Technological Skills Between the Fresh-Man and Outgoing Students of the English Department of Hamdard University Bangladesh

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Abstract. This study investigates the students' cognitive approach in terms of learning technical equipment. During the novel Coronavirus in 2019, the education sector all over the world almost collapsed. The government had shut down all kinds of educational institutions. Therefore, online classes have become a substitute for physical classes. Both the educational institutions and the students faced different types of obstacles. All students of the English Department at Hamdard University Bangladesh had to do the classes online. Therefore, it has become a necessity to find out the technological skill development among students after attending classes online. The newly admitted students are very new to online classes. On the other side, senior students are supposed to be well-skilled in this area by the end of their studies. However, some of them are not able to improve. While investigating, the researcher compares the freshman students with the graduating class. To analyze students' development in technical skills, Bloom's six-stage model of development of the mind and its alternative model given by Ruben Poentedura have been analyzed. The responses from 80 fresh-men students and 24 outgoing students are compared in terms of their technological development.

Keywords: online · technology · cognitive

1 Introduction

The tertiary level students should be more competent in using technologies than the primary, secondary, and higher secondary level students in Bangladesh. It is a generalized assumption by the people of Bangladesh. However, there is a sheer difference in technological skills achieved by university students based in cities and villages. There are some others factors also in terms of age, gender, and financial capabilities. However, in this paper, the researchers have focused on the student's perspective in terms of developing technological skills. It is important to research this area because online classes have become inevitable after the massive spread of the novel Coronavirus. Therefore, students' cognitive ability in terms of acquiring computer skills is important to study.

The paper aims to investigate the level of First Semester students when they enroll themselves in the Department and their level of cognition after completing 8 semesters in the University. While doing so, the researchers will find out the loopholes in the teaching techniques, progresses among students, and analyze students' cognitive skills with positive and negative feedback from the students.

1.1 Central Research Questions

The following questions have been investigated in this paper:

- To what extent the fresh-men students have developed their technological skills at the end of the semester?
- To what extent the outgoing students have achieved proficiency in using technology?
- What are the reasons behind their success and failures?

2 Literature Review

Learning is a never-ending process. Though a person is highly educated, still, he will need some inner skill to glorify his or her successes. Thus, technological skill depends on people's comprehensive skills or cognitive skills. Technology is a kind of skill to adopt after going through rigorous training. However, it was not required until very recently. After the Coronavirus attack, every teacher and student started to educate themselves with technological skills and ideas.

Information and Communication Technology (ICT) is a subject that is taught to students from Class VIII to Class XII. Until Class X, studying ICT is mandatory; however, in Class XI and XII, this subject is optional or elective. As a result, it is expected that the students will have basic ICT knowledge. According to Rodrigues, Taylor, Cerdeira & Alves, students live in an era where technology is a way of getting developed, financially and technologically. They mentioned, "Being digitally competent is about being able to use such digital technology is a critical, collaborative, and creative way" [1]. To be able to technologically competent, cognitive skills can determine the level of students' understanding. Shetty said cognitive skills could assist in teaching-learning of the world [2].

The attitude of the students towards developing technological skills is supposed to be positive. Hussain and Akhter found out that in their home country Pakistan, the students are positive in learning the technological skills [3]. They said engineering students are in the lead in this case. Biswas, Roy, and Roy found out in their studies that Bangladeshi students are nowadays very tech-savvy but most of the time prefer to use their smartphones for surfing social networking sites e.g., Facebook, Zoom, Google, YouTube, and some other android apps [4]. Dutta and Smita found that although Bangladeshi students use smartphones for Facebook, they have yet to learn to use educational technology [5]. Razali, Talib, Monaf, and Hassan mentioned Unfried, Faber, Stanhope, and Wiebe; they found out students' attitudes towards science, engineering, and technology development when they are at the secondary school level [6]. However, they also discussed that cognitive skill is important to develop students' technological skills. According to Hoque, Mohamed, Salaeh, and Kadir, Malaysian university students have a positive approach to developing their technological skills [7].

2.1 Research Questions

The following questions have been investigated in this paper:

- To what extent, the fresh-men students have developed their technological skills at the end of the semester?
- To what extent, the outgoing students have achieved proficiency in using technology?
- What are the reasons behind their success and failures?

3 Methods

3.1 Pedagogical Setting and Participants

The title of the research is "Technological Skills between the Freshman and Outgoing Students of the English Department of Hamdard University Bangladesh". The study intends to investigate the cognitive technological skills of the students of the English Department at the beginning and at the end of the degree program. In another sense, it determines the technological skill development of the students. The researchers prepared a questionnaire and distributed it among the freshmen and outgoing students of the English Department of Hamdard University Bangladesh. The sampling is cluster sampling. It would have been better if the fresh-men students and final-semester students were the same. Then the research would have been time-consuming, and even the syllabus would not have been the same. Hence, the researchers chose four different groups for data collection.

3.2 Design of the Study

This research is mixed method research. The data has been collected from the English department students of Hamdard University Bangladesh through a questionnaire. There were 13 questions in the questionnaire. Among the questions, 12 questions are for fresh-men to fill up and 13 questions are for outgoing students to fill up. The questions consist of open and close-ended questions.

3.3 Data Collection and Analysis

The questionnaire was filled up by fresh-men and outgoing students. The data were collected in a formal setting. The researchers took permission from the course teachers of those semesters and collected the data with the help of the course teachers of those semesters. The questions of the questionnaire were both open and close-ended. After collecting the data from the clusters, the researchers compared the data and analyzed them to find the answer to the central research questions. When the researchers were analyzing the data, they had to keep in mind the financial condition and gender of the students because these also influence the data and results of the findings. Besides that, Bloom's taxonomy was used to make the readers understand the students' cognitive skills. Islam and Islam mentioned Bloom's taxonomy and Dr. Ruben Poentedura's in
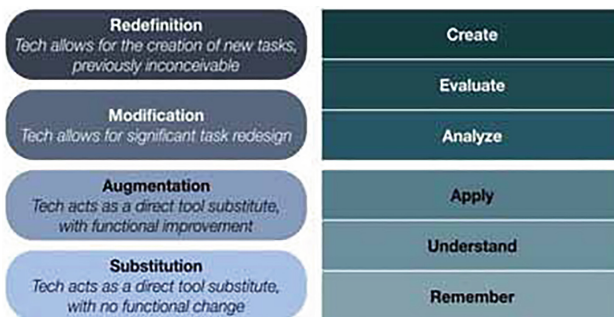
Fig. 1. Bloom's Taxonomy and SAMR Model [8]

their research and showed how Poentedura tried to use Bloom's taxonomy to show students' technological and cognitive skills during their teaching-learning [3] (Fig. 1).

According to the theories, the fresh-men students are in remember, understand, and apply the level of Bloom's taxonomy which is the substitution and augmentation level of SAMR Model. On the other hand, the 8th semester or outgoing students are supposed to be in analyze, evaluate, and create the level of Bloom's and modification and redefinition of SAMR model.

4   Data Analysis

4.1   Answer to the Central Research Question 1 "To What Extent, the Fresh-Men Students Have Developed Their Technological Skills at the End of the Semester?"

The fresh-men students were freshly enrolled in the English department. They have none or little skill in technology. During their high school studies, most of the female students just did rote learning and could not learn the operating processes of computers. Among 80 students of fresh-men, 39 students were female. Among them, 12 students, 30.77%, responded they do not have any technological knowledge from their college study. 51.28% of students, that is, 20 students, responded they have a few skills before enrolling at the tertiary level. Of the rest of the students, 17.95% said they have basic technology skills. After analyzing this, the researchers can state that 32 female students need to improve themselves technologically. However, from the next question of the questionnaire, the cognitive behaviour of these students was determined. On the other hand, among 28 male students, six students (14.63%) did not have any technological skills, 20 students (48.78%) had basic skills, and 15 students (36.59%) had a few skills technologically. Hence, the researchers can say that 21 students need to be improved at the end of the semester.

The cognitive technological skill of the 8th-semester students is positive. There were 12 male and 12 female students. Among 12 male students, one student (8.33%) still lack basic computer skill, three students (25%) have advanced level of technological skills, and eight students (66.67%) have attained an intermediate level of computer
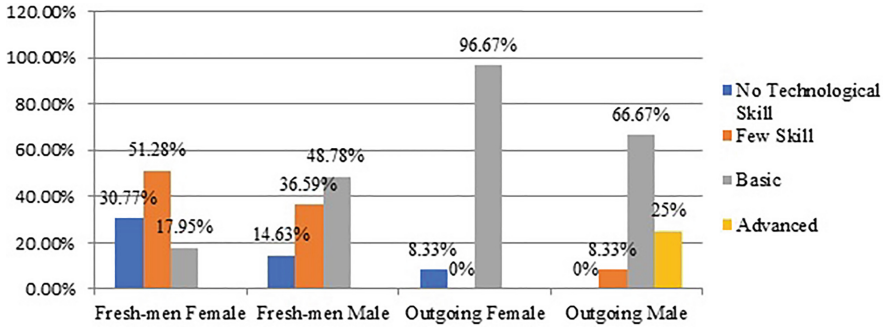
Fig. 2. Comparative Analysis of Technological Skills between Fresh-men and Outgoing Students

skills. Among female students, one student (8.33%) still lacks basic computer skills. The rest of the (91.67%) students have acquired technological skills. They know MS Office, internet browsing, photo editing, painting, etc. (Fig. 2).

However, the next few questions in the questionnaire revealed the nature of the students in learning technology.

4.2 Answer to the Central Research Question 2 "To What Extent the Outgoing Students Have Achieved Proficiency in Using Technology?"

In the first central research question, it is already investigated that the students have developed their level of technological skill. After analyzing the data, it was found out that after rigorous practice and presentation, the students were able to make computer-composed assignments, to design PowerPoint slides, to use Google Classroom, to attend classes using Google Meet, to collaborate online, and to use the internet at a higher level. Four male students have learned graphic design. These four students acquired proficient levels of computer skills. According to Bloom's taxonomy and Poentedura's SAMR model, these four students belong to the level of analyze, evaluate, and create. Though the rest of the 20 students belong to the same level but their creativity is limited, not at the same level of the four students.

4.3 Answer to the Question No. 3 "What are the Reasons Behind Their Success and Failures?"

The reasons behind the successful development of the students are as follows:

- The students regularly prepare power point slides to present their assignments.
- The students compose written assignments
- Besides regular academic work, some students need to do some extra-curricular activities.
- Students attend Google Classroom, Zoom webinars etc.

The reasons for some students' failures in their cognitive learning:

- Students who do not have laptops or computers at home, they take help from other friends to make ready their presentation and assignments. As a result, they do not get to improve their technological skills
- Those who are financially challenged, they cannot possess laptops/desktops. Somehow, they manage to buy smartphones and just attend Google Classrooms. They take help from their classmates for further academic performance. Hence, they lack technological skills.
- From the data collection, it is found that female students are reluctant to learn new technologies because they think it is not necessary to learn those. However, during their 4-year study times, these female students at least learn how to use MS Word, MS power point and internet browsing.

5 Discussion

After the data analysis, it can be said that fresh-men female students do not have any positive approach to learning technology as they are new to the system. However, at the end of their study, after 4 years, they learn how to operate technological tools for educational purposes. Contrarily, male students from both factions are willing to develop themselves technologically. They have positive attitudes toward learning technology. The findings in Pakistan, Malaysia, and other parts of Bangladesh, which are already mentioned in the literature review and the findings of the research, are essential. The findings hint that demography, culture, and economy are some of the factors in learning technology, but most important is the student's attitude toward learning technology.

6 Conclusion

In conclusion, it can be said that male students are more enthusiastic about learning computers compared to female students. Male students experience more in using regular technological equipment; on the other side, female students get lesser experience. Similarly, the fresh-men students have lesser experience but more opportunities to develop themselves technologically, and the outgoing students develop themselves at least to the level so that they can employ their expertise in the job field in the future.

The limitation of this study is that the data is compared between two separate groups. The result and findings would have been more effective if the data were collected from the same group of fresh-men and outgoing students. Then the results were more accurate. The researchers plan to collect data from the same fresh-men student after three and half years to delineate how much the students of the fresh-men have developed their technological skills after their 4-year study.

As recommendations, the researchers suggest that other researchers, scholars, and students may work in the same topic in a broader area by comparing students of different public and private universities.

Authors' Contributions. The Correspondent author discussed the problems of the paper with the second author before starting the research. The first author collected the data from the outgoing students, and the second author collected the data from the fresh-men students. Both authors actively prepared the data analyses.

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