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DOES THE CHOICE OF LANGUAGE IN TESTS HAVE AN IMPACT ON GENDER EQUALITY IN PRIMARY EDUCATION? A CASE STUDY IN SENEGAL

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Abstract

Purpose: The present study analyses the possible impact on gender equality when using a language familiar to students in tests at primary schools in Sub-Saharan Africa where a European language is the unique medium of instruction and assessment.

Methodology: To this aim, students at grades 3 and 6 (83 girls and 66 boys) in primary schools in rural Senegal were given two different tests: Mathematics problem-solving tasks and multiple-choice questions of Social Sciences. They were divided at random into a control group if they received the tests in Seerer, the local language familiar to them, or French, the sole official language in the Senegalese education system. After data collection, results were codified for analysis considering two variables: Gender and grade. First, we calculated both the percentage of students who scored the set mark and those who obtained the highest scores. Second, we checked for statistically significant differences between groups by means of One-Way-ANOVA and Tukey tests.

Findings: Although Seerer as language of tests was found to benefit both genders, results suggest that its use may especially determine girls' success at school: Girls in the experimental group obtained higher results than girls in the control group, especially the youngest, and many reached the highest scores.

Unique contribution to theory, practice and policy: Findings suggest that first, the use of a language familiar to students in tests seems to have positive effects on their academic results, and second, that it may play a role in bridging the gap between genders in some education models thanks to the evident benefits for girls, especially young ones. Such results might be taken into consideration by education authorities together with other existing examples to introduce local languages in the education system of Senegal and other Sub-Saharan countries where only a European language is employed, as it seems to contribute to reaching gender equality in education. We suggest that local languages could be used in tests from the lower levels of primary education in bilingual programs, thus favouring transfer of linguistic skills and content from the local to the European language, and increasing school success.

Keywords: *Senegal, local language familiar to students, schools tests, primary schools, academic success.*

1.0 INTRODUCTION

In Sub-Saharan Africa, women, especially those living in rural areas, are a vulnerable group due to the gender inequality rooted in patriarchal cultural habits (Tuwor and Soussou, 2008). Besides, in many schools of the region, a language unfamiliar to the students, very often an official European language established by colonizers, is used for teaching and testing (Rea-Dickins, Yu and Afitska, 2009; Brock-Utne, 2007). These two facts represent a double hurdle for girls which has a negative impact on their achievement at school, which leads to grade repetition and early school dropout (Benson, 2001). The present study aims at analysing whether the use of a local language familiar to the students may contribute to reach gender equality at primary schools in rural Senegal by focusing on the possible effect that it may have on girls' academic results.

The paper begins with a brief review of the literature, which is subdivided into two sections; the first provides an overall picture of features and studies on submersion and non-submersion models of education in Sub-Saharan schools. The second part focuses on issues of gender equality and education in Senegal, the context of the present study, through the analysis of research that has addressed the topic, even if tangentially. It is important to bear in mind that, to the best of the authors' knowledge, no previous research has focused on the relationship between gender equality and the use of the language of tests at Senegalese schools. The study carried out is described in the third section, which begins with a brief overview of languages in Senegal and in education and is followed by the description of the participants, the instruments used, the procedure and the data analysis. The fourth section analyses the results, which are presented by grades for the sake of clarity, since, as will be seen, relevant differences appear at the two different levels of education. Finally, such results are discussed, leading thus to the concluding remarks of the paper.

2.0 REVIEW OF THE LITERATURE

2.1 The Submersion Model and the Language of Tests in Sub-Saharan Schools: The Effects on Gender Inequality

Africa, where different languages are spoken in and across countries, is linguistically rich and diverse; according to *Ethnologue* (2021), 2,154 languages are spoken in this continent. Despite this diversity, it is frequent to find a linguistic situation in which an exogenous European language established during colonialism is the unique language employed officially in all public domains and in education; some local languages are thus relegated to the symbolic status of *national* and some others are not even recognised (see Bamgbose, 2011). This is also the case in Senegal, where the present study took place.

In such contexts, most students face a triple challenge when they start compulsory education: They must learn curricular contents, try to understand lessons, and make efforts to answer examinations in a language unfamiliar to them (see Rea-Dickins et al., 2009; Brock-Utne, 2007; Mwinsheikhe, 2009, among others). This education model is generally known as *submersion* because students have to swim to the surface if they want to succeed at school; according to Rea-Dickins et al. (2009), such model is one of the reasons for students' academic failure, grade repetition and early school dropout, especially for children living in rural areas and girls, the latter being negatively affected by patriarchal norms as well (Rea-Dickins et al., 2009; Milligan, Desai and Benson, 2020).

As Mohanty (2009) argues, any education system indifferent towards local languages which are familiar to students cannot be the means in which knowledge and language are taught to benefit students' personal growth; rather, these systems generate a discriminating circle of failure and socio-linguistic indifference, poverty, and social exclusion. In Senegal, for instance, Cissé (2005: 107) argues that only the mastery of French allows people to succeed socially and professionally because it is "the only means to access to the world of decision-making and power".

Several studies carried out in Africa showcase the above-mentioned negative effects of the exclusion of local languages familiar to students. Vuzo (2010) carried out a study in Tanzanian schools where students attended lessons of Social Sciences in different languages as Medium of Instruction (MoI) (English vs Kiswahili). Students who received lessons in English mostly provided incorrect answers and used short sentences, since they did not fully understand the content of the lesson or the teacher's questions. However, in the lessons taught in Kiswahili, participation was meaningful and the exchanges in the classroom were long and showed the comprehension of the new content which could be connected to their prior knowledge. Besides, the use of a language familiar to the student may also promote attendance; as claimed by Smits, Huisman and Kruijff (2008), attendance rates increased a 10% in average in developing countries where a local language familiar to the student was used as a MoI, especially in rural areas. As a case in point, Benson's (2001) study in several experimental schools in Mozambique shows that females at grade 5 attending schools where the MoI was a local language familiar to them obtained better academic results than their female mates who were taught only in an unfamiliar language, Portuguese. Moreover, Benson (2001) also found out that girls in experimental schools outperformed boys, especially in issues which required language comprehension and expression. Similarly, in a study carried out in Niger and Guinea Bissau, Hovens (2002) claimed that, even if boys outperformed girls in tests, the differences between the two genders shortened as they received instruction in a local language familiar to them.

As Llosa (2017) claims, language and content cannot be easily separated, since the assessment of students' knowledge requires language proficiency; tests taken in a language unfamiliar to the learners in Sub-Saharan schools following the submersion model may, therefore, determine their success or failure. This is to say, as Rea-Dickins et al. (2009: 191) state, "language constitutes a determining factor in the demonstration of achievement in the formal examination of school subject knowledge and (...) the use of an unfamiliar language as medium of instruction is a factor in underachievement, in school effectiveness, that contributes to drop out rates and grade repeating and that girls may particularly be disadvantaged". Garcia (2020) and Shohamy (2006) argue that the language of tests may push down students into society by making them feel inferior as compared to children of the elite who have grown up in a privileged background and for whom the official language is familiar to them. In addition to the symbolic barrier that the language of tests may represent to achieve success, according to Shohamy (2011) it also represents a tool of power in favour of a small elite who are fluent in the official language in order to perpetuate their hegemony in the country.

A case in point is the study carried out in secondary schools of rural Senegal by Martín-Chazeaud and Celaya (2020), which analysed the effect of the language of tests in Mathematics problem-solving tasks. Students had been attending lessons at school only in French during eight and ten years but were fully fluent in Diola, a local language. Participants in the experimental group were given the tests in Diola and those in the control group in French.

Results showed that students obtained better results when they solved the Mathematics problem-solving tasks in Diola, which led to the conclusion that French as the language of tests hindered learners' academic success because students did not master French to understand tests. Similar results appear in Mwinsheikhe's (2009) study in Tanzania and in Hovens (2002) in Guinea Bissau and in Niger.

As opposed to the submersion model, non-submersion education models defend the presence of a local language in formal education during different lengths of time; for instance, the early-exit transitional establishes a maximum of four years, the late-exit transitional six years and the additive models at least eight years. In such models, linguistic and academic skills are strongly fixed in the students' minds through a language familiar to them, which can, therefore, be transferred to the European language and lead to high levels of proficiency in both languages (see Cummins [1979] theories' of the Interdependence and Threshold Hypotheses). In this sense, Benson (2012) claims that the use of local languages in the education of students in Sub-Saharan Africa also increases students' self-esteem and motivation, which encourages their participation and attendance and, consequently, their academic success. The author also argues that parents get more involved in their children's learning process since they can help them with their homework, especially with topics related to their previous cultural knowledge, and can easily communicate with teachers about their children's achievement (see Heugh, Benson, Yohannes, and Bogale [2010] in Ethiopia; Owu-Ewi and Eshuns [2015] in Ghana; Oluoch [2017] in Kenia; Nomnolo and Sosibo [2016] in South Africa). In the specific case of Senegal, despite the positive outcomes shown by research, the use of local languages in education is only restricted to some experimental private primary schools (see Benson, 2020).

2.2 Gender and Academic Success: The Case of Senegal

One of the most recent actions to empower women in Senegal is the *Stratégie Nationale pour L'Équité et Égalité de Genre 2016-2026* (National Strategy for the Equity and Equality of Gender 2016-2026) approved by the *Ministère de la Femme, de la Famille et de l'Enfance* in agreement with the United Nations' 2030 Agenda for the Sustainable Developmental Goals. As claimed by the *Ministère de la Femme, de la Famille et de l'Enfance* (2016: 129), "significant and real improvements are expected with regards to mentality change, behaviour, attitudes and practices for the achievement of equality between men and women in all sectors of public policies".

More precisely in education, the *Stratégie Nationale pour L'Équité et Égalité de Genre 2016-2026* points out to the year 2006 because it meant a turning point for gender parity in the education system of Senegal, first attained in primary and later, in lower secondary. In fact, reports such as USAID (2017) claim that a narrowing gap exists between boys and girls in lower secondary education regarding enrolment. More recently, data from the *Ministère de l'Éducation Nationale* (2018) reveals that in primary parity appears in favour of girls: The gross enrolment ratio is 92.6% for girls and 80.4% for boys. Regarding lower secondary education, the difference between boys and girls enrolled has been shortening during the last decade, also reaching parity in favour of girls: In 2010 there were 33.1% of girls and 38% of boys enrolled, whereas in 2018 there were 53.3% of girls and 45.9% of boys (*Ministère de l'Éducation Nationale*, 2018).

Despite the efforts made to reach parity and high enrolment ratios, early dropout remains a reality for both girls and boys in compulsory primary and secondary education, especially at grade 1 and during the last grades of each stage (see table 1), one of the reasons being the poor economic conditions and sociocultural habits of their families (see Heugh et al., 2010).

Table 1. Dropout rates at primary and lower secondary education.

		Girls	Boys
Primary	Grade 1	10.1%	10.7%
	Grade 2	3.2%	4.1%
	Grade 3	8.2%	10.5%
	Grade 4	1.8%	4.3%
	Grade 5	17.3%	22%
	Grade 6	24.5%	21.6%
Lower secondary	Grade 7	6.3%	8.8%
	Grade 8	4.7%	6%
	Grade 9	10.3%	11.2%
	Grade 10	20.4%	17.4%

Source: *Ministère de l'Éducation Nationale* (2018)

In fact, in 2017, there were 65.7% (close to 3 million) of illiterate Senegalese women older than 15 years, as shown by the UNESCO Institute for Statistics (<http://uis.unesco.org/en/country/sn>). With respect to gender differences concerning academic achievement, results in the national tests carried out in 2017 and 2018 show the learners' low achievement as well as the existing academic differences between genders. The *Agence Nationale de la Statistique et la Démographie* (2020) shows that in both tests, the *Certificat de Fin d'Études Élémentaires (CFEE)*, taken at the end of primary education, and the *Brevet de Fin d'Études Moyennes (BFEM)*, taken at the end of lower secondary education, the number of successful boys is higher than that of girls (see table 2). Unfortunately, as claimed in *Ministère de l'Éducation Nationale* (2018), this fact is a reality in all the fourteen regions of the country.

Table 2. Percentage of successful students at the CFEE and the BFEM.

Year	CFEE		BFEM	
	Girls	Boys	Girls	Boys
2018	53.9%	57.3%	49.2%	55.6%
2017	54.6%	59.4%	42.5%	48.3%

Source: *Agence Nationale de la Statistique et la Démographie* (2020)

According to USAID (2017), only 27% of girls living in rural areas of Senegal complete lower secondary education. According to Benson (2001) and Tuwor and Soussou (2008), this is mainly due to their participation in household chores such as helping their mothers to take care of their younger siblings, cooking, cleaning, gathering water and working the land, among others.

This time-consuming female-role established by sociocultural habits produces exhaustion on girls who are unable to do their homework or to participate actively in the classroom (Benson, 2001). Furthermore, as argued by Angers-Sall (2009) and Benson (2001), parents must choose one child to receive formal education; often, the privileged one is the oldest son because he is believed to be the one who will bring income to his relatives because girls, in the Sub-Saharan tradition, become part of their husband's family as they get married. Girls must also face other events that affect their academic education, among them, early marriage, pregnancy and, even, harassment (see Angers-Sall, 2009; USAID, 2017). As argued by Tuwor and Soussou (2008), this situation of gender inequality in Sub-Saharan Africa is due to social and cultural habits which, added to the adverse circumstances of the submersion model above mentioned, hinders their access to an education of quality, and leads to their academic failure. However, as claimed by Ouane and Glanz (2010: 185), "with regard to the gender issue which is often evoked in this context, there appears to be no in-depth research available on which to establish a robust connection between the use of the mother tongue in primary education (or bilingual education involving the mother tongue) and girls' school participation and success in sub-Saharan Africa". Therefore, the present study tries to fill in this gap in the area.

Taking into consideration the above-mentioned ideas, the following research question is posed: Does the language of tests (Seerer vs. French) influence girls' academic success at grades 3 and 6 in Seerer-speaking areas in rural Senegal?

3.0 THE STUDY

3.1 Senegal: Social and Linguistic Context

Senegal is a West African country with almost 17 million people; 50.2% are women and 48.8% are men; 54.8% of the population live in rural areas while 45.2 % are settled in an urban background (*Bureau de L'État Civil et des Projections Démographiques*, 2020).

After its independence in 1960, French became the official language of the country and, therefore, the sole language to be used in public domains, including education (Cissé, 2011). Some years later, in 1971, the State agreed to give the status of *national* to six local languages: Diola, Pulaar, Malinké, Seerer, Soninké and Wolof (Diallo, 2005). Seventeen more languages were added to that list after the Constitution of 2001 declared as *national* all local language encoded with a script (Fall, 2007). Today, none of those local languages are employed formally as MoI at schools, except for experimental bilingual private primary schools (see Benson, 2020).

3.2 Participants

The students participating in the present study were gathered from five rural schools located in the regions of Kaolack and Fatick, in the centre of Senegal. All participants were born in a rural environment and from families for whom the main income depends on agriculture, cattle raising and fishing. Their main language of communication is Seerer; moreover, and in line with Brock-Utne's (2017) description of multilingualism in Sub-Saharan countries, due to contact with other communities from early childhood, children may also speak other local languages such as Wolof, Fula or Bambara. In order to make sure that Seerer was familiar to students and that they had been in contact with French at school for the same amount of time (3 and 6 years with respect to their school grade), the participants completed a questionnaire. After discarding grade repeaters and those students for whom Seerer was not a main language of communication, the final number of participants was 149: There were 91 in the experimental group (49 girls and 42 boys) and 58 in the control group (34 girls and 24 boys).

Students at both grades 3 and 6 were randomly divided into two groups each according to the language in which they received the tests: The experimental group (Seerer) and the control group (French). Moreover, with the purpose of analysing the effect of the language of tests on girls' academic achievement at school, four subgroups were established according to gender in each of the two school grades involved (see table 3).

Table 3. Number of participants in the present study

	Grade 3		Grade 6	
	Girls	Boys	Girls	Boys
Experimental group	30	24	19	18
Control group	23	12	11	12

Participants' age ranged between 7 and 16 years of age (mean=10.89). In line with Benson (2001), we also checked for possible late school enrolment due to sociocultural circumstances: As shown in table 4, girls were, in average, older than boys at both grade 3 and grade 6. The oldest girl at grade 3 was 12 (the oldest boy was 11) and the oldest girl at grade 6 was 16 (the oldest boy was 14). This fact seems to confirm that girls participating in the present study may have started school later as compared to their boy classmates due to the social, economic, and cultural factors above described.

Table 4. Participants' mean ages

	Girls	Boys	Age difference
Grade 3	9.11	8.89	.22
Grade 6	12.83	12.53	.30

3.3 Instruments

One test of Social Sciences and another of Mathematics (henceforth, SS and M, respectively) were designed according to the Senegalese curricula for grades 3 and 6. In the case of grade 6, questions were also inspired by examples of the national exam CFEE. The SS tests consisted of six questions with four different possible answers each. The M test had three problem-solving tasks. In order to check the language effect, we chose multiple-choice questions and the problem-solving task because these tests are used frequently in schools to assess students; moreover, the comprehension of language is essential in order to give correct answers. Taking into account that the main aim of the test was to check comprehension, each pair of SS questions and each M problem-solving task gradually increased language complexity.

The context of the tests was designed in such a way that it was close to the participants' realities, so, for example, names of people and objects were adjusted to their sociocultural context. Considering the study carried out by Hazel et al. (1997) claiming that the content of tests could disadvantage girls, we also made sure that tests in the present study did not show gender disparity. Tests were designed first in French, and then translated into Seerer by a volunteer assistant who mastered Seerer and who had received formal instruction in that language, and then translated backwards to check their equivalence in both languages. Moreover, their content was verified by education experts and checked by local teachers.

Tests were piloted in a primary school in the town of Sokone and some adjustments were made before the data collection procedure. Tests were administered orally because participants had never read, written or received any type of formal instruction in Seerer. The participants were given blank paper to take notes and an answer sheet and questions were repeated as many times as they required so that short memory could not influence the results.

In order to gather sociolinguistic information from participants, a questionnaire was also designed. The answers allowed us to discard participants who did not fulfil all the requirements.

3.4 Data collection procedure

Before tests were administered, each of the school directors signed a consent form so that they agreed with the researcher to collect data in their schools. Explanations were given about the way to complete the tests, with examples on the board, each of the groups in the language of the tests. Since data were collected in a rural area difficult to reach by road and where villages had no electricity, all the printed material required was previously prepared.

The order for administering SS or M was swapped in each school to avoid any possible effect attributed to tiredness. Tests were read by native speakers of each language: The first author of the present study in French (as a native speaker of the language) and a volunteer assistant in Seerer. Local teachers were very helpful with management. After the tests, participants were asked to complete the questionnaire. When the process of data collection finished, students and teachers were rewarded with some drinks.

3.5 Data analysis

Data obtained at both grades 3 and 6 was analysed according to two variables: The gender of the participants and the language in which they took the tests. Therefore, girls' results in the experimental group were compared to those obtained by their female classmates in the control group; after that, results were also compared between girls and boys when they were given SS and M in Seerer (experimental group), and also those who were given the tests in French (control group).

Once individual scores were established, participants were classified according to the score obtained along a rating scale from 0 to 6 points (increasing 1 point in the SS test and in 0.5 points in the M test). After that, we calculated the percentage of participants who scored below and equal or above a level of 3 points (which is considered in the present study as the threshold for subject success) in the SS and the M tests at both grades 3 and 6. Finally, data were submitted to a one-way-ANOVA and a post-hoc HSD Tukey test with SPSS 24. The results obtained are shown in tables in the following way: First, the percentage of successful girls and boys at grade 3 according to the language in which they were given both the SS and M tests, followed by the percentage of girls and boys who obtained each score along the rating scale. After that, several tables present the results from the statistical analysis.

4.0 RESULTS

4.1 Effects of Seerer as the language of tests at grade 3

The difference in the percentage of girls at grade 3 who succeed when they were given the SS and M tests in Seerer is larger as compared to those who were given the tests in French, especially concerning M. However, when contrasting the results by gender when participants were given the tests in Seerer or in French, the percentage of successful boys is larger than that of girls, mainly in SS (see Table 5).

Table 5. Students at grade 3 who scored equal or above the level of 3 points

	Seerer		French	
	SS	M	SS	M
Girls	43.33%	80%	13.04%	0%
Boys	79.17%	95.83%	25%	16.67%

In order to have a more accurate overview, participants at grade 3 were located along a rating scale according to the language in which they took the SS test and the score they obtained (see table 6). As shown, girls who took the SS test in Seerer reach higher scores than those who took it in French. However, when compared to boys also in the experimental group, the percentage of girls located in the highest marks of the rating scale is smaller even though the mark of 5 points is reached by both genders. With respect to the control group, not very large differences appear between girls and boys in the control group along the scale.

Table 6. Grade-3 students per gender according to their scores in SS

Score	Girls		Boys	
	Seerer	French	Seerer	French
0	13.33%	30.43%	0%	25%
1	20%	39.13%	12.50%	25%
2	23.33%	17.39%	8.33%	25%
3	23.33%	8.70%	16.67%	8.33%
4	10%	4.35%	45.83%	16.67%
5	10%	0%	16.67%	0%
6	0%	0%	0%	0%

As shown in table 7 below, the most relevant fact at grade 3 is that 13.33% of girls who received the test in Seerer could score higher than 5 points, whereas none of the girls who received it in French scored higher than 1 point. Like girls, 12.51% of the boys in the experimental group could reach the highest marks of the rating scale. It should be said that, as opposed to girls who received the M test in French, only a small percentage of boys in the control group could get the mark of 4 points.

Table 7. Grade-3 students per gender according to their scores in M

Score	Girls		Boys	
	Seerer	French	Seerer	French
0	0%	39.13%	0%	25%
0.5	0%	47.83%	0%	41.67%
1	0%	13.04%	0%	0%
1.5	0%	0%	0%	0%
2	10%	0%	4.17%	8.33%
2.5	10%	0%	0%	8.33%
3	20%	0%	20.83%	0%
3.5	23.33%	0%	25%	8.33%
4	16.67%	0%	29.17%	8.33%
4.5	6.67%	0%	4.17%	0%
5	0%	0%	4.17%	0%
5.5	3.33%	0%	4.17%	0%
6	10%	0%	8.33%	0%

The highest mean score at both tests was obtained by boys who took SS and M in Seerer, followed by girls who also took the tests in Seerer; except for girls at the SS test, all participants in the experimental group got a mean score above the level of 3 points. On the contrary, girls who took both tests in French get the lowest mean score at both tests, especially those girls at the M test. The one-way ANOVA revealed statistically significant differences depending on the gender of the participants and the language in which they took both SS and M tests (see Table 8).

Table 8. Results from one-way-ANOVA at grade 3

Gender	Language	SS test				M test			
		Mean	SD	F	p	Mean	SD	F	p
Girls	Seerer	2.27	1.51	12.26	.000	3.61	1.13	70.45	.000
	French	1.17	1.11			.36	.34		
Boys	Seerer	3.46	1.25			3.87	.97		
	French	1.67	1.44			1.21	1.42		

The post-hoc HSD Tukey test carried out to determine the differences among groups yielded statistically significant differences in the SS test between girls in the experimental group and those in the control group as well as between girls and boys in the experimental group; however, no statistically significant differences were found when boys and girls took the SS test in French. As for the M test, the analysis only yielded statistically significant differences in the M test between girls who took it in Seerer and those who took it in French, but not between both genders when the test was administered in the same language (see Table 9).

Table 9. Results from post-hoc HSD Tukey test at grade 3

		SS test		M test	
		Mean difference	p	Mean difference	P
Girls (Seerer)	Girls (French)	1.10	.021	3.25	.000
	Boys (Seerer)	1.19	.009	.26	.776
Girls (French)	Boys (French)	.49	.729	.85	.089

4.2 Effects of Seerer as language of tests at grade 6

At grade 6 the percentage of girls who succeeded is much higher when they were given the SS and the M tests in Seerer as compared to those girls who took the tests in French (see table 10). There is not much difference between the percentage of girls and boys who score equal or higher than 3 points, but a higher percentage of boys than girls succeed in M. When the language of tests was French, the percentage of successful girls is higher than that of boys at both tests.

Table 10. Students at grade 6 who scored equal or above the level of 3 points

	Seerer		French	
	SS	M	SS	M
Girls	84.21%	73.68%	27.27%	36.36%
Boys	83.33%	83.33%	16.67%	25%

As for the SS test, as shown in table 11, a low percentage of girls in the experimental group reached the score of 6 points in the rating scale, although none of them did so when the test was administered in French. Boys also attained the highest mark, but the percentage was slightly lower. When comparing results from both genders in the control group, girls scored one point higher than boys.

Table 11. Grade-6 students per gender according to their SS scores

Score	Girls		Boys	
	Seerer	French	Seerer	French
0	0%	9.09%	0%	8.33%
1	5.26%	45.45%	0%	33.33%
2	10.53%	18.18%	16.67%	41.67%
3	21.05%	9.09%	5.56%	16.67%
4	26.32%	18.18%	38.89%	0%
5	21.05%	0%	27.78%	0%
6	15.79%	0%	11.11%	0%

At grade 6 there is one point difference between the best score obtained by girls in the experimental group (5 points) and that achieved by girls in the control group (4 points). The highest score obtained by boys who were given the test in Seerer also was also 5 points. When comparing girls who took the M test in French with their male counterparts, girls reach 0.5 points higher (see table 12).

Table 12: Grade-6 students per gender according to their scores in M

Score	Girls		Boys	
	Seerer	French	Seerer	French
0	0%	9.09%	0%	0%
0.5	0%	0%	0%	0%
1	0%	18.18%	0%	16.67%
1.5	0%	18.18%	0%	41.67%
2	0%	0%	0%	8.33%
2.5	15.79%	18.18%	16.67%	8.33%
3	5.26%	36.36%	11.11%	8.33%
3.5	5.26%	9.09%	16.67%	8.33%
4	42.11%	0%	38.89%	8.33%
4.5	5.26%	18.18%	5.56%	0%
5	15.79%	0%	11.11%	0%
5.5	0%	0%	0%	0%
6	0%	0%	0%	0%

As shown in table 13, the best mean scores at both SS and M are obtained by boys who were given the tests in Seerer, although there is not much difference with mean scores obtained by girls who also were given the tests in Seerer; in all cases, participants in the experimental group get mean scores above the level of 3 points. The lowest mean score was for participants who took the tests in French: boys in SS and girls in M. The One-way ANOVA conducted on the results of the SS and M tests given to participants at grade 6 yielded statistically significant differences according to the language of the test and the gender of the test-takers.

Table 13: Results from one-way-ANOVA at grade 6

	Language	SS test				M test			
		Mean	SD	F	p	Mean	SD	F	p
Girls	Seerer	3.95	1.43	12.27	.000	3.63	1.03	14.06	.000
	French	2.09	1.76			2	1.05		
Boys	Seerer	4.11	1.23			3.69	.77		
	French	1.67	.89			2.04	.99		

With the purpose of determining statistical differences between groups, an HSD Tukey test was carried out. As shown in table 14, there were statistically significant differences when contrasting results of both the SS and M tests taken by girls in Seerer and in French. However, no statistically significant differences were found between girls and boys when they were given the tests in Seerer or French.

Table 14: Results from post-hoc HSD Tukey test at grade 6

		L test		M test	
		Mean difference	P	Mean difference	P
Girls (Seerer)	Girls (French)	1.86	.003	1.63	.000
	Boys (Seerer)	.16	.983	.06	.997
Girls (French)	Boys (French)	.42	.875	.04	1

5.0 DISCUSSION

The present study aimed at analysing the effect on gender equality of the use of a local language familiar to students in school tests in rural areas of Senegal. To this aim, students' academic results when they received tests in the local language (Seerer) were compared to results when tests were in the language of unique MoI at schools (French).

A first relevant finding to answer the research question in the present study is that, as seen above, girls in the experimental group (SS and M tests in Seerer) obtain higher results than girls in the control group (tests in French) at both grades 3 and 6. These results in rural schools in Senegal follow a similar pattern to Benson's (2001) study in Mozambique, and seem to point to the beneficial effects of using a local language familiar to the students in tests for the female population at both grades 3 and 6. Of special concern are girls at grade 3 who received the tests in French: None of them succeed in the M test (their best score was one point) and a very small percentage of them did so in the SS test.

Such finding seems to suggest that their low achievement might be due to a poor mastery of French as language of tests which hindered comprehension (Rea-Dickins et al., 2009; Martín-Chazeaud and Celaya, 2020), an idea supported by the fact that they could not even understand a short problem-solving task with simple language structures and easy lexicon based on their daily routine. Moreover, it should be remembered that these girls had been attending lessons during three years in a language they do not master and, therefore, could not learn the academic content adequately. Taking into consideration that answering SS questions correctly requires previous understanding of the teachers' speech and class-notes during lessons and also memorising content in a language unfamiliar to them, girls at grade 3 presented gaps of academic content taught in French and could not be transferred to Seerer. This finding seems to be in line with Rea-Dickins et al. (2009) and Milligan et al. (2020), who claimed that the negative outcomes of submersion schooling such as academic failure could especially affect those students living in rural areas, especially girls. As claimed by Benson (2012), the introduction of a local language familiar to the students at school could become a great advantage for the empowerment of girls, since they would be able to show their real skills and knowledge and thus contribute to increasing their motivation and their self-esteem not only in school but also for future opportunities.

As for the difference between boys and girls at grades 3 and 6 in the experimental group, we have seen that boys do better than girls in both SS and M tests. Interestingly, however, the difference between mean scores obtained by girls and boys shortens from grade 3 to grade 6, similarly to Hovens (2002), who argued that academic results between girls and boys were closer when they received instruction in a language familiar to them. Nevertheless, the fact that no statistically significant differences between boys and girls were found in the experimental group or in the control group at grades 3 and 6 suggests that the language of tests is a critical factor in determining students' academic success which may contribute to reach gender equality at schools. The use of Seerer as the language of tests has a positive effect on academic results of both genders. There is, however, one exception to this finding: In the SS test at grade 3, the mean score differences between boys and girls yielded statistically significant differences with boys getting higher results. A possible explanation to this result can be found in Benson (2001) and Tuwor and Soussou (2008), who claimed that sociocultural habits which attribute responsibilities to girls results in exhaustion and, consequently, in certain inactivity and inattention at school; this fact, added to the support that parents grant to boys at school, might contribute to girls' lower results.

The percentage of girls who attain high scores in the experimental group is superior to that of boys in three out of four cases; on the contrary, there are more girls than boys in the control group who obtain the lowest scores in the scale at grades 3 and 6 and at both SS and M tests. Such results are in line with results in the national tests CFEE and BEFM (*Ministère de l'Éducation Nationale*, 2018). The arguments here described, added to the difficulties that girls must deal with in school and together with sociocultural habits, suggest that, in line with Benson (2001), it is true that both genders in the present study benefit from tests given in a language familiar to them, but more advantages have been found for girls.

Girls at grade 3 who were given SS and M in French were those who obtained the lowest results; however, their classmates in the experimental group reached higher scores and the number of successful girls was much higher as happened in the M test. Besides, the mean score differences between genders in the experimental group at grade 3 in SS and M were much larger than at grade 6.

Such findings seem to confirm that Seerer as the language of tests may specially favour younger girls due to their low competence in French, which does not allow them to understand the language, or therefore the contents, of tests.

The use of a local language familiar to girls as the language of tests (and possibly as MoI by extension) may contribute to their academic development, thus increasing their engagement in classroom exchanges, as claimed by Vuzo (2010). Taking into consideration that CFEE and BFEM are tests to promote students to lower secondary and to upper secondary, respectively, a possible bilingual version in French and in a local language familiar to the students could raise the number of successful girls enrolling in the next stage, and therefore, help them in their personal empowerment and, ultimately, in reaching gender equality in education.

The findings in the present study tie well with Martín-Chazeaud and Celaya (2020), who claimed that in secondary schools of rural Senegal a local language familiar to the student as the language of tests might favour students' academic success whereas French hinders it due to the students' poor mastery of this language. In the case of the present study, such findings seem to also be confirmed in primary education at both grades 3 and 6 and in both the SS and the M tests.

Although the present study aimed at analysing the effect of the language of tests in traditional schools, our findings follow a similar pattern to that in previous studies carried out in experimental schools of Sub-Saharan Africa such as Mwinsheikhe (2009), Hovens (2002), Heugh et al. (2010) and Benson (2020). Therefore, we believe that a change in the linguistic policy in Senegalese education (as well as in other parts of Sub-Saharan Africa) may result in several advantages for students, especially females, and their families. As shown by research, an education system in which a local language familiar to the student is used to fix linguistic and academic skills for a later transfer to the official European language may lead to the development of high competences in both (or more) languages and to optimal learning of contents. As in Ethiopia (see Heugh et al., 2010), our belief is that, after attending a competent education system of quality which promotes the transfer of language and academic skills from the local language familiar to the students to the official language, French may become also familiar to Senegalese students, therefore putting an end to the language barrier and the social injustice it implies. This way language may play a role in bridging the gap between genders in education.

6.0 CONCLUDING REMARKS AND FURTHER RESEARCH

Albeit with a small number of participants and in a specific context, results in the present study show the impact on academic success of the language used in tests at schools in Senegal where the MoI is not a local language familiar to the students. This is especially evident in the case of the female population, a finding that may point to a change of paradigm. Therefore, in order to bridge the gap in education between girls and boys and hence reduce gender inequality in certain contexts in the world, there is a need for the introduction of local languages in those Sub-Saharan schools which are based on the submersion model.

In line with previous studies, and bearing in mind the findings presented here, we believe that education authorities of Senegal and other Sub-Saharan countries where a European language is the unique official language in education should take into consideration the possibility of designing a bilingual program in which local languages familiar to students are employed as language of tests and assessment together with the European language with the purpose of

diminishing school failure and dropout rates, and thus conferring wider opportunities to students, especially to girls.

Further studies could focus on testing students on other school subjects, other contexts, and other local languages in Sub-Saharan Africa.

Ultimately, small scale experimental studies where the local language is used as the MoI may yield interesting insights and lead to changes in language policies that may impact positively on education among the female population. Gender equality needs to be promoted from the very early ages in schools.

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