

63_Gambia

November 2, 2025

1 How has female enrolment in primary education evolved relative to the number of female teachers in primary education in the Gambia between 1971 and 2019?

1.1 Abstract

Using World Bank World Development Indicators (WDI) data, this study examines how female enrolment in primary education has evolved relative to the number of female teachers in primary education in the Gambia between 1971 and 2019. These indicators jointly reflect progress in gender parity, educational access, and the development of a gender-balanced teaching workforce. Over the period, both female enrolment and the number of female teachers increased, but at different magnitudes. While the number of female teachers rose gradually, female enrolment expanded dramatically — by roughly eightfold — indicating a sharp rise in educational participation among girls that outpaced the growth of the female teaching force. This widening gap suggests significant gains in access to schooling for girls, yet also underscores the growing demand for trained female educators to sustain gender-sensitive learning environments and improve education quality.

1.2 1. Question

How has female enrolment in primary education evolved relative to the number of female teachers in primary education in the Gambia between 1971 and 2019?

- **Female enrolment proxy:** Enrolment in primary education, female (number)
- **Female teachers proxy:** Teachers in primary education, female (number)

1.3 2. Data

- **Source:** World Bank World Development Indicators (WDI)
- **Indicators:**
 - Enrolment in primary education, female (number)
 - Teachers in primary education, female (number)
- **Coverage:** The Gambia, 1971–2019
- **Notes:** National-level data only

1.4 3. Method

1. Filtered the WDI dataset for the Gambia and selected the relevant female education indicators.
2. Extracted year, indicator name, and value columns.

3. Pivoted the dataset to align enrolment and teacher counts by year.
4. Created a dual-line time series plot visualizing trends in female enrolment versus female teachers from 1971 to 2019.

(Analysis is descriptive; no causal inference applied.)

1.5 4. Results

- **Female enrolment:** Increased substantially—approximately eightfold—over the study period, reflecting major improvements in girls' access to primary education and expansion of the schooling system.
- **Female teachers:** Increased at a slower but steady rate, indicating gradual progress in female participation within the teaching profession.
- **Comparison:** The steep growth in enrolment relative to the modest rise in teachers suggests rising student-to-teacher ratios among girls and potential strain on instructional resources.

(Figure 1. Gambia: Female Enrolment vs. Female Teachers in Primary Education, 1971–2019)

(Table 1. Pivoted dataset summary)

1.6 5. Interpretation

- The divergence between enrolment and teacher growth highlights a positive trend in educational demand and gender inclusion, alongside emerging challenges in education quality and capacity.
- Rapid enrolment growth may reflect successful education reforms, community mobilization, and international development support targeting girls' education.
- The slower rise in female teachers suggests persistent structural barriers in teacher training, recruitment, or retention, particularly for women.
- Together, these trends emphasize the need for policies that balance enrolment expansion with proportional investments in human resources and gender-equitable teacher development.

1.7 6. Limitations

- Aggregate national data may obscure rural-urban and regional disparities in teacher deployment and female student access.
- The analysis does not incorporate qualitative factors such as policy reforms, cultural norms, or household-level determinants of education.
- The descriptive approach captures correlations, not causal relationships, between enrolment and teacher growth.

1.8 7. Next Steps / Extensions

- Analyze trends in the student-to-teacher ratio disaggregated by gender to assess classroom-level impacts.
- Examine correlations between female teacher presence and female student retention or performance outcomes.
- Compare Gambia's trajectory with neighboring West African countries to identify regional patterns in gender parity in education.
- Incorporate education expenditure and policy milestones to contextualize the evolution of human capital investment over time.

```
[2]: # How has female enrolment in primary education evolved relative to the number
      ↴of female teachers in primary education in the Gambia between 1971 and 2019?

import pandas as pd
import matplotlib.pyplot as plt
import os

# Folders
data_raw_folder = "data_raw/"
data_clean_folder = "data_clean/"
figures_folder = "figures/"

# Load CSV
filename = "education_gmb_filtered.csv" # Filtered dataset with only relevant
      ↴rows
df = pd.read_csv(os.path.join(data_raw_folder, filename))

# Keep only needed columns
df = df[["Year", "Indicator Name", "Value"]]

# Convert Year and Value to numeric, drop invalid rows
df["Year"] = pd.to_numeric(df["Year"], errors="coerce")
df["Value"] = pd.to_numeric(df["Value"], errors="coerce")
df = df.dropna(subset=["Year", "Value"])

# Pivot indicators into separate columns
df_pivot = df.pivot(index="Year", columns="Indicator Name", values="Value").
      ↴reset_index()
df_pivot = df_pivot.sort_values("Year")

print("Pivoted Gambia dataset:")
display(df_pivot)

# Interpolate missing values for smooth plotting (optional)
df_plot = df_pivot.interpolate(method='linear')

# Plot the indicators
plt.figure(figsize=(10,6))
plt.plot(df_plot["Year"], df_plot["Enrolment in primary education, female".
      ↴(number)],
         marker='o', linestyle='-', label="Enrolment in primary education,".
      ↴female (number)")
plt.plot(df_plot["Year"], df_plot["Teachers in primary education, female".
      ↴(number)],
         marker='o', linestyle='-', label="Teachers in primary education,".
      ↴female (number)")
```

```

plt.title("Gambia: Female enrolment vs Female teachers in primary education, \
           (number) (1971-2019)")
plt.xlabel("Year")
plt.ylabel("Number")
plt.legend()
plt.grid(True)
plt.tight_layout()
plt.savefig(os.path.join(figures_folder, \
                        "gambia_female_enrolment_vs_female_teachers_in_primary_education.png"))
plt.show()

# Save cleaned CSV
df_pivot.to_csv(os.path.join(data_clean_folder, \
                            "gambia_female_enrolment_vs_female_teachers_in_primary_education"), \
                index=False)

```

Pivoted Gambia dataset:

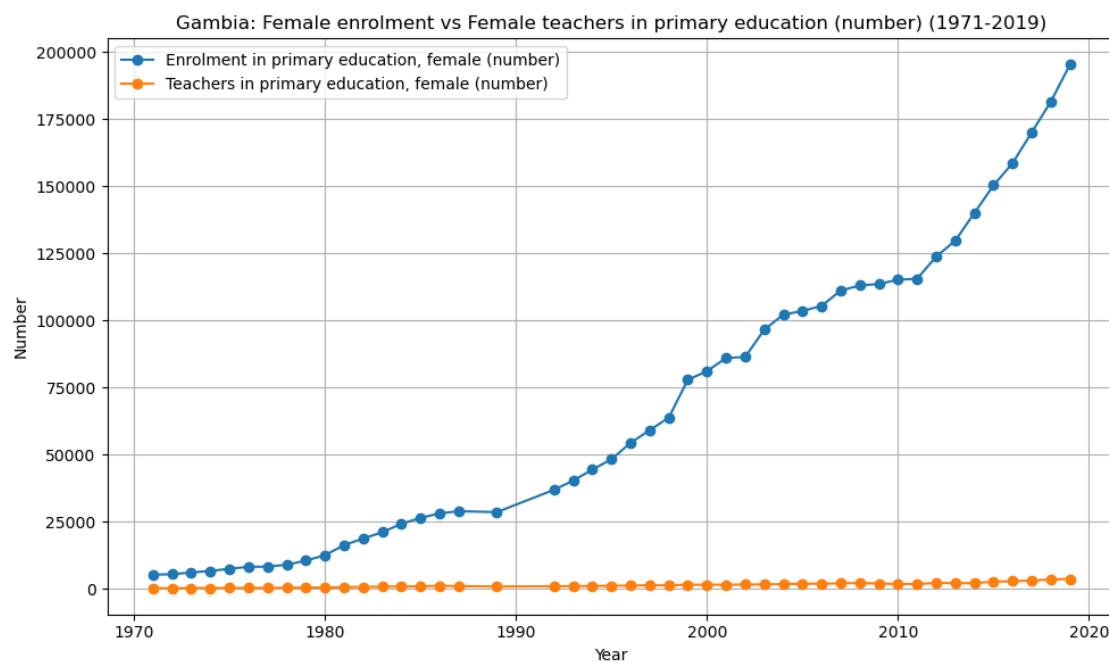
Indicator Name	Year	Enrolment in primary education, female (number)	\
0	1971	5251.0	
1	1972	5395.0	
2	1973	6070.0	
3	1974	6606.0	
4	1975	7424.0	
5	1976	8169.0	
6	1977	8235.0	
7	1978	8931.0	
8	1979	10481.0	
9	1980	12474.0	
10	1981	16250.0	
11	1982	18680.0	
12	1983	21058.0	
13	1984	24180.0	
14	1985	26382.0	
15	1986	28059.0	
16	1987	28903.0	
17	1989	28540.0	
18	1992	36870.0	
19	1993	40314.0	
20	1994	44372.0	
21	1995	48271.0	
22	1996	54343.0	
23	1997	59086.0	
24	1998	63748.0	
25	1999	77910.0	
26	2000	81056.0	
27	2001	86009.0	

28	2002	86373.0
29	2003	96549.0
30	2004	102143.0
31	2005	103520.0
32	2006	105380.0
33	2007	111122.0
34	2008	113014.0
35	2009	113594.0
36	2010	115160.0
37	2011	115523.0
38	2012	123765.0
39	2013	129727.0
40	2014	140057.0
41	2015	150320.0
42	2016	158636.0
43	2017	170065.0
44	2018	181513.0
45	2019	195302.0

Indicator Name Teachers in primary education, female (number)

0	207.0
1	183.0
2	261.0
3	NaN
4	NaN
5	NaN
6	286.0
7	332.0
8	413.0
9	460.0
10	NaN
11	NaN
12	778.0
13	826.0
14	897.0
15	1078.0
16	NaN
17	833.0
18	880.0
19	995.0
20	979.0
21	1045.0
22	1194.0
23	1262.0
24	1255.0
25	1485.0
26	1496.0
27	1510.0

28	1543.0
29	1586.0
30	1710.0
31	1883.0
32	1864.0
33	2006.0
34	2146.0
35	Nan
36	1745.0
37	1739.0
38	2184.0
39	2086.0
40	2085.0
41	2614.0
42	Nan
43	3039.0
44	3443.0
45	3656.0



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