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Introduction of Computer Studies to non-science university students: The Sri Lankan experience

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Key words: Computer education, non-science students, didactics in IT

Abstract:

Introduction of computer studies as a subject to students in the Faculties of Humanities and Social Sciences in Sri Lankan universities is a relatively recent experience. University of Kelaniya was the first university in Sri Lanka that offered computer studies as a subject to its Bachelor of Arts Degree programme starting in 2001. This paper attempts to analyze the relative performance of science and non-science students offering the same module under the new computer studies curriculum.

1. Introduction

University of Kelaniya is one of the major universities in Sri Lanka with a student population of approximately 9000. It consists of six Faculties of Study namely, Commerce and Management Studies, Humanities, Medicine, Science, Social Sciences and Graduate Studies. Faculty of Science provides various courses in computer science, information technology and related areas while the Faculty of Commerce and Management Studies offers several modules in information technology. Considering a long felt need the University decided in 2001 to introduce a subject called Computer Studies, mainly to a selected group of students in the Faculties of Humanities and Social Sciences as well as to a selected group of students in the Faculty of Science. The selection of students is done according to a specific criteria. In fact, this was the first attempt by a Sri Lankan university to offer Computer Studies as a subject to students in the Faculties of Humanities and Social Sciences. The university selects 50 students to follow Computer Studies from these two Faculties and another 50 students from the Faculty of Science. The curriculum of Computer Studies is representative of the current demands in IT in the industry and comprises six three-credit modules namely, Fundamentals of Computer Science & Computer Applications, Structured Programming Concepts, Fundamentals of Database Management Systems, Information Systems & Decision Support Systems, Visual Programming, and Web Technology & e-commerce Applications.

This paper presents a comparative analysis of performance among the two student groups, i.e., students from the Faculties of Humanities and Social Sciences and students from the Faculty of Science, in respect of a third year Computer Studies module. A baseline test was administered to both groups of students before the commencement of delivery of the module and the same test was administered at the end of delivery. The module selected was 'Web Technology and e-commerce Applications'.

2. Analysis of data for Faculty of Science students

Number of students who took the first and second baseline tests are 23 and 29 respectively. Total number of students registered for the course unit is 37.

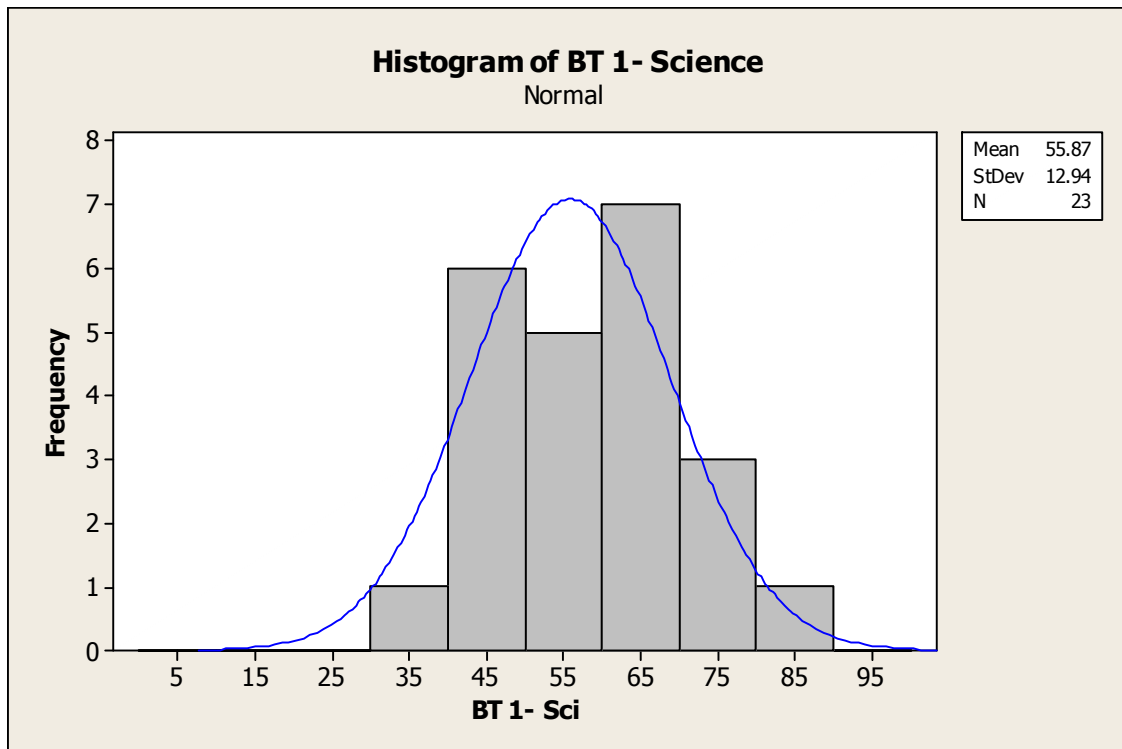


Figure 1

The histogram in Figure 1 is for the baseline test 1 of science students. A student typically scores around 55 marks while scores between 45 and 65 are quite frequent. The histogram is reasonably symmetric around 55 marks.

Descriptive Statistics of Baseline Test 1 (Science)

Number of Students	23
Mean	55.87
Standard Deviation	12.94
Median	55

Table 1

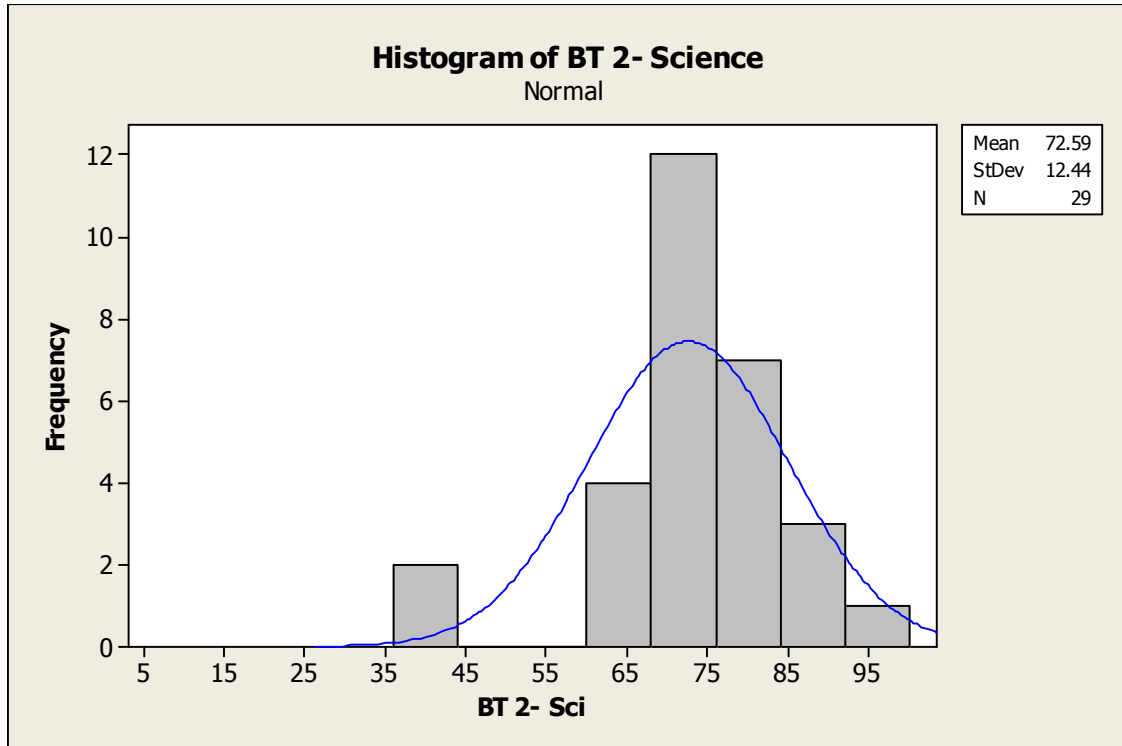


Figure 2

The histogram in Figure 2 is for the baseline test 2 of science students. A student typically scores around 72 marks while scores between 67 and 84 were quite frequent. Due to the atypical small value, the histogram is slightly skewed to the left, or negatively skewed. Without this value, the histogram would be reasonably symmetric.

Descriptive Statistics of Baseline Test 2 (Science)

Number of Students	29
Mean	72.59
Standard Deviation	12.44
Median	75

Table 2

When comparing the two histograms (Figure 1 and Figure 2), majority of the marks for the baseline test 1 lies in between 40 and 70. But for the baseline test 2 majority of the students were able to score in the range of 65 to 85. This is a significant improvement in performance.

The descriptive statistics in the two tables (Table 1 and Table 2), can also be used for the comparison. The baseline test 1 has a mean of 55.87 while baseline test 2 has 72.59. The clearly visible difference between the two medians 55 and 75 and the fact that these medians imply that half of the students were able to score more than 75 marks in their second attempt of the baseline test, which is a significant improvement over the other.

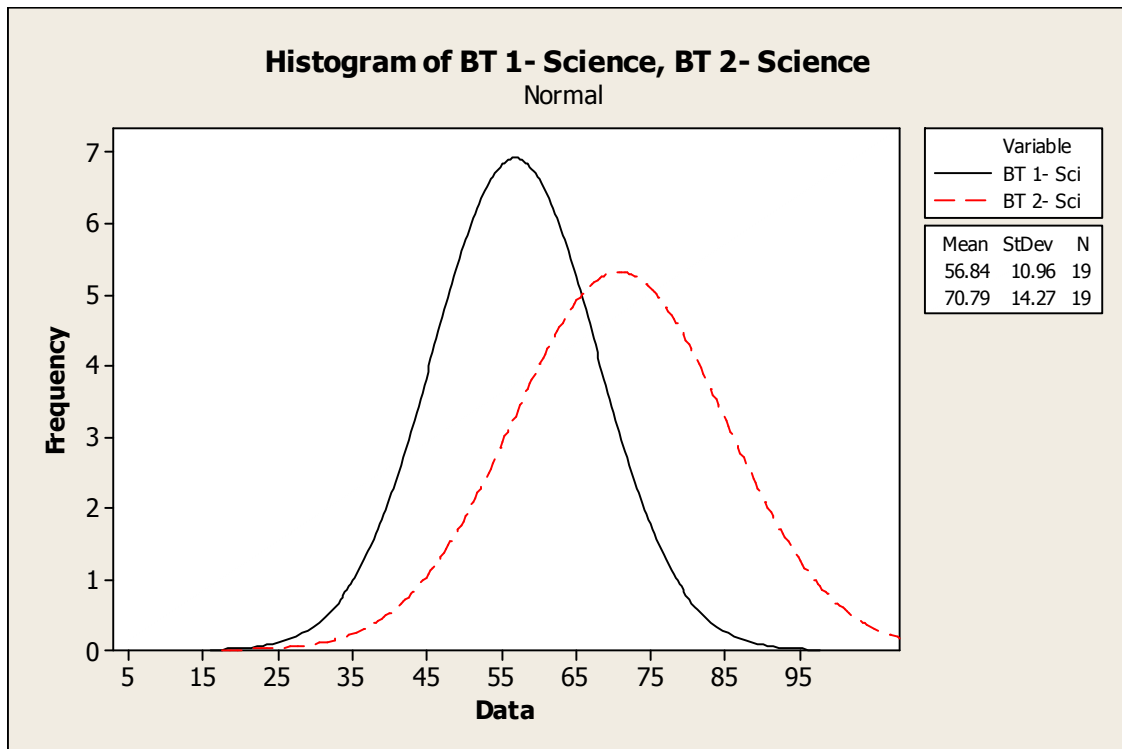


Figure 3

The histogram in Figure 3 depicts students participated in both tests. There are 19 students and the marks they got for both tests are drawn in the same graph. This figure also suggests that their marks are improved obviously from baseline test 1 to baseline test 2.

3. Analysis of data for Faculties of Humanities and Social Science students

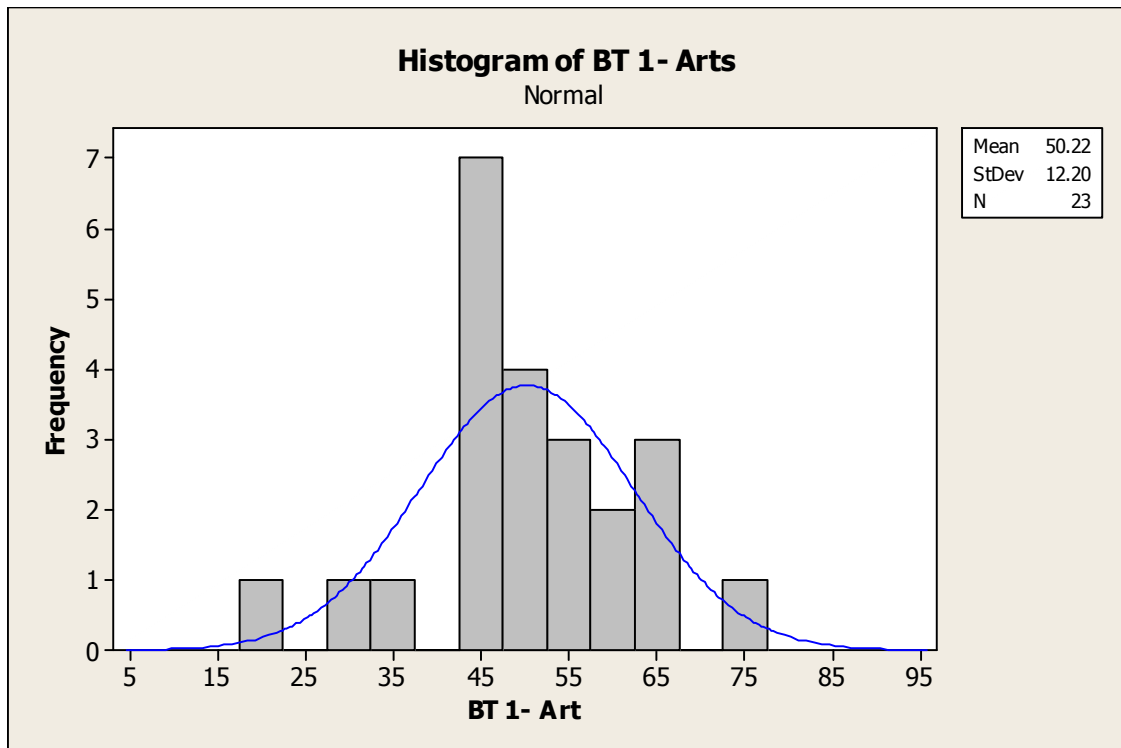


Figure 4

The histogram in Figure 4 is for the baseline test 1 of humanities and social sciences students. A student typically scores around 50 marks while scores between 43 and 53 are quite frequent. The histogram is reasonably symmetric around 50 marks.

Descriptive Statistics of Baseline Test 1 (Humanities and Social Sciences)

Number of Students	23
Mean	50.22
Standard Deviation	12.20
Median	50

Table 3

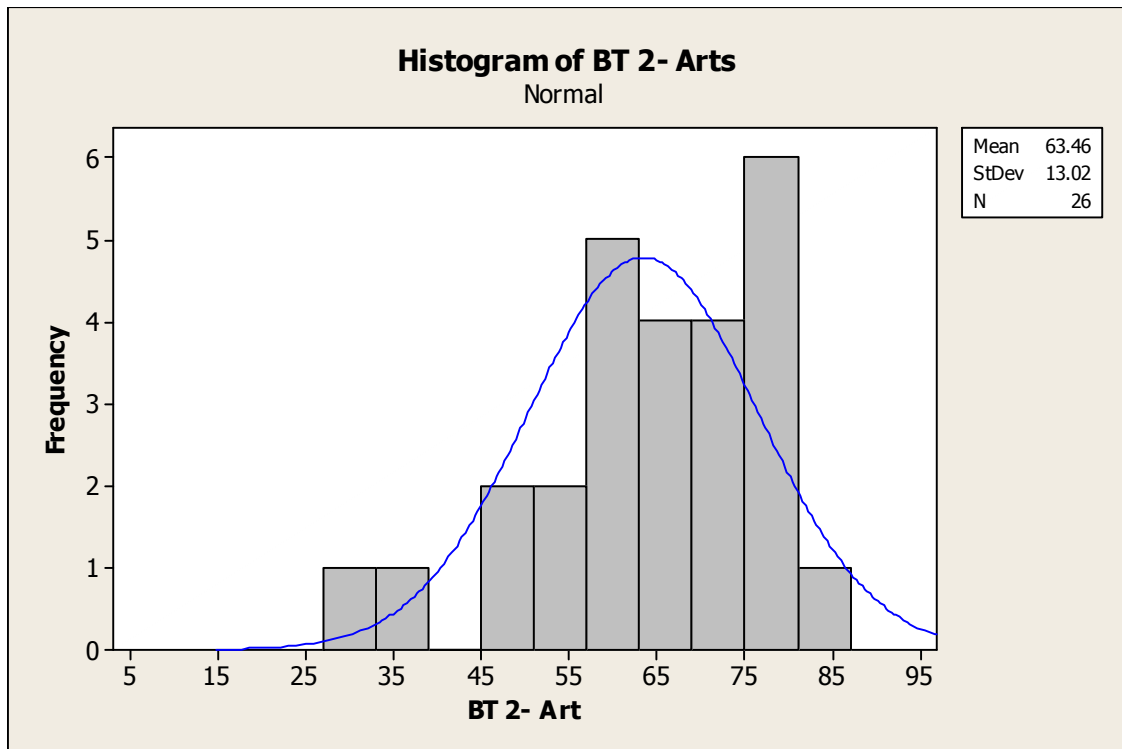


Figure 5

The histogram in Figure 5 is for the baseline test 2 of humanities and social sciences students. A student typically scores around 62 marks while scores between 57 and 81 are quite frequent. The histogram is reasonably symmetric around 62 marks.

Descriptive Statistics of Baseline Test 2 (Humanities and Social Sciences)

Number of Students	26
Mean	63.46
Standard Deviation	13.02
Median	65

Table 4

When comparing the two histograms (Figure 4 & Figure 5), majority of the marks for the baseline test 1 lie in between 43 and 53. But for the baseline test 2 majority of students were able to score in the range of 57 to 81. This is a significant improvement from baseline test 1 to baseline test 2.

According to descriptive statistics in the two tables (Table 3 & Table 4), the baseline test 1 has a mean of 50.22, while the baseline test 2 has a mean of 63.46. Even though the improvement of the mean is not as much as that of science students category, it implies that knowledge of these students had improved. The difference between the two medians 50 and 65 is also a good indication to prove the improvement.

The histogram in Figure 6 considers only the students who participated in both tests. There are 18 students and the marks they got for both tests are drawn separately in this graph.

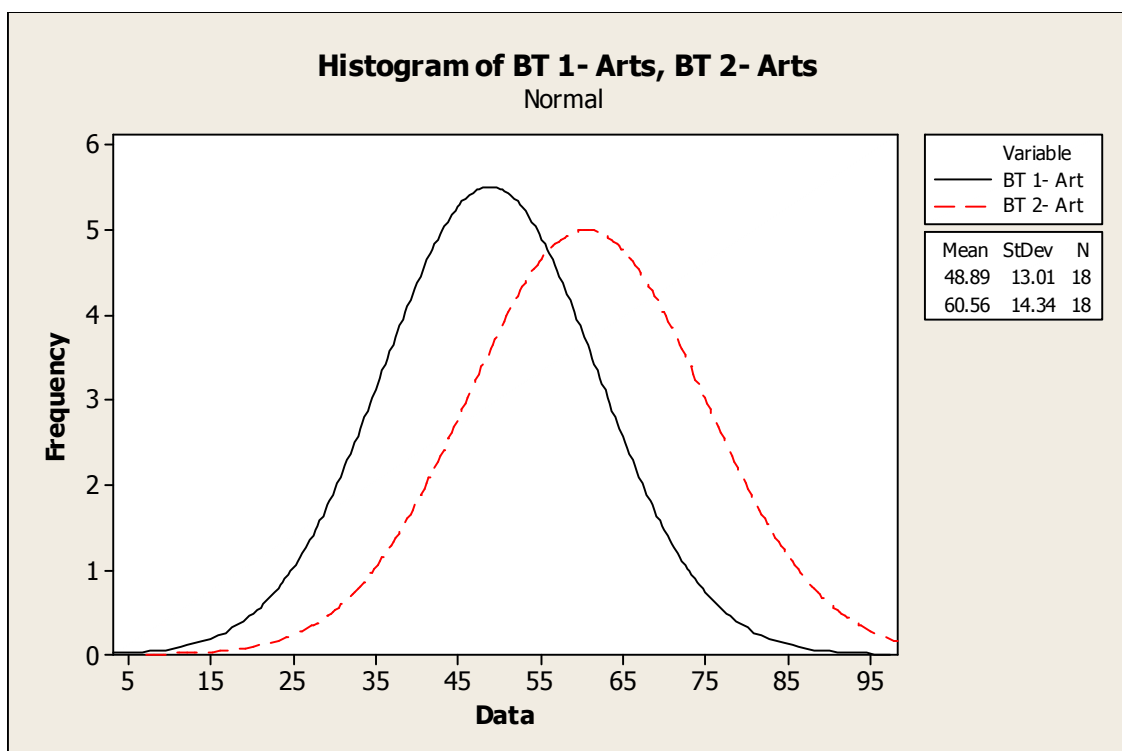


Figure 6

4. Comparison of performance between Science and non-science students

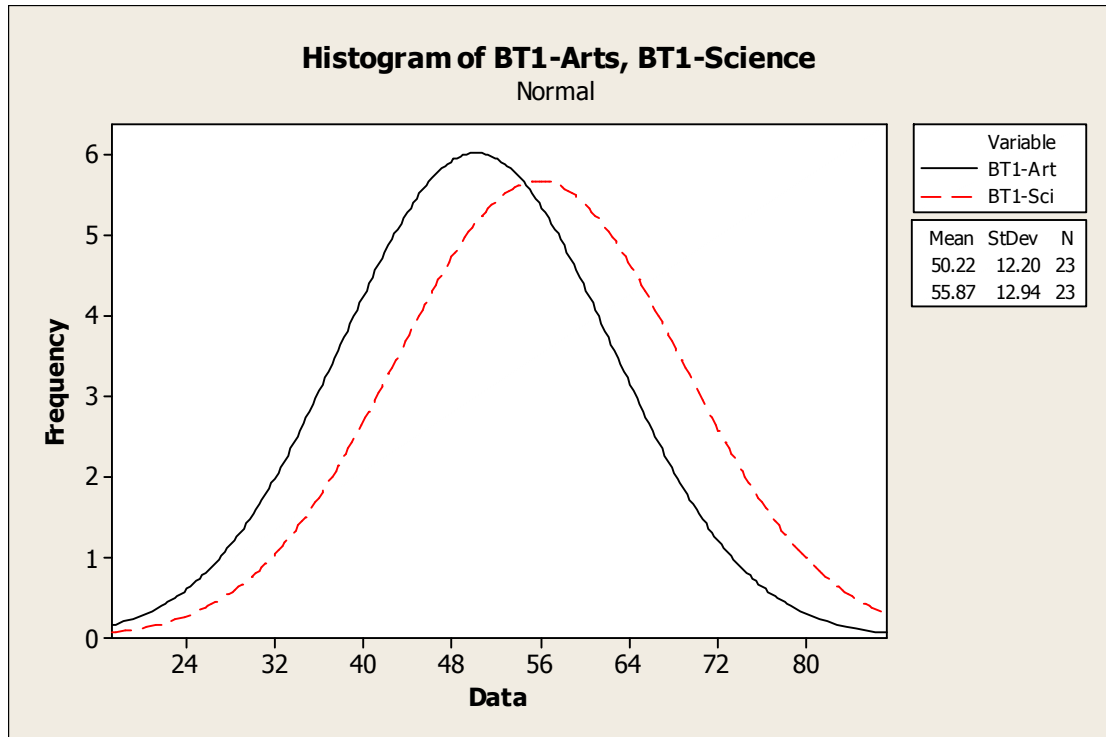


Figure 7

Figure 7 graphically summarizes the baseline test 1 marks of the two groups. Marks of the science category are shifted to right indicating an improvement but only in a small amount.

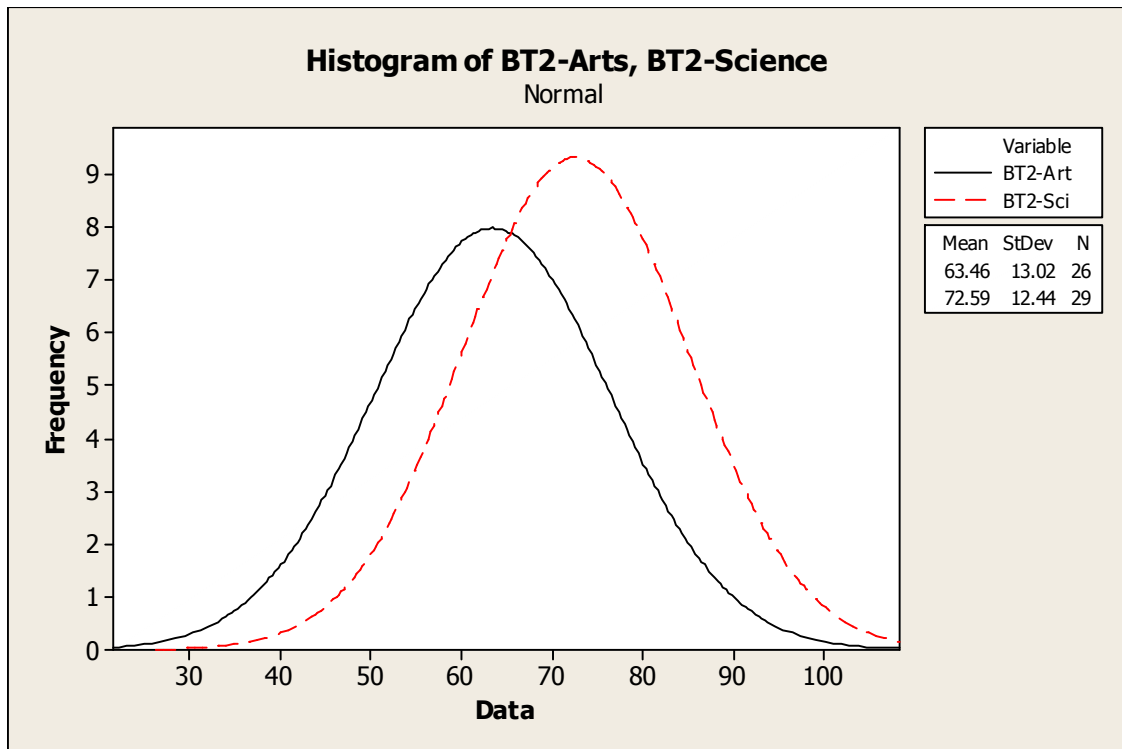


Figure 8

Figure 8 graphically summarizes the baseline test 2 marks of the two groups. Marks of the science category are shifted to right and its frequency is also higher and hence it indicates a better improvement.

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