MAPPING OUT KEY PRESSING CURRENT ISSUES AND KNOWLEDGE GAPS IN ACCESS, PARTICIPATION AND CHALLENGES OF GENDER AND HIGHER EDUCATION IN MULTIPLE AFRICAN CONTEXTS

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Abstract

Scoping exercises of current literature/research is being conducted by members of the Examining Gender in Higher Education (EGHE) network, in relation to issues affecting women's participation and success in Higher Education (HE) in network members' countries. Funded by a grant from the United Kingdom's Economic and Social Research Council (ESRC), the network involves a collaborative partnership between academic and activist colleagues with interdisciplinary expertise based in Scotland and Africa.

Scoping work focuses in the area of Science, Technology, Engineering and Mathematics (STEM) and also more broadly on issues related to gender and higher education in member countries as part of the EGHE network's activities, in order to produce findings of relevance for policy makers and practitioners, and to identify and develop further key areas for future research collaboration. One key area of concern which has already been identified is participation and success of women students at university in all subjects including STEM. As the World Economic Forum report (2016) notes, women continue to remain under represented among STEM graduates for which the global gender gap stands at 47 percent, with 30 percent of all male students graduating from STEM subjects.

The work of the network members in scoping research literature of relevance to their national contexts is in its initial stages, and is expected to reach conclusion in the summer of 2018. The author has actively participated in scoping exercise in multiple African contexts. This paper outlines key issues that have emerged from the author's initial research findings in relation to access, participation and factors which affect female students in higher education. Findings include the following: (a) Issues affecting admission into HE for women students, including those studying STEM subjects – including issues of support and encouragement, the importance of role models, and the influence of wider gendered expectations as to the appropriateness of certain subjects/study for girls and women (b) The importance of looking at participation and success for different groups of women, for example differences relating to age, socio-economic status and geographical location and (c) Initial thoughts relating to patterns of similarity and difference comparatively across African countries.

Keywords: Higher Education, STEM, Access, Participation, women students, women and girls, Role Models, Examining Gender in Higher Education, Sustainable Development Goals

1 INTRODUCTION

It is well accepted by Government's worldwide that it is important to educate female and male alike at all levels of education and to participate in advancing the global development goals. Yet across the world gender imbalance continues to be a major issue at all levels of education and progresses to higher education. Gender inequalities at tertiary level cannot be discussed without reference to secondary education as this affects enrolment rates at tertiary levels. Lestrade (2012) argues that eliminating gender disparity in higher institutions is extremely challenging for Ethiopia because of the low base from which it begins as only 4 percent of secondary school students are female. A study by UNESCO (2012) for instance, found out that gender disparity in education is higher in secondary and higher education. This has been emphasised further by Eshetu (2015) who argued that issues of equity in education between male and female groups have been a serious problem at all levels of education and particularly the higher education.

Education for All (EFA) Global Monitoring Report (2015) emphasised that poor primary attainment and drop out from secondary education reinforce disparity into tertiary education. Gender disparity is

higher in secondary education than it is in primary education in a number of countries. By 2012, according to the report, 63 percent of countries with available data had yet to achieve gender parity in secondary enrolment. This analysis from EFA Global Monitoring Report shows that gender gaps continue to affect secondary and tertiary education. Moreover, fewer girls who reach tertiary education face challenges which will be discussed in this paper.

Documentation on girls' and women's education emphasise on access and participation of female on all subjects including Science, Technology, Engineering and Mathematics (STEM). For instance, according to UNESCO (2012), education statistics in sub-Saharan African countries show that women continue to lag behind men in education, in general and specifically in science, mathematics and technology. Therefore, it is not surprising that the Sustainable Development Goals (SDGs) set by the United Nations cannot be realised unless women and girls are involved in all areas of development and global issues including their participation in STEM subjects (UNESCO, 2012).

World Economic Forum report (2016) suggests that women continue to remain under represented among STEM graduates for which the global gender gap stands at 47 percent, with 30 percent of all male students graduating from STEM subjects. As Mbano et al. (2017) states, in Malawi female students' access, success and retention in Mathematics and Science continue to be major areas of concern throughout secondary school and emanates to the higher education.

It is against such background that the Examining Gender in Higher Education Network engaged in scoping exercise to identify factors which affect access and participation of female students in higher education. This paper discusses the research methodology, findings and finally conclusions and insights.

2 METHODOLOGY

The scoping exercise of current literature research is being conducted by members of the Examining Gender in Higher Education Network. Members consist of academic and activist colleagues with interdisciplinary expertise based in Rwanda, Uganda, The Gambia, Scotland, and the pan-African Forum for African Women Educationalists (FAWE). As already mentioned the work of the network members is in its initial stages and expected to be concluded in the summer of 2018. As a member of the network the author conducted literature research in multiple African contexts through reviewing literature on higher education in publications, websites and the UN agencies documentations.

3 RESULTS

3.1 Access and participation of female students in Higher Education

Research reveals that there are disparities in accessing female students in Higher Education. Over the years primary education enrolment rates have increased, for instance, from 52 percent in 1990 to 78 percent in 2010 in sub-Saharan Africa and 80 percent to 99 percent in North of Africa. However, girls continue to lag behind boys particularly at secondary and tertiary levels (UNESCO, 2012). A study in Ghana, for instance, shows that there are gender inequalities in the higher education system. As Atuahene (2013) states, Ghana as in other African countries access to participation in higher education has generally improved numerically over the years but disparity persists between male students.

Atuahene's study in Ghana revealed that access has not been broadened to include social groups. Data reveals unequal participation among women, minorities, including individuals from low socio economic backgrounds. The accessibility and participation gap are mainly due to students' social economic status, gender, region of origin and the type of location of secondary schools attended. This scenario is common in many countries in sub-Saharan Africa. For instance, Lestrade (2012) notes that in Ethiopia 71 percent of university students come from families in the top income quartile from urban areas. Thus the expansion of university places, opportunity and access to university remains limited and inequitable.

This is supported by UNESCO (2012) that national wealth plays an important role in shaping ways in which men and women participate at tertiary education and is reflected at the regional level. The largest regional which favours men is in sub-Saharan Africa and includes the low income countries. Women are more likely to pursue tertiary education in countries with relatively high income and less likely to do so in low income countries. Ethiopia, Ghana, Malawi, Swaziland, Tanzania and Uganda

(just to mention a few) had less than 20 percent of gross enrolment rates in 2009 (UNESCO, 2012). UNESCO further explain that despite the narrowing of the gender gap in tertiary enrolment significant differences are observed in the fields in which men and women choose to earn degrees. For instance, in sub-Saharan Africa fewer female than male students graduate in engineering and in all fields (UNESCO, 2012).

The Sustainable Development Goals highlight both the importance of STEM fields for a more peaceful and prosperous world, as well as gender equality in terms of ensuring equal access to higher education for women and men alike. Yet despite rising demand for STEM professionals, women who represent over half the world population are often under-represented in these fields (UNESCO, 2012). For instance, in Malawi in spite of a number of gender equity policies and initiatives that encourage females to pursue careers within the fields of science, technology, engineering and mathematics, research indicates that they are under-represented (Mbano et al., (2017).

Morley et al. (2010) study in four universities in Tanzania and Ghana reveals that entry rates of mature students and low social economic female students were particularly low. Students from low socio economic backgrounds, mature students and students living with disabilities were severely represented in all four Universities. According to the findings in Tanzania, age, social economic background, participation rates of low socio economic status and older women were shown to be extremely low. Moreover, STEM subjects were seen as incompatible with socially constructed feminine identities. Morley et al. (2010) study reveal gender gaps in enrolment rates in the first year of the programme as shown in Table 1 and Table 2.

Table 2: Access in Tanzania 1st year of the programme: 2007/2008

Programme	1st Year students (%)		Age 30 and over		Mature (%)	
	M	F	M	F	M	F
B. Commence	66.88	33.12	0	0.16	0	0
LL B. Law	71.88	28.13	1.04	1.04	1.04	0
BSc. Engineering	73.96	26.04	0.49	0.49	0	0
B Science with Education	83.75	16.25	0	0	0	0

Table 2: Access in Ghana 1st year of the programme: 2007/2008

Programme	1st Year students (%)		Age 30 and over		Mature (%)	
	M	F	M	F	M	F
BSc. Optometry	69.23	30.77	0	0	0	0
B Commence	76.11	23.89	9.44	3.33	0.56	0
B Education Primary	71.95	22.05	59.84	18.90	5.51	1.57
B Management Studies	66.67	33.33	1.89	6.29	0	0

Figures 1 and 2 reveal that access for the first year students is lower for girls than boys. It is also surprisingly noticeable that in Ghana female students are still fewer than male in a Degree in Education programme. There is an assumption that female students opt for a career in teaching. For instance, a study conducted by Johnson (2011) in Tanzania noted that girls preferred to enrol for teaching career subjects partly because there were no role models in careers such as doctors and lawyers in their communities. Figure 1 shows that there are more male students (73.96 percent) in BSc. in Engineering compared to 26.04 percent female students in Tanzania.

Atuahene (2013) cites UNESCO (2011) which shows that there were a total of 285,862 students at the University of Ghana for the academic year 2007/08. Out of this 179,572 (63 percent) were male and 106,290 (37 percent) were female. Johnson's study in Tanzania in 2011 revealed the same trend. Respondents gave various reasons for low enrolments rates in higher education. Pregnancy and early marriages was on top of the list. To the extent that parents were scared to send their daughters to universities for fear of getting pregnant because of the alarming rates of pregnancy and early marriages.

Atuahene, (2013); Lestrade, (2012); Johnson, (2011) and UNICEF, (2014); have noted factors which affect girls' education as academic, economic, environmental, socio cultural and policy related factors. Additionally, UNICEF mentions inadequate infrastructure and insufficient policy guidelines that work to promote girls' access to STEM education as additional factors.

The World Economic Forum Report on Gender Gaps (2016) suggests that the gender gap is commonly attributed to negative stereotypes and lack of role models, lowering girls' performance and aspirations vis-à-vis science and technology. Furthermore the report speculates that sub-Saharan Africa will close their education gender gaps in 33 years; whilst Middle East and North Africa in 10 years; Latin America, Caribbean and South Asia in 5 years. Additionally, it is reported that globally gender gaps have closed in 95 countries at tertiary education. Yet women make up a larger proportion of youth not in school (23 percent) or education with 15 percent. These are mainly found in developing countries including the sub-Saharan Africa as already discussed. It is clear that gender gaps will persist if factors affecting girls' education in primary, secondary and tertiary levels are not addressed.

It is also noticeable in Figure 1 and 2 that mature students both female and male have far lower enrolment rates apart from Ghana which shows enrolment rates of 59.84 percent for male and 18.90 percent female aged 30 and over in Bachelor in Education Primary programme. Morley et al. (2010) and Johnsons (2011) have noted reasons which include challenges which married female students face. For instance, they have to balance between academic work and household chores in the home. Respondents who were married, as noted by Johnson's study in Tanzania, balanced education and marriage because educated husbands were supportive as they understood women's rights.

Access to education at all levels of education including in higher institutions need further investigation to answer questions on how Governments could formulate policies and guidelines to promote girls' access to higher institutions and STEM education. As Johnsons (2011) suggests, wide approaches could be used to understand the experiences and perspectives of access to higher education resulting to a much deeper knowledge of how Tanzania's persist in education.

3.1.1 Increasing participation of female in STEM subjects at tertiary levels in Africa

As already discussed, education statistics in sub-Saharan Africa countries show that women continue to lag behind men in education in general and specifically in science, mathematics and technology education (UNESCO, 2012). In sub-Saharan Africa girls in particular tend to participate in social sciences subjects than in physical science and mathematics. For instance, in Morocco 46 percent of women made up of the graduate population and 39 percent graduated in the field of education. Furthermore, in 83 countries available data indicated that engineering, manufacturing and construction was dominated by male graduates (UNESCO, 2012).

Researchers acknowledge that the persistent gender gap in higher education threatens to maintain Africa Women's marginalisation in the global knowledge economy. Trends reveal that with acceleration of advancement in technology emphasis is shifting to STEM subjects. For instance, at the Gender Summit 5 Africa held in South Africa in April 2015, it was recognised that there are few women in Africa engaging in or participating in STEM, adding that more women are needed in such fields to bridge the gap. Thus the researchers and organisations in the development of science, technology, engineering and mathematics acknowledged the need to bridge the gender gap in these disciplines. Participants noted that improved support for women in academic institutions and entrepreneurship could benefit Africa economies. UNESCO (2012) points out that as today's world requires more STEM professionals to find innovative solutions to global challenges, there is a growing awareness of the importance of drawing more girls and women into STEM subjects.

Morley et al. (2010) study in Tanzania and Ghana found out that academic staff and policymakers envisaged facilitation of women's entry to STEM subjects as a tool for increasing participation. However, women's representation in the STEM programmes was still low. Mbano et al. (2017) suggests that in Malawi, female students' access, success and retention in Mathematics and Science continue to be major areas of concern throughout secondary education and higher education.

At the first International Day of Women and Girls in Science in 2016 the Director-General of the United Nations Educational, Scientific and Cultural Organization (UNESCO) noted that gender equality is a global priority. Therefore, the new 2030 Agenda for Sustainable Development and the Africa Union 2063 Agenda will not meet its promise without investing in women's and girls' empowerment through and in science**.** The Agenda 2063 is a strategic framework for the socio-economic transformation of the continent over the next 50 years. It seeks to accelerate the implementation of past and existing continental initiatives for growth and sustainable development. It is asserted that there is a significant

labour shortage in STEM. Yet STEM fields are crucial for sustainable development and participation for women should be encouraged by policy formulation to supports girls participation in STEM.

The UNESCO Director argued that there is a lack of disaggregated data to fully understand the complexities that influence women's participation in STEM subjects and a gap in the lack of effective and targeted policies to address this issue. Reviewing literature on access and participation of female students at higher education has been a challenge because of lack of data. In some cases the data is not disaggregated to examine participation of female and girls in higher institutions. In this case there is a need to vigorously conduct research with disaggregated data to investigate the underlining challenges which female students face in engaging in STEM subjects. For instance, as already mentioned a respondent in Tanzania mentioned that she opted for a career as a teacher because there are no role models such as doctors and lawyers in communities (Johnsons, 2011).

3.1.2 Female role models

There are factors which affect female education in access, attainment and accomplishment higher institutions which have already been mentioned in this paper. UNESCO (2015) noted that low participation is due to school years where girls in particular are influenced from society and culture, education and labour market. One factor which stands out and has been mentioned by World Economic Forum Report on Gender Gaps, (2016); Atuahene, (2013); Morley, (2010); Lestrade (2012); Johnson, (2011) and Iversen (2012) is a lack of female role models for female students. . Johnson's (2011) PhD study on higher education institutions in Tanzania found out that lack of role models contributed to access and participation of female students. Respondents mentioned that girls miss discussing issues with role models, get encouraged and build their confidence. Additionally, girls copy each other in villages in getting married. If this is the case, it can as well be argued that equally girls would be motivated and encouraged to pursue education due to the presence of role models such as doctors, engineers, lawyers or accountants in their communities.

It is not surprising that respondents noted the absence of such career women. Nevertheless, some respondents perceived few female teachers as role models in their settings. For instance, one respondent mentioned being encouraged by a headmistress at the higher institution. However, researchers reveal that there are few female teachers in universities. Lestrade (2012) argued that there are inadequate teachers in higher institutions in Ethiopia. For instance, auditors raised concerns of inadequate female teachers in reports. Johnson's study in Tanzania concluded that women in rural areas have a harder time finding role models because there are fewer women in positions of power or authority (Johnson, 2011).

The Council for the Development of Social Sciences Research in Africa (CODESRIA) (2009) assertions noted a lack of female role models. CODESRIA rightly argues that in the structures of many Africa Universities remain deliberately masculine, in terms of their representational structure, decision making procedures and the culture of their members. Women continue to be minorities in higher education and those involved in these institutions are fragmented and isolated for various social, economic, cultural and psychological reasons. CODESRIA gives an example of a lack of women representatives during the 2008 Dean's Conference which was held in Yaoundé in Cameroon as part of the General Assembly. Out of the nineteen deans from different African countries representing the faculties of Humanities and Social Sciences who took part in the conference only one was a woman. One reason would be the fact that there are a few female deans in African Universities or they face gender related challenges which need to be unpacked.

Studies have proved that female teachers have a significant role to play in being role models for female students. Iversen (2012) noted that "well-trained, supported and motivated teachers can act as effective professional female role models for girls and in the community, challenging traditional views and socio cultural norms around the roles of women. Accordingly, higher numbers of female teachers have been shown to increase the rate of girls' enrolment and help sustain their participation in education. Additionally, the presence of female teachers can be very important in protecting girls from potential abuse and violence within school. Lestrade's (2012) study in Universities in Ethiopia noted that audits found out that many female students are afraid of male teaching staff, which is a cause of absenteeism and attrition, along with lack of security for females at universities.

4 CONCLUSIONS

This paper has highlighted some initial emerging points of concern in relation to the access and experience of women students in higher education, paying attention to African countries. It is evident

that female students lag behind male students in access and participation particularly in STEM subjects. Students from low socio economic background, predominant cultural practices, mature students and those living with a disability are particularly affected. Role models play a significant role in enhancing participation of female students at all levels of education including tertiary.

Yet this paper has revealed that females lack role models at institution and community levels. Other factors relate to policy issues. These issues need further research to examine underlining factors of access and participation of females in higher education. For instance, the question of (a) formulation of policies to access female students from different social backgrounds including mature students into higher education; (b) how Governments can create an environment or platform where female professionals, including female teachers, can act as role models to encourage girls' access and participate in higher education and (c) understanding the structures and character of the higher education environment in Africa with a focus on gender.

With the scoping exercises the network intends to provide as much information as possible not only in relation to women's access to Higher Education in these countries, but also to their experience and success whilst at university. There are a number of challenges: for example at present it is proving challenging in many countries to find data that goes beyond enrolment. The network aim to establish from academic, policy and institutional literature the nature and extent to which universities in network countries employ gender equality and Anti-Sexual Harassment Policies and how these policies relate to practice on the ground. In addition to explore the link between these experiences and wider sociocultural views about gender – assessing the degree to which essentialist social conceptions about what is 'natural' and 'appropriate' for girls and women to do affects not only participation in HE but also subject choice – particularly in STEM subjects - and progression as graduates and as academics.

Finally, the network aim to explore comparatively the ways in which the review countries not only contrast but also to highlight areas and patterns of similarity, in order to share knowledge and to work collaboratively on research that can inform policy and practice in this area to benefit women across and beyond the multiple national contexts.

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