The Effectiveness of Teaching Information Technology Using the Conventional Methodology and Task-Based Methodology for Medical Undergraduates

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Abstract

Medical education, practice, and research are increasingly dependent on Information Technology (IT). Hence, the Faculty of Medicine in Wayamba University of Sri Lanka offers a basic course of computer literacy during the orientation period to the new entrants before commencing the academic programmme. This orientation programme is called as Professional Transition Programme (PTP) and it includes 40 hours of IT spreading over 8 weeks where the students learn the basics of IT, which will be helpful for subsequent learning.

Student-centered teaching was recognized to be one of the best methods in teaching and learning process. There is growing evidence that IT teaching is more beneficial with student-centered learning than the conventional teacher-centered method. The main objective of this study was to assess these two methods. To achieve that, the traditional lecturing as the teacher-centered method, and task-based method as the student-centered teaching method were compared to detect the effectiveness of these two methods in teaching IT.

All the students of two consecutive batches of faculty of medicine in Wayamba University of Sri Lanka were included in the study as two cohorts. The teacher-centered teaching method was applied for the first batch of students, and the student-centered teaching method was applied for the second batch of students for teaching IT in their PTP. In the teacher-centered method, the students were taught as one large group in the IT laboratory and students followed the teacher for the theory and the practical sessions. In the student-centered method, initial introduction was given by the teacher and a task was given with proper guidance. The students were supposed to perform the group and individual tasks during the session and the immediate feedback was given by the teacher at the end of the task. Acquired knowledge by the students was assessed at the end of the course by administering a theory and practical based examination. Final marks of the students were used for the study after obtaining consent from the students and permission from the Faculty and analyzed using independent sample t test.

Index Number, Gender, z score and post PTP IT examination results of the consented students were extracted from the existing databases of the faculty. Out of the total sample (n=140), 71 students were in the first batch of students and 69 students were in the second batch of students. Majority of

the sample (66.9%) were female students. Based on the teaching method applied, student performance in student-centered approach produced significantly higher ($p<0.001$) mean score (mean=81.74, SD±13.46) than traditional approach (mean=65.6 SD±20.94). There was no significant relationship between gender ($p=0.977$) and z scores ($p=0.276$) with the performance in IT course.
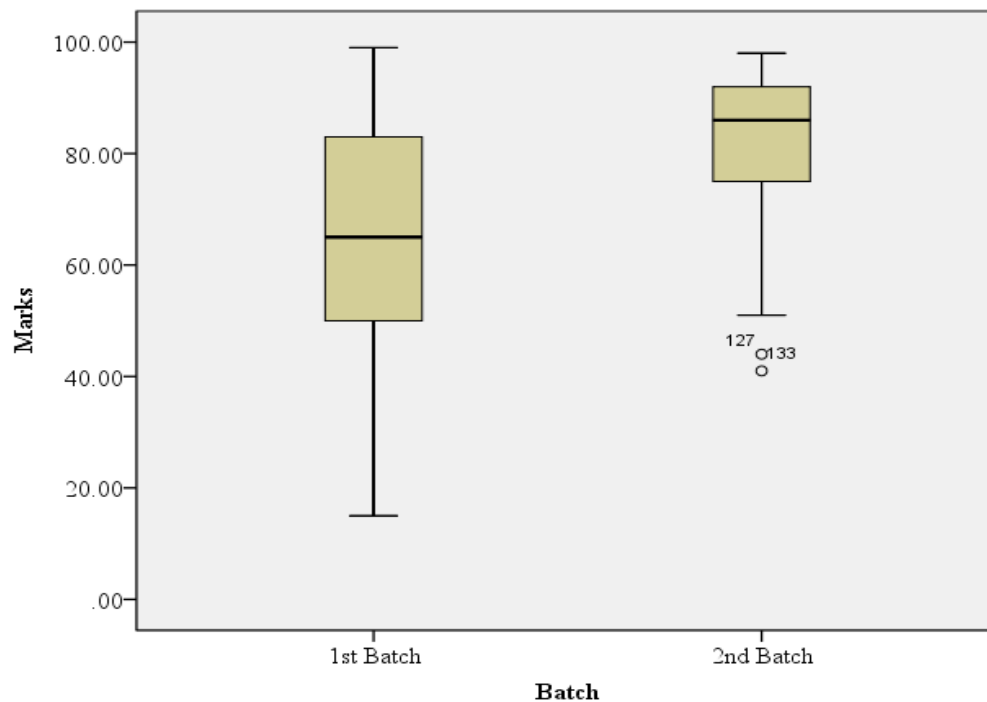
The study revealed that teaching IT is more effective with the student-centered teaching method than the teacher-centered teaching method for medical undergraduates. A research study conducted in Turkey also detected same finding that there is a noticeable difference in favor of student-centered approach than the teacher-centered approach. Although the International Computer and Information Literacy Study revealed that the gender difference slightly affects for the performance on computer literacy, this study revealed that the students' IT literacy can be improved despite their gender and z score.

Comparing the IT knowledge of two groups without evaluating their prior knowledge in IT was a limitation of this study. Hence, we assumed that their prior knowledge is in an equal level as their advanced level stream and average educational level is more or less equal to be selected as medical undergraduates. Standards of the both evaluation examinations were equal as they were designed to test same intended learning objectives to achieve same outcomes.

Keywords: student centered teaching; Information Technology; medical undergraduates; task-based teaching;