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Section B: Short Communication

# Performance of FCAE Diploma Holders at USP

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**Abstract**

*The University of the South Pacific (USP) is currently attracting many students who have completed a Diploma at the Fiji College of Advanced Education (FCAE) into its study programmes. These students are not required to do certain courses, mostly those at the first year level, as they had done courses of a similar nature at FCAE and hence these are cross-credited towards their study programme at USP. In order to ensure that the granting of cross-credits for these FCAE courses is justified, USP needs to study the performance of these students. In this paper, we have carried out a statistical analysis using the Cumulative Grade Point Averages (CGPA) of all 67 such students. Results of the analysis indicate that the performance of these students justifies the granting of cross-credits.*

Keywords: USP, FCAE, GPA, Statistical Tests.

## I. INTRODUCTION

The University of the South Pacific is a regional university which has twelve member countries namely, Cook Islands, Fiji Islands, Kiribati, Marshall Islands, Nauru, Niue, Samoa, Solomon Islands, Tokelau, Tonga, Tuvalu and Vanuatu. It is the premier provider of tertiary education in the Pacific Region with its current academic programmes being well recognized worldwide, attracting high calibre students and staff from throughout the Pacific Region and internationally.

USP is currently becoming a popular place for students who already hold some qualification from another tertiary institution and who may wish to study towards a higher qualification. Such students always apply to get some of the courses that they had undertaken in their previous qualification cross-credited towards their current programme. Currently, USP's criteria for the award of cross-credits are as follows (as given in the USP Calendar 2002, page 482):

**(i)** Where the examinations passed or credits gained elsewhere or at USP for another programme substantially correspond with, or are equivalent to, courses in a program of study for which the candidate is enrolled at USP, specified cross-credits may be awarded.

**(ii)** Where examinations passed or credits gained elsewhere or for another programme of study at USP do not correspond with, but are relevant to, courses in a programme of study for which a candidate is registered at USP, a limited number of unspecified cross-credits may be awarded depending on the structure of the programme of study concerned.

**(iii)** In cross-crediting courses, consideration shall be given to contents of the courses for which students are applying for cross-credits, and relevance of their intervening experience.

Before cross-credits for courses undertaken elsewhere or for another programme of study are given, USP needs to follow the above mentioned criteria. Moreover, USP needs to keep an eye on the performance of the students who have been given cross-credits for courses. This will allow USP to determine if the granting of credits for certain courses is justified.

In this paper, we shall consider the performance of students who had previously completed a diploma at FCAE and who had enrolled in various study programmes at USP. For this purpose, relevant data was obtained from USP and a statistical analysis was carried out.

## II. COLLECTION OF DATA

The Cumulative Grade Point Averages (CGPA) for all the 67 students holding FCAE diploma and who had enrolled for the various programmes at USP was obtained from the Academic Office for the years 1995 and onwards. Here, GPA stands for "Grade Point Average". Each letter grade has a corresponding GPA associated with it. These are given in the following table.

| GRADE | A+ | A | B+ | B | C+ | C | R | D | E | E(X) | I |
|---|---|---|---|---|---|---|---|---|---|---|---|
| GPA | 4.5 | 4.0 | 3.5 | 3.0 | 2.5 | 2.0 | 1.5 | 1.0 | 0 | 0 | 0 |

The grades A+, A, B+, B, C+, C and R (for restricted pass) are pass grades; I means "incomplete"; and the rest are fail grades. Note that CGPA is the sum of all the Grade Point Averages divided by the number of courses attempted.

The students were first divided into the three categories BA, BEd, and BSc & others and statistical tests were carried out. The 95% confidence intervals for the mean CGPA of the students for these three different categories as well as for all the students taken together were also obtained.

## III. STATISTICAL ANALYSIS

For the 67 students which were divided into three categories, Mean, Standard Deviation, Minimum and the Maximum of the CGPA's were found. These are given in the following table.

| | N | Mean | Standard Deviation | Min | Max |
|---|---|---|---|---|---|
| BA | 13 | 2.475 | 0.84 | 1.37 | 4.2 |
| BEd | 46 | 2.4698 | 0.5893 | 0.7 | 3.75 |
| BSc & Others | 8 | 2.890 | 0.43 | 2.23 | 3.45 |
| ALL | 67 | 2.5209 | 0.6352 | 0.7 | 4.2 |

Before we carry out any tests, we have to determine whether or not the given data follows a normal distribution. If it does, then appropriate parametric tests would be required. Otherwise, nonparametric tests would be required.

The $\chi^2$ test was used to verify that the given data follows a normal distribution with unknown parameters, mean $\mu$ and standard deviation $\sigma$. Hence, we have carried out T tests, for all the three categories and also for all the 67 students taken together. The null and alternative hypotheses for the tests are given below.

$$H_0 : \mu = 2.0, \quad H_1 : \mu > 2.0\,.$$

The above hypothesis was chosen as the GPA for the Grade C is 2.0. Moreover, the mean (as given in the above table) for all the three categories as well as for all taken together is more than 2.0. The T-values and the corresponding p-values for the given test are as given below.

| | T-value | p-value |
|---|---|---|
| BA | 2.04 | 0.032 |
| BEd | 5.41 | 0.000 |
| BSc & Others | 5.86 | 0.0003 |
| ALL | 6.71 | 0.000 |

For BA students, we reject the null hypothesis when the type I error is at least 0.032 and accept it otherwise. For all the other categories, we reject the null hypothesis and hence accept the alternative hypothesis that the mean CGPA is more than 2.0, as the p-values are almost zero for these categories. It will also be useful to consider the 95% confidence interval for the mean CGPA for all the four cases. These are given in the following table.

| | N | Lower Confidence Limit | Upper Confidence Limit |
|---|---|---|---|
| BA | 13 | 1.97 | 2.98 |
| BEd | 46 | 2.29 | 2.64 |
| BSc and Others | 8 | 2.53 | 3.25 |
| ALL | 67 | 2.37 | 2.68 |

The lower confidence limits for BEd and BSc & others and all taken together are clearly more than 2.0 (which is the GPA for a C Grade). For the BA students, the lower confidence interval is approximately 2.0. This tells us that the probability that a Diploma holder of FCAE will pass at USP will be at least 0.95.

## IV. CONCLUSION

The parametric tests carried out shows that the mean CGPA is more than 2.0 for all categories except for BA students. For BA students, the mean CGPA is more than 2.0 when the type I error is at least 0.032 and it is equal to 2.0 otherwise. This implies that the FCAE diploma holders are performing satisfactorily at USP and hence USP may continue to give cross-credits to the FCAE diploma holders. In order to see the concentration of the mean CGPA, confidence intervals were also obtained. An examination of the lower confidence limits of the three different categories as well as that for all the students taken together, suggests that the mean CGPA is concentrated above 2.0 for all the cases, except for BA which is approximately 2.0, This tells us that the probability that a FCAE diploma holder will pass at USP is at least 0.95.

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