

# Research On The Effects Of Integrating Information And Communication Technology (Ict) Into English Teaching In Technical And Vocational Colleges

<sup>1</sup>Cao Li , <sup>2</sup>Marlissa Omar , <sup>3</sup>Mohamad Sattar Rasul

<sup>1</sup>Faculty of Education, Universiti Kebangsaan Malaysia, Malaysia.

<sup>2</sup>Faculty of Education, Universiti Kebangsaan Malaysia, Malaysia.

<sup>3</sup>Centre of STEM Enculturation, Faculty of Education, Universiti Kebangsaan Malaysia, Malaysia

*Corresponding Author: Mohamad Sattar Rasul*

## Abstract

The field of education and the teaching of languages, in particular, have evolved considerably throughout the years. The twentieth century witnessed significant advancements and developments in language instruction that made it more creative, enthusiastic, and collaborative. Numerous studies have shown that integrating information and communication technology (ICT) into English instruction may improve motivation and engagement, energize the learning environment, and increase the effectiveness of language learning and teaching. **Issue:** There are still certain issues with the use of ICT tools because of the uniqueness of teaching English. **Objective:** This empirical research explores the impact of incorporating ICT into English instruction in technical and vocational colleges and the specific elements of English instructors before forming a better teaching model. **Research design:** This research utilized a quasi-experimental design to examine how ICT has an impact on universities. **Data collection:** English instructors at technical and vocational institutes in Shandong province were surveyed to gather data. **Sampling:** To gather qualitative data, purposeful sampling was employed. **Data Analysis:** The statistical procedures of ANOVA and Chi-square were used to evaluate the data analysis. **Outcome:** The results demonstrate that ICT improves language acquisition and may be a useful teaching and learning tool. The author expects that the results of the present research will influence instructors to include ICT in their lessons in both high schools and universities.

**Keywords:** information and communication technology, English teaching, quasi-experimental design, purposeful sampling, ANOVA, and Chi-square.

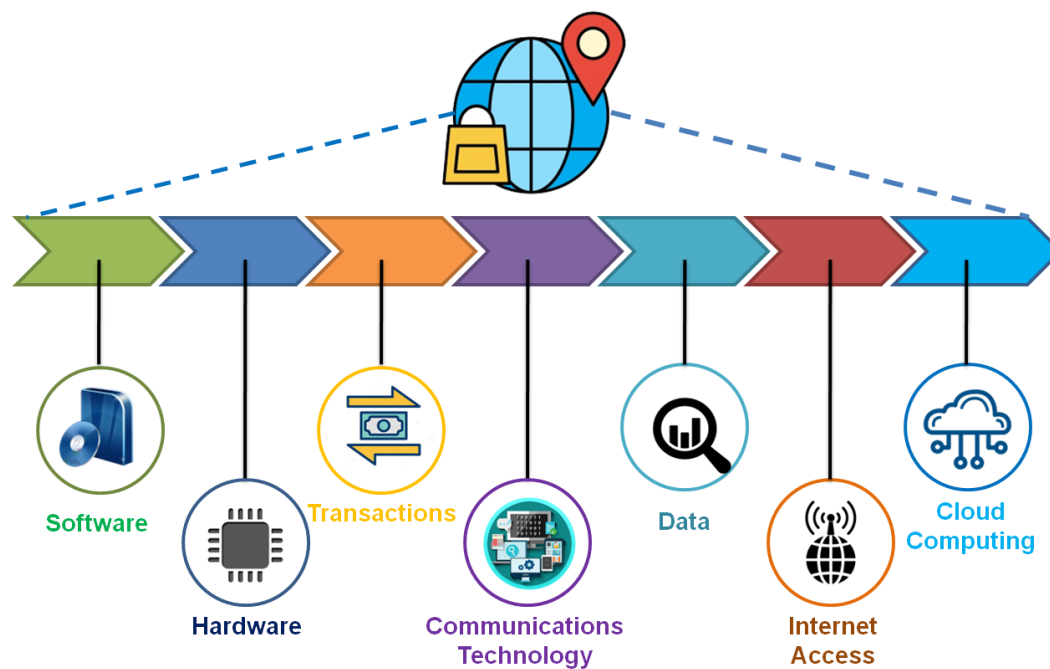
## I. INTRODUCTION

ICT is advancing quickly, and during the last ten years, vocational colleges have increasingly incorporated numerous types of technology. This advancement in science and technology may have influenced all parts of life, including educational practices. One strategy for enhancing a person's talents is to use ICT in the context of teaching.

Although its initial purpose was to support the teacher and the textbook, its effectiveness was ultimately dependent on the teacher's perception of its value in the classroom. Today, it is impossible to avoid using ICT in technical colleges for educational purposes. This is because societies need individuals who can adapt to the changes, difficulties, and technological advancements of the day (Qaddumi

et al. (2021)). ICT integration is the use of technology by instructors to make the learning process more interesting while maintaining the integrity of the course materials. Using technology to finish, complete, and help the teaching-learning method is known as technology integration. Due to its benefits for instructors and to assist students' learning development, technology has become a crucial instrument in the instruction and understanding of English in the framework of EFL classes. It led to the development of language skills in students and

expertise and self-efficacy in instructors. While incorporating technology into the instructional process, the classroom will become more engaging and interesting, and students will be accountable for their success, leading to significant learning. Additionally, this technology allows students the opportunity to study English independently, which is beneficial for their growth in the language (Maru et al. (2021)). The representation of the ICT architecture can be seen in figure 1.



**Figure 1: ICT Architecture**

Modern ICT provides numerous benefits when used in the education process, but as a new analysis has shown, its integration into the education process is quite sluggish and difficult. ICT's quick growth has led to several changes in the world and, as a result, in the way that education is delivered. Incorporating ICT into the instructional process changes traditional instruction into innovative instruction that is prepared to fulfill the expectations and requirements of an emerging beginner to enhance the educational experience positive academic

encouragement, utilization of various learning materials, advancement of functional capacity in educators, as well as the final aim is to enhance educational objectives (Cao et al (2022)). One of the main methods for teaching and studying L2 is widely regarded to be the ICT-based instruction approach. This is because it gives classroom contexts—which are similar to those seen in virtual settings a vibrancy they don't already have. In actuality, scholars have not thought of information and communications technology as a single technology but as a mix of software,

hardware, delivery systems, and multimedia technologies. ICT encompasses a wide range of rapidly developing technologies in today's education systems, including “notebook, handheld, and desktop computers, the Internet, digital cameras, the World Wide Web (WWW), cloud computing, tutorials, spreadsheets, emails, simulations, Bluetooth, local area network (LAN), digital versatile discs (DVDs), and streaming”, along with applications like “virtual environments, word processors, digital libraries, simulators, emulators, video-conferencing”, and more (Fannakhosrow et al. (2022)). It is anticipated that informationized education would compensate for conventional teaching's shortcomings by offering the benefits of innovation, integration, and variety. The advancement of information technology is influencing the creative reform of college English instruction as we ride the wave of the artificial intelligence age. In addition to modernizing, diversifying, and facilitating teaching techniques, the use of contemporary information technology in college English instruction has also altered the ideas, materials, and methods of instruction. English instruction information reform is impending since it is a topic that is highly significant in the curricula of Chinese institutions Huang ((2022)). This study investigates the effects of integrating ICT into English training in technical and vocational institutions, as well as the distinctive qualities of English teachers, to develop a more effective teaching methodology. To ascertain how the impacts of English instruction in technical and vocational institutions relate to the incorporation of ICT instruments.

#### **Contribution of this article:**

- ICT has significantly aided in progress and prosperity, greatly contributing to higher standards of living while also increasing production and employment.

The usage of ICT broadens the scope of teaching.

- It offers high-quality educational resources and fosters independent study. For a bright future, kids need to have communication abilities in English in addition to academic brilliance.
- The use of technology tools must simplify curriculums.

This article's remainder is organized as follows: In Section 2, the literature review is shown. Section 3 follows with a presentation of the approach utilized to combine information and communication technologies. The performance analysis is shown in Section 4, and the conclusions along with certain gaps in the studies and future research directions are presented in Section 5.

## **II. LITERATURE SURVEY**

The amount of preparedness and desire of English instructors to utilize ICT in the classroom (Husnawati (2022)). As ICT usage needs to increase, English instructors adapt. The difficulties educators have while using ICT in the classroom this research was designed using a descriptive qualitative method. Teachers who participate encounter a variety of difficulties, such as a lack of inventiveness on their side, uncertainty about the efficacy of e-learning, loss of learning time, and similar issues. A model created by (Harmandolu Baz and Cephe (2022)) is put to the test to find out what role computer self-efficacy, computer anxiety, constructivist teaching beliefs, and computer attitude play in predicting the behavioral intention of English student teachers to use ICT in their future classes. At a university in Qatar, (Kim (2022)) identified teachers' perspectives on potential obstacles and problems they face while integrating ICTs and multimedia into their teaching. The question this research seeks to answer is whether or not English as a second language (ESL) instructors

face obstacles and difficulties when using ICTs and multimedia in language instruction. According to (Ndebele (2022)), the dynamics of the relationship among macro and micro level language management, as well as various sociolinguistic and socio-cultural elements, have an impact on the eventual success of language management objectives related to ICT localization. The growth and intellectualization of these languages have been hampered by the educational system's predominance of former colonial languages for the transfer of knowledge. To research the planned ICT for Education 4.0, (Oliveira (2022)) carried out a systematic mapping study. Data were gathered from 81 articles using a search across four search engines. Another hazard that occurs often in research is data extraction bias, which was reduced by outlining all potential responses in the procedure before the extraction. Asratyan et al. (2022) discussed the methodological concerns with using ICT in language instruction and reported on their practical experience using information resources in teaching English at Naberezhnye Chelny State Pedagogical University. Paudel (2021) planned to study the functions and use of ICT in Nepali English as Foreign Language (EFL) classrooms. An explanatory sequential mixed research design was chosen as the best strategy to achieve the aim. As a result of this investigation, Abkarin (2021) demonstrated that there were certain points. First, 10 English instructors were knowledgeable about the use of ICT in the classroom. They understood that the availability of ICT may help them advance their professional abilities. The issue with utilizing ICT those instructors discovered, as well as encouraging elements, obstructive factors, and a need for using ICT. ICT usage in instructional activities, according to (Qurbonovna (2021)), helps students reach meta-subject learning outcomes. Although the value of education is

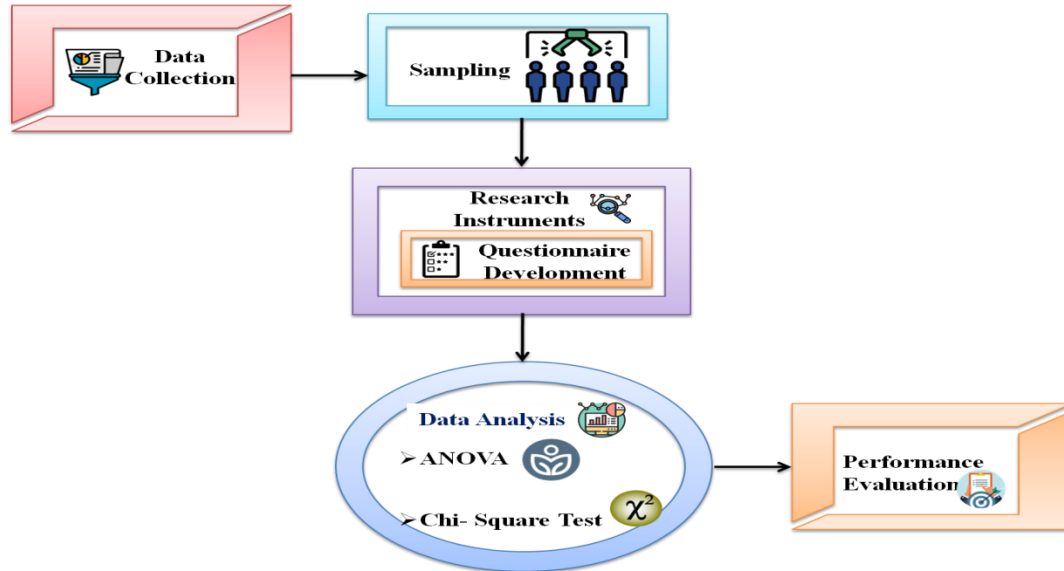
rising, there are new demands on both the educational system and the students. According to Ifeakor (2021), there is no proof to back up the assertion that kids learn more efficiently in a classroom setting than they do online. Academic performance is independent of the media; therefore students may excel utilizing any or both teaching and learning modalities. ICT-based English language education may replace conventional classroom instruction, and institutions that did not previously incorporate ICT into teaching and learning are increasingly doing so.

### **Problem statement**

There are still significant deficiencies in the implementation of ICT technologies due to the unique characteristics of English language instruction. This empirical research studies the English instructors in-depth and then develop a model for enhanced instruction based on what was discovered. It has expensive ICT systems to purchase, install, run, maintain, and replace, additionally, there are out-of-date equipment and software systems, an inadequate level of technical support for computer upkeep, and more.

### **III. PROPOSED WORK**

With the help of ICT, educators may take advantage of learning materials and refresh traditional teaching strategies, encouraging individuals to cooperate more efficiently as they get a deeper understanding of technical concepts. Information and communication technologies also greatly aid in the development of perception. ICT aids educators in spotting a unique student in a classroom. ICT aids instructors in inspiring pupils and fostering a love of learning. The suggested technique's working mechanism is shown in Figure 2.



**Figure 2: The working mechanism of the suggested work**

### A. Data collection

This research gathered data from 62 undergraduate English majors from a university in Jinan City, Shandong Province, eastern China, to examine the link between academic achievement and motivational beliefs in English courses under such a corpus-data-driven blended teaching technique. These 62 students were separated into two parts based on how often they used information and communication technology for learning English, and they received three English classes per week for 15 weeks a year from identical instructors utilizing a corpus-data-driven blended teaching technique (Yu and Shen (2022)).

### B. Sampling

To undertake the examination of the link between English academic achievement and learning enthusiasm underneath the fundamental corpus-data-driven integrated education paradigm, this study chooses 62 undergraduate English majors from a university in Jinan City, Shandong Province, eastern China. Before the research, data analytics and evaluation on the prevalence of online instruction and learning for trainees have

been conducted to minimize the impact of interaction effects.

These 62 individuals were categorized into two parts: the practice team, which consisted of random students in total, of 14 males and 17 females was made up of those with a prior network service teaching process and a significant number of online educations. The study group consisted of 31 students in all, 15 men and 16 women, and comprised of students with little or no expertise in studying online and those who used fewer times.

### C. Research instruments

The questionnaire was created after reading up on the adoption of integrating English with ICT, its advantages, and its drawbacks. Two types of questionnaires are included in the study: closed queries that were created to answer the first research topic and open-ended queries for the next. The open-ended queries investigate the elements that have helped and prevented students from performing well in the hybrid way of education, while the closed-ended questions employ multiple rating scales to address the

concerns surrounding teaching the English course with ICT.

**D. Data Analysis**

The process of examining, purifying, manipulating, and modeling data to collect relevant information, enable inferences, and effective care. Data analysis is employed in several industries such as business, research, and political theory, and has many dimensions and methodologies. Data analysis is the procedure of gathering, compiling, and analyzing quantitative data to render it valuable to a variety of enterprises and organizations. An individual who examines statistics employing data analysis tools is known as a data analyst. They derive significant findings from the unprocessed data. It employs a variety of strategies and terminology. Data analysis enhances learning in the education field and aids in more empirical decision-making. In this research, the data analytics method is ANOVA and Chi-square test.

**a) Analysis of variance (ANOVA)**

To investigate how several characteristics vary from one another, the quantitative technique known as analysis of variance (ANOVA) is often utilized. The observed deviations in a given component are divided into aspects due to distinct causes of variation by the principle of the overall variance of the data, on which the ANOVA is based. ANOVA provides a data analytical test to assess if two or even more sampling values are equivalent, generalizing the F-test across two alternative methodologies. Equation (1) is employed to calculate the F-test to analyze student performance.

$$F = \frac{ASB}{ASW} \tag{1}$$

ASB represents the average sum of the square between the groups

Here,

$$ASB = \frac{TSB}{tl_p} \tag{2}$$

$$tl_p = m - 1 \tag{3}$$

TSB means the total square between the groups

$$TSB = \sum_{i=1}^r (\bar{Y}_i - \bar{Y})^2 \tag{4}$$

ASW in equation (1) represents the average sum of the square within the groups

Here

$$ASW = \frac{TSW}{tl_u} \tag{5}$$

$$tl_u = l - 1 \tag{6}$$

TSW means the total of the square within the groups

$$TSW = \sum_{i=1}^r \sum_{j=1}^l (Y - \bar{Y}_i)^2 \tag{7}$$

Equations (2) to (7) are the parameters of the F-test of ANOVA which is computed through study groups and further calculate F-test with the help of all these parameter values.

**b) Chi-square test**

A chi-squared test is a relevant statistical test to perform if the testing is chi-squared distribution within its null hypothesis. Chi-squared analyses are used when the distributions of the test statistic approximate the possibilities; that is, as the number of observations increases, the testing statistic's sampling distribution resembles a chi-squared distribution to a greater extent. One of the fundamentals of contemporary statistical analysis is the chi-square test.

$$\sum_{k=1}^m n_k = 1 \tag{8}$$

$$\sum_{k=1}^m C_k = N \sum_{k=1}^m n_k = N = \sum_{k=1}^m Z_k \tag{9}$$

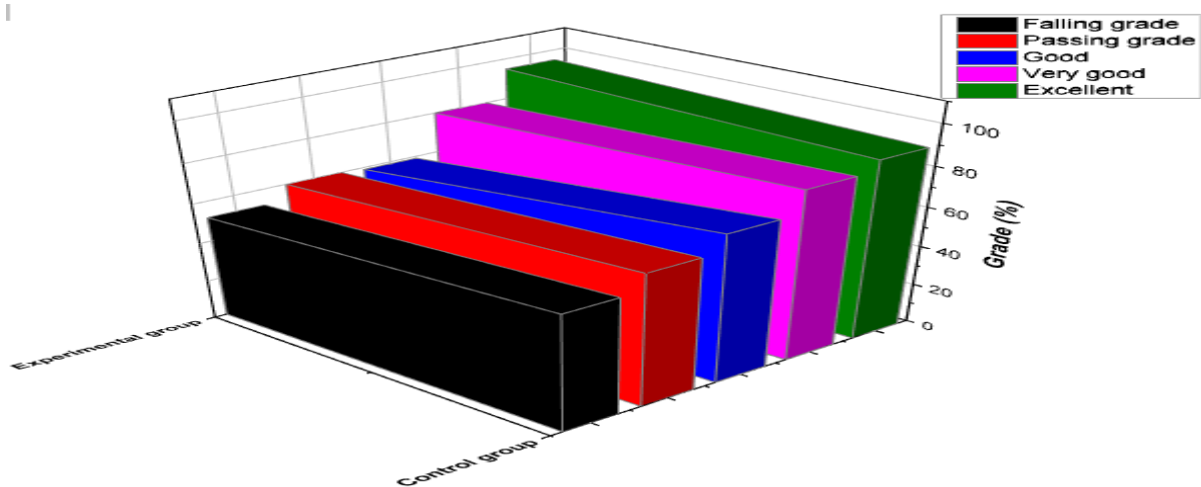
$$\chi^2 = \sum_{k=1}^m \frac{(Z_k - C_k)^2}{C_k} = \sum_{k=1}^m \frac{Z_k^2}{C_k} - N \tag{10}$$

$$\chi^2 - \chi^2 = \sum_{k=1}^m \frac{Z_k^2}{C_k} - \sum_{k=1}^m \frac{Z_k^2}{C_k} \quad (11)$$

A null hypothesis states that the probability  $P_i$  that an observation belongs to the  $k^{th}$  class is given by the classification of observations in a randomized sample of a population into  $m$  mutually exclusive categories with the corresponding observed values  $Z_k$  (for  $k = 1, 2, \dots, m$ ). As a result, we get the predicted values  $C_k = Nn_k$  for every  $k$ . Equation (8) is utilized to evaluate chi-square for the predicted values  $n$ . It is also written as equation (9). Equations (10) and (11) were employed to calculate the chi-square value for the  $m$  population with the predicted value.

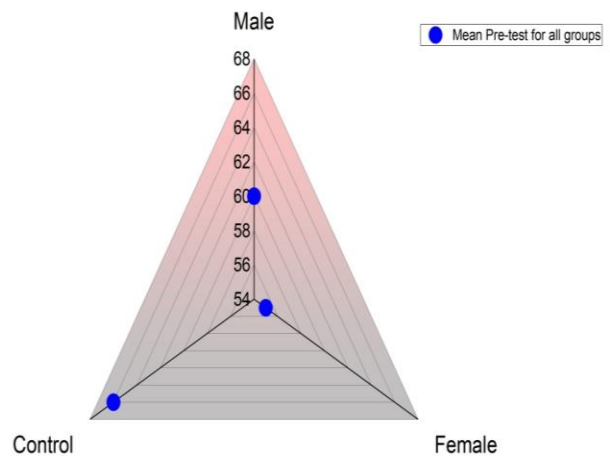
#### IV. PERFORMANCE ANALYSIS

Technology has become an integral part of education in the twenty-first era. The utilization of ICTs is essential for improving effective learning and improving mastery of the English language specifically. In this section, the results of information and communication technology students are analyzed. The results of All Groups on the Pre-Test, All Groups on the Post-Test, and All Groups on the Final Test were compared. The result of the ICT students is also analyzed.



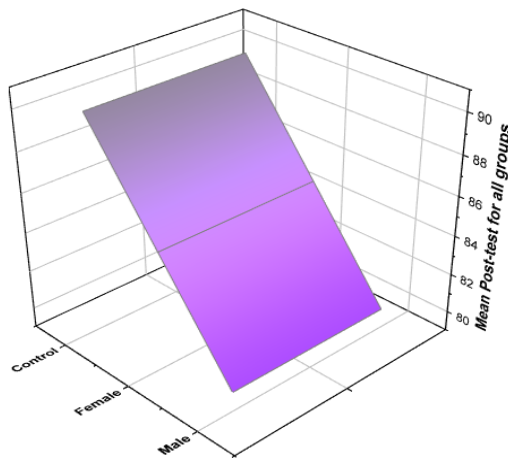
**Figure 3: Results of the ICT students**

Figure 3 displays the results of information and communication technologies. In this image, there are two groups: an experimental group and a control group. Both the experimental group and the control group experienced 58% of their grades falling. Passing grades were earned by 60% of the experimental group & 66% of the control group. In the control group, the average score was 74%, while in the experimental group, it was 59%. 80% of the experimental group scored very well, while 85% of the control group did as well. 90% of the control group & 95% of the experimental group received excellent ratings.



**Figure 4: Comparing the Pre-Test Results for All Groups**

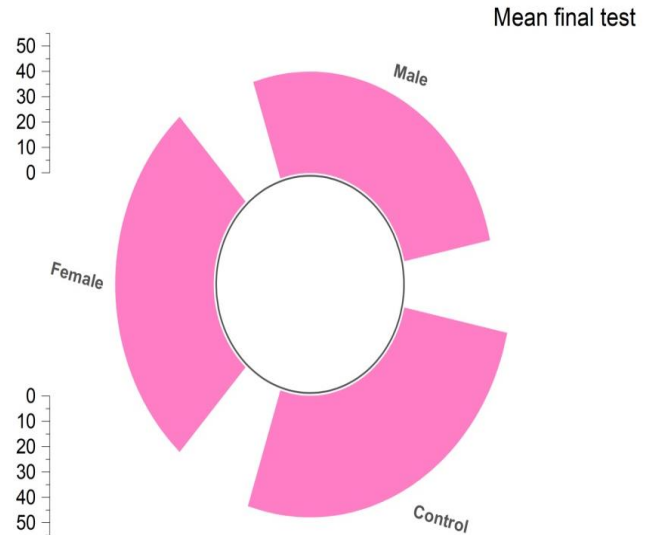
The results of the pre-test, as shown in the above figure 4, imply that all groups were basically at the same level in terms of their prior knowledge of English and vocabulary (experimental group boys = 60, experimental group girls = 55, and the control group = 66). These results suggest that the groups' performance was consistent during the pre-experiment phase. The homogeneity of the groups may then be determined and compared. Therefore, we can logically evaluate the success or failure of the usage of ICT in general English among college students.



**Figure 5: Comparing the Post-Test Results for All Groups**

The results of the post-test, as shown in the above figure 5, imply that all groups were basically at the same level in terms of their prior knowledge of English and vocabulary (experimental group boys = 80, experimental group girls = 85, and the control group = 90). The post-test findings highlight the tremendous change that has occurred as a result of the use of ICT in a classroom. The control group receiving no therapy exhibits no such changes or improvements in performance, as the means of the pre-test and post-test indicate. In context,

these methods are used to improve students' performance.



**Figure 6: Comparing the final test results for all groups**

According to the final exam findings as shown in figure 6, (experimental group boys = 40, experimental group girls = 45, & the control group = 48), all groups were essentially at the same level in terms of their prior knowledge of English and vocabulary. An overall comparison of pre-test, post-test, and final test results of all groups, with the pre-test scoring high, the post-test scoring low, and the final test scoring the average of the two.

**V. CONCLUSION**

Information and communication technology (ICT) has unquestionably developed into a potent weapon that is disrupting the established educational paradigms. ICT integration in the teaching and learning process could make the educational system more effective and innovative. This work empirically investigates the effects of using ICT in English classes at technical and vocational institutions, as well as the unique aspects of English teachers, to develop a more effective teaching model. The post-test has a high level in the experimental outcomes



when the results of a pre-test, post-test, and final test are compared for all groups. Therefore, it is crucial to investigate language teachers' attitudes toward information and communication technology (ICT) to improve ICT integration in English subject in the future.

## REFERENCES

1. Qaddumi, H., Bartram, B. and Qashmar, A.L., 2021. Evaluating the impact of ICT on teaching and learning: A study of Palestinian students' and teachers' perceptions. *Education and Information Technologies*, 26(2), pp.1865-1876.
2. Maru, M.G., Pikirang, C.C., Ratu, D.M. and Tuna, J.R., 2021. The Integration of ICT in ELT Practices: The Study on Teachers' Perspective in New Normal Era. *International Journal of Interactive Mobile Technologies*, 15(22), pp.44-67.
3. Cao, Y., AlKubaisy, Z.M., Stojanović, J., Denić, N., Petković, D., Zlatković, D. and Zakić, A., 2022. Appraisal of information and communications technologies on the teaching process by neuro fuzzy logic. *Computer Applications in Engineering Education*, 30(3), pp.779-802.
4. Fannakhosrow, M., Nourabadi, S., Ngoc Huy, D.T., Dinh Trung, N. and Tashtoush, M.A., 2022. A Comparative Study of Information and Communication Technology (ICT)-Based and Conventional Methods of Instruction on Learners' Academic Enthusiasm for L2 Learning. *Education Research International*, 2022.
5. Huang, L., 2022. An Empirical Study of Integrating Information Technology in English Teaching in Artificial Intelligence Era. *Scientific Programming*, 2022.
6. HUSNAWATI, H., 2022. A STUDY ON ENGLISH TEACHERS' READINESS IN UTILIZING INFORMATION AND COMMUNICATION TECHNOLOGY (ICT) IN ENGLISH LANGUAGE TEACHING (Doctoral dissertation, Universitas Mataram).
7. Harmandaoğlu Baz, E. and Cephe, P.T., 2022. English student teachers' behavioral intention to use information and communication technologies. *Education and Information Technologies*, pp.1-33.
8. Kim, E., 2022. Teacher Views on Barriers and Challenges to Information and Communication Technologies (ICTs) and Multimedia Integration in the ESL Classroom: A Case Study (Doctoral dissertation, Northcentral University).
9. Ndebele, H., 2022. Exploring the challenges of information and communication technology localization in South African higher education: a language management approach. *International Journal of Multilingualism*, 19(3), pp.368-382.
10. de OLIVEIRA, L.C., GUERINO, G.C., de OLIVEIRA, L.C. and PIMENTEL, A.R., 2022. Information and Communication Technologies in Education 4.0 Paradigm: a Systematic Mapping Study. *Informatics in Education*.
11. Asratyan, N., Radionova, S., Mukhtarova, R., Tsyganova, E. and Sharaeva, G., 2022. Information and Communication Technologies in Language Teaching. In *International Conference on Digital Technologies in Teaching and Learning Strategies* (pp. 139-148). Springer, Cham.
12. Paudel, P., 2021. Information and communication technology in foreign language classes in English: Roles and practices. *International Journal of*

- Technology in Education and Science (IJTES), 5(1), pp.37-55.
13. Abkarin, N.A., 2021, July. The analysis of teachers' professional competence in utilizing information and communication technology. In *ELT Forum: Journal of English Language Teaching* (Vol. 10, No. 2, pp. 125-135).
  14. Qurbonovna, I.M., 2021. The Importance of ICT in the Teaching English Language. *IJTIMOY FANLARDA INNOVASIYA ONLAYN ILMIY JURNALI*, 1(1), pp.95-97.
  15. Ifeakor, J.U., 2021. EFFECT OF USING INFORMATION AND COMMUNICATIONS TECHNOLOGY (ICT) IN TEACHING AND LEARNING ENGLISH LANGUAGE IN TERTIARY INSTITUTIONS IN NIGERIA DURING COVID-19 PANDEMIC ERA. *Journal of Educational Research & Development*, 4(2).
  16. Yu, L. and Shen, J., 2022. Analysis of the Correlation between Academic Performance and Learning Motivation in English Course under a Corpus-Data-Driven Blended Teaching Model. *Scientific Programming*, 2022.