



Sifal Secondary School

Report Card Distribution - Plus 2 School

Magh 17 | 4:30 PM to 6:00 PM

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ANALYSIS REPORT OF TERM II EVALUATION USING SPSS, 2076



Executive Summary

Sifal Secondary School conducts a Terminal Examination at the end of every four months. The school follows the Continuous Assessment System (CAS), providing information about the students' progress to parents, and helping students judge their own learning. In the Plus 2 School (Grade XI-XII), the assessment does not include CAS, only terminal examinations are undertaken. For the academic year 2076/77, Second Term Evaluation for the Plus2 School was held from Poush 21 to 29 (January 6 to January 14). In the evaluation, students appeared on theoretical and practical examinations of different NEB-prescribed and DSS credit courses taught in the Second Term. The Report Card was distributed to the parents on Magh 17 (January 31). The Report Card pack contained a mark sheet, answer sheets, and the term summary.

This Result Analysis Report is based on the marks obtained by the students in each subject in the Second Evaluation. The total 100 marks comprise of Theory + Practical/Assignment/Internal Evaluation, 75 marks for the former and 25 marks for the latter. The results were analyzed by statistical software, SPSS, and comparative analysis was performed, and inferences/conclusions were drawn. To make the comparison of the marks obtained, a 'test score' was used for the statistical t-test (50 for Theory and 20 for Practical/Assignment/Internal Evaluation).

In the Theoretical Evaluation of Grade XI, average marks obtained were 'significantly higher' than the test score '50' in Reading Book Grading but it was 'significantly lower' than the test score in Physics, Chemistry, Mathematics, Biology and Reading Book Log. An increase or decrease in Computer and PHP and MySQL was statistically insignificant. In Assignment Evaluation, average marks obtained was 'significantly higher' than the test score 20 in the assignments of Math, Biology, and PHP and MySQL but it was 'significantly lower' than the test score for English, Physics, Chemistry, Computer, Reading Book Grading, and Reading Book Log. In the Assignment Evaluation of the rest of the subjects, the increase or decrease was statistically insignificant.

In the Theoretical Evaluation of Grade XII, average marks obtained were 'significantly higher' than the test score 50 in Java Script, Reading Book Grading, and English composition but it was significantly lower than the test score in Nepali, Physics, Chemistry, Mathematics and Reading Book Log. In the Theoretical Evaluation of the rest of the subjects, an increase or decrease in average marks statistically insignificant. In Internal Evaluation (including practical/assignment), average marks obtained were 'significantly higher' than the test score 20 in biology but it was 'significantly lower' than the test score in English, Physics, Chemistry, Reading Book Grading, and Reading Book Log. In Internal Evaluation of the rest of the subjects, the increase or decrease was statistically insignificant.

In the 'overall analysis', mean and median were calculated based on the marks obtained (all subjects combined including reading book tests) by all students in a grade. The analysis shows a wide variability of marks obtained by the students. In theory, the students secured 50-55% of the total marks on average and in Assignment/Internal Evaluation/Practical, they secured 70-73% on average.

In conclusion, this report provides an overview of the Second Term Evaluation in Plus 2 School in terms of central tendency measurements and their comparative analysis. Results in computer science were noticeably better than other subjects. This analysis report indicates rooms for improvement of the results.

Introduction

This report provides results of the analysis of the Second Term Evaluation of the academic year 2076/77.

Analyses were based on the marks obtained by the students in theory and assignment of each subject. The theory marks are the marks obtained by a student out of 75 total marks in each subject. The assignment marks are the marks obtained by a student out of 25 total marks in each subject. This report does not provide information regarding the causes of the increase or decrease in marks.

Methods

Data

The data were obtained from mark sheet ledgers: [DSS - PLUS 2 SCHOOL - MARKSHEET - TERM II - XI \(2021\)](#) and [DSS - PLUS2 SCHOOL - MARKSHEET - TERM II - XII \(2020\)](#)

Data Analysis

All analyses were performed using the software 'Statistical Package for the Social Science' (SPSS) (IBM, New York, US). Average marks obtained were compared by a statistical test (Student's t-test). To compare the results, the following hypotheses were set and tested:

Theory

Null Hypothesis (H_0): There is no significant difference in between Second Term Evaluation Result and a test score 50, i.e. $\mu S = 50$

Alternate Hypothesis (H_1): There is a significant difference in between Second Term Evaluation Result and a test score 50, i.e. $\mu S \neq 50$

Assignment/Practical/Internal Evaluation

Null Hypothesis (H_0): There is no significant difference in between Second Term Evaluation Result and a test score 20, i.e. $\mu S = 20$

Alternate Hypothesis (H_1): There is a significant difference in between Second Term Evaluation Result and a test score 20, i.e. $\mu S \neq 20$

Level of Significance: The level of significance is defined as the probability (p) of rejecting a null hypothesis by the test when it is really true, which is denoted as α . A p-value of ≤ 0.05 is widely considered to be a statistically significant result. That is p (Type I error) = α . Type I error is the rejection of a **true** null hypothesis (also known as a "false positive" finding). Type II error is the rejection of a **true** alternate hypothesis (also known as a "false negative" finding).

Results

Grade XI

The evaluation was based on 36 students. The table below provides **Mean and Median** marks obtained by Grade XI students in their respective subjects. Furthermore, the marks obtained were compared with the test scores (theory test score 50 and assignment test score 20) and inference and conclusion were drawn.

Subject	Central Values		Chi-squared test	Conclusion
	Mean	Median	p-value	
English	47.63	47.3	0.059	<u>In the second term, 50% of Grade XI students scored >47.30 in English.</u> Since $p > \alpha$, we retain the null hypothesis and conclude that the average mark obtained in English was not significantly lower than the test score 50.
Physics	37.05	35.5	7.48E-06	<u>In the second term, 50% of Grade XI students scored >35.5 in Physics.</u> Since $p < \alpha$, we fail to retain the null hypothesis and conclude that the average mark obtained in Physics was significantly lower than the test score 50.
Chemistry	39.75	38	6.29E-05	<u>In the second term, 50% of Grade XI students scored >38 in Chemistry.</u> Since $p < \alpha$, we fail to retain the null hypothesis and conclude that the average mark obtained in Chemistry was significantly lower than the test score 50.
Mathematics	34.85	31.15	1.26E-06	<u>In the second term, 50% of Grade XI students scored >31.15 in Mathematics.</u> Since $p < \alpha$, we fail to retain the null hypothesis and conclude that the average mark obtained in Mathematics was significantly lower than the test score 50.
Biology	38	39	0.010	<u>In the second term, 50% of Grade XI students scored >39 in Biology.</u> Since $p < \alpha$, we fail to retain the null hypothesis and conclude that the average mark obtained in Biology was significantly lower than the test score 50. Note – since there are only six students in the biology group, the t-test is not appropriate (viz., no such statistical test is needed).
Computer	52.03	50	0.229	<u>In the second term, 50% of Grade XI students scored >47.30 in Computer.</u> Since $p > \alpha$, we retain the null hypothesis and conclude that the average mark obtained in Computer was not significantly higher than the test score 50.
PHP and MySQL	52.37	54.4	0.279	<u>In the second term, 50% of Grade XI students scored >47.30 in PHP and MySQL.</u> Since $p > \alpha$, we retain the null hypothesis and conclude that the average mark obtained in PHP and MySQL was not significantly higher than the test score 50.

Reading Book Grading	56.59	60	0.001	In the second term, 50% of Grade XI students scored >35.5 in Reading Book Grading. Since $p < \alpha$, we fail to retain the null hypothesis and conclude that the average mark obtained in Reading Book Grading was significantly higher than the test score 50 .
Reading Book Log	35.49	36.6	3.06E-05	In the second term, 50% of Grade XI students scored >35.5 in Reading Book Log. Since $p < \alpha$, we fail to retain the null hypothesis and conclude that the average mark obtained in Reading Book Log was significantly lower than the test score 50 .
English Assignment	16.37	15.9	1.15E-06	In the second term, 50% of Grade XI students scored >15.5 in English Assignment. Since $p < \alpha$, we fail to retain the null hypothesis and conclude that the average mark obtained in English Assignment was significantly lower than the test score 50 .
Physics Assignment	19.16	18.7	0.0420	In the second term, 50% of Grade XI students scored ≥ 18.7 in Physics Assignment. Since $p < \alpha$, we fail to retain the null hypothesis and conclude that the average mark obtained in Physics Assignment was significantly lower than the test score 50 .
Chemistry Assignment	16.25	16.5	5.30E-07	In the second term, 50% of Grade XI students scored ≥ 16.5 in Chemistry Assignment. Since $p < \alpha$, we fail to retain null hypothesis and conclude that average marks obtained in Chemistry Assignment was significantly lower than the test score 20 .
Math Assignment	22.375	22.5	6.28E-11	In the second term, 50% of Grade XI students scored ≥ 16.5 in Math Assignment. Since $p < \alpha$, we fail to retain the null hypothesis and conclude that the average mark obtained in Math Assignment was significantly higher than the test score 20 .
Biology Assignment	24.66	25	3.49E-06	In the second term, 50% of Grade XI students scored >16.5 in Biology Assignment. Since $p < \alpha$, we fail to retain the null hypothesis and conclude that the average mark obtained in Biology Assignment was significantly higher than the test score 20 . Note – since there are only six students in the biology group, the t-test is not appropriate (viz., no such statistical test is needed).
Computer Assignment	16.83	17	1.61E-07	In the second term, 50% of Grade XI students scored ≥ 17 in Computer Assignment. Since $p < \alpha$, we fail to retain the null hypothesis and conclude that the average mark obtained in Computer Assignment was significantly lower than the test score 20 .
PHP and MySQL assignment	22.52	22	1.97E-13	In the second term, 50% of Grade XI students scored ≥ 17 in PHP and MySQL Assignment. Since $p < \alpha$, we fail to retain the null hypothesis and conclude that the average mark obtained in PHP and MySQL Assignment was significantly higher

				than the test score 20.
Reading Book Grading Assignment	15.75	16	5.97E-07	<u>In the second term, 50% of Grade XI students scored ≥ 17 in Reading Book Grading Assignment. Since $p < \alpha$, we fail to retain the null hypothesis and conclude that the average mark obtained in Reading Book Grading Assignment was significantly lower than the test score 20.</u>
Reading Book Log Assignment	13.30	13.5	4.15E-08	<u>In the second term, 50% of Grade XI students scored ≥ 17 in Reading Book Log Assignment. Since $p < \alpha$, we fail to retain the null hypothesis and conclude that the average mark obtained in Reading Book Log Assignment was significantly lower than the test score 20.</u>

Term II Summary – Grade XI

- In Theory, average marks obtained was **significantly higher** than the test score 50 in Reading Book Grading ($p < 0.05$).
- In Theory, average marks obtained was **significantly lower** than the test score 50 in Physics, Chemistry, Mathematics, Biology, and Reading Book Log ($p < 0.05$).
- In Theory, an increase or decrease in average marks obtained in Computer and PHP and MySQL with respect to the test score 50 were statistically insignificant ($p > 0.05$).
- In Assignment, average marks obtained was **significantly lower** than the test score 20 in English Assignment, Physics Assignment, Chemistry Assignment, Computer Assignment, Reading Book Grading Assignment, and Reading Book Log Assignment ($p < 0.05$).
- In Assignment, average marks obtained were **significantly higher** than the test score 20 in Math Assignment, Biology Assignment, PHP and MySQL assignment ($p < 0.05$).

Grade XII

The evaluation was based on 27 students. The table below provides **Mean and Median** marks obtained by Grade XII students in their respective subjects. Furthermore, the marks obtained were compared with the test scores (theory test score 50 and assignment test score 20) and inference and conclusion were drawn.

Subject	Central Values		Chi-squared test	Conclusion
	Mean	Median	p-value	
English	49.51	51.8	0.77	<u>In the second term, 50% of Grade XII students scored > 51.8 in English. Since $p > \alpha$, we retain the null hypothesis and conclude that average mark obtained in English was not significantly lower than the test score 50.</u>
Nepali	40.93	41.6	8.96E-05	<u>In the second term, 50% of Grade XII students scored > 41.6 in Nepali. Since $p > \alpha$, we fail to retain null hypothesis and conclude that average marks obtained in Nepali was significantly lower than the test score 50.</u>

Physics	32.03704	30	1.77E-05	In the second term, 50% of Grade XII students scored <u>>30</u> in Physics. Since $p < \alpha$, we fail to retain the null hypothesis and conclude that the average mark obtained in Physics was significantly lower than the test score 50 .
Chemistry	28.78	25	3.28E-06	In the second term, 50% of Grade XII students scored <u>>25</u> in Chemistry. Since $p < \alpha$, we fail to retain the null hypothesis and conclude that the average mark obtained in Chemistry was significantly lower than the test score 50 .
Mathematics	20.65217	14	2.84E-08	In the second term, 50% of Grade XII students scored <u>>14</u> in Mathematics. Since $p < \alpha$, we fail to retain the null hypothesis and conclude that the average mark obtained in Mathematics was significantly lower than the test score 50 .
Biology	33	30	0.09	In the second term, 50% of Grade XII students scored <u>>30</u> in Biology. Since $p > \alpha$, we retain null hypothesis and conclude that the average mark obtained in Mathematics was not significantly lower than the test score 50 . Note – since there are only four students in the biology group, t-test is not appropriate (viz., no such statistical test is needed).
Java Script	56.41304	60	0.041	In the second term, 50% of Grade XII students scored <u>>60</u> in Java Script. Since $p < \alpha$, we fail to retain null hypothesis and conclude that average marks obtained in Java Script was significantly higher than the test score 50 .
Reading Book Grading	59.32963	63.8	0.0017	In the second term, 50% of Grade XII students scored <u>>63.8</u> in Reading Book Grading. Since $p < \alpha$, we fail to retain the null hypothesis and conclude that the average mark obtained in Reading Book Grading was significantly higher than the test score 50 .
Reading Book Log	37.24074	37.5	0.0003	In the second term, 50% of Grade XII students scored <u>>37.5</u> in Reading Book Log. Since $p < \alpha$, we fail to retain null hypothesis and conclude that average marks obtained in Reading Book Log was significantly lower than the test score 50 .
English composition	54.58519	58.9	0.0033	In the second term, 50% of Grade XII students scored <u>>58.9</u> in English composition. Since $p < \alpha$, we fail to retain the null hypothesis and conclude that average mark obtained in English composition was significantly higher than the test score 50 .
English communication	48.61111	54	0.638	In the second term, 50% of Grade XII students scored <u>>54</u> in English communication. Since $p > \alpha$, we retain null hypothesis and conclude that the average mark obtained in English communication was significantly lower than the test score 50 .
Internal- English	13.24074	13.8	4.13E-07	In the second term, 50% of Grade XII students scored <u>>13.8</u> in English internal evaluation. Since

				$p < \alpha$, we fail to retain null hypothesis and conclude that the average mark obtained in English internal evaluation was significantly lower than the test score 20 .
Internal- Nepali	20.31481	20	0.179	<u>In the second term, 50% of Grade XII students scored >20 in Nepali internal evaluation.</u> Since $p > \alpha$, we retain the null hypothesis and conclude that the average mark obtained in Nepali internal evaluation was significantly lower than the test score 20 .
Internal- Physics	17.1963	17.2	0.0006	<u>In the second term, 50% of Grade XII students scored >17.2 in Physics internal evaluation.</u> Since $p < \alpha$, we fail to retain the null hypothesis and conclude that the average mark obtained in Physics internal evaluation was significantly lower than the test score 20 .
Internal- Chemistry	16.90741	18	0.0008	<u>In the second term, 50% of Grade XII students scored >18 in Chemistry internal evaluation.</u> Since $p < \alpha$, we fail to retain the null hypothesis and conclude that the average mark obtained in Chemistry internal evaluation was significantly lower than the test score 20 .
Internal - Math	20.68696	20.8	0.37	<u>In the second term, 50% of Grade XII students scored >20.8 in Math internal evaluation.</u> Since $p > \alpha$, we retain the null hypothesis and conclude that the average marks obtained in Math internal evaluation was not significantly higher than the test score 20 .
Internal - Biology	23.5	24	0.027	<u>In the second term, 50% of Grade XII students scored >24 in Biology internal evaluation.</u> Since $p < \alpha$, we fail to retain the null hypothesis and conclude that the average mark obtained in Biology internal evaluation was significantly higher than the test score 20 . Note – since there are only four students in the biology group, t-test is not appropriate (viz., no such statistical test is needed).
Internal - Java Script	20.15556	18.8	0.866	<u>In the second term, 50% of Grade XII students scored >18.8 in Java Script internal evaluation.</u> Since $p > \alpha$, we retain the null hypothesis and conclude that the average marks obtained in Java Script internal evaluation was not significantly higher than the test score 20 .
Internal - Reading Book Grading	18.07407	19	0.02	<u>In the second term, 50% of Grade XII students scored >19 in Reading Book Grading internal evaluation.</u> Since $p < \alpha$, we fail to retain the null hypothesis and conclude that the average mark obtained in Reading Book Grading internal evaluation was significantly lower than the test score 20 .
Internal - Reading Book	12.51852	12	3.3E-08	<u>In the second term, 50% of Grade XII students scored >12 in Reading Book Log internal</u>

Log				evaluation. Since $p < \alpha$, we fail to retain the null hypothesis and conclude that the average mark obtained in Reading Book Log internal evaluation was significantly lower than the test score 50 .
Internal - English composition	20.15	18.80	0.86	<u>In the second term, 50% of Grade XII students scored >18.80</u> in English composition internal evaluation. Since $p > \alpha$, we retain the null hypothesis and conclude that the average mark obtained in English composition internal evaluation was not significantly higher than the test score 20 .
Internal - English communication	20.59	22.00	0.27	<u>In the second term, 50% of Grade XII students scored >22.00</u> in English communication internal evaluation. Since $p > \alpha$, we retain the null hypothesis and conclude that the average marks obtained in English communication internal evaluation was significantly higher than the test score 20 .

Term II Summary – Grade XII

- In Theory, average marks obtained was **significantly higher** than the test score 50 in Java Script, Reading Book Grading, and English composition ($p < 0.05$).
- In Theory, average marks obtained was **significantly lower** than the test score 50 in Nepali, Physics, Chemistry, Mathematics and Reading Book Log ($p < 0.05$).
- In Theory, increase or decrease in average marks obtained in the rest of the subjects with respect to the test score 50 were statistically insignificant ($p > 0.05$).
- In Internal evaluation (i.e. practical/assignment), average marks obtained was **significantly higher** than the test score 20 in biology ($p < 0.05$).
- In Internal evaluation (i.e. practical/assignment), average marks obtained was **significantly lower** than the test score 20 in English internal evaluation, Physics internal evaluation, Chemistry internal evaluation, Reading Book Grading internal evaluation, and Reading Book Log internal evaluation ($p < 0.05$).
- In Internal evaluation (i.e. practical/assignment), increase or decrease in average marks obtained in the rest of the subjects with respect to the test score 20 were statistically insignificant ($p > 0.05$).

Overall Result

In the overall analysis, mean and median were calculated based on the marks obtained (all subjects combined including reading book tests) by ‘all’ students in a grade. The table below provides the information.

Term II	Central Values									
	Theory					Assignment/Internal Evaluation/Practical				
Grade	Mean	Median	Min.	Max.	S.D.	Mean	Median	Min.	Max.	S.D.
Grade XI	44.13	45.8	3.8	72	15.39	17.98	18.2	1	25	4.65
Grade XII	42.93	45.8	2	73.5	18.35	19	18.02	1	25	4.99

The analysis shows a wide variability of marks obtained by the students. In theory, DSS +2 students secure about 50-55% of the total marks in average and in Assignment/Internal Evaluation/Practical, they secure 70-73% on average.

Examination Team

Tasks	Name
Question Prep./Examination/Answer Sheet Evaluation/Marks Entry	Subject Teachers
Online Handbook/ Mark Sheet Ledger	Madhusudan Bhusal
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