

## **Performance Analysis of Students in Nawalparasi Based on SEE Results in 2078 BS**

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Received: November 15, 2022

Revised: December 17, 2022

Accepted: January 01, 2023

Published: January 29, 2023

How to cite this paper:

Adhikari, B.P & Kafle, S.C (2022).

Performance analysis of students in Nawalparasi based on SEE results in 2078 BS.

*The OCEM Journal of Management, Technology & Social Sciences, 2(2), 1-14*

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Journal.oxfordcollege.edu.np

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Originality: This paper is original and has not been published anywhere else

Paper type: Research Paper

J.E.L. Classification: I (2), I (29)

### **Abstract**

The primary objective of this study was to examine students' gender-wise performance in different subjects of SEE results, the average grade point of each subject, and the total grade points of all subjects in the SEE exam in 2078 in Nawalparasi district. The data for this study was obtained from the 2078 BS SEE exam results using secondary data collection methods. The data analysis technique of this study was descriptive statistics where correlation analysis, arithmetic mean, Mann-Whitney U test and Chi-square test of independence were used for data analysis. The study included the exam results of 13139 students from both private and public schools in Nawalpur district. There were 6654 male students (50.6%) and 6485 female students (49.4%) in the sample. The results indicated that the majority of the SEE participants students (97.9%) were between 13 to 21, and 34.7% were 16 years which is the maximum observed percentage of students. In 2078 BS, only 1.1% of students over the age of 21 participated in the SEE exam, according to the results.

The results importantly show a significant association between the gender of students in Grade Point Average (GPA) of the SEE results in 2078 BS. The majority of the students had poor results in the SEE-2078 exam, as 56.3% of students secured less than 2.39 GPA, whereas no one obtained 4 GPA out of 4. Finally, the results indicate that the total grade point (TGP) of girls (2.53) is higher than boys in compulsory Nepali compared to male (2.59) students in the SEE results of 2078 BS in Nawalparasi district. The implication of this study would be beneficial to the Education Department of Secondary Education Examination (SEE), educators, researchers, policymakers, and parents to improve the overall GPA in SEE results.

**Keywords:** Educational assessment, Grade Point Average (GPA), SEE results, Students Performance Analysis

## 1. INTRODUCTION

Students' final result scores are important indicators of their performance in an educational setting (Gottfried et al., 2015). Research has shown that students who score well on final exams and other assessments have better academic outcomes, such as higher grades and greater success in postsecondary education (Dillon, 2017). On the other hand, students who score poorly on final exams are more likely to struggle academically and may be at risk of failing or dropping out of school (Gottfried et al., 2015). Several factors can influence students' final result scores, including their cognitive abilities, motivation, and study habits (Dillon, 2017). Students who have strong cognitive skills and are motivated to learn are more likely to perform well on final exams (Gottfried et al., 2015).

Additionally, students who develop good study habits, such as setting aside dedicated time for studying and reviewing material regularly, are more likely to succeed academically (Dillon, 2017). Hence, students' final result scores are key indicators of their performance in an educational setting. However, many factors impact the final score of an exam.

The school board exam certificate for the 10<sup>th</sup> class was named by School Level Certificate (SLC) before 2070 BS; however, it is now held in class 12. The 10<sup>th</sup> board exam is named by School Exit Examination (SEE in 2076). After implementing the Education Act 2073, the Higher Secondary Education Council was eliminated, and the National Examination Board became operational. The area of work has been determined so that the related school permit, scholarship, and school management work being edited by the Higher Secondary Education Council is now being managed at Local Level. The curriculum creation, development and equivalence determination work is also being operated by the Curriculum Development Center for Class ten (SEE). Examinations and activities related to classes eleven and twelve (SLCE) have been included under the National Examination Board's (NEB) jurisdiction. In addition, the responsibility of conducting the class ten examination at the provincial level and guiding the examination of the entire school education has been included within the scope of the NEB (National Examination Board, 2076). According to the Act's provision, the NEB's main work,

established to conduct, manage, and upgrade school education examinations, focuses on developing the examination system. The examination defines the National Education Board as a self-governing and organized body with unbroken succession.

After inspecting the SEE exam in Nepal, a few minor problems were identified. Even the teachers have complained about some of the question papers of SEE exams that should be reviewed. The government of Nepal has been continuously spending a large amount of the national budget on SEE exams all over Nepal; however, the results are not satisfactory constantly. The teachers are involved in political parties at all levels and are always busy serving the political leadership and unions and avoiding their fundamental tasks. At the same time, the politicians are actively involved in making student cadres participate in the protest, and election, throwing stones and burning tyres (Paudel, 2021).

The failure of leaders to recognize good and bad teachers is another big problem in current education. The local governments look aloof as far as the education system is concerned. They haven't yet presented quality policies for improving the education sector. They could have worked on making school-level education more practical, but even in their second tenure; they did nothing to improve education. The political power-sharing among students and teachers at different levels is causing harm to the entire education system. The next problem is that the people working in the education sector are using it as a source of income instead of making it a learning and academic hub. Likewise, the student unions and officials supposed to reform the education sector are ignorant and indifferent to the student's problems. The final impact of the abovementioned problems is weak grades in Math, Science, optional subjects, and overall grades (Paudel, 2021).

## Objectives

The primary objective of this study is to examine the association between different subjects of SEE results, the average grade point of each subject, and the total grade points of all subjects in the SEE exam in 2078 in Nawalparasi district. The specific objectives are:-

- To analyze the results of demographic participation in the See exam of 2078 in Nawalparasi district
- To analyze the secondary data of SEE results of Nawalparasi district in 2078 based on gender
- To analyze the secondary data of SEE results of Nawalparasi district in 2078 based on age
- To find the association between the demographic and GPA of the SEE exam of 2078

### **Research questions**

- What is the gender participation percentage in the 2078 BS SEE exam in Nawalparasi district?
- What is the age-wise participation in the SEE exam of 2078 in Nawalparasi district?
- What is the association between the age of students and their performance in the SEE results in 2078?
- What is the gender-wise performance difference in each subject of SEE in 2078 BS?

## **2. METHODS AND MATERIALS**

The secondary data was used in this study, where numerical data of SEE results were requested from the SEE Board Sanuthimi Kathmandu by submitting an official request letter of Oxford College of Engineering and Management, Gaidakot-2, Nawalpur of Nepal. The research paradigm of this study is a quantitative research design because it gives crucial facts from numerical data. Through statistical analysis, we can derive important facts and valuable insights from purely numerical data, provide more accurate and reliable data, support analysis with clarity, and be more helpful (Cohen et al., 2011). The data analysis technique of this study is a descriptive statistical analysis where correlation analysis, arithmetic mean, one-way ANOVA analysis (Kruskal–Wallis one-way analysis of variance) and Chi-square analysis test were used for data analysis. The analysis further focuses on comparing gender wise performance of students. The independent variables are the grade point average of each subject grade points of compulsory and optional subjects of SEE. This study has followed the quantitative method to analyze the secondary data of SEE results of 2078 BS at Nawalparasi district.

These authors followed all the secondary data's ethical issues during the analysis phase (Creswell & Plano Clark 2007).

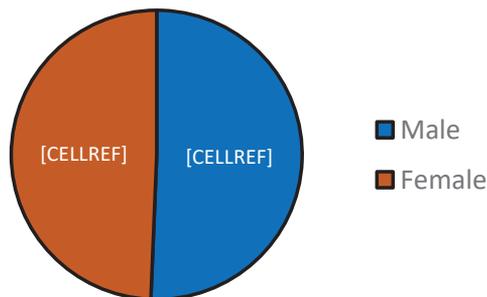
### 3. RESULTS

*What are the association between different subjects, the average grade point of each subject, and the total grade points of all subjects in the SEE exam in 2078 in Nawalparasi district, Nepal?*

The results of this study have summarized the comparative analysis of SEE results of 2078 in Nawalparasi district, Nepal. The results section has focused on analyzing each compulsory subject's average GPA comprising gender and age of SEE students. This section has also analyzed the results of absent, failed, below and good and above and good level.

#### Demographic analysis

*What is gender-wise participation in the SEE exam of 2078 in Nawalparasi district?*



*Figure 1: Gender-wise student distribution in SEE 2078*

The number of male students was 6654 (50.6%), and for females was 6485 (49.40%). The total number of schools (both Private and Public) in the Nawalpur district from which students have participated in the SEE board exam was 13140.

*What is the age-wise participation of SEE examinees in 2078 in Nawalparasi district?*

Student of different ages was attending in SEE exam; the age structure of students attending in SEE exam is shown in the bar diagram with error bars as below-

## Age structure

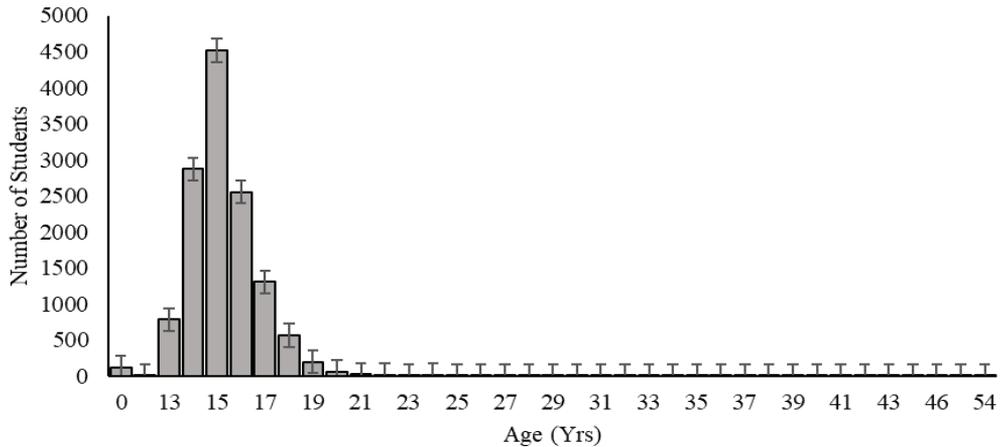


Figure 2: Age of the SEE participants of 2078 BS at Nawalparasi district

The results show that the majority of the SEE participant students (97.9%) were between 13 to 21, and 34.7% were aged 16 years, the maximum observed percentage of students for a specific age. The results indicate that above the age of 21, only 1.1% of students participated in the SEE exam in the 2078 BS. On an individual basis, the age of the most SEE students in 2078, BS was 16 years (30%), followed the 15 years (29.4%), 17 years (14.6%), 14 years (10.8%), 18 years (7.8%), 19 years (3%), 13 years (1.8%) and 20 years (1.1%). The age percentage of other students was below 1%, so lower than 1% was excluded from the analysis.

## Average GPA Age-wise

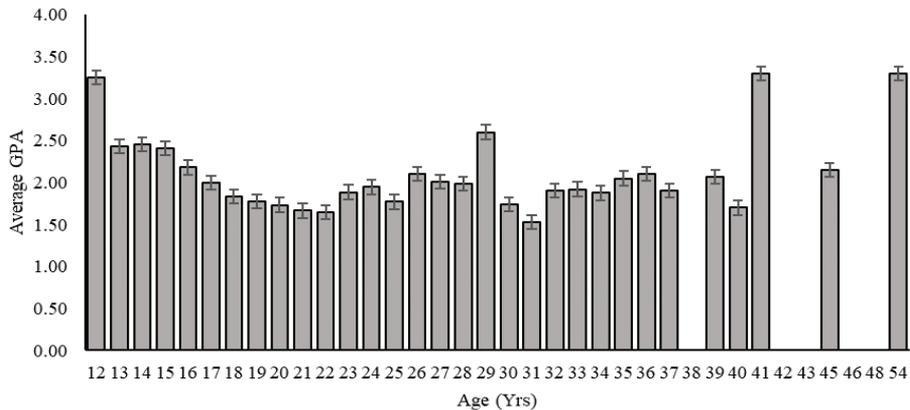


Figure 3. Age-wise average GPA of SEE students in Nawalparasi district

The results indicate that the average GPA of SEE students in the 2078 BS in Nawalparasi district is nearly the same for students of different ages. However, there are few students beyond the age of 13 to 21 years, the average GPA for students aged 42 and 55 was the highest and lowest for those aged 32 (see Figure 3). If we consider only the students between 13 to 21 years, 13 years students secured the highest score, it is almost the same for the age group 14 to 16 years, and it decreases up to 21 years (see Figure 3).

***What is the gender-wise performance difference in each subject of SEE in 2078 BS?***

**Table 1. The analysis of gender-wise GPA Table 2. Mann Whitney U test for equality of mean GPA.**

| Passed             | 12729     | Sex    | Number of Students | Mann-Whitney U | Z      | P- Value |
|--------------------|-----------|--------|--------------------|----------------|--------|----------|
| Absent or fail     | 413       |        |                    |                |        |          |
| Mean               | 2.29      | Female | 6485               | 19504148.5     | -3.593 | <0.01    |
| Standard deviation | 0.60      | Male   | 6654               |                |        |          |
| Variance           | 0.37      | Other  | 1                  |                |        |          |
| 95% CI of Mean     | 2.38-2.30 | Total  | 13140              |                |        |          |

The results indicate that among 13140 students registered to attain the SEE exam in 2078 BS, 12729 got the result, and the remaining students were absent or failed in at least one subject. The mean GPA of students who got the result is 2.29 with a standard deviation of 0.37, at a 95% confidence level, and the mean GPA of students is 2.28 to 2.30 (see Tables 1 & 2). Among the total student, one student mentioned another gender was omitted from the study as it may be a manual error, or even if it is correct, it does not have any significant effect on the data. The results show that the mean sample GPA of boys and girls students differs. To test whether it is the same in the population too, at first normality of GPA is tested for two genders, and it is found Non-Normal for both groups, so the data is required to carry the Mann-Whitney U test. Unless the data is normal for both groups, a t-test for the difference between two independent means cannot be carried out (Sainani, 2012). A significant difference between male and female students' average GPA on the SEE results in 2078 BS is seen as the p-value for Mann-Whitney U test is less than 0.01.

***What is the association between the age of students and their performance in the SEE results in 2078?***

**Table 3. Categorical result analysis for students of 2078 BS**

| Results             | Number of students | Percentage |
|---------------------|--------------------|------------|
| Absent              | 411                | 3.1        |
| Up to 2.39 (poor)   | 7402               | 56.3       |
| 2.40 to 3.99 (Good) | 5327               | 40.5       |
| 4 (Excellence)      | 0                  | 0          |
| Total               | 13140              | 100.0      |

**Table 4. Gender-wise performance of all SEE students of 2078 BS**

| Sex    | Missing     | Below good level (Below 2.4) | Good Level (2.4 to 3.99) | Total        |
|--------|-------------|------------------------------|--------------------------|--------------|
| Female | 177 (1.3%)  | 3752 (28.7%)                 | 2556 (19.5%)             | 6885 (49.4%) |
| Male   | 234 (1.82%) | 3650 (27.8%)                 | 2770 (21.1%)             | 6654 (50.6%) |
| Total  | 411 (3.1%)  | 7402 (56.3%)                 | 5326 (40.5%)             | 13140 (100%) |

The majority of the students had poor results in the SEE-2078 exam, as 56.3% of students secured less than a 2.39 GPA, whereas no one obtained a 4 GPA out of 4. The results indicate that the student's performance on the SEE Exam of 2078 BS has been presented except for one omitted other-gender student (see Table 3). The results show that the percentage of male and female students securing below and above good level is nearly the same. The results show a statistically insignificant association between the gender of the student and their performance in the SEE exam; it was significant while testing the Chi-Square test for whether there was a significant association between gender and SEE students' performance (p-value = 0.003). Somewhat male have better results than female students (see Table 4).

***What is the gender-wise performance difference in each compulsory subject of SEE in 2078 BS?***

**Table 5. Age-wise performance of SEE students**

| Age group                      | GPA Group      |                  |                  | Total          |
|--------------------------------|----------------|------------------|------------------|----------------|
|                                | Absent or fail | Below Good level | Above Good level |                |
| Below 13 years and age missing | 2 (0.02%)      | 53 (0.40%)       | 72 (0.55%)       | 127 (0.97%)    |
| 13 years to 21 years           | 359 (2.73%)    | 7277 (55.38%)    | 5249 (39.95%)    | 12885 (98.06%) |
| Above 21 years                 | 46 (0.35%)     | 76 (0.78%)       | 6 (0.05%)        | 128 (0.97%)    |
| Total                          | 407 (3.10%)    | 7406 (56.36%)    | 5327 (40.54%)    | 13140 (100%)   |

**Table 5. Mean GPA of students in major eight subjects**

| Grade in Compulsory subjects | Mean | Standard Deviation |
|------------------------------|------|--------------------|
| COMP.ENGLISH                 | 2.46 | 0.80               |
| COMP.NEPALI                  | 2.53 | 0.66               |
| COMP. MATHEMATICS            | 1.36 | 0.83               |
| COMP. SCIENCE                | 2.11 | 0.76               |
| COMP. SOCIAL STUDIES         | 2.37 | 0.75               |
| COMP. HEALTH, POP & ENV      | 2.58 | 0.798              |
| COMP. SANSKRIT LANGUAGE      | 1.78 | 0.90               |
| COMP.SANSKRIT LANGUAGE       | 2.67 | 0.82               |

The results show that out of 13140 students, 12885 (98.06%) belong to the age group 13 to 21 years, and most of their results are below a reasonable level. However, those above a good GPA contributed more from the same age group. The results indicate that compulsory Sanskrit language has the highest GPA (2.67), whereas the lowest was in Compulsory Maths (1.36). Similarly, the second highest GPA was in Health, and Physical Education (2.58), while the second lowest was in Compulsory Science (2.11 (see Table 5).

**Table 6. Gender-wise performance in eight compulsory subjects**

| Sex    | Values | GPA in English | GPA in Nepali | GPA in Math | GPA in Science | GPA in Social Studies | GPA in HPE | GPA in the Sanskrit Language | GPA in Falit Jyotish |
|--------|--------|----------------|---------------|-------------|----------------|-----------------------|------------|------------------------------|----------------------|
| Female | Mean   | 2.42           | 2.59          | 1.31        | 2.08           | 2.35                  | 2.58       | 1.74                         | 2.66                 |
|        | N      | 6477           | 6477          | 6484        | 6479           | 6478                  | 6477       | 6478                         | 6476                 |
|        | SD     | 0.813          | 0.657         | 0.777       | 0.734          | 0.743                 | 0.778      | 0.864                        | 0.806                |
| Male   | Mean   | 2.5            | 2.48          | 1.42        | 2.14           | 2.39                  | 2.58       | 1.82                         | 2.7                  |
|        | N      | 6632           | 6631          | 6653        | 6633           | 6632                  | 6631       | 6634                         | 6631                 |
|        | SD     | 0.802          | 0.655         | 0.873       | 0.777          | 0.756                 | 0.779      | 0.932                        | 0.839                |
| Total  | Mean   | 2.46           | 2.53          | 1.36        | 2.11           | 2.37                  | 2.58       | 1.78                         | 2.68                 |
|        | N      | 13111          | 13110         | 13139       | 13114          | 13112                 | 13110      | 13114                        | 13109                |
|        | SD     | 0.809          | 0.659         | 0.829       | 0.757          | 0.75                  | 0.778      | 0.9                          | 0.823                |

Table 7 compares the student's performance in each of the eight subjects, with red in average GPA indicating higher than others, green for less and yellow for the same. The results indicate that the total grade point of girls is higher than that of boys (2.53) in compulsory Nepali compared to male students (2.59) in the SEE results of 2078 BS in Nawalparasi district. It was also found that female grade points were lower than male students in the rest of the compulsory subjects (see Table 7). But the total grade points of HPE of both boys and girls was the same (2.58). The results further indicate that the total grade points for Maths (1.31) were the lowest of all other subjects. The results confirm that male students got higher total average grade points in all subjects than female students except Nepali (see Table 6).

**Table 7. Mann-Whitney U Test on the mean rank of different compulsory subjects**

| Subject                        | Sex    | Number of Students | Mann Whitney U | P- Value        |
|--------------------------------|--------|--------------------|----------------|-----------------|
| <b>Comp. English</b>           | Male   | 6478               | 20113754.5     | <b>&lt; 0.0</b> |
|                                | Female | 6632               |                |                 |
|                                | Total  | 13110              |                |                 |
| <b>Comp. Nepali</b>            | Male   | 6478               | 18860390.5     | <b>&lt; 0.0</b> |
|                                | Female | 6631               |                |                 |
|                                | Total  | 13109              |                |                 |
| <b>Comp. Math</b>              | Male   | 6485               | 20249652.5     | <b>&lt; 0.0</b> |
|                                | Female | 6653               |                |                 |
|                                | Total  | 13113              |                |                 |
| <b>Comp. Science</b>           | Male   | 6480               | 20501505       | <b>&lt; 0.0</b> |
|                                | Female | 6633               |                |                 |
|                                | Total  | 13113              |                |                 |
| <b>Comp. Social Studies</b>    | Male   | 6479               | 20653074.5     | <b>&lt; 0.0</b> |
|                                | Female | 6632               |                |                 |
|                                | Total  | 13111              |                |                 |
| <b>Comp. H.P.E</b>             | Male   | 6478               | 2146429        | <b>0.774</b>    |
|                                | Female | 6631               |                |                 |
|                                | Total  | 13109              |                |                 |
| <b>Comp. Sanskrit Language</b> | Male   | 6479               | 20577118       | <b>&lt; 0.0</b> |
|                                | Female | 6634               |                |                 |
|                                | Total  | 13113              |                |                 |
| <b>Comp. Falit Jyotish</b>     | Male   | 6477               | 20835753.5     | <b>0.03</b>     |
|                                | Female | 6631               |                |                 |
|                                | Total  | 13108              |                |                 |

The results indicate that the mean rank results indicate the mean of the eight compulsory subjects' Total grade points for each of the eight subjects of SEE results in 2078 BS. At a 5% significance level, the mean GPA of students is significantly different for males and females for Compulsory HPE (P-value =0.774). At a 1% significance level, it is significantly different from Compulsory Falit Jyotish (P-value = 0.03). In the rest subjects, there is no significant difference in mean GPA between the two genders (See Table 7).

#### 4. DISCUSSION, CONCLUSION AND RECOMMENDATION

The main findings of this study have been presented in tabulated form (see Table 2). The results indicate that the number of male students was 6654, and the number of females was 6485. The total number of schools in the Nawalpur district was 13140 in the SEE Board Exam of 2078 B.S. The results indicate that most of the SEE participants students were between 13 to 21 and 16 years, the maximum observation percentage

of students. The results on an individual basis indicate that the age of the most SEE students in 2078, BS, was 16 years, followed the 15 years, 17 years, 14 years, 18 years, 19 years, 13 years, and 20 years. The majority of the students had poor results in the SEE-2078 exam, as 56.3% of students secured less than a 2.39 GPA, whereas no one obtained a four-by-four GPA. The results indicate that the student's performance of the SEE results of 2078 BS has been presented except for one omitted unknown gender student. The results show that the percentage of male and female students securing below and above good level is nearly the same. The results showed a statistically insignificant association between gender and their performance in the SEE exam; it was significant while testing the Chi-Square test for whether there was a significant association between gender and SEE students' performance ( $p$ -value = 0.003).

The results indicate that 12885 (98.06%) participants belonged to the age group 13 to 21 years, and most of their results are below a reasonable level. Compulsory Maths has the most negligible average GPA compared to the highest value of the Compulsory Sanskrit Language(2.67) (see Table 6). Similarly, the results indicate that Health and Population have the second highest mean value (2.58), following the second lowest mean value of compulsory Science (1.36%). Additionally, the third highest mean value of Compulsory Nepali (2.53), whereas the third lowest mean value, are recorded in compulsory Science (2.11). The study of Liang, Choon and Bing (2010) supported this study's results, who found compelling evidence of a sizeable number of mathematics teachers in the participating secondary schools who could hardly produce better grades in Mathematics subject at the secondary level. The current high demand for mathematics teachers is also a possible reason for poor mathematics GPA in Nawalparasi district. The lack of government supervision to examine the teachers' teaching capability is the leading cause of weak results in Mathematics. Other possible causes of lower GPA in Mathematics are teachers' negligence in teaching mathematics, incapability of mathematics teachers, students' negligence to SEE exam, and parents' immaturity and negligence towards their children's education.

As stated in the Nepalese education act, the Ministry of Education regulates the overall education system, from curriculum development to school establishment in seven provinces. Various other regulatory bodies are designated to oversee the education

system at different levels, including the Secondary Education Examination (SEE) Board, which conducts and regulates the examination of grade ten. The National Examination Board (NEB) regulates the conduction and regulation of the Ministry of Education, which governs the overall education system from curriculum development to school establishment in seven provinces. Various other regulatory bodies are designated to oversee the education system at different levels, including the Secondary Education Examination (SEE) Board, which conducts and regulates the examination of grade ten. But there is a high difference between the declared law and practice in the Nepalese educational department from the central to the local level. All levels of government do not have cooperation and coordination to supervise school-level academic quality in Nepal.

The current study has supported the studies of Backstrom (2021) and Salem et al. (2014), who found that the gender of students significantly affected their academic performance of students. Students with a cumulative GPA of 3.0 or greater significantly differed from those with a GPA of less than 3.0 female students. Factors such as gender has been shown to significantly affect medical student GPA as a whole batch as well as when they were tested for gender.

## **RECOMMENDATION**

After completing the research, the researchers have the following recommendations

- The local education department of Nawalparasi district needs to revise the regional education policy to improve SEE results.
- The school administration needs to supervise teachers' classroom teaching activities and the consistency of classroom presentations.
- Mathematics teachers need to change their classroom instruction strategies and teaching pedagogy.
- Mathematics and other teachers need to follow the memorization and writing strategy to improve the overall results in the SEE exam in Nawalparasi district.
- The whole school mechanism has to be revised to improve the overall results of SEE in Nawalparasi district.

- The Ministry of Education Department needs to formulate an incentive policy to motivate subject teachers to improve their overall GPA.

## ACKNOWLEDGEMENT FROM THE FIRST AUTHOR

I would like to recognize the love and affection of my wife, Nilam Adhikari, including my two sons, Dhruva Adhikari and Rabi Adhikari and daughter Rina Adhikari in the writing of this article. My family kept telling me courageously that you are a writer." It was very inspiring for my article writing. My honorable principal Prof. Er. Hari Prasad Bhandari always inspires me. I want to express my sincere thanks to the BBA department and my editor Dr Deb Raj Dhakal (Dean of Management Pokhara University), for editing my article. I would also like to acknowledge the help of all OCEM advisor committee faculty members for their continuous help and support while writing this article. I would recognize my decent colleagues and my students, especially Miss Sujayana Piya and Miss Susmita Gurung, for their support of our research.

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## AUTHOR'S CONTRIBUTIONS

This work was carried out in collaboration between both authors. Author BPA designed the study, managed the literature searches, wrote the protocol and wrote the first draft of the manuscript. Authors SCK performed the statistical analysis of the study. Both authors read and approved the final manuscript.