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Research Article

Investigating the Impact of Technology Involvement in Education from Student's Perspective

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Abstract: Technology is a great blessing from God as it makes life easier. It has various facets of life and has a strong impact on living organisms. Modern technologies have a strong impact on our education system. In our study, we investigated the impact of modern technologies in our academic era. A questionnaire was designed and gathered data from both male and female students in the education department of NUML University. There are more than 90 % of students who are interested to use technology to excel in their careers in academia. Students are highly interested to solve complex problems by using search engines including Google and YouTube. Based on our research, there are more than 90 % of students agreed that information technology (IT) helped them to solve problems and improve their grades and skills. Similarly, more than 80 % of students are well aware of the ethical use of online tools and information by providing the proper references to the source to avoid academic misconduct.

1. INTRODUCTION

Technologies play a vital role in education for instant learning. The modern era is surrounded by with full of technologies for education, research and entertainment. Various kinds of techniques and algorithms are designed to improve the skills for education in an individual. With the help of technology, knowledge is disseminated and communicated more quickly. Various tools are designed that engaged the students and help them to learn during the class as a class activity and practical demonstrations. Technology has a strong contribution towards education development and involvement for students at the university level [1].

The impact of modern technologies is assessed through quick feedback from the students, teachers, administrations and parents. The students are more attracted and fascinated towards the technologies like the visual representation of facts and practical demonstrations of knowledge through online sources [2]. Different kinds of techniques (brainstorming) and visuals are used to involve the students and make their participation possible in the class. The education technology program provided computer access for both students and teachers and this technology was considered an apple classroom for tomorrow (ACOT) and the objective of ACOT was to promote the education context and the practicality of the theoretical concepts [3].

In addition, by applying abstract ideas to real-world situations, technology helps students to understand complex concepts. Through the use of online tools, self-learning and the competence level of the students are enhanced [4]. Technology also plays a significant role in teachers making their lectures and providing various sources to students for the same information to validate

their arguments. There are also some techniques and algorithms developed which create automatic groups of students based on their performance as low, average and high. These groups increase the students' performance as knowledge and technical difficulties are communicated within the group and the low-performance students improve their learning with the help of these groups [5].

Collaborating learning is a significant technique in education as it also contributes to internal personal skills which is the prime requirement of the modern era. Collaborating learning improves the ability of critical thinking, and cognitive skills and provides help to solve complex problems analysis [6]. Group formation (which determines the high quality of group work) is the basic element to assess the quality of collaborative learning [7].

The purpose of this study is to 1) find the students' perceptions of technology involved in academia, and 2) describe the current use of general technologies and assistive technology in academia including students (those with documented learning disabilities). The objective of the study is to understand the need and importance of technology involved in education learning. By the use of modern technologies, we can motivate, encourage and involve the students in learning and use these technologies for the betterment of their upcoming careers.

2. METHODOLOGY

2.1 Research Design

In our research, we conducted a quantitative research design to evaluate the student's interest towards modern technologies for self-learning and personal development. A questionnaire was designed that contained various questions as shown in Table 1 regarding the online tools, ethical use of information, basic tools for education and IT infrastructures of the university. With the help of questionnaires, we collected the data from a selected population and analyzed the results based on these data as shown below in Figure 1.

2.2 Population

The study was conducted at the National University of Modern Languages (NUML), Islamabad and our targeted population was the students of M.A Education in the final semester. We selected 62 students from the final semester (both morning and evening). There were both male and female
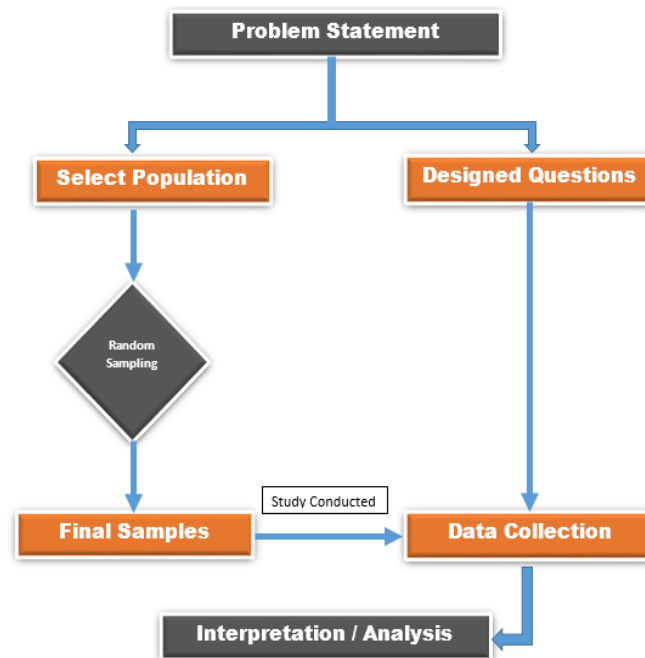

Fig. 1. Research Framework

students in our selected population with a specific proportion.

2.3 Sampling Technique

As our audience came from the same background and possessed similar kinds of technical skills and knowledge, the selection of any sample could contribute similarly. We used a simple random sampling technique to select the samples from the populations. As in random sampling, there remained an equal probability for all the samples being selected from the target population.

2.4 Sample Size

By using a random sampling technique, we selected 50 participants (male and female) from the target population. We informed the selected participants about the purpose of the study and then data was collected from the final selected samples.

2.5 Data Collection Instrument

We used questionnaires as tools for data collection purposes. We designed 15 questions apart from the participant's personal information. The 15 questions were based on various studies and tried to cover the very aspect of technologies impact on academia. As each question carried four options as either participant may strongly agree, agree, disagree or strongly disagree against each question as given in Table 1.

The data were collected in a controlled environment as we did not use any online tool for data collection like Google Forms. The designed questionnaire was provided to the selected students after random sampling techniques and collected the data. As the questions were designed based on some previous research and some questions were designed by keeping the view of the current situation of covid-19 as shown in Table 1. The questions are categorized based on training needs, ethical use, online tools, basic introductory courses and IT facilitations provided by the university as shown in Figure 3 and replicated in Table 1.

During Covid-19, both students and faculty faced a lot of problems while tackling the online tools and applications. There were a lot of technical difficulties to handle the students and made their involvement in class during online teaching.

3. RESULTS AND DISCUSSION

EThe experiment was performed and we collected the data from the participants and analyzed it to check the specific impact of modern technology on education. There were more than 60 % of students strongly agreed and 30 % of students agreed that technology helped them to solve complex problems and secure good grades. There were also 46 % and 42 % of students strongly agreed and agreed respectively that the online available resources helped them to solve and manage their work efficiently. 42 % of participants strongly Agreed and 40 % of students agreed with the use of basic IT tools like MS office (word, PowerPoint, excel).

As the legal aspects were concerned there were 60 % and 20 % of students strongly agreed and agreed that the ethical use and plagiarism issues of online resources to avoid academic misconduct. Participants were highly interested in basic computer training to excel in their academic careers. Based on our survey students were satisfied with the internet speed and fair IT infrastructure provided by the university. After performing the experiments and gathering data through questionnaires, it became the need to indulge the basic computer-based technology in our education system. As most students strongly agreed that modern technologies helped them to analyze, understand and solve complex problems. There were only a few students who disagreed that there was no impact of modern technologies on education.

As most of the participants agreed that grades were improved by using modern technologies. Participants agreed that modern technologies helped them out with subject understanding and task completion. No participant strongly disagreed that modern tools or applications did not contribute to learning purpose as shown in Figure 2.

As the survey was conducted and most of the participants agreed with fair internet speed at the university level. According to the survey, there were enough tools for educational learning in the targeted university i.e. NUML. There were a large number of students who strongly agreed that there must be

Table 1. Designed Questionnaires

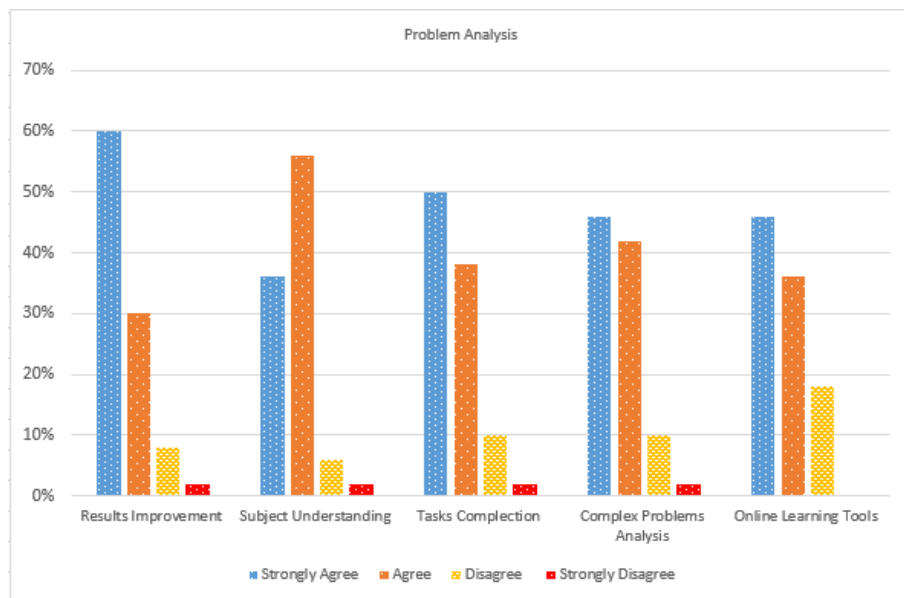| Question Statements	Question Responses			
Technology helps me to get better results in my subjects.	Strongly Agree	Agree	Disagree	Strongly Disagree
Technology helps me to understand the subject's material more deeply.	Strongly Agree	Agree	Disagree	Strongly Disagree
Technology provides help to complete my assignments more conveniently.	Strongly Agree	Agree	Disagree	Strongly Disagree
Integrating the technologies in education increase the student's involvement in class.	Strongly Agree	Agree	Disagree	Strongly Disagree
There are many online tools to solve the complex problems more easily.	Strongly Agree	Agree	Disagree	Strongly Disagree
I am very familiar with some e-learning tools and applications.	Strongly Agree	Agree	Disagree	Strongly Disagree
I am familiar with basic education tools like MS Office (Word, PowerPoint, excel).	Strongly Agree	Agree	Disagree	Strongly Disagree
I am comfortable to search the relevant information from the internet.	Strongly Agree	Agree	Disagree	Strongly Disagree
I encourage the use of technology to complete class tasks / activities	Strongly Agree	Agree	Disagree	Strongly Disagree
There is a need to integrate the basic computer course in education department.	Strongly Agree	Agree	Disagree	Strongly Disagree
There must be some IT related training to learn the basic academic technologies.	Strongly Agree	Agree	Disagree	Strongly Disagree
The university provides enough IT infrastructure in our education department	Strongly Agree	Agree	Disagree	Strongly Disagree
There is a fair internet speed provided by university for all students.	Strongly Agree	Agree	Disagree	Strongly Disagree
I am aware with the copyright laws to use the resources from the internet.	Strongly Agree	Agree	Disagree	Strongly Disagree
There is need of reference to use the other work to avoid the academic misconduct.	Strongly Agree	Agree	Disagree	Strongly Disagree

Fig. 2. Complex Problems and Technology Support

some IT-related training or integration of some IT course with the curriculum for career grooming as shown in Figure 3. There were very few participants showed resistance to the involvement of technology at the university level.

Most of the students strongly agreed that modern technologies helped them to analyze, understand and solve complex problems. There were only a few students who disagreed that there was no impact of modern technologies in the academic era.

Based on our experiments, we explored the overall acceptance and rejection ratio of technology involved in the education department. As we used the accumulated results of (strongly agree + agree) and (Strongly Disagree + Disagree) as shown in Figure 4. As there were more than 90 % of participants agreed that modern tools and technologies helped them to understand the subjects. Almost 90 % of participants strongly encouraged the technology to improve their academic results as shown in Figure 4.

By using the technology in education can increase the academic achievement both for students and educators. The technology based learning incorporated, analyzed and solved real-world complex problems both for students and educators [8]. There were a lot of online resources which provided help to understand subjects. The technology-based learning incorporates, analyses and solves real-world complex problems both for students and educators. [9]. There were a lot of academic resources including internet sources, WebCT, and YouTube which provided help to understand situations, and complex concepts and apply abstract ideas to the real world at the bachelor level [10].

All kinds of Technologies are fully integrated to daily life from cell phones with fingerprint scanners to cars with integrated GPS navigation. Modern technologies internet, chat boat and other online platforms were widely used in communication and information sharing [11]. The rapid growth of information and communication technology (ICT) including laptops, mobile, computers, and television completely changed the education era [12]. Students benefited by using online and offline

technologies to solve their academic problems. With the help of software applications, students can easily access their records from remote areas as well.

According to the modern school day, students preferred to use technology and knew the impact of these technologies in their life. Augmented reality (AR) contributed well to education and helped to increase critical thinking, decision making and personal development [13]. Augmented reality applications were used to teach various subjects in higher education systems with visual impacts and had a strong positive influence on education [14]. There was another research conducted about the global universities partnerships and interaction was made about the technology transitions paradigm in education. The research emphasized the associations between education, technologies and continuous improvement in education by involving the technologies in education [15].

Another research was conducted which identified the number of software which have visual effects that attracted the students to the classroom for their participation [16]. There were some animations which were mapped on the learning modules and pedagogical community response to the information challenges. The model was developed with the name of the author's children's animations, which helped the preschool-age students thinking ability and modern information society [17]. There was also existed an innovative conceptual framework approach called the Students Career Assistance System (SCAS) which described the state-of-the-art education system. The smart education system was based on content analysis and evolved rapidly through the range of various technology applications [18].

There was a study conducted which depicted that students who used mobile phones more frequently performed better as compared to those students who avoided using phones [19]. It also depicted that communication through mobile phone among students which were primarily not for the class content but also contribute to students teaching [20]. There was a study, which correlated the methodological value and the importance of modern technologies in edutainment. The objective of this study was the determination
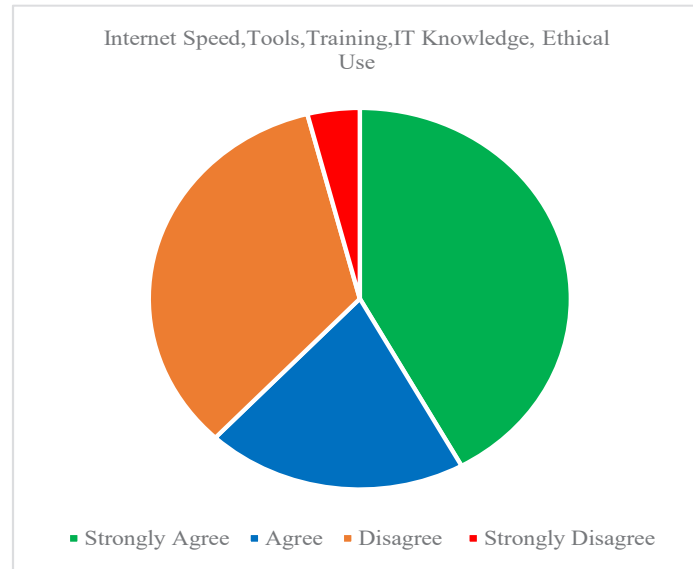
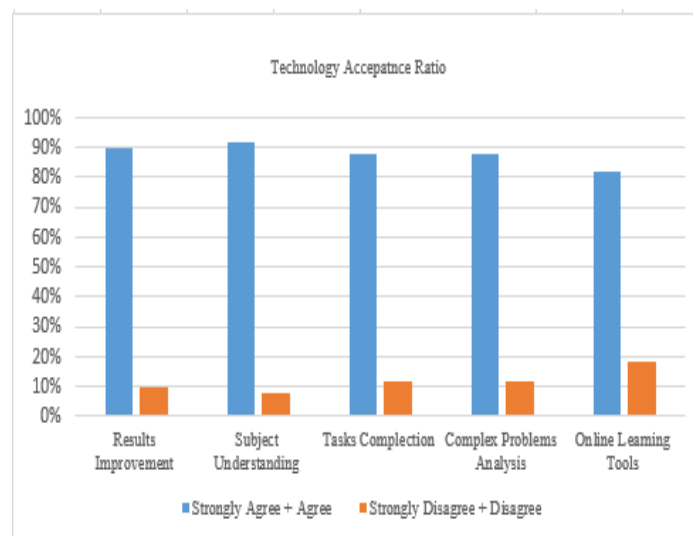**Fig. 3.** Technology and Student Involvement

Fig. 4. Technology Acceptance Ratio

of methodological technology edutainment. As information volume grew rapidly became obsolete as time progressed and it became difficult to acquire useful knowledge. Rapidly developing technologies facilitate new leisure activities, and the time for obtaining information becomes smaller [21].

Based on the above results we determined the importance of technology in academia for the current era. Most of the students showed their interest towards technology involvement in education to excel in their careers. The students were happy with the IT infrastructure provided university and highly interested in IT-relevant training or integrating the IT course with the curriculum. Most of the students

knew the basic ethical use of online information and the consequence of misuse of information as education misconduct.

4. CONCLUSION

Current technologies play a vital role in daily life and academic development. In our study, we investigated the impact of academic technologies on students' development and learning. We conducted a survey at NUML University with students from the education department. A questionnaire was designed and collected the data from a population of 62 students. The collected data were analyzed to find the students' concerns towards the technology

involved in academia. The results have shown that the students were highly interested in the technology involved in education to learn and grow their future careers. As more than 90 % of students either strongly agreed or agreed that online resources helped them to understand their subjects and improve their academic results. Similarly, more than 85 % of students agreed that current tools and technologies helped them to complete their home tasks and solve their complex problems with proper analysis.

5. RECOMMENDATIONS

Based on our research, there is a need for computer-related training for those students having no technical skills and abilities in IT to use the tools and technologies more appropriately. Based on students there must be an introductory course on computers in non-computing departments including the education department.

6. CONFLICT OF INTEREST

The authors declare no conflict of interest.

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