *Limited female science scholars indeed standout as a drawback in motivation and encouraging young females from pursuing sciences, said a female respondent.*
>
> *A female respondent wanted to go for her Ph.D. and her husband objected. He said produce children first and then go which delayed her career for six years. After producing three children and the husband was happy, he told her you can now proceed for your studies.*
>
> *Men study science courses while women arts and is a serious gender stereotype which causes gender imbalances in which men continue to dominate sciences as women follow. The male respondent told the researcher that there are 15(33%) women with Ph.Ds. in sciences/engineering against 30(67%) men.*

> *Domestic chores and beauty/ smartness gender roles consume women's time to do sciences that are time consuming in laboratories and research according to a male respondent.*

From the above responses of respondents, it becomes clear that Gender Stereotypes and Gender Roles exist and its effect on people is a reality including highly educated people in the university setting where one would not expect such. Indeed gender roles and stereotypes are nurtured right from childhood so that even when people grow and get educated up to university, such nurturing has been rooted in them thus appearing like "genetic" and starts to occur "naturally" yet it is not a scientific fact but a social fact which is a reality as evident above. Such gender stereotypes and roles have greatly contributed to the gender imbalances in KyU and eventual underdevelopment as a result of history, perception, and practice. They are not natural phenomena but socially constructed with far-reaching impacts on women through experiencing a lot of pain, stress, abuses, insults, and psychological torture which eventually reduces their self-esteem, freedom, motivation and ambition. This automatically limits women's chances to higher education access, excellent achievement and leadership in the university and beyond.

Mentoring: The continued failure to close the gender disparities in sciences in in the university continues to paint a picture that these disciplines are for male which discourages females. Mentorship of young people to do sciences is by all gender however people of the same gender have an exceptional advantage they add on building self-esteem and giving a young generation hope that things are possible.

> *A female respondent said that while at advanced level, all teachers of Physics, Chemistry and Biology were men which is okay but it would have been better with some women as teachers, this would have caused more performance and motivation among females.*

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> *Continuous dominance of men in sciences indeed creates an image that sciences are for men which discourages young girls from pursing them, said a male respondent.*
> *Mentorship from a person of your gender adds value, said a female respondent.*

Therefore limited mentorship continues to perpetuate gender imbalances in sciences because of few role female models, motivation, self-esteem, complements and hope which discourages young female generation from pursuing sciences.

Education Implications

Such gender imbalances as illustrated above has great implications in the Education system as a whole and university growth in particular in the following ways:

Education for All: The 1995 constitution of the republic of Uganda provides that all citizens of school going age should receive education in all disciplines without discrimination by gender. In the same line the Universal Declaration of Human Rights 1948 in article 26 provides for the same as well as Sustainable Development Goals (SDGs) number 3. Kyambogo University Admission policy, gender policy 2014 and core values all point equal education access in all disciplines without gender discrimination.

> *In spite of free education, girls drop out of school and those who are unable to score the points needed to join higher education for science disciplines, a female respondent said.*

> *Human rights violation particularly of inability to access education, and limited access to basics needs that are necessary to facility people go to school and pursue sciences, a male respondent affirmed.*

Therefore the existence of gender gaps in student's enrolment and completion of sciences in the university defeats the above constitutional and international conventions for education equality which depicts KyU as non-compliant yet as a university, it ought to be gender responsive.

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Enrolments: The continued failure to get more mentors, role models, and academic staff of all genders and in general demisfying sciences as male preserve indeed perpetuates the gender disparities in enrolments

> *Sciences is for boys and girls for arts which discourages girls from trying sciences, a female respondent said.*
> *Failure to score enough points to join science disciplines inhibits enrolments, a male respondent said.*
> *Limited role models in sciences like Professors, lecturers , teachers and researchers of female gender indeed demotivates and leaves no room for hope and trail to pursues sciences hence low enrolments, said a female respondent.*

From the above responses, it is clear that gender imbalances in sciences indeed results into low enrolments because few female pursue sciences up to university and complete given the above scenarios.

Self-Esteem: Gender violence, Gender stereotypes and Gender roles as sighted in the literature above have greatly contributed to the gender imbalances in sciences enrolments and completion in KyU in particular and our societies in general as a result of history, perception, and practice hence perpetuating education inequalities.

> *They are not natural but socially constructed with far reaching impacts on KyU women who in the end experience a lot of pain, stress, abuses, and insults that ultimately affect their self-esteem in all forms. A male respondent said.*
>
> *A female respondent affirmed that they create psychological torture which eventually reduces women's self-esteem, freedom, motivation and ambition.*
>
> *This automatically limits KyU women's chances to higher education access, and excellent achievement in the university and beyond, a female respondent said.*

It is now clear from the above responses that gender violence, gender stereotypes and gender roles which are a reality in KyU are largely because higher education remains patriarchal indeed limits self-esteem, freedom, motivation and ambition of women to complete their career on time. This ultimately hinders their enrolment in science disciplines at KyU

Academic Staff: By 2020 in May there were more male staff teaching sciences than female counterparts which is a systematic problem. From the beginning in primary school, secondary to university, there are few females staff teaching sciences than male which is equally translated into students because of several gender related factors as well as political, economic and social conditions in society.

> *Limited females doing sciences in primary secondary and university indeed leaves a big up in upward mobility of scholars in sciences thus by the time they recruit academic staff, the male become dominant, said a male respondent.*

> *Limited staff teaching sciences indeed discourages many females from pursing sciences because of limited mentorship and gender support, female respondent said.*

Therefore limited staff teaching sciences has an implication on female students performances, mentoring, comprehension, motivation, academic achievements which continuously perpetuates gender disparities in education

Higher Degrees Achievements: As illustrated above, the completion rate being with such gender imbalances, it creates gaps in higher degree achievements like at Masters and Ph.Ds. acses in point is at KyU with a total of 419 academic staff (KyU Employment Records, 2019), 152(36.2%) are female and 267(63.8%) are males a clear demonstration of gender imbalances in human resources capacity to serve the institution hence hindering its ability to achieve its vision and mission.

> *Such low achievements among the female in comparison to men leads to gender imbalances in promotion majorly to ranks of Senior Lecturer, Associate Professor and Professor*

which eventually kills motivation, self-esteem, freedom and hope among the current staff & students as well as those still in school. A male respondent said.

Such a scenario becomes a stumbling block to the nurturing of talents particularly of academic excellence and achievement hence missing many women's scholarship, mentoring, and research contribution in KyU. A female respondent said.

A male respondent said that such gender imbalances makes men and women miss the special nurturing, mentorship and leadership of qualified women.

A female respondent further affirmed that such imbalances makes the situation look natural yet it is socially constructed and continue to perpetuate gender imbalances which ultimately affects individual and joint collaboration for development.

We have indeed missed on grants and projects where gender balance is a must, a male respondent said.

This eventually kills motivation, self-esteem, freedom and hope among the current staff & students as well as those still in primary and secondary schools. Such a scenario becomes a stumbling block to the nurturing of talents particularly of academic excellence and achievement hence missing many women's scholarship, mentoring, nurturing, leadership, supervision, and research contribution in KyU and Uganda as whole and beyond.

Returns on Higher Education Investment: Investment in education comes with both public and private returns. Public returns include increased entrepreneurship, job creation, good economic and political governances, health and social fabric, safety, tax base, savings and investments, delivery of services like teaching, legal counsel and treating, responsible population amidst decreased population, research and development. While private returns include salary, income, job, status, psychological and career development (Bloom et al, 2005). This

theory is further buttressed by the neo-classical who avow that there is a positive relationship between education and development (De Beer & Swanepoel, 2000).

> *Gender imbalances therefore creates imbalances in education achievement and development, a male respondent said.*
>
> *We have indeed missed out on grants and research collaborations in education that require gender balance as a must, a male respondent said.*
>
> *Public returns of investing in education end up coming from one gender mainly which is not health for holistic development, a female respondent said.*
>
> *Private returns of investing in education go largely to men not women who create income inequalities, a female respondent said.*
>
> *A good development should be enjoyed by all genders, a female respondent said, insisting that the one at KyU is not celebrated equally by all.*

Given the fact that human beings are the active agents who accumulate capital, exploit natural resources, build social, economic and political organizations, and carry forward national development who include both males and females, a country which is unable to develop their knowledge, values and skills as is in KyU and Uganda as whole in sciences and to utilize them effectively in the national economy will be unable to develop anything else which will greatly curtailed growth of the education system, education equality and nurture the most talented brains in sciences of both male and female.

Conclusion

It is now clear that there are gender imbalances of sciences in KyU as manifested in the admissions and completion rates which are inhibiting the 16-year-old university from achieving its vision of being a centre of Academic and Professional excellence in terms of equal access to higher

education, completion and higher degree achievements for both male and female. The cause is nurture and social construction largely rooted in gender stereotypes, gender roles and gender violence not natural a phenomenon thus it can be deconstructed to pave way for gender equality in sciences education enrolment, completion and higher achievement.

Recommendation

Create Awareness: KyU must start public awareness in all primary and secondary schools that it offers sciences disciplines which are open for both males and females. This should be done through media, career guidance in schools, publishing science programs at KyU and entry requirements and being available for question and answer. This will indeed create awareness for both male and female students and among parents which will culminate into motivation and better self-esteem for hard work which will increase enrolments.

Science, Technology, Engineering and Mathematics (STEM) affirmative policy passed and adopted by Makerere university council on at its 147th meeting held between 6th-8th August 2019 to ring fence 40% enrolment preserve for female applicants to the above university programmes of Science, Technology, Engineering and Mathematics (Mak, 2019). KyU should adopt the same STEM Programme either in the same format or with modification according to KyU facilities and abilities in order to promote and give females greater opportunities to study those courses hence enhancing more enrolment thus closing the science gender gap.

Scholarships: The University Council in its budget should reserve 200 scholarships for females from vulnerable families to purse science disciplines at KyU. This will certainly increase motivation for hard work for those in secondary schools and enrolments hence closing the gender gap in sciences.

Gender Policy: Kyambogo University Director of Gender Mainstreaming must ensure that the KyU Gender Policy of 2014 with its broad aim of achieving gender equality in the university in all spheres is

implemented to the letter. This paper recommends increased funding by the University Council to the Directorate in terms of staffing, office space, equipment, scholarships and research which will accelerate gender equality in the university among students in all disciplines.

Gender Mainstreaming Program: Kyambogo University should establish a full-fledged functioning gender mainstreaming programmes in the Directorate of Gender that will address all the imbalances mentioned above in terms of recruitment, promotions and award of scholarship with an affirmative action view. The Directorate should offer technical guidance from time to time.

Gender Monitoring and Evaluation: Gender monitoring and evaluation should be continuously done by KyU Gender Directorate in view of the polices at hand to ensure that gender imbalances in science disciplines in terms of admission, completion, sponsorship of students as well as recruitment and promotions of academic staff are handled chronologically to ensure that thy are on course of delivering gender equality from time to time. They should ensure that the correct alternative is implemented and that the policies / programmes of gender equality are having the desired effect and cost-effective in view of the intended beneficiaries.

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Declaration of Interest Statement

I declare that this is my original work as a single author with interest for publication and I hereby authorize the Journal to publish it.

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