Journal of Research and Development
Vol.7, Issue-1, November 2024, pp.18-28
Doi: https://doi.org/10.3126/jrdn.v7i01.72496
ISSN: 2616-0366 (Print)
Research and Development Nepal (RDN)

Exploring Secondary Enrolment and GDP Growth in Nepal

Bandana Pokharel[1], Tirtha Raj Timsina*[2]

Abstract

Education is crucial for the advancement of every nation. The paper explores the importance of secondary education in human capital development and economic growth. It investigates the existing gender disparities in enrolment rates. This article aims to investigate the relationship between secondary level student enrollment rates and the Gross Domestic Product (GDP) in Nepal. It also explores the impact of educational gender disparity on economic development and provides insights into potential policy implications. Data from various sources, including the Ministry of Education of Nepal and the World Bank, are utilized to analyze trends in enrolment rates and GDP from 2011 to 2021. Data has qualitatively analyzed to investigate the link between secondary enrollment and GDP in Nepal. Pearson's correlation and linear regression are utilized for thorough examination. The study has found no clear connection between secondary enrollment and GDP in Nepal. Surprisingly, as enrollment rates decrease, GDP seems to rise, suggesting that secondary school enrollment does not notably affect GDP in the country.

Keywords: Secondary enrollment, education, GDP, income distribution

Introduction

Education is widely recognized as having a significant impact on economic development worldwide. It not only contributes to economic growth but also enhances the efficiency of farms and labour productivity. Education has been found to play a crucial role in reducing poverty, improving income distribution, and fostering various aspects of social, political, and demographic development (Hanushek & Wößmann, 2007). In developing countries like Nepal, human capital, which includes education, holds even greater importance compared to developed countries. Therefore, the Government of Nepal has actively participated in the country's development by implementing various strategies and enhancing the educational system to align it with the needs of the nation.

Human capital stands as a pivotal driver of economic growth, as highlighted by the Organisation for Economic Co-operation and Development (OECD). The OECD defines human capital as a form of productive wealth embedded in labour, skills, and knowledge. It represents a key component of intellectual capital, cultivated through the accumulation of an individual's knowledge, skills, experience, expertise, and abilities. Continuous investments in education, training, health, knowledge, skill enhancement, and experience are crucial for

[1] Ms. Pokhrel is a Gender analyst and MPhil/PhD Scholar at the Central department of Rural Development, Tribhuvan University, Nepal. Email: pokharelbandana1@gmail.com

[2] Mr. Timsina is an Assistant Professor and MPhil/PhD Scholar at the Central Department of Rural Development, Tribhuvan University, Nepal. Orcid: 0009-0003-1012-3207;

*Corresponding email: tirtha.timsina2@gmail.com

elevating the quality of human capital. Renowned scholars such as Schultz (1961), Mincer (1974), and Becker (1975) have empirically demonstrated that the attainment of human capital directly correlates with a worker's productivity, thereby fostering overall economic growth.

In 2016, the World Economic Forum proposed three pathways by which education impacts a nation's productivity. Firstly, it enhances the workforce's capacity to execute current tasks more efficiently. Secondly, secondary and tertiary education particularly aid in disseminating knowledge about emerging information, products, and technologies developed by others (Barro and Lee 2010). In recent years, Nepal has made significant strides in enhancing educational opportunities, yet challenges persist, particularly in achieving gender parity in secondary education. Understanding the interplay between secondary level enrollment, gender dynamics, and its correlation with the country's GDP is imperative for policymakers and stakeholders alike.

While certain countries have explicit public policies that discriminate against females, others may have policies that indirectly prevent women from participating in public, social, and economic spheres. The exclusion of women from public life has a significant impact on economic growth and raises the probability of violent conflicts within a nation. Women who lack education are unable to effectively educate their children and provide them with the vision needed to pursue better careers and lives. Consequently, prioritizing the education of girls and women should be a primary focus (Hervías Parejo & Radulović, 2023).

During the year 2000, global leaders convened in New York and introduced the United Nations Millennium Development Goals (MDGs). Among these goals, a significant emphasis was placed on achieving universal primary education by 2015. Building upon the MDGs, the Sustainable Development Goals (SDGs) were established, which also encompass education targets. One such target is to ensure that by 2030, both girls and boys have access to free, fair, and high-quality primary and secondary education that lead to meaningful and effective learning outcomes (United Nations, 2015). In Nepal, secondary education typically follows eight years of primary and basic education and is then followed by higher education, vocational training, or employment.

The aim of this article is to assess the enrolment of male and female in secondary level and to analyze the relationship between secondary education and economic development in Nepal.

Materials and Methods

This research paper is based on the secondary data which are collected from various sources like Economic Survey reports of three different years. Additionally, data on student enrolment in secondary education are obtained from these reports and Flash I Report (2011-2021) of Centre for Education and Human Resource Development. To further examine the relationship between enrolment and socioeconomic factors, specifically gender disparities, flash reports published by the Department of Education are utilized. The collected data underwent a quantitative analysis to explore the relationship between secondary enrolment and GDP in Nepal. Pearson’s correlation and linear regression are applied to critically analyze the data. The correlation coefficient was applied to analyze the strength and direction of the relationship between the variables whereas regression was applied to analyze the scale of the relationship between secondary enrollment and GDP growth that are under investigation. Additionally, this paper has applied following standard regression equation considering secondary level enrolment as independent variable and GDP as dependent variable as given below:

Linear Regression Model $Y= \beta_0+ \beta_1X_1+ e$

Where Y=GDP

β_0=constant

β_1=coefficient of regression

X_1 =secondary level enrolment

e=error

GDP= 4179.46 – 0.001 x secondary level enrolment + error

Results and Discussion

Many economists and educators maintain the view that education plays a vital role in fostering the necessary human skills and knowledge needed to improve personal earnings and drive economic advancement at a national level. From this perspective, education is considered to be a strong tool that generates both macro and micro level economic development by increasing the stock of human capital (Akkoyunlu-Wigley & Wigley, 2008). This perspective aligns with the human capital theory, which highlights education and training as primary drivers of economic growth (Gedik, Sahin, & Suer, 2002).

Education is essential for human capital formation, leading to increased productivity and innovation. Education also contributes to the development of a skilled labor force, improving competitiveness in the economy. Education is a powerful tool for reducing poverty, as it provides individuals with better employment opportunities and promotes social mobility. Education is closely linked to technological progress and fosters social and political development by promoting social cohesion, democratic values, and active citizen participation. Investment in Education is crucial for sustainable and inclusive economic growth (Todaro & Smith, 2015).

Economic growth and education towards education spending relate at least three mechanisms through which education may affect economic growth in the sense mentioned by Shrestha (2014) First, education can increase the quality (efficiency) of the labour force that works as a factor of production and shift growth towards a higher equilibrium level of output (Lucas,1988; Mankiw, Romer &Weil,1992). Another perspective regarding the impact of education on economic growth asserts that it can enhance the capacity of the economy for innovation, with new knowledge of technologies, products, and processes stimulating growth (Romer, 1990). The third expression is that education can facilitate the diffusion and transmission of knowledge needed to understand and process new information and to successfully implement new technologies created by others and promote economic growth (Nelson and Phelps, 1966; Benjamin and Spiegel, 1944).

According to Elena Penetsku's (2015) analysis, human capital plays a crucial role in economic growth. The author thoroughly examines the growth of three categories in relation to growth theory and emphasizes the importance of intelligent, sustainable, and knowledgeable individuals as human capital. It is highlighted that achieving adequate economic growth through human capital requires sufficient education and training. The author argues that the quality of the education system significantly influences how human capital is developed. A well-educated individual possesses the capacity for extensive research and contributes significantly to progress. In conclusion, the author evaluates data from various countries, revealing that inadequate investment in education and health (human capital) can have adverse effects on a nation's development.

Several studies have reviewed the link between economic growth and enrolment in educational institutions. Animba and Wawire (2022) examined the effect of education institution enrolment on economic growth in Nigeria. The study adopted a quantitative research design which was used to answer the research question and objective. Results found that enrolment rate into educational institutions based on secondary school enrolment was positively related to economic growth while primary school enrolment and tertiary school enrolment were not related to economic growth. This means that only secondary school enrolment affects economic growth.

Petrakis and Stamatakis (2002) examined the relationship between the educational levels and growth of OECD countries and less developed countries. The study used a comparative analysis and results showed that the effects of education on growth depended on the level of development in the country. The low-income countries benefited in terms of growth from primary and secondary education more than the high-income countries. Self & Grabowski (2004) analyzed how education affected economic growth in India. The study aimed to determine how each level affected economic growth. They further analyzed the education variables by gender to investigate potential variations in findings. The findings showed that education at the primary level influenced economic growth more in comparison to the secondary one. It was also discovered that educating females at different levels had the potential to cause the economy to grow, whereas educating males only had a cause-effect on growth at the primary education level.

Tansel & Gungor (2013) investigated the gender implications of education using provincial-level data in Turkey. Their findings revealed a positive and statistically significant impact of female education on labour productivity, while the influence of male education appeared somewhat limited. In the context of Asia, Mukherjee (2015) explored the correlation between the expansion of female education and women's engagement in paid employment across Japan, China, and India. Despite increased educational access, Mukherjee observed that women tended to abstain from the labour market due to various factors, including societal discouragement.

Similarly, examining the relationship between female human capital and economic growth in Pakistan from 1972 to 2012, Khan (2016) disclosed a positive and significant long-term connection between female education and economic growth. However, in the short term, the relationship seemed positive but lacked statistical significance. Conversely, Pegkas and Tsamadias (2017) conducted an empirical analysis to assess the impact of male and female higher education on Greece's economic growth. Their study found no long-run co-integration between the enrolment rates of males and females with higher education, physical capital investment, and economic growth in Greece. Additionally, in the short term, the effects of both genders were deemed insignificant to overall economic growth.

In a study conducted by Dahal (2012), the focus was on analyzing the relationship between higher educational enrolment, school teachers, and the GDP of Nepal. The main objective was to empirically investigate the connection between higher education and the real gross domestic product of the country. To accomplish this, the paper utilized time series data spanning the years 1975 to 2009, including information on enrolment in higher education, teachers in lower secondary and secondary schools, and the gross domestic product of Nepal. The study employed unit root and co-integration tests to examine Granger's causality, aiming to identify any causal relationships between the variables. The results indicated a causal link between the real gross domestic product and enrolment in higher education, suggesting that economic growth influences higher educational enrolment. No significant causal relationship was found between the real gross domestic product and the number of school teachers.

There is no literature available on the correlation between secondary enrolment and GDP in Nepal thus far. Research has focused on the relationship between higher education enrolment and GDP in the country. This article examines the enrolment rates at the secondary level and explores the connection between secondary education and economic development by using correlation and regression models.

Educational Activities and GDP

In Nepal, educational activities have a significant impact on the country's GDP. The Government recognizes the crucial role of education in driving economic development and has emphasized the need for investment and focus on educational initiatives to ensure sustained economic progress. The recently released economic survey report for 2023 by the Government of the Nepal provides a comprehensive overview of the country's annual economic status. The report includes a comparative analysis of various factors influencing economic growth and GDP over the past decade. This section highlights the significant impact of educational activities on GDP during this period.

Table1

Gross Output by Educational Industries

Fiscal Year	Education (Rs. in 10 Million)
2012/13	13258
2013/14	15874
2014/15	18135
2015/16	20762
2016/17	24762
2017/18	27786
2018/19	34245
2019/20	38276
2020/21	39338
2021/22	44217

Source: MoF, 2022

Table 1 indicates the gross output figures for the educational industries in Nepal over 10 fiscal years. The numbers indicate a consistent growth trend in the output generated by the education sector. The highest growth in output is observed in the most recent fiscal year, 2021/22. This data signifies the expanding contribution of the education industry to the overall economy of Nepal.

Table 2

Annual Growth Rate of GDP by Educational Activities

Fiscal Year	Contribution of Education for GDP Growth
2013/14	4.95
2014/15	5.48

2015/16	7.15
2016/17	7.21
2017/18	5.83
2018/19	5.98
2019/20	3.20
2020/21	3.92
2021/22	4.66

Source: Economic Survey, 2022

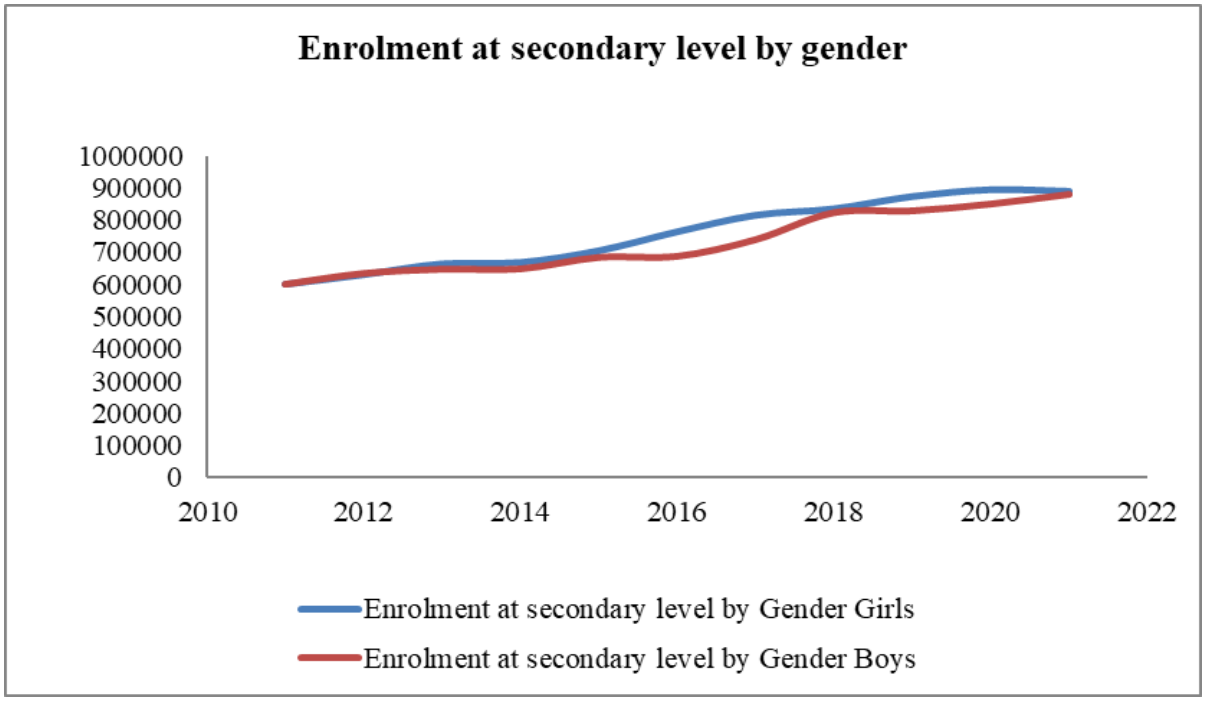
Table 2 presents the annual growth rates of GDP by educational activities in Nepal. From 2013/14 to 2021/22, the education sector consistently demonstrates positive growth rates. The highest growth rates were observed in the fiscal years 2015/16 and 2016/17, indicating a significant expansion of the sector during that period. Although the growth rates slightly fluctuated in subsequent years, the education sector maintained a positive trajectory. This data highlights the consistent contribution of the education sector to the overall GDP growth in Nepal.

Student's enrolment and GDP

This section highlights the relationship between student enrolment and GDP in Nepal.

Figure 1

Enrolment at the Secondary Level by Gender



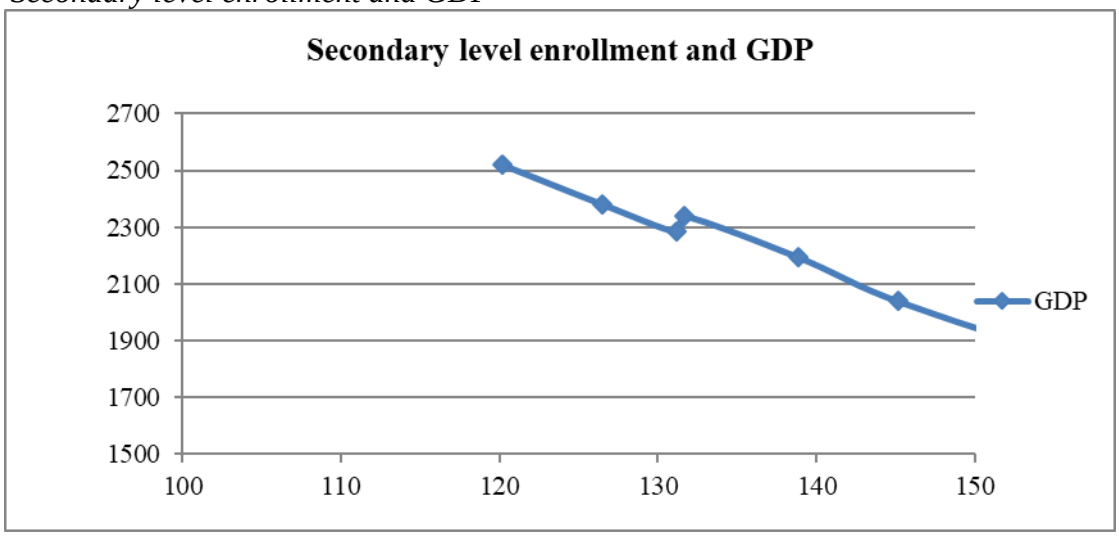
Note. Adopted from Flash I Report (2011-2021)

In 2011, the total enrolment was 1,201,907, with 602,833 girls and 599,074 boys. The enrolment increased gradually over the years, reaching a peak in 2020 with a total of 1,745,036 students. From 2011 to 2015, both girls and boys experienced steady enrolment

growth. The enrolment growth rate was relatively higher for girls during this period. After 2015, the growth rate for boys accelerated, leading to a narrowing of the enrolment gap. The highest enrolment year was 2020, with 895,268 girls and 849,768 boys, totaling 1,745,036 students. In 2021, there was a slight decrease in total enrolment compared to the previous year. The number of girls enrolled decreased, while the number of boys increased.

Figure 2

Secondary level enrollment and GDP



GDP at the basic price (in billion) and student number in ten thousand

Based on the regression analysis of secondary level enrolment and GDP from 2011-2021, there is evidence of a strong negative correlation between secondary-level enrolment and GDP. The negative correlation suggests that as school enrolment increases, GDP tends to decline.

Table 3

Correlation between Student Enrolment and GDP

	Total	*GDP*
Total	1	
GDP	-0.987	1

When we analyze the correlation coefficient between secondary-level enrolment and GDP is -0.987. A correlation coefficient close to -1 suggests that as GDP increases, school enrolment tends to decrease, and vice versa.

Table 4

Regression Summary

Regression Statistics	
Multiple R	0.987
R Square	0.975
Adjusted R Square	0.972
Standard Error	50.248

The regression summary indicates the R-square also known as the coefficient of determination which can help in explaining variance. R-squared value is 0.975, indicating that approximately 97.5 percent of the variance in school enrolment can be explained by the linear relationship with GDP and other factors in the model.

Table 5

Regression Coefficients

	Coefficients	*Standard Error*	*t-Statistics*	*P-value*
Intercept	4221.59	115.34	36.60	4.20E-11
Total	-0.001	7.68E-05	-18.94	1.46E-08

Dependent Variable: GDP

The constant (intercept) term represents the value of the dependent variable (GDP) when the independent variable (school enrolment) is zero. In this case, the intercept is 4221.59. However, since school enrolment cannot be zero, the intercept may not have a direct practical interpretation in this context. The coefficient for the independent variable (school enrolment) is -0.001. This indicates that for each unit increase in school enrolment, the GDP is expected to decrease by approximately 0.001 units, holding other variables constant.

The t-statistic for the intercept is 36.60, and for the school enrolment coefficient, it is -18.94. Both the p-values for the intercept and the school enrolment coefficient are very small (4.20E-11 and 1.46E-08, respectively), suggesting a statistically significant relationship.

To improve impact of secondary education on GDP of Nepal, we need inclusive policies ensuring equal access for all genders. This involves scholarships, awareness campaigns, teacher training, curriculum development, and resource provision. Addressing socio-cultural barriers, promoting vocational and technical education, and establishing a data collection system are crucial. Collaboration among government, educational institutions, civil society, and the private sector is vital for success.

Conclusion

In conclusion, this article examined the dynamics of male and female enrolment at the secondary level in Nepal and its relationship with the country's GDP. The analysis revealed that enrolment gradually increased over the years, reaching a peak in 2020. Initially, both boys and girls experienced growth, with girls showing a slightly higher growth rate. However, after 2015, the growth rate for boys accelerated, narrowing the enrolment gap. In 2021, a slight decrease in total enrolment was observed, primarily due to a decline in the number of girls enrolled.

The analysis revealed no discernible correlation between secondary level enrollment and GDP in Nepal. Secondary school enrollment in Nepal does not exert a significant impact on Gross Domestic Product (GDP); intriguingly, as enrollment rates decrease, GDP appears to increase. The regression analysis supported this finding, showing that approximately 97.5 percentage of the variance in school enrolment can be explained by the linear relationship with GDP. The study highlights the need to address gender disparities in enrolment and underscores the complex nature of the relationship between enrolment and GDP. Overall, this paper provides valuable insights for policymakers, educators, and researchers, enabling them to develop targeted interventions to enhance educational opportunities, reduce gender disparities, and foster socio-economic development in Nepal.

References

Animba, A., & Wawire, N. (2022). Effect of enrolment in education institutions on economic growth in Nigeria. *Asian Journal of Economics, Finance and Management, 4*(1), 346-354.Retrieved from https://globalpresshub.com/index.php/AJEFM/article/view/1598

Barro, R. J., & Lee, J.-W. (2010). A new dataset of educational attainment in the world, 1950–2010. *NBER Working Paper No. 15902*. Cambridge, MA: National Bureau of Economic Research. https://doi.org/10.3386/w15902

Becker, G. S. (1975). *Human Capital: A Theoretical and Empirical Analysis, with Special Reference to Education* (2nd ed.). National Bureau of Economic Research. Retrieved from http://www.nber.org/chapters/c3730

Dahal, M. (2012). Higher educational enrolment, school teachers and GDP in Nepal: a causality analysis. *Economic Journal of Development Issues,* 11. https://doi.org/10.3126/ejdi.v11i0.6107

Gedik, A., Sahin, N., & Suer, S. (2002). The importance of sociodemographic indicators in regional disparities in Turkey, 1990-1994. In *42nd Congress of the European Regional Science Association: "From Industry to Advanced Services - Perspectives of European Metropolitan Regions,"* August 27th - 31st, 2002, Dortmund, Germany. European Regional Science Association (ERSA), Louvain-la-Neuve. Retrieved from https://hdl.handle.net/10419/115729

Gümüş, S., & Kayhan, S. (2012). The Relationship between Economic Growth and School Enrollment Rates: Time Series Evidence from Turkey. *Educational Policy Analysis and Strategic Research, 7*, 24-38. Retrieved from https://epasr.inased.org/makale/258

Hanushek, E. A., & Wößmann, L. (2007). *The Role of School Improvement in Economic Development*. World Bank Policy Research Working Paper 4122. Retrieved from https://documents1.worldbank.org/curated/en/260461468324885735/pdf/wps4122.pdf

Hervías Parejo, V., & Radulović, B. (2023). Public Policies on Gender Equality. In D. Vujadinović et al. (Eds.), *Gender-Competent Legal Education*. Springer Textbooks in Law. https://doi.org/10.1007/978-3-031-14360-1_12

Khan, M.K. (2016). Contribution of female human capital in economic growth: An empirical analysis of Pakistan (1972-2012). *Quality and Quantity, 50*(2), 709-728. https://doi.org/10.1007/s11135-015-0172-6

Mankiw, N. G., Romer, D., & Weil, D. N. (1992). A contribution to the empirics of economic growth. *The Quarterly Journal of Economics, 107*(2), 407–437. https://doi.org/10.2307/2118477

Mincer, J. A. (1974). Schooling and earnings. In J. A. Mincer (Ed.), *Schooling, experience, and earnings* (pp. 41-63). National Bureau of Economic Research. https://www.nber.org/chapters/c1765

Ministry of Education, Science and Technology {MoEST}. (2011). *Flash I Report*. Centre for Education and Human Resource Development. Sanothimi, Bhaktapur.

MoEST. (2012). *Flash I Report*. Centre for Education and Human Resource Development. Sanothimi, Bhaktapur.

MoEST. (2013). *Flash I Report*. Centre for Education and Human Resource Development. Sanothimi, Bhaktapur.

MoEST. (2014). *Flash I Report*. Centre for Education and Human Resource Development. Sanothimi, Bhaktapur.

MoEST. (2015). *Flash I Report*. Centre for Education and Human Resource Development. Sanothimi, Bhaktapur.

MoEST. (2016). *Flash I Report*. Centre for Education and Human Resource Development. Sanothimi, Bhaktapur.

MoEST. (2017). *Flash I Report*. Centre for Education and Human Resource Development. Sanothimi, Bhaktapur.

MoEST. (2018). *Flash I Report.* Centre for Education and Human Resource Development. Sanothimi, Bhaktapur.

MoEST .(2019). *Flash I Report*. Centre for Education and Human Resource Development. Sanothimi, Bhaktapur.

MoEST. (2020). *Flash I Report*. Centre for Education and Human Resource Development. Sanothimi, Bhaktapur.

MoEST. (2021). *Flash I Report*. Centre for Education and Human Resource Development. Sanothimi, Bhaktapur.

Ministry of Finance {MOF}. (2019). *Economic survey 2018/19.* Ministry of Finance, Government of Nepal.

MOF. (2021), *Economic survey 2020/21*. Ministry of Finance, Government of Nepal.

MOF .(2022), *Economic survey 2021/22*. Ministry of Finance, Government of Nepal.

Mukherjee, S. S. (2015). More educated and more equal? A comparative analysis of female education and employment in Japan, China, and India. *Gender and Education, 27*(7), 846–870. https://doi.org/10.1080/09540253.2015.1103367

Pegkas, P., & Tsamadias, C. (2017). Are there separate effects of male and female higher education on economic growth? Evidence from Greece. *Journal of the Knowledge Economy, 8*(1), 279-293. https://doi.org/10.1007/s13132-015-0286-z

Petrakis, P. E., & Stamataki, D. (2002). Growth and educational levels: A comparative analysis. *Economics of Education Review, 21*(5), 513–521. https://doi.org/10.1016/S0272-7757 (01)00050-4

Schultz, T. W. (1961). Investment in human capital. *The American Economic Review, 51*(1), 1-17. https://www.jstor.org/stable/1818907

Self, S., & Grabowski, R. (2004). Does education at all levels cause growth? India, a case study. *Economics of Education Review, 23*, 47–55. https://www.elsevier.com/locate/econedurev

Tansel, A., & Gungor, N.D. (2013). Gender effects of education on economic development in Turkey. *Koç University-TUSIAD Economic Research Forum Working Papers, 40*(6), 794-821. https://doi.org/10.1108/JES-10-2012-0140

Todaro, M. P., & Smith, S. C. (2015). *Economic development (12th ed.).* Pearson Education Pvt. Ltd.

United Nations. (2015). *Transforming our world: The 2030 Agenda for Sustainable Development.* https://sustainabledevelopment.un.org/post2015/transformingourworld

Akkoyunlu-Wigley, A., & Wigley, S. (2008). Basic Education and Capability Development in Turkey. In A. M. Nohl, A. Akkoyunlu-Wigley, & S. Wigley (Eds.), *Education in Turkey*. New York/Münster: Waxmann Publishing. https://ssrn.com/abstract=1292227

World Economic Forum. (2016). *Global Competitiveness Report 2015-2016*. http://reports.weforum.org/global-competitiveness-report-2015-2016/education/#view/fn-53