AN EMPIRICAL INVESTIGATION OF THE EFFECTIVENESS OF TRANSPARENT LANGUAGE ONLINE FOR TEACHING AND LEARNING ENGLISH LANGUAGE AT TERTIARY LEVEL

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A dissertation submitted in partial fulfilment of the requirements for the Degree of Doctor of Philosophy in English at the Department of English, Faculty of Languages and Literature, International Islamic University, Islamabad

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بِسْمِ اللَّهِ الرَّحْمَٰنِ الرَّحِيمِ

أَلَمْ نَشْرَحْ لَكَ صَدْرَكَ ﴿١﴾ وَوَضَعْنَا عَنكَ وِزْرَكَ ﴿٢﴾ الَّذِي
أَنقَضَ ظَهْرَكَ ﴿٣﴾ وَرَفَعْنَا لَكَ ذِكْرَكَ ﴿٤﴾ فَإِنَّ مَعَ الْعُسْرِ يُسْرًا ﴿٥﴾ إِنَّ
مَعَ الْعُسْرِ يُسْرًا ﴿٦﴾ فَإِذَا فَرَغْتَ فَانصَبْ ﴿٧﴾ وَإِلَىٰ رَبِّكَ فَارْغَب ﴿٨﴾

1. Have We not Expanded thee thy breast? –
2. And removed from thee Thy burden
3. The which did gall Thy back? –
4. And raised high the esteem (In which) thou (art held)?
5. So verily, With every difficulty, There is relief:
6. Verily, with every difficulty, There is relief.
7. Therefore, when thou art Free (from thine immediate task), Still labour hard.
8. And to thy Lord Turn (all) thy attention.

AL-Quran (30:94)
Translation by Abdullah Yusuf Ali[1]

[1] https //quranyusufali com/94/

Acceptance by the *Viva Voce* Committee

Title of the thesis: **"An Empirical Investigation of the Effectiveness of Transparent Language Online for Teaching and Learning English Language at the Tertiary Level"**

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DECLARATION

I, Muhammad Asif, Registration No. 111-FLL/PHDENG/F16, a student of PhD in English at the International Islamic University (IIU) Islamabad, do hereby solemnly declare that the dissertation submitted by me in partial fulfilment of the requirements for the degree of Doctor of Philosophy in English is my original research work, except for cases acknowledged in the dissertation, and that this work has not been submitted for any other degree or purpose. The material produced in this dissertation entitled "An Empirical Investigation of the Effectiveness of Transparent Language Online for Teaching and Learning English Language at Tertiary Level" has not been submitted by me entirely or in part for any other educational qualification or award and will not be presented by me in the future to acquire any additional degree from IIUI or any other academic institution of higher studies.

Muhammad Asif

(MUHAMMAD ASIF)

To Abid Khan, Ayesha Aslam, Ghazala Yasmin (Late) and Muhammad Suheyl Umar

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LIST OF ACRONYMS AND ABBREVIATIONS

A1	Assessment 1
AI	Artificial intelligence
ANOVA	Analysis of variance
ASTM	American society for testing and material
BL	Blended learning
BS	Business school
CALL	Computer-assisted language learning
CBT	Computer-based test
CELTA	Certificate in English language teaching to adults
CL-150 Platform	The US government (military) instance of Transparent Language
CI	Confidence intervals
CMC	Computer-mediated communication
CMS	Content management systems
CPD	Continuous professional development
CS	Computer science
DABL	Declaratively accelerated blended learning
DL	Declarative learning
DM	Declarative memory
EAL	English as an additional language
EFL	English as a foreign language
EL	English language

ELLs	English language learners
ELS	English listening skill
ESL	English as a second language
F2F	Face-to-face
FL	Foreign language
fMRI	Functional magnetic resonance imaging
H	Hypothesis
HE	Higher education
ICTs	Information and communication technologies
ILR	Interagency language roundtable
ISLA	Instructed second language acquisition
K12	Elementary and secondary school grades kindergarten through grade 12
L1	Arterial language/ first language/ mother tongue/ native language
L2	Second language/ target language
LMS	Learning management systems
MALL	Mobile-assisted language learning
M	Mean
MAR	Missing at random
MOOC	Massive open online course
MSU	Michigan State University, East Lansing, MI, United States
NIIT	National Institute of Information Technology
PM	Procedural memory
RQ	Research question

QUAN	Quantitative
RC&UoE	Reading comprehension & use of English
SD	Standard deviation
SLA	Second language acquisition
SPSS	Statistical package for the social sciences
TELL	Technology-enhanced language learning
TL	Transparent Language
TLO	Transparent Language Online: A US-based Web-delivered language learning platform
TESOL	Teaching English to speakers of other languages
U1	University 1
U1CS	University 1 computer science
U1BS	University 1 business school
U2	University 2
U2CS	University 2 computer science
U2BS	University 2 business school
UCL	University College London, UK
WM	Working memory

STATISTICAL SYMBOLS

α	Alpha
H_0	Null Hypothesis
H_a	Alternative Hypotheses
$>$	Greater than
$<$	Less than
$N(\mu,\sigma^2)$	Normal distribution
N	Uppercase N to refer to a total population
n	Lowercase n to refer to a sample of the population.
μ	Population mean
σ^2	Variance
$\sum$	Summation: Sum of all values in a range of series
S^2	Sample variance
$X\sim$	Distribution of X
$\chi^2(k)$	Chi-square distribution
$\hat{y}$	Y hat: the predicted value of y

ABSTRACT

The present research aims to evaluate the effectiveness of Transparent Language Online (TLO) for teaching and learning English language at the tertiary level in Pakistan. The universities in Pakistan are often reluctant to use Web-delivered language learning platforms and new educational technologies in language classrooms because they are not sure if they will be effective. Next, second language (L2) or foreign language (FL) learners at the university level in Pakistan come with diverse cultural, linguistic and technological backgrounds, despite being digital natives, displaying major disparities in language skills, and in most cases, limited cognisance of interacting with established digital and educational technologies now in use. The purpose of this research is not only to raise the technological awareness of language learners and educators but also to help them integrate new technology tools and Web-based learning platforms efficiently in synchronous and asynchronous environments. This research is novel in that, to date, no research has been carried out to directly investigate TLO's efficacy for imparting second or foreign language instruction at the tertiary level.

The current study uses a quantitative experimental research method with a large L2 population, $N = 1{,}000$, who were selected using a convenience sampling technique based on major and class/university and were equally distributed into two major groups, i.e., experimental (n = 500) and control (n = 500). Standardised Reading Comprehension and Use of English (RC&UoE), and First Certificate in English Listening tests (FCE-LT) were used in strictly observed synchronous environments to collect data. The investigator organised the data gathered in MS Excel, converted it to IBM SPSS 25.0 files, followed by normality tests and subjected to several statistical analyses to address four research questions and examine statistical hypotheses.

The findings prove that the inclusion of TLO in language pedagogy, when integrated efficiently, enhanced language learners' academic performance, raised their proficiency scores, increased their confidence in using new technology tools, prompted their curiosity and improved language educators' instructional apparatuses. A rerun of the current research could offer deeper comprehension of the impact of technology broadcasts, e-assessments, Web-based platforms and forums on different skills, such as speaking and writing, and different variables, such as vocabulary. As a result, this study will be regarded as a promising start to facilitating language pedagogy that incorporates new technologies and Web-delivered learning platforms and encouraging indigenous empirical research and development in Pakistan.

CHAPTER 1: INTRODUCTION

The current study investigates Transparent Language Online's efficacy for teaching and learning English language at the university level in Pakistan. This investigation aims to determine how English language learners (ELLs) and English language (EL) educators benefit from this Web-delivered language learning platform and how such technology tools can facilitate the teaching-learning process at the tertiary level. The present research offers a perspective on how techniques of blended learning (DeMillo, 2019; Dziuban et al., 2018; Keengwe, 2017; Means et al., 2013; Olapiriyakul & Scher, 2006) have been turned into a conducive method for instructing and learning English language and "sets the stage for exploring the declaratively accelerated blended learning (DABL) approach" (Asif et al., 2022, p. 273), an optimal TLO technique for language-learning.

This introductory chapter presents the research with the motivation for this investigation, and gives the background to the research, and the purpose and problem statement of the study. The chapter likewise introduces the research questions (RQs) and statistical hypotheses, i.e., H_0 and H_a. Next, the significance, rationale, and delimitations of the investigation are presented. The chapter concludes by explaining into what chapters the dissertation is partitioned.

1.1. Motivation for the Present Investigation

A crucial motivating component for the present research was the time when the scholar was a Fulbright fellow at the University of Wisconsin, Madison, WI, USA, in 2013–14. As a teaching assistant for foreign language instruction in the United States, he learned about Transparent Language Online[1], for the first time, and used it practically in the classroom. His interest in

[1] https://www.transparent.com/

innovative technologies in the language classroom grew further when, from 2017–21, he attended various courses relevant to the use of new technology in the classroom. They were: (1) *Blended Learning Essentials: Embedding Your Practice* offered by the University of Leeds, UK, and University College London, UK; (2) *Blended and Online Learning Design* by University College London, UK; (3) *Teaching English Online* by Cambridge Assessment English; (4) *Quantitative Methods* offered by the University of Amsterdam, the Netherlands; (5) *Cambridge CELTA* from the University of Cambridge, (Teaching House, London) UK; (6) *Quantitative Research in Second Language Studies* (LLT 873) from Michigan State University (MSU), MI, USA; (7) *Technology-mediated Language Learning and Teaching* (LLT 813) from MSU, MI, USA; and (8) *Language Identity and Ideology in Multilingual Settings* (LLT 856) from MSU, MI, USA (courses labelled 1–4 were taken online, while those labelled as 5–8 were taken on-campus).

The researcher's 15-years' experience of teaching languages, i.e., English, Urdu and Pashto, in reputed universities in Pakistan, Afghanistan and the United States, also reinforced his faith in the usage of educational technology, Web-delivered language learning platforms and apps in the EL classroom. He observed language pedagogues and their pedagogical practice and decided to conduct research that could facilitate foreign language (FL) pedagogy in general and English language (EL) instruction, in particular at the tertiary level. The purpose was not only to raise technological awareness among language learners and educators but also to help them integrate new technology tools, applications, and Web-based language learning platforms efficiently in both synchronous and asynchronous environments.

In autumn 2016, the investigator introduced Transparent Language Online (TLO) at a private sector university (U1) in Lahore, Pakistan, and in autumn 2018, in another private sector

university (U2) with limited user accounts. In autumn 2017, he conducted a pilot[2] investigation to examine the efficacy of these technology tools at University 1 (U1), using "a single-group pre-test and post-test design" (Asif et al., 2022, p. 273) with undergraduate computer science students, *N* = 525. The analysis of language learners' encouraging results paved the way for this research.

Nonetheless, it was too early to determine the exact level of effectiveness of TLO for teaching English in a non-native English-speaking country, such as Pakistan, where educators and learners need adequate professional training, continuous workshops and ongoing webinars to benefit the most from the significant advantages that these technological platforms offer and learn how to utilise this system or its mobile application anytime, anywhere, on any device.

1.2. Technology in the Classroom

The high-tech revolution has impacted on university education in many ways. As world institutions that not only promote change but also accept it whenever the need arises, universities utilise emerging and advanced technologies in the most practicable ways when surviving in an era offering exceptional possibilities to academicians as well as professionals in various subject domains, and in linguistically as well as socially contextualised fields (Kessler, 2018; Laurillard, 2013; Lupton et al., 2018; Ng, 2015; Warschauer, 2004; Weller, 2011).

Technology, a profoundly integrated part of the contemporary world, can explicitly alter how this computer-savvy generation of learners learn, connect, correspond, and are instructed in any foreign language (Asif et al., 2022). Ortega (2017) states that, today, technology is not a luxury but an indispensable necessity for everyone; nonetheless, its access and usage are disproportionately dispersed. From a contemporary standpoint, technology is a reality, offering

[2] The pilot investigation for this project entitled "Evaluating the impact of technological tools on the academic performance of English language learners at tertiary level. A pilot investigation" was published in January, 2022 in *Pegem Journal of Education and Instruction, 12(1)*, 272-282.

each learner the opportunity to fully comprehend a language in on-campus and off-campus environments (Bonner & Reinders, 2018; Habibi et al., 2019; Kessler, 2018). Research in language teaching shows that the most feasible apparatus to learn and instruct any second language is technology combined with human pedagogy, i.e., blended learning or hybrid learning, the process of instructional methods amalgamated with technology (Bonk & Graham, 2012; Cunningham, 2021; DeMillo, 2019; Graham, 2012; Horn & Staker, 2015; Johnson & Graham, 2015; McCarthy, 2016; Stein & Graham, 2014).

To improve their students' communication skills, higher education institutions in Pakistan are devising educational programmes and core curricula that consolidate language pedagogy with new technologies as a method befitting the teaching-learning process in L2 or FL classroom environments (Quraishi et al., 2020). This approach can be helpful for self-guided autonomous learning wherever L2 learners, at large, and ELLs specifically, can take advantage of it. Learners who fulfil their language learning needs with a teacher or a book are, for the most part, directed to learning a second or foreign language in a typical environment. Various technological tools, for example, desk computers, laptops, mobile devices including smartphones and tablets, social media platforms and networks such as Twitter, Instagram, Skype, YouTube, blogs, podcasting and web sheets, are presently in place that can promote learning FL and EL in Pakistani universities.

Research has investigated the use of technology to teach as well as learn English as a second or foreign language at the elementary and secondary levels, in both online and on-campus classroom environments, in various geographical contexts, including China (Hu, 2002; Li & Walsh, 2011; Ruan & Leung, 2012), East Asia (Butler, 2014, 2015; Hu & McKay, 2012; Kam, 2002; Lazaro & Medalla, 2004; Williams, 2017), India (Patel & Jain, 2008), Malaysia (Azman, 2016; Foo & Richards, 2004; Lau & Sim, 2008; Yang, 2014), the Middle East and North Africa

(Hidri, 2019; Kirkpatrick, 2017; Reinders et al., 2019), and South Asia (Béteille et al., 2020; Bolton, 2008; Chan, 2012).

The body of research addressing the issue at the tertiary level is relatively small. Researchers have conducted studies examining the use of technology in the language classroom at the primary and secondary school levels in Pakistan (Akram et al., 2020; Haidar & Fang, 2019; Hussain et al., 2010; Norton & Kamal, 2003; Shamim, 2011; Suleman et al., 2014; Warsi, 2004). However, research in the domain of new technology blended with English language (EL) pedagogy at the tertiary level in Pakistani context is scant. This study aims to fill this lacuna by conducting an empirical investigation of TLO's efficacy for teaching and learning EL at the tertiary level, and integrating this advanced Web-delivered language learning platform with pedagogy in two private universities, i.e., U1 and U2, in Lahore, Pakistan.

1.3. Statement of the Problem

The primary problem of the present investigation is that higher education institutions in Pakistan are either not using or are reluctant to use technology in the language classroom because they are not sure if it will be effective or not.

A subsidiary problem is that most EL instructors at the university level in Pakistan are hesitant to incorporate emerging and advanced technologies and novel teaching techniques into their instruction. The scholar observed and presumed that they defend conventional pedagogical practices to avoid additional work. They already have pre-arranged (prepared) content and instruct using the same material everywhere, unaware of or unconcerned with the fact that learners in the contemporary world are digital natives. The needs and expectations of their students belonging to Generation Z and Generation Alpha differ from those of the older generation, i.e., Generation Y (Millennials) and Generation X. Educators have an important obligation to examine and address

students' requirements to meet 21st century needs, help them become autonomous learners, enhance their individual creativity, inculcate their critical thinking, and help them to become global citizens. However, this reluctance on the part of instructors is also the result of their scepticism and lack of certainty about the results technological tools can deliver in a language teaching environment.

A tertiary problem is that students at the university level in Pakistan come with diverse linguistic, cultural and technological backgrounds, displaying major variations in their English language skills and usually with limited awareness and experience of interacting with established, emerging, and novel technologies now in use. Their learning is often flawed due to a lack of familiarity with linguistic knowledge and innovative pedagogical practices, as well as having inadequate knowledge of the effective utilisation of technology now being used in second or foreign language instruction.

Despite the massive popularity of commercial online language learning platforms having millions of active users (Kukulska-Hulme et al., 2017; Loewen, Crowther, et al., 2019; Loewen et al., 2020; Vesselinov et al., 2019), their efficacy for learning a second or foreign language has received little consideration from investigators (Jiang et al., 2021; Loewen et al., 2020). One such Web-delivered learning platform, which is completely neglected and marginalised by researchers, is Transparent Language Online (TLO). Therefore, it is vital to examine TLO's efficacy for foreign language learning. In this investigation, the researcher examines the effectiveness of Transparent Language Online (TLO) to address these issues by using the TLO platform as a supplementary means to enhance language learners' academic performance, increase their proficiency, train them to use advanced technology tools efficiently, help them become self-directed learners, and prepare them for future challenges. The study also helps language instructors to incorporate novel

technology tools and advanced pedagogical techniques to enhance their existing instructional methods.

1.4. Research Questions

The following research questions guided the study:

1.4.1. To what extent does the integration of Transparent Language Online with pedagogy impact on the academic performance of ELLs at the tertiary level?

1.4.2. To what extent is there a difference, if any, in the English language proficiency scores of ELLs exposed to TLO instruction and those in a traditional classroom environment? Is this difference statistically significant?

1.4.3. To what extent is there any significant difference, if any, in ELLs' language proficiency results when two sub-groups of TLO, i.e., U1CS and U2CS, are compared?

1.4.4. What is the effect of TLO on enhancing the instructional methods of English language instructors at the tertiary level?

1.5. Research Hypotheses

The study addresses the following statistical hypotheses for all research questions:

1.5.1. Hypotheses for Research Question (RQ) 1

H_0. There is no significant impact of Transparent Language Online on the academic performance of ELLs at the tertiary level.

H_a. There is a significant impact of Transparent Language Online on the academic performance of ELLs at the tertiary level.

1.5.2. Hypotheses for RQ 2

H_0. There are no significant differences in the English language proficiency scores of ELLs exposed to TLO instruction and those in a traditional classroom environment.

H_a. There are significant differences in the English language proficiency scores of ELLs exposed to TLO instruction and those in a traditional classroom environment.

1.5.3. Hypotheses for RQ 3

H_0. There is no significant difference in ELLs' academic performance when two sub-groups of TLO, i.e., U1CS and U2CS, are compared.

H_a. There is a significant difference in ELLs' academic performance when two sub-groups of TLO, i.e., U1CS and U2CS, are compared.

1.5.4. Hypotheses for RQ 4

H_0. There is no effect of TLO on enhancing the instructional methods of English language educators at the tertiary level.

H_a. There is a significant effect of TLO on enhancing the instructional methods of English language educators at the tertiary level.

1.6. Nature of the Investigation

The research's primary motivation was to analyse whether TLO is a helpful platform for improving ELLs' academic achievement, increasing EL proficiency, and enhancing EL educators' teaching methods at the university level. To this end, the researcher conducted this experiment on a large student population, $N = 1{,}000$, studying Functional English in their first semester, in autumn 2018, at two private universities, i.e., U1 and U2, in Lahore, Pakistan. He divided the partakers into two major groups, i.e., experimental ($n = 500$) and control ($n = 500$), and further sub-divided them into four groups, i.e., U1CS ($n = 250$), U1BS ($n = 250$), U2CS ($n = 250$), and U2BS ($n = 250$) using two instruments, i.e., Standardised Reading Comprehension and Use of English (RC&UoE), and First Certificate in English Listening Test (FCE-LT).

A total of 1,000 participants attempted ten different assessments, i.e., six RC&UoE tests, and four FCE-LT assessments in two formats: (1) computer-based in the experimental group, and (2) paper-based in the control group, in observed synchronous environments to gather data, verify TLO's effectiveness, respond to four research questions, and examine statistical hypotheses. Overall, the investigator collected 10,000 observations. The data gathered were arranged in MS Excel, converted to IBM SPSS 25.0 files and further subjected to descriptive and various inferential statistical analyses to identify any significant differences between the experimental and control groups and among the four sub-classifications, i.e., U1CS, U1BS, U2CS, U2BS. The study investigates whether these differences are statistically significant.

The study uses a quantitative method since this technique has explicit distinguishing attributes, for example, beginning with specific suppositions, collecting numerical information pertaining to hypotheses, and subsequently using statistical techniques to investigate and draw conclusions from the data (Cozby & Bates, 2018; Leedy & Ormrod, 2016; Riazi, 2016). Of the

various kinds of quantitative research designs, the researcher used a quantitative experimental research design for this investigation and data gathered on the entire student population involved, $N = 1{,}000$, for this study.

In addition, the present research used a convenience sampling technique to pick ELLs. The investigator used the entire classes limited to two specific majors, computer science and business, and two universities, U1 and U2, with some natural attrition. To reduce bias in convenience sampling, he utilised it along with probability sampling to keep this sampling bias under check (Leedy & Ormrod, 2016; Riazi, 2016). The study utilised G*Power version 3.0.10 to determine the sample size (Faul et al., 2007, 2009). However, the sample did not comprise students from other semesters and may not be generalisable to every group of students.

1.7. Purpose of the Study

The research seeks to evaluate TLO's efficacy for training in and learning EL at the tertiary level on the one hand; and to examine how and to what extent this Web-delivered platform helps ELLs to become more proficient in EL, improves their academic achievement, increases their confidence, and analyses the effect of such tools combined with conventional teaching on ELLs' learning outcomes in a university environment on the other hand. The investigation also explores TLO's effectiveness in enhancing the existing instructional methods of EL instructors.

Moreover, the research offers a perspective on how hybrid learning techniques have become a useful tool for EL pedagogy. This connotes that pedagogical techniques, methods, and systems, i.e. declaratively accelerated blended learning (DABL) and Transparent Language Online (TLO), can be convenient apparatuses for (1) improving students' English language skills, (2) impacting on the paradigm of teaching English language, (3) enhancing educators' pedagogical

practice, and (4) raising awareness among the scholarly community about indigenous research and development regarding teaching and learning a foreign language using new technologies.

1.8. Significance of the Research

Various factors highlight the significance of this research.

First, there is a great deal of scope to carry out an investigation in Pakistan since research in the proposed field is scant at the university level. This is regardless of the fact that research studies have been conducted in the domains of artificial intelligence (AI), blended learning, hybrid learning, computer-assisted language learning (CALL), and technology-enhanced language learning (TELL) in collaboration with sister fields such as education, psychology, and mathematics at elementary, secondary and tertiary levels outside Pakistan, concentrating on a minimal sample size of a maximum $N = 100$ respondents. In any case, these studies do not provide statistical evidence on intricate matters (individual students' individual errors, individual sections and individual instructors, plus detailed progress reports for any of these) and at what level of proficiency students entered the programme and what level they acquired after completing the research. What limitations should be considered when teaching EL to non-native undergraduate speakers at the university level? Via this investigation, the researcher attempts to gather research-based evidence on whether a Web-delivered language learning platform, i.e., TLO, benefits language learners by enhancing their language proficiency. The investigator also examines a strategy being used at the tertiary level to improve learners' language proficiency; in this situation, predominantly Pakistani speakers of English have mixed arterial language (L1). Consequently, the investigation constitutes a significant addition to analysing TLO's effectiveness for university students in terms of improving their EL proficiency in the Pakistani HE context.

Second, university students in Pakistan should be given enough exposure to derive maximum advantage from Web-delivered language learning platforms and technology tools that are accessible to them to boost their integrated language skills. Therefore, the investigation conducts an in-depth analysis of TLO's effectiveness blended with conventional pedagogy to spotlight learners' learning deficiencies, improve their EL integrated skills, nurture the acquisition of a base of ideas, master the ability to work with additional learning and develop critical thinking.

Third, in our advanced, fast-paced, and technology-driven world, Content Management Systems (CMSs) and Learning Management Systems (LMS)s have arisen as new language types (Li et al., 2020). Web-based learning is expanding enormously due to advances in new technology tools, including smartphones, iPads, tablets, and portable laptops. As part of this technology-savvy world and explicitly amid and post the COVID-19 pandemic, the Virtual Learning Environment (VLE) is proving its worth (Bayne, 2008; Boulton et al., 2018; Caprara & Caprara, 2021). Hence, it is imperative to check whether LMS and CMS settings reverberate with the findings of language use, with investigations previously conducted, or reveal new ones. The present research is a valuable endeavour along this path.

Fourth, foreign language instructors, language schools, and local administrations may utilise the results of this investigation on TLO to boost students' language proficiency to assist learners academically and help them succeed. Instructors can download online task-based reports from the TLO system (in Excel and PDF formats) and analyse learners' progress. They can share individual students' detailed reports with local language schools, students, and parents. This allows building collaborations between local schools and parents to ensure students' success. The researcher will present the study's data so that administrators can apply knowledge learnt from the investigation to decide if TLO offers a helpful methodology to increase learners' language

proficiency effectively at the tertiary level, as well as helps language instructors to improve their existing teaching methods.

Fifth, this study can help pedagogues and researchers not only in the proper effective use of these technological tools in the instructional procedure of English, but also generate interest in empirical indigenous research and development in Pakistan, which will be a valuable contribution to the scholarly community.

Sixth, the investigation has significance for future research. It evaluates the efficacy of a technology-driven Web-delivered platform, which can help researchers dissect students' language proficiency and their inquisitiveness as regards language learning platforms. Likewise, for an analysis of the control group, students learning English language (EL) through conventional apparatuses, this examination is helpful in revealing what challenges they encountered when learning EL in traditional setups.

Seventh, beneficiaries of the investigation are students and instructors of English, researchers, schools and colleges in both cities and remote regions, users and supervisors of declaratively accelerated blended learning (DABL) and Transparent Language Online (TLO), and the public who have an interest in improving their English language skills through integrating various available technological tools such as desktop computers, laptops, tablets, smartphones, social media platforms, and networks, and online/ desktop software and learning platforms such as Transparent Language, Duolingo, Rosetta Stone, italki, Hello English et cetera.

And last, this study can perform a substantial part in facilitating and transforming language pedagogy at the university level in Pakistan. At present, the field of language pedagogy in Pakistan needs serious reform. This study can reveal societal patterns of people's approach to learning a foreign language and the difficulties encountered by learners and pedagogues, as identified in their

learning process. This study will assist instructors and help them improve their instructional methods, and guide learners to make advanced technology an integral part of their learning process.

1.9. Key Terms of the Investigation

At this point, it is appropriate to explicate certain keywords.

1.9.1. Transparent Language Online

Transparent Language Online (TLO) is based in Nashua, New Hampshire, United States. Transparent Language (TL), established in 1991, has helped individuals with learning new dialects and languages easily, rapidly and successfully. Top US government language schools, for example, the Defense Language Institute (DLI) and Foreign Service Institute (FSI), have invested in its solutions. Asif et al., states, "TLO provides a robust learning environment that incorporates both asynchronous preparation using Web, computer and mobile capabilities, and synchronous conversations, role-plays, and in-language tasks" (2022, p. 274). The former can take place anytime, anywhere, thanks to technology and online resources. The latter can take place in a traditional or remote virtual classroom. Rather than being a 'one-size-fits-all' solution, it allows instructors to customise learning materials. It does not require installation and can be easily accessed through multiple devices, including smartphones and tablets. Using this system, instructors can:

- prepare vocabulary and reading lessons
- organise and manage classes through a portal
- assign, track, and report the activities of students
- design dialogue-oriented courses

In addition, students are offered:

- many learning resources, including educational games
- automated tests to enable students to assess their command of English
- a flexible online learning environment that they can use anywhere at a time that suits them
- interactive activities that enable learners to review and retain the things they have studied

After completing a unit of study, students take a self-assessment test on TLO to find out whether they need to spend more time in that unit or are ready to move on to the next one.

1.9.2. Declaratively Accelerated Blended Learning

Declaratively accelerated blended learning (DABL) is an optimum combination of pedagogy blended with technology (Allen, 2016; Patchan et al., 2016) and an ideal technique setup by Transparent Language (TL) for learning languages. The best apparatus based on DABL is Transparent Language Online (TLO), which handles learning issues successfully because of its methodology of educational practices mixed with technology. DABL is an adaptable strategy, able to adjust to any curriculum, any learner, and any environment (Conrad & Donaldson, 2012). Developed after thorough research, this approach is grounded in a cardinal principle of human learning (Asif et al., 2022, p. 273).

1.9.3. Declarative and Procedural Memory Systems

Modern functional magnetic resonance imaging (fMRI) has revealed that the human brain has two specific memory systems that contribute to language learning: declarative and procedural memory systems (Ullman, 2001a, 2001b, 2004). "The declarative memory system learns facts, whereas the

procedural memory system learns skills" (Ullman, 2001c, p. 196). Regarding language learning, the declarative memory stores words and phrases and learns facts, which requires a conscious effort and repeated exposure to those items. The procedural memory stores skills and learns abilities, which tend to be learnt by working with languages so frequently that grammar rules and patterns can be internalised and applied automatically. Of these two, the previous performs a substantially significant part in learning a language compared to the latter, which helps us learn aptitudes (Ullman, 2001c, 2004).

1.9.4. Web-delivered Language Learning Platforms

Web-delivered language learning platforms, which frequently comprise applications as one of their learning systems, are playing a vital and expanding part in giving language pedagogical guidance. The market for these providers is colossal and emerging exponentially across the globe (Vesselinov et al., 2019). The main providers are Transparent Language Online, Rosetta Stone, Duolingo, Babbel and busuu; other competitors include Mango Languages, Berlitz, WeSpeke, Fluent Forever, Fluenz, Linguistica360, Rocket Languages, and Yabla.

Web-delivered language learning platforms are fast-paced, adaptable, interactive and engaging. These platforms contain digital material and constructs that energise L2 using ICT apparatuses and significantly enhance educators' preparation programmes (Hager, 2020; Sollohub, 2021). Such tools comprise learning exercises, audio-video aids, e-books and mobile applications. These systems offer a customised learning environment, authorise continuous input, and expand learning techniques due to their versatile and diverse configurations and learning formats.

1.10. Delimitations of the Study

This investigation comprises the following delimitations:

- In academia, multiple technology tools and online learning platforms are being used to train language learners and try to boost their language proficiency; however, this research is delimited to Transparent Language Online (TLO).
- Users need to purchase the TLO-licensed version for unlimited use to get the maximum benefit from TLO's platform, which costs US$29.95 per month, per user. However, a restricted trial version is available for two weeks. In addition, TLO's desktop (offline) version is limited and can only be used with a fast Internet connection. Nonetheless, TLO is accessible via multiple gadgets.
- This study is limited to gathering data from two private-sector coeducational universities in Lahore, Pakistan. The research is further restricted to the faculties of computer science, i.e., U1CS and U2CS, and the faculties of business studies, i.e., U1BS and U2BS.
- The faculties of computer science, i.e., U1CS and U2CS, at U1 and U2 purchased a TLO-licensed subscription (one year) for unlimited use to provide an exceptional learning experience to their ELLs. These faculties additionally authorised the investigator to conduct the experiment for 16 weeks.
- The target population of this research is limited to undergraduate students who studied Functional English as a compulsory course in year 1 in autumn 2018.
- The study is limited to N=1,000 ELLs divided into experimental and control groups. Both groups are subdivided into four classifications, i.e., U1CS, U1BS, U2CS, and U2BS.
- The investigator data gathered for the experimental group from U1CS and U2CS, where students learned English language using TLO. He also collected data for the control group from U1BS and U2BS, where students acquired English language through typical conventional apparatuses.

- The two universities offer three English language courses in computer science and business studies programmes: Functional English, Communication Skills, and Technical Report Writing in semesters 1, 2, and 6, respectively. This research is delimited to students studying Functional English in their first semester, year 1, in autumn 2018.
- Functional English focuses on receptive and productive skills of the English language (EL). This investigation is further delimited to EL receptive skills (reading and listening skills plus the use of English).
- The Cambridge Common European Framework of Reference for Languages (CEFR) was used as an assessment benchmark to assess ELLs' language competency in receptive language skills.

1.11. Chapter Division

This research comprises six chapters.

Chapter 1 (Introduction) denotes the investigation by characterising the effectiveness of TLO, the motivation for the study, technology in the classroom, a problem statement, and research questions and hypotheses. The chapter also explains the nature, purpose, and significance of the study. The section concludes by elucidating delimitations and chapter division.

Chapter 2 (Literature Review) recapitulates extant literature on the role of new technologies being used, along with blended/ hybrid-learning approaches for teaching and learning the English language. It also gives an overview of previous research work. And it indicates how the research fits into the specific field under review and aims to fill gaps in this domain. It also builds upon and moves forward from the existing canon of research on the topic.

Chapter 3 (Research Methods) presents the research methodology, research type, investigation methods, participants, sampling, instruments, and research procedure. This section

also presents an overview of data collection and analysis, a pilot experiment, assumptions, and validity, reliability and ethical considerations.

Chapter 4 (Results) provides a comprehensive analysis. It leads to validation of the study in light of quantitative data, which uses descriptive statistics and various inferential statistical apparatuses, i.e., classical ANOVA, Welch-ANOVA, simple regression, t-tests, Pearson's correlation, Kruskal-Wallis H and Median tests using IBM SPSS 25.0, to answer the research questions and corroborate statistical hypotheses. This research's explicit plan elucidates the framework with pictures, diagrams, histograms, PP plots, QQ plots, boxplots and tables as a perspective on the research questions and hypotheses.

Chapter 5 (Discussion) explicates the outcomes and conducts a detailed discussion of the data, normality, variables, descriptive statistics, variances, and question-wise results. The chapter concludes the discussion by summarising the significant findings.

Chapter 6 (Conclusion) concludes the dissertation by presenting and summarising key findings, highlighting the limitations of the entire project, and proposing guidelines and recommendations for future researchers. The chapter concludes by summarising the entire research, verifying TLO's effectiveness and authenticating the goal of the current project, as shown and validated by the study findings.

CHAPTER 2: LITERATURE REVIEW

This literature review engages with extant works as follows. It:

- evaluates the role of technology in the teaching-learning process.
- examines the blended learning approach.
- presents the declarative-accelerated blended learning (DABL) method and explicates Ullman's declarative and procedural model.
- reviews the role and significance of Web-delivered language learning platforms and stand-alone applications.
- prepares the ground for Transparent Language Online.
- suggests a gap in the current literature.

Well-established technologies have proved pervasive for instructing language pedagogy around the world (Cope & Kalantzis, 2009; Golonka et al., 2014; Selwyn, 2012; Steel & Levy, 2013). Modern technologies, as well as portable gadgets, are increasingly available to nurture second language learning (Godwin-Jones, 2017; Lin & Lin, 2019; Loewen, 2019). Nonetheless, additional technologies, such as Web-based learning platforms, mobile applications and virtual reality (VR), are as yet evolving (Carreon et al., 2020; Kolodziejczak et al., 2018; Parmaxi & Demetriou, 2020; Stambough et al., 2020).

Technological development can foster learners' curiosity, encourage them to develop their integrated language skills, and support their growing exposure to second language input as well as plausible collective opportunities. Also, it gives language educators favourable techniques to design and execute course curriculums and work together with multi-ability students in asynchronous and synchronous learning atmospheres. The present research neither incorporates all the current educational technologies, online language learning platforms, and learning

applications nor utilises an entirely face-to-face or Web-based approach. Rather, this investigation is restricted to TLO's effectiveness using a blended learning approach and Ullman (2001)'s declarative/ procedural model. This study also sets the stage for investigating TLO's ideal technique for language learning, i.e., declaratively accelerated blended learning (DABL).

2.1. Documentation

Relevant research studies published up to June 2021 were thoroughly examined. First, the investigator used the libraries, electronic databases, and accompanying data sources at Michigan State University (MSU), East Lansing, MI, USA, to explore articles and reliable existing literature. These digital library E-Databases include EBSCOhost, ELSEVIER (Science Direct), ERIC, JSTOR, ProQuest Digital Dissertations, SAGE Journals, SpringerLink, Taylor & Francis Journals, and Wiley-Blackwell Journals accessed via the Michigan State University's digital library E-Databases. The search techniques were also customised to make the method work, with all exploration hunts being driven by blends of two sorts of search terminologies. The first one uses terms including technology, pedagogy, education and training, for instance, 21st-century learning, blended learning, declaratively accelerated language learning, e-learning, English language learners, hybrid learning, language learning platforms, learning applications, and online learning. Another utilises terms for research design and types of research, such as quantitative study, empirical enquiry, experimental research, control group, and experimental group. Second, the researcher restricted his search to relevant research articles published in prestigious peer-reviewed impact-factor scholarly journals up to 2021. These comprise the Modern Language Journal, Applied Linguistics, CALICO, Computer-Assisted Language Learning, Computer and Education, Foreign Language Annals, Language Learning, Language Learning and Technology, ReCALL, System, Studies in Second Language Acquisition, TESOL Quarterly, The Internet and Higher

Education, and so forth. Last, the scholar used Google Scholar's Web index research database. As a result, the literature review data provide insights from previous studies reported through doctoral dissertations, scholarly peer-reviewed and academic journals. The review further provides supplementary contextual foundations to decipher the findings of this research.

2.2. Technology and the Teaching-Learning Process

Technology, a profoundly interconnected segment of the current era, can explicitly transform the means via which this computer-savvy generation of students learn, communicate, and are trained in any foreign language (Asif et al., 2022). In previous years, substantial efforts were made to incorporate technological support and development for learning. These advances have affected the domain of education, but also extended as well as tested our perception of what comprises a learning milieu. Dror (2008) states that the learning environment comprises not only personal computers and the Web, but also smartphones, games, simulations, and 3D technologies. In the contemporary technological era, one cannot question how much technology has impacted on the present-day world and our modern lives. As a result, technology presently plays an indispensable role in human social improvement. Technology is imperative for assisting and expediting the teaching-learning process. Technology has the potential to transform language pedagogy, but it must be incorporated strategically. Ortega (2017) states that, today, technology is not a luxury but an indispensable necessity for everyone; nonetheless, its access and usage are disproportionately dispersed. Technology is an instrument that can adversely influence students and the course of teaching-learning, if not implemented effectively. From a contemporary point of view, technology is a reality, giving each learner the opportunity to fully understand a language in on-campus and off-campus environments (Burston, 2014; Lee & Park, 2020; Ng, 2015).

Learners studying English as a second language (ESL), foreign language (EFL) or additional language (EAL) require frequent reading, writing, listening, and speaking practice to further develop their abilities as well as gain more experience. Indeed, technology can enhance language skills (Ahmadi, 2018; Blake, 2016), pronunciation (Pennington & Rogerson-Revell, 2019; Reed & Levis, 2015), and language fluency (Abdolrezapour, 2017; C. M. Chen et al., 2016). Consequently, English language learners (ELLs) should use appropriate instruments that will empower them to attain language proficiency easily and effectively. The objective is not the technology itself; however, one should comprehend that integrating technology into learning is a constant process that requires persistence, dedication and consideration for the learners using it. Thus, educators and learners should acknowledge and comprehend the advantages and disadvantages of incorporating technology into learning (Beldarrain, 2006). Technology's role and significance are extensive. Investigators presently believe that a suitable blend of technology with pedagogy can lead to notable learning accomplishments (Amiel & Reeves, 2008; Dziuban et al., 2018).

Over the years, scholars have investigated and written widely on technology's role in and contribution towards the teaching-learning process of English. However, the historical backdrop of technology in the domain of education can be traced back to the introduction of modern libraries and pencils during the 17th century, and chalk and slates, calculators and typewriters in the 19th century. The 20th century saw other technologies, including radio, slide rules, mimeographs, videotapes, photocopiers, overhead projectors, and computers, and witnessed the emergence of interactive whiteboards and the Internet. The 21st century accepts mobile devices, smartphones, 3D/4D technologies, social networks, virtual reality (VR) games and Web-delivered learning platforms in education.

Teaching and learning English has a long history and the demand for it and its significance are continually increasing. English, the language behind most technological and scientific advances, comes first (Chapelle, 2003; Graddol, 2006). English language instruction has always employed technology (Chapelle, 2003; Stockwell, 2013). Over the decades, institutions of higher education established laboratories for training English language learners and equipped them with available technologies, i.e., cassette players, tape recorders, radio, microphones, and headphones. Singhal (1997) states that the notion behind these labs was positive; however, the process was boring and monotonous.

Technologies have been involved in the teaching and learning of foreign languages for a very long time, going all the way back to the time of chalkboard and radio (Kazemi & Narafshan, 2014). Stanley (2013) argues that to utilise advanced technologies successfully, they must be appropriately incorporated into the syllabus. Kazemi and Narafshan (2014) declare that most English language educators have a positive approach towards instructive technologies; however, they contain minimal technological information–they consider themselves digital immigrants–and that does not integrate technology tools efficiently in the classroom. Recent technological advances have transformed English language teaching a great deal and now offer clear alternatives for making EL pedagogy more engaging.

Technological progress, at best, can stimulate students' curiosity, facilitate them to support their integrated language skills and offer growing admittance to second language input and attainable collective prospects. It also offers instructors favourable strategies to design and execute curricula and collaborate with multi-ability students in asynchronous and synchronous environments. In Pakistan, universities are installing resources to prepare and expand the domains of educational technology to offer an exceptional learning platform to enhance learners' academic

performance and increase their confidence while learning a new language through technology. Students currently experience awful linguistic and technological constraints after acquiring admission to tertiary level programmes at the university level, which impacts on their academic performance. Moreover, these technological facilitations provide a chance for EL instructors to revisit and enhance their teaching methods and integrate novel instructive strategies.

In short, research in the domain of language pedagogy shows that the most practical method to learn, communicate and teach any foreign or second language is blended learning, the combination of technology with pedagogy (Cunningham, 2021; Graham, 2012; Johnson & Graham, 2015; Rasheed et al., 2020).

2.3. Blended Learning

Blended learning, a blend of real-time in-person classroom learning with the utilisation of Web-based (online) resources, has wide-ranging and multifaceted implications (Christensen et al., 2013; Cunningham, 2021; DeMillo, 2019; Dziuban et al., 2018; Graham, 2012; Madden et al., 2019; McCarthy, 2016; Picciano, 2015; Stein & Graham, 2014). The broadness of clarifications implies that virtually anything can be viewed as blended learning (Oliver & Trigwell, 2005). On the other hand, Madden et al. (2019) advise that "blended learning itself is a kind of bridge between traditional in-person learning and the modern movement of online education. It seeks to integrate the benefits of the two: the face-to-face (F2F) interaction as well as the personal advising and mentoring of the former, with the scale, asynchrony, and flexibility of the latter" (p. xii).

Blended learning has included various methods, for instance, connecting means of online technology, instructional apparatuses, educational technologies, and authentic work assignments (Bidarra & Rusman, 2017; Driscol, 2002). Nevertheless, Driscol claims that blended learning implies different objects, to diverse individuals, that define the undiscovered capabilities of

blended learning (2002). Although there was a significant discussion of hypothetical advances that blended learning peaked over a decade ago, the curiosity to explore blended learning persisted among practitioners and researchers, who frequently asked: why, when, how and what are we blending (Bonk & Graham, 2012; Bruggeman et al., 2021; DeMillo, 2019; Driscol, 2002; Dziuban et al., 2018; Hrastinski, 2019; Kennedy & Soifer, 2013; McCarthy, 2016)? Also, the word is repeatedly used within academia; there is still uncertainty about what blended learning really means (Bruggeman et al., 2021; Hrastinski, 2019; Jones & Lau, 2010).

In addition, the definitions of blended learning vary from being too general so that practically any learning experience can qualify, which incorporates instructional technology, to others that feature a particular portion of an online curriculum combined with conventional pedagogy in a face-to-face environment. Blended learning's great range of definitions have been devised from many different angles of learning. Nonetheless, the two most frequently quoted definitions of blended learning in the literature are those proposed by Garrison and Kanuka (2004) and Graham (2006). According to Google Scholar, they had been quoted 4,794 and 3,284 times, respectively, at 31 May 2021). Garrison and Kanuka state that "Blended learning is the thoughtful integration of classroom face-to-face learning experiences with online learning experiences" (2004, p. 96). This definition does not specify whether lesson-driven exercises and drills using technology can be viewed as blended learning. It primarily blends the face-to-face pedagogical modality with online instruction. Graham explains that "Blended learning systems combine face-to-face instruction with computer-mediated instruction" (2006, p. 5). These definitions lead to a consensus that blended learning's essential elements are in-person, real-time F2F interaction, and Web-delivered instruction.

Similarly, Keengwe and Kang (2013) define blended learning as conventional real-time F2F and Web-delivered, online learning milieu where technology collaborates with all participants. Researchers have likewise defined blended learning in psychological terms, suggesting that learning happens in a conventional setup while online situations impact on educators' and learners' affective domain (Boelens et al., 2017; Hwang & Chang, 2016; Rasheed et al., 2020; Tseng, 2016).

With numerous definitions of blended learning in use across academic domains (Bonk & Graham, 2012; DeMillo, 2019; Drysdale et al., 2013; Garrison & Kanuka, 2004; Madden et al., 2019; McCarthy, 2016; Picciano, 2015; Stein & Graham, 2014), it is clear that the term blended learning has been argued over for more than 20 years (Graham et al., 2013; Güzer & Caner, 2014; Moskal et al., 2013; Tucker et al., 2016). The primary argument is the longevity of the words distance education (Davidson-Shivers et al., 2018; McCowan, 2017; Moore & Diehl, 2019). Another substantial argument is the interchangeable use of blended and hybrid learning (Corry & Carlson-Bancroft, 2014; Garrison & Kanuka, 2004; Graham et al., 2005; Hrastinski, 2019; Keengwe & Agamba, 2015; O'Byrne & Pytash, 2015; Stein & Graham, 2014). A tertiary argument is the different varieties of blended learning models accessible to tertiary and higher education organisations (Bonk & Graham, 2012; Bryan & Volchenkova, 2016; DeMillo, 2019; Dziuban et al., 2018; Keengwe & Agamba, 2015; Kitchenham, 2011; Olsavsky, 2017; Horn & Staker, 2011). Madden et al. (2019) state that blended learning is one of the most up-to-date developments in higher education and is increasingly well-regarded; however, research on blended learning is still nascent (p. xii).

However, the global pandemic, COVID-19, changed the world remarkably (Chick et al., 2020; d'Orville, 2020; Ma & Lee, 2021). During the pandemic, researchers underscored the importance of blended learning (Henshaw, 2020; Ma & Lee, 2021; Reuge et al., 2021), providing

novel opportunities to learn and grow (Bonk, 2020; Kilcrease, 2020; Lockee, 2021). Where the global pandemic disrupted the learning process of 90 percent of learners worldwide (Reuge et al., 2021), blended learning has offered new opportunities and turned out to be a new normal in tertiary and higher education (Henshaw, 2020; Ma & Lee, 2021). In brief, blended learning during COVID-19 has revolutionised the traditional teaching and learning process worldwide (Ma & Lee, 2021; Reuge et al., 2021; Wang et al., 2021).

This section bridges the gap between rigorous investigations of blended learning and its actual practice. It is anticipated that researchers, practitioners, educators, and other interested groups will devise innovative courses of action concerning blended learning, yet examine the efficacy of such learning to consider instructive encounters and use information and evidence to enhance blended learning persistently. They will also explore in what capacity blended learning can be implemented, upheld, and assessed at institutional, departmental, programmatic, and individual levels, particularly post-COVID-19.

2.3.1. Blended Learning Models

A broad range of blended learning models has been proposed based on the significant characterisations illustrated above. Blended learning models have generally emphasised surface-level or physical attributes instead of instructive or psychosomatic characteristics (Stein & Graham, 2014). Researchers have employed various blended learning models in tertiary and higher education institutions (Chan & Leung, 2016; Crawford & Jenkins, 2017; O'Byrne & Pytash, 2015). Nevertheless, various hurdles, such as online instructive activities and drills, digital technologies, time management, and organisation level collaboration, have prohibited total acceptance of blended learning by education organisations (Werth et al., 2013). Another obstacle to consider is modifying the pedagogical apparatuses of current academic staff because of ordinary events

(Mirriahi et al., 2015). The blended learning models discussed in this review have been customised in accordance with blended learning definitions as a template for the present research.

2.3.1.1. NIIT Characterisation of Blended Learning Models

Researchers have mentioned that the National Institute of Information Technology (NIIT) (as cited by Valiathan, 2002) characterised early blended learning models into three types that were a best fit for performance and training: skills-driven, attitude-driven, and competency-driven models (Akkoyunlu & Yilmaz-Soylu, 2008; Oliver & Trigwell, 2005; Reece & Lockee, 2005; Valiathan, 2002).

First, Valiathan's (2002) *Skill-driven Model* aims to acquire explicit knowledge and skills, where educators provide support and constant feedback. An instructor does not merely attend a class but works as a catalyst for change, inspires learners and enables the pedagogical process to be completed according to learners' needs. In addition, instructors support and evaluate the learning process and provide learners with formative and summative (constructive) feedback. The skills-driven model applies various Web-based as well as offline reading materials and joint study aids, such as manuals, books, brochures, and flyers to accomplish learning objectives (Valiathan, 2002). A fundamental part is apparatuses for synchronous and asynchronous correspondence among students and instructors/ facilitators (email, chat, videoconferencing, discussion forums). At times, conventional classroom teaching is also used.

Next, the *Attitude-driven Model* intends to develop behaviours and attitudes where shared communication and collaborative tasks blend conventional classroom learning and online education (Valiathan, 2002). The most significant aspect of this model is the correspondence amongst partakers, so that they can gain new knowledge in a risk-free learning environment. Valiathan states that the attitude-driven model frequently utilises simulations of practical life/ work

events, role-playing, synchronous webinars, discussion opportunities, Web-based interaction and joint ventures (2002).

Finally, the *Competency-driven Model* is anticipated to improve competencies and implicit knowledge where students must notice specialists in the field and at work (Valiathan, 2002). Competencies are perceived, at this juncture, as the aptitude to make proper judgements based on information obtained and standards acquired. Nonetheless, to make a correct judgement at the perfect time, it is mandatory to not only mention specific knowledge but also define implicit knowledge that one gains through enough practice or observation and collaboration with specialists in the field. In short, the essence of this model is the mediation of implicit knowledge. Valiathan (2002) proposes the significant use of mentoring (synchronously and asynchronously), discussion forums, training workshops, and different electronic communication modes. Oliver and Trigwell (2005) criticised the NIIT categorisation of the three models for its intermixed nature, as it also depends on instructional approaches and learning aims.

2.3.1.2. The Charles Graham Model (2006)

Graham (2006) describes a blended learning model to discover desirable blends, rather than undesirable blends, that make most of the attributes and avoid the shortcomings of in-person F2F and Web-based learning. He further elucidates various characteristics and limitations of the model by executing real-life in-person classroom discussions contrasted with Web-based classroom situations. For example, an educator may decide to mix both learning conditions, beginning with a brief investigative F2F conversation to inject energy for the subject and prepare a platform for a thorough follow-up conversation in a Web-based environment (2006, pp.18-19).

Graham recommends characterising BL models as per four dimensions, four levels, and three categories (2006). His four measures are time (synchronous/ asynchronous), space (in-

person, F2F, and Web-based, online), humanness (high human, low human/ no machine, high machine), and sensual richness (high, low/ all senses, text-only). These are identified with the blended learning notion of bimodal delivery, including in-person or co-present and computer-mediated components. The manner in which these components are utilised for various learning goals and equilibrium amid constituents enables more than one model to be built homogeneously with the mentioned definitions.

Graham's four levels are activity, course, programme and institution (2006). Using blended learning methods and activities for an institution is, to a certain extent, different from blended learning activities for an individual. Last, Graham presents three different types of the blended model associated with purpose: (1) enabling blends that emphasise adaptability and access, (2) enhancing blends that strive for supplementing conventional instructional methods, and (3) transformative blends that aim at evolving instruction. According to Graham (2006), the third type implies, for instance, that students might perform a more dynamic part in the creation of their individualised education. Transformation in this implicit hierarchy is the most valuable objective. Consequently, Graham (2006) shifts from past modalities in his classification to ponder scope together with the academic target.

2.3.1.3. The Chew, Jones, and Turner Model (2008)

Chew, Jones and Turner (2008) investigated four different blended learning models and presented a theoretical framework for examining those using Vygotsky's and Maslow's insights into learning.

The first model is Gill Salmon's *Structured E-moderation*. The mediator monitors the progression of stages to persuade learners to feel motivated and welcome in an online setup. Chew et al. (2008) praise this model along with Maslow's *Needs Hierarchy* (2008); however, Friesen

(2012) states that this model cannot be viewed as a blended learning model. This is most likely an outcome on which the researchers base their own relatively weaker blended learning definition.

The second model is Wenger and Ferguson's *Sun Microsoft Systems*' 'learning ecology' (2011), which appears as a quadrant of self-directed learning and practice content. Self-directed investigation of content might involve reading a book or asynchronous (Web-based) resources. Self-directed practice may include learners' interaction with peers and discussion in small groups. Guided study of the content may comprise video conferences or classroom lectures. Guided practice may include employing lab practice or mentoring. This model clarifies that various delivery modes can pursue diverse learning goals (Singh, 2003). Chew et al. (2008) acknowledge the model's capacity to be dependable and coherent with Vygotsky's insights into the *Zone of Proximal Development*. Students can develop their insights under the supervision of an expert. However, this model's primary limitation is that it does not offer a reasonable model for execution.

The third model is Chew's *Blended Learning Continuum*. The University of Glamorgan[3] adopted an organisation-wide strategy for blended learning. However, it did not execute it coherently and consistently, instead permitting faculties to have various modules with a range of e-intensiveness, from negligible PowerPoint presentations to entirely Web-based content. Moderate (intermediate) items on the scale address permission to access learning resources tackled through interactive resources, e-assessments and discussion forums/ boards. This model is very adaptable, recognising that various faculties in different fields might execute blended learning differently. Chew et al. (2008) reject the notion that Jones' *Continuum* should be presented in percentages, as Allen, Seaman, and Garrett advocate. The possibility is that merely a 30–80% blended course is simply overgeneralisation, regardless of whether it might be measured or agreed.

[3] Merged with the University of Wales, Newport, and that shaped the University of South Wales in April 2013.

Nonetheless, the model is not comprehensive, it merely has delivery modes and is hypothetically weak (Chew et al., 2008).

The fourth model is Garrison and Vaughan's *Enquiry-based Framework* that visualises learners and instructors as members of a *Community of Enquiry*. The name relies on Wenger's research on 'communities of practice' (2011). Similarly, a community of practice comprises experts who communicate comprehension and figure out how to perform a task efficiently. Consequently, a *Community of Enquiry* contains students who develop their insights by collaborating with one another. This model shifts the focus from delivery methods to learning. Technology plays a vital role and has three principal components, that is, *cognitive presence* (data exchange, preparing as well as analysing ideas), *teaching presence* (giving structure, direction and guidance), and *social presence* (empowering teamwork and coordinated effort). Chews et al. (2008) consider the model coherent and dependable, with significant Vygotsky and Maslow insights. Nonetheless, the procedure for operationalising such a dream requires a massive amount of time and determination (Moskal et al., 2013; Vaughan, 2010).

2.3.1.4. The Staker and Horn's Model (2012)

Staker and Horn (2012) contribute the most effective approach to blended learning. They recognise that blended learning courses shift enormously based on varied pedagogical impacts on students' learning comprising instructors' roles, physical space, scheduling and instructional methods (Horn & Staker, 2012, 2015; Staker et al., 2011). They also proposed six original models, which were later reduced to four. The six original models comprised face-to-face driver, rotation, flex, online lab, self-blend (à la carte), and online driver (enriched virtual) (Christensen et al., 2013; Horn & Staker, 2011, 2015; Staker et al., 2011). These models prove some facets of face-to-face as well as Web-based (online) teaching and vary regarding pace, path, and time. Almost all the

models last for the duration of a typical school day on campus (the location remains mostly the same). Staker and Horn's (2012) characterisation of the blended learning model is undoubtedly informed by employing their bimodal interpretation of blended learning. The following table provides a brief description of Staker and Horn's (2012) six models:

Table 2.1

Staker and Horn's six models

Model	Descriptions
Face-to-Face Driver	An instructor is still regarded as the principal deliverer/ distributor of course content. Web-based (online) learning facilitates struggling learners and supplements for classroom learning (Staker & Horn, 2011, 2012).
Rotation	Learners rotate between varied learning apparatuses, including online working environments such as online, small groups, independent tasks, and additional classroom-based methods (Horn & Staker, 2015; White, 2019) and at the instructor's discretion or within a pre-set (fixed) timetable.
Flex	Learners study pertinent content primarily online through an independently personalised schedule and in-person facilitation arranged by the instructor depending on the situation (Staker & Horn, 2011, 2012); nevertheless, location is always a bricks-and-mortar setting. The educator stays on-site supervising individual learners, as well as their learning progress.
Online lab	Learners undertake an extra Web-based (online) course in a F2F classroom environment to supplement their learning. They frequently meet synchronously in a computer lab under a lab attendant or non-certified instructor (Horn et al., 2014, 2015).
Self-blend (a la cart)	Learners choose to undertake a supplementary Web-based course off-campus and their conventional courses (Staker & Horn, 2011, 2012).

	The Web-based (online) course or part of the lesson does not replace learners' traditional courses because its mode of delivery is entirely online with a different online educator.
Online driver (enriched virtual)	Learning is predominantly online with learners' periodic visits to bricks-and-mortar settings for in-person tuition (Staker & Horn, 2011, 2012) with the same instructor. The enriched virtual model allows learners to rotate within a particular course instead of one course instructed in a traditional setup and another through a virtual mode.

Staker and Horn (2012, 2013, 2015) chose to reduce model (1) as inadequately dissimilar to (2), (3), and to consolidate (4) and (5). They were left with the following sub-classifications of the rotation model: rotation, flex, self-blend, and enriched virtual (2012, 2013, 2015). The sub-models adhere to the layout (format) of partly face-to-face instruction and partial online delivery, with variations in locations (synchronous and asynchronous). Horn and Fisher (2017) illustrate that sub-rotation models are executed in a typical conventional classroom synchronously and asynchronously.

Staker and Horn's (2015) nomenclature for the four models is predominantly implemented in tertiary and K-12 environments and is much cited in peer-reviewed research journals. Nevertheless, investigations have not been regarded as empirical studies (Halverson & Graham, 2019; Henrie et al., 2015; Pulham, E.B., 2018; Yang et al., 2021). Staker and Horn observed different variations of the rotation model concerning whether learners rotate inside the classroom, in a different room or off-campus (2013, 2015), and supplementary blended learning models have appeared over the last decade, such as station rotation, lab rotation, individual rotation, and flipped classes (Christensen et al., 2013; Crawford & Jenkins, 2017; Pace & Mellard, 2016; Powell et al., 2015; Stover & Houston, 2019).

Table 2.2

Variations of the rotation model

Model	Description
Station rotation	Learners rotate between various learning stations in a bricks-and-mortar situation, collaborate in small F2F groups with an instructor, and self-coordinate Web-based learning during their school day to a fixed schedule (Horn & Staker, 2015). For instance, one station might incorporate independent tasks, whereas an alternative is instruction for a small group and an additional online learning station. Importance is attached to the instructor's use of students' data, received from Web-based tools to put learners in particular groups. Moreover, this model has primarily been implemented and practised at the elementary level (Horn & Fisher, 2017; Horn & Staker, 2015).
Lab rotation	Learners within a similar class period devote (use) a portion of their class period (time) to traditional F2F teaching and part of their class period (time) learning to Web-based (online) tools in a computer lab (Horn & Staker, 2015).
Individual rotation	Learners rotate between learning platforms, dependent on an individually fixed and customised schedule created by computerised algorithms or educators (Horn & Staker, 2015). The learners have a plan designating synchronous and asynchronous learning environments (when, where, and for what purpose to meet). This model accomplishes a mixture of Web-based learning and F2F classroom learning and is implemented by replacing conventional F2F classroom time with Web-based (online) learning time. In addition, the individual rotation model is an efficacious method for reducing face-to-face class sizes while extending students' interaction, involvement, motivation, and learning (Kenney & Newcombe, 2011).
Flipped classroom	An instructional model uses a Web-based mode to deliver a preliminary synopsis and background knowledge of the topic (foundational material)

online through video tutorials (lesson) prepared by the instructor before the class meets in-person in a bricks-and-mortar setting – a preloading of instruction (Bergmann, 2017; Horn & Staker, 2015). Learners spend class time on collaborative tasks, assignments, and projects and work in small groups (Horn & Staker, 2015). This enables learners to develop their understanding, comprehend advanced-level ideas, discuss higher-order tasks and get assistance in a face-to-face class environment (Strayer, 2012). In his research, Strayer found that learners in a flipped model were fully involved and open to discussion and collaboration when contrasted with a conventional group (2012). He concluded that these results were gathered from an introductory course where students did not have any necessary background knowledge concerning the subject to connect the activity to the lesson (2012).

2.3.2. Blended Learning Models: Implications

The implications for experts and researchers of blended learning models depend upon the proposed objectives of implementing them and how the challenges of implementation are successfully addressed. For instance, consider the 'learning ecology' model examined previously. Cost-effectiveness was one of the concerns in building this model. Online self-study might appear to be a striking delivery mode for somebody focused on cost-effectiveness and cost-saving. For others, whose focus is on collaborative as well as constructivist insights into learning, online group tasks and discussion might be an essential component of course delivery. Either objective might fail to be accomplished, for instance, if programming authorising charges are higher than anticipated or if Web-based correspondence is badly directed or cumbersome. However, with this model, more than one objective is harmonious, but that is not guaranteed.

Graham notes six distinct rationales for executing blended learning: instructional affluence, admittance to information, societal communication, individual agency, cost-viability, as well as the comfort of review (2006). Of the mentioned rationales, (1), (2), and (5) have been observed and discovered to be primary motives (Bonk & Graham, 2006). Researchers propose that blended learning can increase access to learning for part-time learners (Heinze & Procter, 2004; Poon, 2013; Procter, 2003). Graham (2006) recorded research that demonstrated improved access. Some scholars question the capability of blended learning to improve access; such arguments primarily hinge on the notion of a 'digital divide' where some segments of the community have a shortage of digital literacy to profit from increasing access (Bancroft, 2016; Sharma et al., 2016; van Dijk, 2006). This worry has lessened in developed nations because of the widespread dissemination of digital technology, but it still involves some cost-effectiveness arguments. Graham (2006) states possibly massive returns on investment; however, Launer (2010) rejects the proposition that blended learning is less expensive due to the cost of acclimatising and upgrading data, materials, and infrastructure, as well as providing adequate technical support.

Researchers argue that, while introducing blended learning, the fundamental source of cost-savings is staff savings (Graham et al., 2005; Horn & Staker, 2011; Kim et al., 2009; Olapiriyakul & Scher, 2006); however, the principal debate hinges on instructional efficacy. In addition, blended learning accommodates different learning styles (Uğur, B., Akkoyunlu, B., & Kurbanoğlu, S., 201; Procter, 2003; Tempelaar et al., 2009); the debate persists and enquires whether it delivers what it intends to deliver. For instance, the lecture method and the lecturer's role were questioned for a while; this mode is still a typical means of training learners and conveying knowledge in most developing nations. It has been ferociously criticised on account of its inefficiency and unidirectional nature (Ellis, 2008). Thus, the two claimed advantages of online technology (its

capacity to connect space and time) are inadequate to make the lecture method as engaging and stimulating as an entirely blended learning mode.

Another example is a group discussion in small and large setups. One of its prominent advantages is that such activities enable shy learners to take part in discussions on a Web-based forum, voluntarily at first and eagerly later (Hew & Cheung, 2014); researchers have likewise observed that some learners feel inhibited and unable to contribute to online discussions due to linguistic, cultural, and spatio-temporal limitations (Deng & Tavares, 2013; Hew & Cheung, 2014; Jaques & Salmon, 2007; Mazzolini & Maddison, 2007; Rovai, 2007). The implication appears to be that just uploading a learning activity to the Web is not enough to ensure the effective implementation of pedagogical outcomes. Supplementary factors might be comparably significant, for instance, delivery mode and learning style.

Graham and Dziuban (2008) likewise observe that studies' findings favour blended learning and propose that modifications partially explained this to the course content being conveyed, which is more appropriate for a Web-based apparatus. Additional clarification may be that e-assessment (Web-based evaluation) strategies are geared to what can be readily computerised, preferred by apprentices (Graham & Allen, 2011). This concurs with nervousness in certain nations, including Britain, that learners are getting less ready to adapt to the typical requirements of a course, like reading an entire book, as per some considering the drastic impact of advanced technology (Buzzetto-More et al., 2007; McIntyre et al., 2005).

Blended learning reveals comparatively better learning outcomes than typical conventional F2F learning or completely Web-based modes (Dziuban et al., 2018; Laurillard, 2013; Madden et al., 2019; McCarthy, 2016; Moore & Diehl, 2019; Picciano et al., 2014). Lowes found it challenging to offer substantial exploratory validation concerning the efficacy of varied techniques

because there are numerous variables to control and moral and pragmatic issues to remember (2014).

Consequently, the grammar component is accessible for independent study and examined by computerised assessments set at varying difficulty levels, whereby learners can pick tests according to their needs. On the other hand, other different modules are utilised as elective or additional choices to enhance learning. This method comprehensively accords with acquiring lexicon, syntactic constructs, and grammar that are more appropriate for Web-based strategies. In contrast, interactive exercises, particularly in productive skills, writing and speaking, need an instructor's inclusion and facilitation (Launer, 2010). As a result, receptive skills, i.e., reading and listening, provide an engaging asynchronous learning environment for learners to track their progress and reduce the burden on educators during e-assessments.

2.3.3. Blended Learning in the K-12 Sector

The US Department of Education acknowledges the need to enhance education in the K-12 sector and distinguishes the prerequisites of advancing hybrid models and 21st-century skills of blended learning (Barbour, 2014; Eguchi, 2014). The 21st-century skills model attempts to overcome barriers to plan, prepare, and upgrade educators and learners alike (Barbour, 2014; Eguchi, 2014). Blended learning and online learning are still in emerging phases of evolving to reach in maximum potential in the K-12 sector (Picciano et al., 2014), more investigation should be directed towards validating blended learning's efficacy in that sector (Cavanaugh et al., 2009). Blended learning emphasises learners and a learner-centred approach. Wang et al. (2015) state that blended learning has been significant among researchers and practitioners since 2010. Blended learning has seen substantial progress in all pedagogical models directed at the K-12 level (Barbour et al., 2013). Blended learning alters the manner in which students get information, reviews their mastery of

skills and content, and resolves issues by communicating in real-time and Web-based environments using Internet technology (Drysdale et al., 2013).

Most higher education institutions in the US have effectively implemented blended learning courses (Allen et al., 2007; Drysdale et al., 2013); however, developing countries, including Pakistan, are till now still struggling with the successful execution of blended learning courses at all educational levels. Learners at different stages have dissimilar psychosomatic necessities; therefore, diverse learning strategies are needed. Drysdale et al. (2013) argue that teenage students have different needs, capacities, and limitations than tertiary or post-graduate learners, focusing on blended learning research.

On the one hand, blended learning needs extensive research at the K-12 level (Coe, 2014; Drysdale et al., 2013). On the other hand, Halverson et al. (2012) propose more studies on blended learning at different levels concerning educators, managers, learners, programme execution, and predominantly perceiving leadership and administrative levels at tertiary and higher levels. These investigators also argue that blended learning will continue to grow more rapidly as administrators, teachers and researchers collaborate and establish a viable blended learning atmosphere, where execution is subject to expanded development.

2.3.4. Blended Learning in the Tertiary Education

Higher education is, without doubt, confronting numerous changes and challenges post-COVID-19 (Ali, 2020; Bonk, 2020; Kumar, 2020; Stewart, 2021). Pedagogical practices are dramatically altering the overall teaching-learning experience for both educators and learners alike. Even though some features of higher education institutions (universities) will stay unchanged after the global pandemic (Sanford et al., 2020), numerous facets of tertiary and higher education will be unrecognisable in the next two decades (Madden et al., 2019, p.1). Blended learning, which blends

real-life and online education, is the vanguard of this continuing, rapid tertiary education transformation, particularly in the midst of COVID-19 and post-pandemic. Blended learning permeates learning with computer-mediated instruction and frequently contains a mix of asynchronous and synchronous learning environments.

Besides, in a mainstream design known as "flipped" classrooms, lectures are frequently delivered outside of class time through accessible media such as online video (Day & Foley, 2006; Margulieux et al., 2016). This can likewise incorporate adaptive course books as a replacement for lectures (Valiathan, 2002). Supplementary variants incorporate reallocating class time to accentuate critical thinking, problem-solving, lab experiments, and different kinds of proactive commitment and dynamic learning. A significant takeaway is that blended learning transforms the role of an educator from a transmitter of knowledge to a content creator. As a result, this transformation can affect educators' and learners' experiences that emphatically influence academic performance.

Researchers agree that blended learning cultivates profound theoretical comprehension, expanded content mastery, and increased metacognitive aptitudes required for additional learning and accomplishment in the workforce (López-Pérez et al., 2011; Madden et al., 2019; Owston et al., 2013). Strayer (2012) declares that the subsidiary gains of blended learning incorporate expanded learners' engagement and the development of learning networks and communities.

Studies corroborate that learners in blended learning classroom environments demonstrate higher test scores, upgraded mastery of content, self-perception of proficiency and more noteworthy satisfaction with their accomplishments (Biddix et al., 2015; Bishop & Verleger, 2013; Madden et al., 2019). Likewise, the blended learning classroom offers versatility, adaptability, and space for educators to customise the learning experience and build quick intercessions with the

whole class (Bergmann & Sams, 2014; Picciano et al., 2014). Madden et al. (2019) state that some genuine obstructions have been found to testing and implementing "blended learning in practice despite the growing body of evidence that makes a case for it" (p. 2). Educators might find it intimidating to experiment with blended learning on their own. Pedagogical barriers to implementing and redesigning blended learning courses can be frustrating and time-consuming (Bergmann & Sams, 2014; Kenney & Newcombe, 2011; Madden et al., 2019; Picciano, 2014). Some institutional barriers to implementation present themselves and can lack facilitation of new enterprises, innovativeness and initiatives or total scepticism (Porter et al., 2016). Technological barriers to technology should not be overlooked, and different resources can enormously affect whether an educator can guide/ pilot an apparatus (Taplin et al., 2013).

Last but not least, physical space can frequently be a challenge for blended learning in a conventional classroom environment (Bergmann & Sams, 2012). Apart from the barriers mentioned above, scale is one of the more significant obstructions to the execution of blended learning in the higher education sector. Bergmann & Sams (2012) mention that large-scale introductory courses could be problematic for large classes with hundreds of students. These require a lot of initial attention, effort, care, and planning from an instructor's perspective.

Moreover, assessment might also pose hindrances to extensive adoption. Although studies reveal that blended learning prompts more significant gains, these can be challenging to quantify (Madden et al., 2019). A large part of the existing research depends on qualitative instruments, such as learners' feedback surveys. More work should be conducted to spotlight the difficulties in measuring learners' intellectual gains as well as skills, and educators' experience and workload (Henrie et al., 2015). Madden et al. (2019) suggest that researchers should investigate this specific domain and develop more innovative methods (p.3). This section has discussed learning outcomes,

course design, assessment, pedagogy, technology, and institution issues and how to address some difficulties in executing blended learning.

2.3.5. Blended Learning in Higher Education: Pakistan's Perspective

Pakistan is undergoing various progressive modifications concerning the application of technology in education. To begin with, Allama Iqbal Open University (AIOU) initiated the concept of eLearning, for the first time, in Pakistan in 2000. The structure was named the Open Learning Institute of Virtual Education (OLIVE). Second, the Virtual University (VU) of Pakistan presented courses through ICT and public TV channels. Apart from AIOU and VU, no tertiary or higher education has embraced innovative technology platforms and systems and integrated blended learning in a genuine spirit in Pakistan. The Higher Education Commission (HEC) of Pakistan took substantial initiatives to present and bring together new educational technologies in Pakistani colleges and universities that comprise virtual lecturing, video-conferencing as well as "net-meeting using an IP-based video conferencing system broadband facility, National Digital Library, Pakistan education and research network" (Soomro et al., 2018, p. 259). Qureshi et al., (2012) state that a blended learning approach will not benefit developing countries, including Pakistan, unless the variables needed for its transformation and adoption are constantly available in universities; for instance, ICT penetration problems, digital literacy and reluctance to diverge from conventional learning methods, electric power failures, and linguistic limitations.

Alam et al. (2012) examined Pakistani students' perception of distance learning and underscore that learners usually like asynchronous learning environments so that they can learn at their own pace with few spatio-temporal limitations. Besides audio-video recordings and voice mails, mail correspondence is the most preferred correspondence method. They additionally propose that computer-mediated communication (CMC) methods have empowered learners to

participate in agreeable problem resolving, online discussions and peer mentoring. These are best achieved by building up virtual learning networks, which separate customary educator as-transmitter and student as-receiver roles and instead endorse a more student-driven atmosphere.

Hussain (2007) investigated learners' attitudes towards e-learning in Pakistan and concluded that e-learning caters for a more significant population irrespective of organisational limitations and can expand across huge geographic communities. ICT facilitation in e-learning is conducive and adaptable for learners, giving them a more extensive learning experience according to the worldwide norms of education at tertiary and higher education levels. Learners in Pakistan's tertiary and higher education sectors experience specific essential issues when interacting with educational technology tools for teaching and learning purposes. These vital issues encompass limited technology awareness, lack of computer skills, restricted access to Internet sources, and Internet connection disruption. However, effective blended learning integration is the best possible solution to all these problems. It overcomes spatio-temporal limitations and provides innovative opportunities for learners, educators, and administrators in like manner in the higher education sector. As a result, blended learning plays a conducive role in facilitating better learners' learning outcomes, experience, and results. This is also a much-admired approach for educators that improves their teaching practice by means of all available resources.

2.3.6. Blended Learning and the Language Learners

Learners adopted a conventional F2F bricks-and-mortar approach to learning until the emergence of blended learning, and instructors imparted instruction in a typical conventional method, i.e., the grammar-translation method. Over the past decade, and specifically in the era of COVID-19, this notion has been altered dramatically; learners can learn and benefit in synchronous and asynchronous environments, which can be customised as per their requirements.

Horn & Staker (2015) indicate that blended learning is a learner-centred approach incorporating two pertinent ideas: individualised learning and mastery learning. The first one is associated with the explicit requirements of students. Hence, individualised learning is adjusted or individualised with the goal that every individual learner can be successful. When learners acknowledge one-on-one assistance from a coach (educator) rather than group instruction, the results are usually very synthesised.

Moreover, Horn and Staker (2015) state that mentors might need to adjust the speed to fit learners' necessities. They proposed an individualised approach in which learners get in-person, F2F, one-on-one learning when they require training/ coaching (2015). Blended learning investigations into constructive learners' satisfaction have consequences. This happens once blended learning is actualised and executed for academic greatness and finesse (Dutro et al., 2011; Yapici & Akbayin, 2012). This idea of blended learning is growing worldwide. This teaching-learning method is rapidly modernising the conventional instructive framework with various better approaches amid a global pandemic (Bonk, 2020; Ma & Lee, 2021; Wang et al., 2021) and offers ways to gain more authentic information (Henshaw, 2020; Lockee, 2021). In addition, learners cross the threshold of a complex world where they require a learner-centred pedagogical framework. Also, blended learning controls individualised and aptitude-based learning. As learners are exposed to a learner-centred approach, they build up a need to keep moving, have a sense of urgency and proprietorship for their development, notwithstanding the following capacity toward directing their learning (Horn & Staker, 2015). Along these lines, learners will have the capacity to turn out to be long-lasting students, which is fundamental in the present quickly changing world in which information and skills rapidly become outdated. Thus, it is troublesome in the present factory model of training for learners to continue ahead (Horn & Staker, 2015).

2.3.7. Blended Learning Drawbacks

Blended learning is an educational method that assists educators and learners to link, help, and provide customised learning anytime, anywhere. Researchers claim that blended learning is more time-consuming than conventional methods because of the components and design required (Benson et al., 2011; Korr et al., 2012). Garrison & Vaughan (2013) mention that to facilitate educators and compensate for the extra time required for planning, preparing, and designing lessons, some higher education institutions offer incentives such as an additional stipend or academic assistance. Notwithstanding, educators are at a disadvantage because of the continuous development of technology. Ultimately, it is important to comprehend what materials educators find helpful so that policymakers and administrators can successfully target materials and resources to enhance learners' use of technology and innovation in fruitful ways in the instructional process (Schrum & Levin, 2013).

2.3.8. Implementing Blended Learning: Future Solutions

Technology in education is constantly providing new approaches for evaluating curriculums, educators and learners. Conventional education in middle and secondary institutions could be merged with blended learning explicitly post-COVID-19. Part of the historic conundrum is comprehending an instructors' learning atmosphere alongside instructors' pedagogical arrangements to enhance instruction and professional development. Moreover, managers and executives are accountable for guaranteeing that blended learning is executed efficiently and successfully by regulating as well as improving the professional growth and pedagogical apparatuses for educators to upgrade their instructional strategies and skills. There are not many instances of teachers' arrangements for a Web-based climate in instructors' training. Barbour et

al. (2013) express that instructors' provision and arrangements for Web-based environments is a core problem. Less than 40% of Web-based (online) teachers in the US reported that they were getting professional development of any kind prior to starting online teaching practice (Barbour et al., 2013); however, technology training in pre-service, in-service and post-service phases, and technology upgrades are sparse and virtually non-existent in Pakistan. Research studies are required to understand how a blended learning environment affects educators' everyday assignments and instructional practice. Because of the growth in online learning, hybrid learning, and virtual instruction, research to discover interest is imperative; technology is conclusively impacting on schooling worldwide, pre-and-post COVID.

Finally, research shows that educators' provisions and arrangements need adaptability and being detached from shifts within the instructive environment and upcoming prospects to facilitate learning (Cator et al., 2014). Understanding teachers' responsibilities in the BL atmosphere is imperative to support administrative procedures pertaining to professional growth, similarly new pre-service prototypes for fresh educator candidates (Cator et al., 2014). Future ways to execute blended learning will predominately depend upon instructors' readiness to fulfil learners' needs.

2.4. Declaratively Accelerated Blended Learning (DABL)

Research shows that the finest and most practical technique to learn, instruct and how to communicate in foreign languages is blended learning — the combination of technology blended with human instruction (Cunningham, 2017; DeMillo, 2019; Dziuban et al., 2018; Graham, 2012; Johnson & Graham, 2015; Madden et al., 2019; McCarthy, 2016; Means et al., 2009; Picciano, 2015; Stein & Graham, 2014). Means et al. (2009) state that blended learning is better than either human instruction or computer learning. The researcher did a thorough review of blended learning models to decide which model might best serve as a framework for this research. However, the

blended learning models, as discussed above, have serious limitations, as already explained in the sections addressing implications. None of the blended learning models in their existing form could serve as the foundation for this study. Therefore, the investigator, based on blended learning models, examined another such technology-based approach and Transparent Language Online's current favourite, a blend of technology and pedagogy, *declaratively accelerated blended learning* (DABL).

The current section introduces DABL, the research behind its methodology, in what way it tends to be implemented in language teaching, and why its advantages surpass real-life in-person teaching or Web-based instruction alone. The section also presents the DABL cycle, Ullman's (2001) declarative and procedural model, declarative and procedural memory systems, declarative memory, and technology for teaching the declarative component of language.

2.4.1. DABL: An Introduction

Declaratively accelerated blended learning (DABL) is an ideal mixture of technology with human instruction (Allen, 2016; Patchan et al., 2016) and an optimal technique setup offered by Transparent Language Online (TLO) for learning foreign languages (Asif et al., 2022). The best apparatus based on DABL is TLO, which successfully handles learning issues because of its methodology of instructive practice blended with technology. This approach marries happily with the declarative method to cover any foreign language through TLO.

DABL is an adaptable strategy, easy to change to suit any curriculum, student, and/or environment (Conrad & Donaldson, 2012). Developed after exhaustive research, this approach is "grounded in a cardinal principle of human learning" (Asif et al., 2022, p. 273). Educational plans are sequenced to pursue proficiency but inclined towards specific domains or performance; a "declarative spine" is firmly adjusted to an educational programme or curriculum and instantiates

declarative, i.e., vocabulary terms and expressions, language structure rules, and cultural components in Web-based lessons. It can convey Web-delivered lessons anytime, anywhere, on any device (Chen et al., 2008; Kukulska-Hulme et al., 2017; Reinders & Benson, 2017; Vesselinov et al., 2019) and incorporates skill-building guidance that shrewdly takes advantages of both novel and acquired declarative skills. This seems to convey the designated results efficiently.

2.4.2. Learning Cycle of DABLs

Step 1: Pre-class Preparation

The objective of pre-class planning is for learners to gain proficiency in fundamental vocabulary, words, and expressions are arranged to be utilised in guided lessons. Irrespective of the topic, subject and domain, the DABL technique can be used on any assortment of vocabulary and expressions to align with explicit objectives, assignments, and teaching prerequisites. Interestingly, learners acquire jargon or additional fundamental notions prior to classes.

Step 2: Classroom Application

Class time's primary objective ought to be for "warmed up" learners to apply the language in context. Group discussions, dramatisations, role plays, press conferences, debates and teacher-driven or peer-led drills are more effective when learners share a communal comprehension of basic vocabulary and expressions. As a result, learners perform notably better when they are fully involved, and the instructor acts as a guide and facilitator, not a sage.

Step 3: Sustainment and Enhancement

Obviously, every instructor wants their students to sustain information of the language, and have the capability to put it into practice years after completion of their programme. As a result, students

should commit language information to long-term memory and technology is a solution that refreshes their learning in the long run.

2.4.3. Declarative and Procedural Model

This section concentrates on long-term memory systems. The more significant part of language should be learned regardless of whether parts of this capability are inherently determined. In particular, the section focuses on how declarative and procedural memory systems perform crucial roles in learning foreign languages. Without doubt, there are two highly effective 'long-term memory systems in the brain' regarding the extent of the capacities as well as domains they support (Ullman, 2001a). The declarative and procedural (DP) model hypothesises that the two systems perform a pivotal role in the domain of language learning in a manner identical to how these systems function in other domains (Ullman, 2001b, 2004). Significantly, these memory systems have been much concentrated on in animal and human studies and, consequently, are moderately well apprehended at numerous stages comprising their molecular, brain and behavioural correlations (Ullman, 2001c, 2004). This comprehension prompts a vast scope of expectations pertaining to language that an individual might have, there is no motivation to rely only on the restricted investigation of language. For example, suppose a particular gene or brain construction is recognised to assume a particular role in the aforementioned memory systems; it may be anticipated that it will assume a similar role in language, regardless of whether one has the motivation to make such a prediction dependent on our comprehension of language alone. As a result, the declarative/ procedural (DP) model is a strong hypothetical framework.

2.4.4. Declarative and Procedural Memory Systems

Modern functional magnetic resonance imaging (fMRI) has proved that there are two specific memory structures in the human brain that contribute to learning languages: the declarative and procedural memory systems. Ullman (2001a, 2001b, 2004) states that "the declarative memory system 'learns facts', while the procedural memory system 'learns skills" (Ullman, 2001c, p. 196). With respect to learning any foreign language, declarative memory stores basic vocabulary, i.e., words, phrases, clauses, and learns facts, which requires a conscious effort and repeated exposure to those items. Procedural memory stores skills and learns abilities, which tends to be learned by working with languages so frequently that grammar rules and patterns can be internalised and applied automatically. Of these two, the former plays an important part in language learning as compared to the latter, which helps us to learn aptitudes (Ullman, 2001, 2004).

2.4.5. Declarative Memory

The "declarative" memory system (Ullman, 2001b, 2004; VanPatten & Williams, 2015) is implicated in the learning, utilisation, and representation of information concerning facts "semantic knowledge", as well as events "episodic knowledge" (Ullman, 2001c, p. 196). This memory system is significant for the speedy learning (for instance, depending on an individual stimulus demonstration) of arbitrarily associated knowledge for the affiliated restricting of data (Ullman, 2004). Squire and Zola (1996) argue that knowledge acquired by this framework is not educationally recapitulated, being available to different brain systems. Additionally, in any event, some portion of this information can be advertently and explicitly recalled.

Researchers express that declarative memory relies upon medial-temporal lobe (MTL) structures (Ullman, 2001a, 2004; VanPatten & Williams, 2015). The MTL complex seems to support numerous correlated memory purposes, such as the encoding, merger, as well as recovery

of fresh memories (Buckner et al., 2001). Memories in the long run (in humans, over months to years) prove to be generally autonomous of MTL structures and dependent on neocortical areas, specifically in the MTL (Ullman, 2001a). Researchers hypothesise that MTL structures partner or "bind" contributions from cortical areas that together preserve a whole memory (Alvarez & Squire, 1994; McClelland et al., 1995). Goodale et al. (1992) state that the declarative memory system is firmly associated with the "ventral" stream system. This framework is established in inferior and lateral MTL constructions and triggers perceptual representations of articles along with their associations. These representations inspire the acknowledgement and recognition of objects, and the long-term storage of information concerning objects.

The declarative memory system refers to the entire framework associated with the learning, representation, and utilisation of applicable data (Eichenbaum, 2000), or merely those brain structures that trigger learning novel memories. Different brain constructions assume a role in the declarative memory framework, though the exact functions and regions are not too well-defined.

2.4.6. Technology for Teaching the Declarative Component of Language

Declarative acceleration leverages technology to speedily present and support words, phrases and clauses by means of a suite of connecting and engaging sequences, games and learning activities (Means et al., 2014). Because of its adaptability, personalisation and speed, technology more effectively instructs the declarative language element (Bolgün & McCaw, 2019; Golonka et al., 2014; Radianti et al., 2020). Asif M, Sheeraz M, and Sacco SJ state that a computer can illustrate numerous learning experiences each minute, detect, record and organise results, and consistently alter until the learner stores the task/ assignment in their declarative memory (2022, p.279). Consequently, learners are persistently associated with language learning through personal computers, laptops, the Web, and mobile devices, eliminating spatio-temporal limitations

(Dashtestani, 2016; Du et al., 2022; Ko, 2017; Şad et al., 2020; Stockwell & Hubbard, 2013). An educator would be hard-pressed to reproduce these flexible, rapid, efficient, and customised learning practices in a traditional classroom environment. In contrast, educators are far preferable to computer software pertaining to empowering collaborative tasks, such as role-plays, directing small and large group discussions, and all-around assisting students in applying their knowledge.

In this regard, through Web-delivered language learning platforms such as Transparent Language Online (TLO), massive success has been noticed in accelerating the assimilation of language into declarative memory by rapidly acquainting students with words and phrases using instructive games and varied, engaging activities about reading, writing, listening and speaking that start from the first lesson and proceed until the last. It has ended up being an extensive solution that contrasts with other learning systems and applications and explicitly matches the necessities/ requirements of students.

The next section conducts a thorough review of available Web-delivered learning platforms and learning applications, the research conducted on the efficacy of these platforms, the non-linguistic factors of these platforms, the strengths and weaknesses of stand-alone learning platforms, and preparing the stage for Transparent Language Online.

2.5. Web-delivered Language Learning Platforms: Role and Significance

Web-delivered language learning platforms, which frequently include learning applications as one of their systems, perform a substantial role in training language learners worldwide. Sacco, as cited in Vesselinov et al. (2019), says that the market for these suppliers is colossal and emerging exponentially across the globe. The main providers are Transparent Language Online, Rosetta Stone, Duolingo, Babbel and busuu; however, competitors include Mango Languages, Berlitz, WeSpoke, Fluent Forever, Fluenz, Linguistica360, Rocket Languages, Yabla and various others.

Web-delivered language learning platforms are fast-paced, adaptable, interactive and engaging. These platforms comprise computerised material and constructs that invigorate L2 using ICT methods and together improve instructors' preparation programmes (Hager, 2020; Sollohub, 2021). Such tools consist of learning exercises, audio-video aids, e-books and mobile applications. These platforms provide a mastery-based, self-paced learning environment, approve constant input, and increase the number of learning procedures because of their versatile and diverse configurations and learning formats. Vesselinov et al. (2019) explain that students can learn in an asynchronous learning environment with a computer or mobile device anytime, anywhere (p. 8). This sort of flexibility, adaptability, self-paced, and user-friendliness surpasses traditional instruction conveyed at the K-12 and tertiary levels. Consequently, Web-delivered language learning platforms redirect enrolment from conventional methods; however, these platforms experience cutthroat competition with each other (Vesselinov et al., 2019).

Conventional second language instruction has changed little over the past few decades at the tertiary level; pedagogical practices remain essentially unchanged since the 1970s (Vesselinov et al., 2019). Regardless of these factors, courses still run-in bricks-and-mortar classroom environments, typically with 40 or more learners in a typical classroom; timetabling is the norm four to five times each week in the K-12 and tertiary sectors. Instructors, the principal language transmitters and suppliers, linger on, having restricted knowledge of pedagogical approaches and target language acquisition. Language offerings to date are restricted to the commonly taught languages, for instance, French, German, and Spanish, whereas, for the most part, less commonly taught languages are presented at prominent institutions of higher studies in the US and across the globe (Vesselinov et al., 2019). All in all, conventional second or foreign language teaching adheres to a one-size-fits-all framework. This conventional instructional framework neither

highlights the flexibility and accessibility, nor the customisation of teaching. As a result, this customary model aims to benefit suppliers over users.

2.5.1. Investigations on the Effectiveness of Web-delivered Language Learning Platforms

The efficacy of profitable Web-delivered language learning platforms and applications for learning a second or foreign language has received little consideration from researchers despite hundreds of millions of users worldwide (Jiang et al., 2020, 2021; Kukulska-Hulme et al., 2017; Loewen et al., 2020; Loewen, Crowther, et al., 2019; Vesselinov et al., 2019). The low level of research interest might stem from restrictions on scholars' control while using Web-delivered language learning platforms and applications versus other instruction methods, for instance, captioned target language videos (Gass et al., 2019) or researcher-designed apps (Loewen et al., 2020; Wu, 2015); it might also be the commercial nature of these Web-delivered language learning platforms and apps that discourages scholars most (Loewen et al., 2020). Moreover, these learning platforms experience fierce rivalry for market share, irrespective of a constantly developing industry sector. Most of these learning systems hire commissioned researchers, adding significantly more pressure to adhere to their expectations (Jiang et al., 2021). Guaranteeing a system's dominance is the foremost procedure in persuading an unsophisticated public passionate to acquire proficiency in another language. Notwithstanding, most of these learning platforms and apps are overpriced. Practically all of them make enormous claims, which are difficult to accept to a knowledgeable researcher about rapid learning and helping learners become proficient speakers in the target language (Loewen et al., 2019, 2020; Vesselinov et al., 2019).

Pearl (2017) cites Robert DeKeyser, a distinguished SLA investigator, expressing that most people in the scholarly world have much scorn for the perpetual presentation of applications and devices that are going to resolve all our troubles. There have, however, been various requests for

SLA and ISLA (instructed second language acquisition) practitioners and specialists to investigate such platforms' and applications' effectiveness for second and foreign language learners (Loewen et al., 2020; Plonsky & Ziegler, 2016). Numerous subscriber and customer satisfaction rate surveys are two legitimate measures to quote. No empirical data are available to support adding these unsubstantiated claims of increasing learners' second/ target language proficiency in record time to the list of promotional and advertising policies. Alternatively, it is essential to have some serious analyses and investigations to contemplate; nonetheless, empirical validation for these analyses derives from limited-scope descriptive research with restricted generalisability.

Research on L2 advances has discovered blended learning outcomes. Different non-commercial language learning platforms and applications have been observed to have positive results for second language lexical awareness and grammar improvement (Berghe et al., 2019; Godwin-Jones, 2009; Raine, 2017). Likewise, studies on commercial learning platforms and applications, for instance, Babbel (Vesselinov and Grego, 2016), Busuu (Vesselinov & Grego, 2016), Duolingo (Krashen, 2014; Loewen et al., 2019; Munday, 2015; Vesselinov and Grego, 2012), and Rosetta Stone (Lord, 2015, 2016; Vesselinov, 2009; Vesselinov et al., 2019) have identified positive learning outcomes for clients regarding receptive information of second language jargon and syntax. In light of these investigations, these projects provide similar or more considerable usefulness than traditional F2F second language courses and instruction.

This does not give the impression that language learning platforms and applications, together with commercial alternatives, dependably generate an upsurge in students' grammatical and lexical knowledge, especially of a kind that may be viewed as more particular in nature (Loewen et al., 2019). Notwithstanding their efficacy in improving receptive information, these platforms' worth for advancing speaking skills is unclear. A few non-peer-reviewed research

articles indicate that their students can build up grammar, vocabulary, and speaking skills (Rosetta Stone, Vesselinov, 2009; Busuu, Vesselinov & Grego, 2016b).

The advertising proclamations of language learning business platforms and applications likewise strongly propose that figuring out how to speak effectively in L2 is a pragmatic and reasonable result: "Speak a new language with confidence" (www.babbel.com), "Breaking down workplace language barriers" (www.voxy.com), "Speak a language in 10 minutes a day™" (www.busuu.com), "Learn to speak anytime, anywhere" (www.rosettastone.com) (Loewen et al., 2020, p. 212). Also, Sacco states in Vesselinov et al. (2019) that for potential subscribers, some Web-delivered language learning platforms neither define "fluency" nor "in record time" (p. 10). Babbel claims that "you will learn a language in 3 weeks". Its proposed pace of 20 minutes of study per day, using the Babbel platform, implies that you can become familiar with and learn any second language in just seven hours! When Sacco asked *Babbel* what amount of time would be required to acquire CEFR B1, a Babbel official reacted, "we do not provide that information to the general public" (Vesselinov et al., 2019, p. 10). Vesselinov and Grego (2016) claim in their *Babbel Efficacy Study* that one must study for an average of 21 hours with Babbel for two months to reach the requirements of a first-year college Spanish placement test. Fluent Forever underscores "a proven 5-star method[4]" and asserts that students accomplish CEFR B1 level "in a short time"; however, they were not able to give a transparent definition of "in a short time" (Vesselinov et al., 2019, p. 10). The unverified claims of these online learning platforms make research essential to examine their effectiveness.

To date, there is insufficient research on the effectiveness of Web-delivered language learning platforms and apps (Jiang et al., 2020, 2021; Loewen et al., 2020; Loewen, Crowther, et

[4] https://fluent-forever.com/app/

al., 2019; Lord, 2015, 2016; Rachels & Rockinson-Szapkiw, 2018; Ratzlaff, 2015; Rosell-Aguilar, 2018; Vesselinov and Grego, 2009–2019, nine studies). The emphasis has been on the number of hours it takes to reach a level equivalent to a conventional rudimentary language course, mostly Spanish. A large portion of Vesselinov and Grego's studies (2009–2019) attempted to test just Spanish language skills utilising varied online platforms such as Duolingo, Babbel, Rosetta stone and busuu; only one study has been conducted by researchers on the effectiveness of English language utilising the HelloEnglish system (Vesselinov and Grego, 2017).

Why did Web-delivered language learning suppliers stop after just one research study? Because they received the encouraging outcomes they were expecting. Thus, these providers utilised a single study of one language to draw conclusions for all offered languages. For instance, Duolingo states "it takes 34 hours to cover the content of an elementary college course" (Vesselinov et al., 2019, p. 10). Vesselinov and Grego (2012) declare in their non-peer-reviewed investigation entitled *Duolingo Efficacy Study*, "a person with no knowledge of Spanish would need ... 34 hours on average to cover the material of the first college semester of Spanish" (p. 1). Lord (2015, 2016) observed similar learning outcomes for beginner-level Spanish students of traditional F2F and Rosetta Stone study groups; individuals, who learnt entirely through Rosetta Stone, struggled in discussions compared with students who studied in a traditional classroom environment. Also, learners using Rosetta Stone frequently turned to the English language, while traditional F2F learners were more prepared to maintain correspondence in Spanish.

Similarly, numerous students expect platforms to enhance their speaking module. For instance, as Roscll-Aguilar (2018) mentions, the number one anticipation of busuu students is speaking improvement. Notwithstanding, students tend to perceive more noteworthy improvements to their vocabulary, grammar, and receptive skills after some usage of available

Web-delivered language platforms and learning applications (Botero et al., 2018; Rosell-Aguilar, 2018). However, academics have raised doubts and showed concerns about claims regarding improving oral communicative skills through digital learning platforms and app-based learning (Deusen-scholl, 2015; Lord, 2015, 2016; Rodrigues & Vethamani, 2015).

In their investigation of elementary students of Spanish, Rachels and Rockinson-Szapkiw observed that "Duolingo was no more" beneficial compared to conventional F2F teaching for elementary Spanish language learners (2018, p. 3). Investigating Duolingo, Loewen et al., observed that "beginning learners of Turkish made linguistic improvements in all domains" examined (2020, p. 212); however, learners' accomplishments on oral test segments were significantly poorer than their achievements on written test exam segments. By not explicitly stating Spanish, Duolingo is misleadingly guaranteeing that it requires just 34 hours to reach the level of "an elementary college course in any of the 28 foreign languages the system presents" (Vesselinov et al., 2019, p. 10). Sacco states that Spanish requires fewer hours for native English speakers to accomplish proficiency compared to speakers of Chinese, German, Japanese, Swahili, or Turkish (Vesselinov et al., 2019).

As per the Foreign Service Institute[5], US Department of State, to acquire a superior level in the speaking module of the target language, it requires:

- 600–750 class hours (24–30 weeks) for *Category I Languages* which is comparable to English (Danish, Dutch, Italian, Norwegian, Portuguese, Romanian, Spanish and Swedish – 24 weeks, and French – 30 weeks)
- 900 class hours (approximately 36 weeks) for *Category II Languages* (German, Indonesian, Haitian Creole, Malay, and Swahili)

[5] https //www.state gov/foreign-language-training/

- 1,100 hours (approximately 44 weeks) for *Category III Languages* which are "Hard Languages" with considerable cultural and linguistic dissimilarities from English (Albanian, Armenian, Azerbaijani, Bengali, Czech, Dari, Farsi, Finnish, Greek, Hebrew, Hindi, Kazakh, Kurdish, Nepali, Polish, Russian, Telugu, Thai, Turkish, Urdu, Uzbek, and Vietnamese)
- 2,200 hours (approximately 88 weeks) for *Category IV Languages*, which are "Super-hard Languages" and are remarkably challenging for native English speakers (Arabic, Chinese-Cantonese, Chinese-Mandarin, Japanese, and Korean).

Sacco argues in Vesselinov (2019) that if 21 hours of Babbel, 22 hours of busuu and 34 hours of Duolingo are equivalent to elementary college language courses, effectively accomplishing the final exam of an elementary language course should occur naturally, then this is a different line of investigation for researchers to explore. Sacco mentions his failure in UCLA's elementary Swedish 101/102 final exam, receiving an F grade despite having completed over 200 hours of Duolingo Swedish.

Duolingo imparts grammar structures and vocabulary building through single sentences or phrases utilising the grammar-translation technique, an obsolete strategy that can be traced back to the 1950s and '60s. In contrast to Duolingo, Babbel and busuu vigorously accentuate free expression toward each unit's end. Users of the aforementioned learning platforms and suppliers may accelerate the elementary level final assessment, emphasising communication. This supposition is worth exploring in future research investigations. Ratzlaff (2015) conducted a two-group study comparing learners' German language proficiency at Fresno State University, CA, USA, in a master's thesis. The primary group registered in a German elementary class, whereas the second group utilised the Duolingo platform. The Goethe Institute's A1 level assessment is

utilised for grammar, apart from listening, speaking, reading, and writing. In almost every module, the elementary German traditional group did better than the Duolingo German group.

Ratzlaff asserted that 34 hours of studying through the Duolingo platform is not comparable to an elementary German course and cannot be equivalent. Evidently, the sample size was excessively small, with inadequate statistical power. This line of investigation raises questions; however, future relative investigations must:

- use a larger sample size, as compared to Ratzlaff's study (2015)
- focus on additional languages from different mentioned categories
- emphasise other language learning platforms and applications, such as Rosetta Stone, Babbel, busuu, Duolingo that partook in Vesselinov and Grego's nine studies.

2.5.2. Web-delivered Language Learning Platforms and Learning Applications: Non-Linguistic Factors

Persistence and motivation are salient features of Web-delivered language learning applications and platforms. Studies have observed that merely having a user account and access to such platforms does not guarantee that the systems will be utilised, regardless of whether students provide positive feedback and have positive attitudes towards them (Botero et al., 2018; Loewen et al., 2020). In Neilson's (2011) investigation of Rosetta Stone and Auralog's *TELL me MORE* software, a key result was that US government experts were very inconsistent in continuing to utilise platforms or applications, making it difficult for researchers to gather sufficient reliable data to gauge language proficiency achievements. Rosell-Aguilar (2018) discovered, in a cross-sectional investigation of over 4,000 busuu users, that barely a quarter had utilised the busuu platform for approximately six months. Botero et al. (2018) testify that most learners, 73 out of 115 registered users, started employing Duolingo to upgrade their college target language

investigation and were "try-and-quit" consumers of the platform, signing in for ten or fewer days throughout the study year focused on; these students revealed that they felt demotivated because of the platform's inability to engage them and captivate their interest. Vesselinov and Grego's (2009, 2012, 2016) studies, non-peer-reviewed research, spotlighted problems with users' persistence, but less significantly.

Moreover, these studies proposed persistence with Web-based learning platforms and applications that affect learners' academic achievement. Determined, long-term busuu users can be expected to see an increase in their integrated language skills. At the same time, short-term "guests" who play around inconsistently for less than 30 days were observed to demonstrate no improvement in their language skills (Rosell-Aguilar, 2018). Research showed that approximately 33% of the participants designated to rehearse a Web-based learning application through their scholarly course did not pick to keep utilising it once the semester finished, prompting no additional development in the accompanying language proficiency assessments (Kondo et al., 2012). The researcher likewise theorises that learners' inspiration and Web-delivered platform utilisation melt away together after the first semester (Kondo et al., 2012).

Numerous providers and language app designers have gamified their systems and applications to conquer issues with students' persistence (Isbell et al., 2017; Rosell-Aguilar, 2017), entrenching video game-like characteristics, for instance, experience objectives/ points (procured through accomplishing exercises as well as lessons) and competitive front-runner boards to encourage competition between students (for example, competing to gather the maximum experience focuses), with the desire to spur students on to utilise the platforms and applications more frequently. Consequently, problems of demotivation and perseverance need to be investigated in explorations of the efficacy of online language learning systems and applications.

2.5.3. Stand-alone Learning Platforms: Comparison and Weaknesses

Web-delivered language learning platforms pride themselves on being independent and stand-alone platforms, which is their most significant drawback. Sacco cites McGarell (2013), in Vesselinov et al. (2019), as saying that blended or hybrid learning combines real-life F2F and online learning circumstances as part of blended learning besides immersion. Sacco (2019) further states that a spokesperson of Fluent Forever confessed that their claims for fast and forever fluency essentially emerged from blended learning besides immersion. Blended learning uses and acquires benefits from the strong points of each provider. Knowledgeable education necessitates technology, and technology requires an informed instructor. An informed instructor, who invests many thousands of hours in online learning platforms such as Transparent Language Online, Rosetta Stone, Duolingo, busuu, Babbel, Rocket Languages, Fluent Forever, concludes that these Web-delivered learning platforms cannot do what an informed educator can offer:

- Stimulation, such as critical thinking and problem-solving correspondence
- Discussing convoluted societal misapprehensions
- Conveying recent developments and events through traditional and social media
- Using contextual investigations and case studies to investigate problematic communicative circumstances
- Imparting instruction in the target language through commands such as *Total Physical Response*
- Narrating stories

A knowledgeable educator can add to this indefinite list.

Online learning applications lag far behind conventional learning atmospheres in the instruction of both language and culture simultaneously; however, providers of these online platforms have devised their systems as if language and culture are not entwined. It is one way to get acquainted with vocabulary and grammar, but it is something else to handle communication problems dealing with culture. Conversely, conventional target language course books present cultural and social norms and conceptions in every section and examine the effect of these traditional norms, standards and taboos on cross-cultural correspondence.

2.5.4. Future of Web-delivered Language Learning Platforms

So, what does the future hold? In answer to this question, Larsen-Freeman (2018), a prominent applied linguist and SLA researcher, states, "I hesitate to make projections about the contribution of technology because it changes so rapidly" (p.11). Web-delivered learning platforms and language learning applications may in future add interactive video-games measurements to their current courses. Game-based learning augmented reality, and additional advanced usage of mobile devices will be subjugated to learn and instruct languages (Kern, 2014; Larsen-Freeman, 2018). Nonetheless, Larsen-Freeman rightly predicts the future.

In *eLearning Future: What will eLearning Look Like in 2075*, Rosen (2014) discloses that *World of WarCraft*, as well as *Candy Crush*, expound about cognitive psychology following engagement. Students are fond of games and like contests, interactive components as well as possibilities to foster techniques. They additionally like figuring out and mastering notions, instantaneous input, and personalities with noticeable personas. Extraordinary courses in the future will probably incorporate a considerable number of these components to create a thrilling and entertaining learning experience. In addition, students are curious to participate as well as procure profits by conquering content. Also, Bregni (2018) initiated video games utilisation for imparting

instruction in Italian. His study (2018) portrays gamification's use and is mandatory reading for the suppliers of these learning platforms worldwide. His various teaching awards and grants validate his accomplishment.

As COVID-19 has dramatically transformed every aspect of life, including the teaching-learning process, and humankind has experienced uncertainty and challenging situations; the pandemic provides enormous learning opportunities (Reimers, 2019; Reimers & Marmolejo, 2021; Zhao, 2020). Blended learning amid the global pandemic has revolutionised conventional teaching-learning practices (Ma & Lee, 2021; Wang et al., 2021). As a result, the post-pandemic world is a different new normal (Reimers & Marmolejo, 2021; Valdés & Rendtorff, 2021), where technology is the driving force facilitating every walk of life (Reimers & Marmolejo, 2021).

2.6. Transparent Language Online

Transparent Language Online, based in Nashua, New Hampshire, United States, focuses on language acquisition, sustainment, enhancement and assessment for serious purposes, at first for the US government. Established in 1991, Transparent Language began its application of Stephen Krashen's concept of comprehensible input, but the real world drove it to adopt more efficient and reliable approaches. Much of what Transparent Language appears to teach is, in fact, declarative knowledge. Maybe they have simply evolved far away from Krashen?

Transparent Language (TL) has developed a shared special-purpose digital platform for language materials authoring, dissemination and use. It is called Transparent Language Online in commercial spaces, and the US government offering is called the CL-150 Platform. The authoring of quality tech-delivered lessons in a fraction of the previous time and effort is critical because relevance is critical, so custom tech is often needed. Relevance is motivating, increases time effectiveness by bypassing some irrelevant steps, and better supports mission necessities. Also, TL

is involved in top quality assessment and was instrumental in the development of ASTM[6] Standard Practice F2889 for the development of ILR[7] scale language assessments. Curriculum, training and assessment inform and feed each other.

TL uses research to make educated guesses about what tech, materials and methods may work, then evaluates these based on real-world experience. For example, if certain groups of cryptologic language analysts had a chronic 15% deficiency in proficiency minimums, and afterwards the groups doing something different reliably go to a near zero approach failure and stay there, but the others do not, TL learns from that. By its nature, like all other platforms that bring all the different players together to solve some old problems in a new way (think navigating, for instance), TL naturally produces all sorts of data as a by-product of use by lesson developers, instructors, learners, and managers. It can easily gather data whenever it is asked to do so.

Michael Quinlan, CEO, Transparent Language (personal communication, 22 April 2021), states that TL loves to do formal quality research on L2 acquisition, sustainment, and enhancement effectiveness and efficiency broadly, since TL customers are looking to develop more workforce "mission readiness" with less mission burden (money, time, facilities, and disruption). At the same time, there is an opportunity to better comprehend more granular L2 learning sequences, trajectories, *à la* an old CASL (Centre for the Advanced Study of Language) project on "Correlates of Proficiency". If a linguist wants to be an ILR 3 but is ILR 2+, what is holding them back? What is different at different boundaries (1+/2, 3+/4), in different languages, different modalities. How does Arabic keyboard use evolve for an English or typical American? Or pronunciation? These fascinating questions are near infinite.

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[6] American Society for Testing and Materials
https //www.astm.org/DATABASE.CART/HISTORICAL/F2889-11 htm
[7] Interagency Language Roundtable (ILR) scale

Transparent Language Online (TLO) offers instruction in 115 world languages and has facilitated a huge number of people to learn new languages rapidly, efficiently and effectively. TLO is a reliable language-learning platform used by the US government, US military, corporations, the medical community and more than 12,000 schools and institutions, including top US government language schools, for instance, the Foreign Service Institute, US Department of State, US Department of Education, and the Defense Language Institute, Monterey, California.

Transparent Language Online (TLO) is the leading platform of all Web-delivered language learning platforms. Its exceptional design encourages immersion and offers users the most comprehensible input in the business industry. TLO examines learners' shortcomings and provides curative direction to eradicate them; it allows students to move without restriction through every unit produced by language experts.

TLO is interactive, flexible, and controllable. It offers a strong learning milieu that incorporates both synchronous discussions, dramatisation, acts, and in-language assignments (in a traditional setup) and asynchronous arrangements utilising the Web, portable or computer capabilities (setup anywhere, any device, anytime). The former can happen anytime, anywhere due to technology and Web-based resources; the latter can occur in a conventional or distant virtual classroom setup. Learners are persistently exposed to and engaged with the language through desktop, web, and mobile platforms, eliminating most time and place restrictions. An instructor could not adeptly replicate this fast-paced, adaptable, and individualised learning experience.

TL tends somewhat towards *Skill Acquisition Theory*, albeit the vast majority appear to use grammar rules as examples of declarative. TL sees explicit lexicon addition as by far the most effective form of declarative pre-loading. Generativists still apparently have much influence. Of

course, it works, and some learning appears to have no option ("fast and loose" or "loose and fast"), but it is neither time proficient nor reliable.

2.7. Gap in the Existing Research

Thus, the literature in the current study reveals that while a wide range of studies have been conducted in numerous disciplines in the K-12 and tertiary sectors covering diverse themes under the domain of blended learning, educational technologies and technology-mediated instruction, to name but a few, literature on the particular technique of declaratively accelerated blended learning (DABL) and Transparent Language Online (TLO) and its effectiveness in general and its impact on ELLs in particular is virtually non-existent at the tertiary level, not only in Pakistan but also around the world. Therefore, this investigation aims to fill this lacuna by conducting an empirical investigation into the effectiveness of Transparent Language Online for teaching and learning English language at the tertiary level by integrating and investigating this innovative technology tool with pedagogy in two private sector universities in Pakistan. The study also examines how such innovative apparatuses, if integrated effectively, can accelerate the learning process, increase learners' confidence, improve EL educators' existing teaching methods, and advance language pedagogy at the tertiary level.

CHAPTER 3: METHODOLOGY

This research aims to determine how English language learners (ELLs) and English language (EL) educators benefit from innovative technologies, particularly Transparent Language Online, and how this Web-based platform facilitates the teaching-learning process at the university level. Also, this study provides a perspective on how the techniques of blended/ hybrid learning (Olapiriyakul & Scher, 2006) have become a helpful tool for teaching and learning English language at the tertiary level.

The present investigation was carried out on a large student population, N = 1,000, who studied Functional English as a compulsory course in their first semester, year 1, of their undergraduate programme in two private universities, i.e., U1 and U2, in Lahore, Pakistan. A total of 22 English language (EL) educators also took part in this investigation. Instructors in the experimental group (n = 12) trained learners using TLO. In contrast, instructors in the control group (n = 10) prepared students via a typical conventional methodology. The researcher gathered data for the present research from computer science (CS) and business (BS) departments/ schools in a total of four faculties, i.e., U1CS, U1BS, U2CS, and U2BS, at the two universities. The two faculties (CS and BS) offered almost the same course syllabus for teaching English language, i.e., Functional English, in their undergraduate programmes, i.e., BSCS and BBA.

The students qualified for their intermediate examination with different elective subjects and studied English as a compulsory subject. Their level of achievement in English seemed to be at an intermediate level, but as most of them came from diverse cultural and linguistic, such as Urdu, Punjabi and Saraiki, their level of achievement in English language, which was highlighted in university admission tests, fell between A2 to B1, with a few at B2, of CEFR levels (Heyworth, 2006; Hulstijn, 2014; Little, 2006). Officially, English is their third or fourth language. Therefore,

the two universities provided a remedial eight-week preparatory course, i.e., Functional English, over summer 2018 to support weaker students before introducing them to regular teaching.

Three compulsory English language courses are offered to mixed-ability students at both universities to improve their English language skills. These courses are (1) Functional English, Communication Skills, and Technical Report Writing (HEC Revised Curriculum, 2017). Functional English and Communication Skills are offered as compulsory courses in the first and second semesters, respectively; whereas Technical Report Writing is taught as a compulsory course in the sixth semester. However, the focus of the current research is on Functional English.

In computer science faculties/ departments, i.e., U1CS and U2CS, English language training was imparted through Transparent Language Online (TLO). TLO provides a facility for language learning in 115 foreign languages. Students can benefit from a TLO Web-delivered platform anywhere, anytime, through online desktop and mobile language learning applications. TLO's content is flexible and generalised, which caters to the needs of language learners from all fields, such as computer science, engineering, social sciences, business professionals, and other domains. In contrast, control groups were thoroughly trained and assessed in the business schools, i.e., U1BS and U2BS. The present research evaluated TLO effectiveness by conducting this study in autumn 2018.

The following sections elucidate the research design and methodology in which important topics are discussed, such as the target population, sampling procedure, instrumentation/ materials, study procedures, data gathering/ analysis, assumptions, limitations, delimitations, and ethical considerations. The chapter concludes with a summary of key focuses.

3.1. Research Design

The researcher utilised a quantitative experimental research method. He utilised this apparatus for the present investigation, connected its distinguishing characteristics with experimental and quantitative methods, such as starting with clear propositions, collecting measurable data about hypotheses, and later utilising statistical analyses to check and generalise the data (Creswell & Creswell, 2018; Leedy & Ormrod, 2016; Riazi, 2016).

The investigator used assessment tools (pre-tests, assessments/ quizzes, and post-tests) with two different instruments, i.e., Standardised Reading Comprehension and Use of English (RC&UoE) and First Certificate in English Listening Test (FCE-LT), to gather data to test research hypotheses and answer the research questions. The fundamental goals anticipated for this investigation were to determine how effective TLO is for language learners wishing to (1) improve their academic performance and (2) increase their language proficiency and confidence using L2, and (3) enhance language instructors' pedagogical practice at the tertiary level.

The researcher also used local Learning Management System (LMS) for the experimental group, i.e., U1CS and U2CS, to administer various test types to gather quantifiable data. In contrast, he used a paper-based approach for the control group, i.e., U1BS, U2BS, to collect data from RC&UoE and FCE-LT instruments on the various test types.

Students completed different tests in autumn 2018, these comprised multiple-choice questions for Reading Comprehension and Use of English (RC&UoE) assessment using 42 test items, which detected 14 grammatical and lexical errors in two sets of circumstances, i.e., questions 1–28 gauged reading comprehension and questions 29–42 evaluated use of English (grammar) concepts, and (2) an FCE listening tests consisting of 30 test items evaluated the listening proficiency of students.

The data gathered, comprising quantitative exploration, were subjected to quantitative statistical analyses (Cozby & Bates, 2018; Loewen & Plonsky, 2015; Plonsky, 2015; Riazi, 2016). Descriptive and various inferential statistical tests, i.e., classical ANOVA, Welch-ANOVA, simple regression analysis, T-test, Pearson's correlation, Kruskal-Wallis H and Median tests, were applied using IBM SPSS 25.0 to investigate, corroborate, and acknowledge or dismiss statistical hypotheses and respond to the research questions, i.e., RQ1, RQ2, RQ3, and RQ4.

3.2. Target Population

The target population of the present investigation comprised undergraduate students enrolled in the computer science and business studies programmes of two universities, studying Functional English in their first semester in autumn 2018 in Lahore, Pakistan. This study concentrated on this population to understand how learners become familiar with the English language. Elementary ELLs were hesitant to use new instructional technologies using L2. Both language learners and instructors were trained in how to use the technology platform efficiently. Moreover, G*Power version 3.0.10 was used to determine the required sample size (Faul et al., 2007, 2009) to fulfil essential prerequisites.

3.3. Sampling Procedure

A sample of accessible new undergraduate students was used to generalise the results of the population focused on in this investigation. Sampling in this study included the student population, N = 1,000, who attended the undergraduate CS and BS programmes in autumn 2018 at two coeducational private universities, i.e., U1 and U2, in Lahore, Pakistan.

This investigation used a convenience sampling technique to select the participants and to confirm the validity and reliability. The investigator used the entire classes limited to two specific

majors, computer science and business, and two universities, U1 and U2, with some natural attrition. To reduce bias in convenience sampling, he utilised it along with probability sampling to keep this sampling bias under check (Leedy & Ormrod, 2016; Riazi, 2016). The study utilised G*Power version 3.0.10 to determine the sample size (Faul et al., 2007, 2009). However, the sample did not comprise students from other semesters and may not be generalisable to every group of students.

As discussed at the beginning of this chapter and as shown in the sampling flow chart, see Figure 3.1 below, the investigator examined a sample of 1,000 students, enrolled in autumn 2018 at U1 and U2, who studied Functional English as a mandatory course in their respective programmes, i.e., BSCS and BBA. The participants were equally distributed into two major groups, i.e., experimental (n = 500) and control (n = 500), and further sub-divided into four sub-classifications, i.e., U1CS (n = 250), U1BS (n = 250), U2CS (n = 250) and U2BS (n = 250). A total of 1,000 students participated in four different setups in autumn 2018.

The investigator conducted an experimental study in U1CS and U2CS and trained ELLs using TLO. EL educators utilised this platform throughout the autumn semester of 2018. They taught ELLs ten topics from *Intermediate Conversation in English* and 32 units/ lessons from *English in Context* using the TLO Web-based platform–three topics/ lessons per week–each exercise included text, four learning activities, and an assessment at the end of each unit.

Similarly, respondents for the control groups were taken from U1BS and U2BS and trained students using conventional instruction methods.

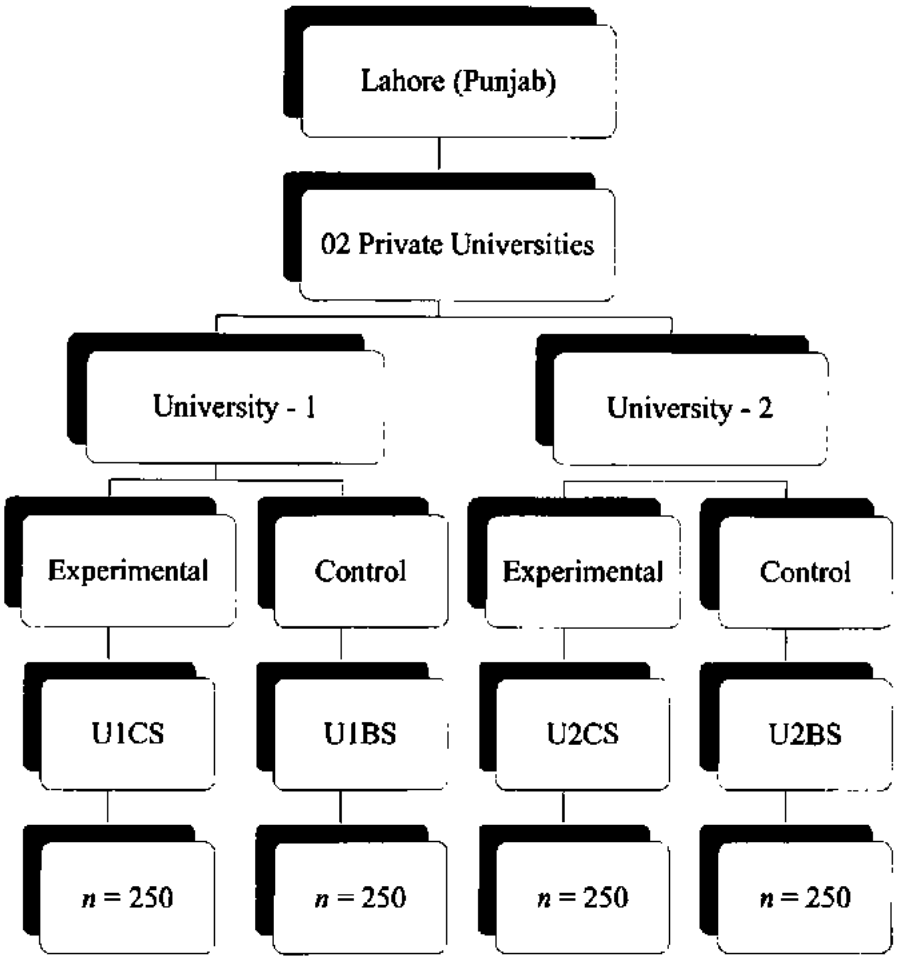

Figure 3.1. Sample flow chart

3.4. Instruments

The instruments used for this research data gathered in two phases: (1) Reading Comprehension and Use of English (RC & UoE) assessments, (2) First Certificate in English Listening tests (FCE-LT). The investigation used ten assessments in two formats: (1) six RC&UoE assessments, i.e., pre-test, A1, A2, A3, A4, and post-test, and (2) four FCE-LT tests, i.e., pre-test, A1, A2, and post-test, to collect data in autumn 2018.

3.4.1. Reading Comprehension and Use of English (RC&UoE)

Reading Comprehension and Use of English (RC & UoE) assessments were adapted from ETS TOEIC tests (Asif et al., 2022, p. 274). The researcher conducted six RC & UoE assessments in an observed synchronous environment and gathered 6,000 observations from N = 1,000 students in four different setups, i.e., U1CS, U1BS, U2CS and U2BS. The pre-test was directed in the first week of the autumn semester 2018; A1, A2, A3, and A4 were conducted in the 4^{th}, 7^{th}, 10^{th}, and 13^{th} weeks, respectively; whereas a post-test was administered in the 16^{th} week.

Forty-two assessments items were used, which consisted of a reading comprehension section and a use of English (grammar) portion. The allocated time was 40 minutes for each RC&UoE test. The tests evaluated 14 grammatical and lexical constructs in the use of English language–noun, pronoun, verb and verb tense, adjective, adverb, determiner, preposition, conjunction, phrase, clause, negative, subject-verb agreement, punctuation, and vocabulary [See Appendix. A]–students did these at two universities in Lahore, Pakistan. In RC & UoE assessments, each item was repeated three times in different positions throughout the tests: (1) twice in reading comprehension, section (questions 1–28), and once in the use of English (grammar) portion (questions 29–42) [See Appendix. B] to check learners' understanding of each construct in different situations.

Further, if an item occurred at a particular position in one assessment, for example, a conjunction appeared in question 1 and a verb in question 2; these items, along with all other constructs, occurred at the same position in all six RC & UoE assessments, i.e., pre-test, A1, A2, A3, A4 and post-test [See Appendices. C–H]. This helped the investigator to gauge individual students' performance as well as each construct tested. For example, suppose the researcher

wanted to explore the performance of all participants, $N = 1{,}000$, on test item 1, i.e., conjunction in any or all the assessments. In that case, he can get the results with a single click and vice versa.

As shown in Table 3.1, RC&UoE test types were administered in two different formats: ELLs in the experimental group, both U1CS and U2CS, attempted all assessments on the Learning Management System, whereas learners in the control group, both U1BS and U2BS, completed all test types through a typical paper-based approach. LMS performed automated checking for experimental learners while the investigator manually checked all other papers for the control group. Each correct answer was awarded one mark, while an incorrect answer was awarded zero.

The investigator used CEFR as an assessment benchmark to measure ELLs' language expertise in the RC&UoE sections.

Table 3.1

RC&UoE assessments conducted (timepoint and mode)

Type of RC & UoE assessment	Week of autumn 2018, in which test/ assessment was administered	Session of the week	Mode of implementation*
Pre-test	First (1)	2nd	LMS & PB
Assessment 1	Fourth (4)	2nd	LMS & PB
Assessment 2	Seventh (7)	2nd	LMS & PB
Assessment 3	Tenth (10)	2nd	LMS & PB
Assessment 4	Thirteenth (13)	2nd	LMS & PB
Post-test	Sixteenth (16)	1st	LMS & PB

Note ELLs in the experimental group attempted assessments on the local university LMS, whereas ELLs in the control group attempted paper-based assessments.

3.4.2. First Certificate in English Listening Tests (FCE-LT)

The researcher also conducted four FCE listening tests, i.e., a pre-test, A1, A2, and a post-test [See Appendices. I–L].; and gathered 4,000 observations from N = 1,000 students of U1 and U2. Listening tests were adopted from the Cambridge FCE. Table 3.2 shows that the pre-test was administered in the first week of autumn 2018; A1 and A2 were conducted in weeks 6 and 11, respectively, whereas a post-test was administered in week 16.

The assessment items numbered 30, and the allocated time was 40 minutes for each one. The tests measured the listening proficiency of the students. All the listening assessments were computer-based for U1CS and U2CS and paper-based for U1BS and U2BS, simultaneously administered. LMS performed automated checking, whereas the investigator manually checked control group assessments. Each correct answer was awarded one mark, whereas an incorrect answer was awarded zero.

The scholar utilised CEFR as an assessment benchmark to assess ELLs' language proficiency in FCE-LT.

Table 3.2

FCE-LT assessments conducted (timepoint and mode)

Types of FCE-LT assessment	Week of autumn semester 2018, in which test/ assessment was administered	Session of the week	Mode of implementation
Pre-test	First (1)	2nd	LMS & PB
Assessment 1	Sixth (6)	2nd	LMS & PB
Assessment 2	Eleventh (11)	2nd	LMS & PB
Post-test	Sixteenth (16)	2nd	LMS & PB

Note. ELLs in the experimental group attempted assessments on the local university LMS, whereas ELLs in the control group attempted paper-based assessments.

3.5. Study Procedure

The researcher sought permission from the Board of Studies, the International Islamic University Islamabad, and authorities at the two private universities associated with the present investigation by submitting an application for data collection in the summer 2018. He informed the authorities about the purpose and significance of the research and how, if completed, this research venture could play a significant role within Pakistani academia to facilitate English language instruction at the tertiary level in Pakistan. He further requested the faculty Deans/ Directors and the Registrar's office of the two universities to permit access to students' information and assured them that students' personal information, such as names, registration numbers, email addresses, faculties and universities, was not required, and should remain strictly confidential. The Deans/ Directors of the four faculties of U1 and U2 granted the request and encouraged the students to participate, giving them incentives to do so during all the assessments; their efforts while attempting low assessments (pre-tests, varied assessments, and post-tests) were considered as graded tasks/ activities. They showed significant interest in figuring out how students performed on standardised assessments with and without technology tools and encouraged them further in their learning ventures.

Before the start of the autumn semester 2018, the authorities concerned informed the investigator of their intention to experiment on the entire cohort (N=2500) of students enrolled for study in the computer science and business studies programmes during the autumn semester. With the consent of his local advisor, the scholar agreed to these terms and conditions and experimented on the whole cohort at all four faculties; however, he informed the authorities that he only needed n = *250* students from each faculty, n = 500 from each university, and n = 1,000 in total. He selected the participants using a convenience sampling technique based on major and class/

university. Therefore, he shared preliminary findings with them and afterwards discarded data records not required.

The IT Directors of the institutions concerned shared with the investigator email lists of authorised LMS users and instructors engaged in this study in autumn 2018. The lists contained general information, such as names; however, they did not include individual email addresses. He discarded information comprising students' names, email addresses etc., if any, when gathering data. Introductory correspondence comprised the research's purpose, TLO link plus username/ password, an LMS link for individual assessments, start and end times and dates, and the investigator's contact details. He coordinated with the instructors and department coordinators and sent fortnightly reminders to all concerned, including students, until the end of the data collection process. Students attempted all ten assessments (pre-tests, assessments, and post-tests) in an observed synchronous environment after studying for a specific time under a particular instructor, with or without utilising new technology tools for imparting English language instruction.

The participants reviewed all their quizzes and assignments once their papers were marked. They were given constructive feedback on each linguistic construct. Their English language instructor considered attempted tests as graded activities. After conducting tests in the experimental group, the LMS/ IT teams downloaded data from LMS system and transferred them to a Microsoft (MS) Excel spreadsheet, shared this with the researcher and deleted it from their local LMS system. Those who did not participate in all assessments were removed from the data gathered and discarded from the project. The data were then entered into IBM SPSS Statistics 25.0 for detailed descriptive and inferential analyses.

In this way, students participated in six RC&UoE assessments and four FCE-LT tests. Thus, the researcher gathered 10,000 observations from N = 1,000 students from U1CS, U1BS, U2CS, and U2BS.

3.6. Data Collection and Analysis

This research used different RC&UoE and FCE-LT test types to gather data from the target universities' undergraduate ELLs, N = 1,000, who registered in autumn 2018. The investigator administered the test types on the universities' local LMS for CS students and in paper-based format for BS students.

The data-collection process commenced when the scholar received approval from the authorities of U1 and U2, and an email distribution list containing students' general information. The faculties also provided contact information for the EL instructors and departmental coordinators of the target courses concerned. As the names and personal information of participants were not required and irrelevant to this investigation, the researcher discarded such identifiable personal information when gathering data. This produced anonymous data allowing for an unbiased evaluation of information collected.

The data-collection process continued throughout a 16-week semester, where participants took different RC&UoE and FCE-LT test types. To acknowledge the students for their worthy role to this investigation, the Deans/ Directors of the four faculties awarded students for their active participation in autumn 2018; their efforts while attempting different assessments/ quizzes and assignments were rewarded as graded tasks. After students attempted the tests, the LMS/ IT teams downloaded data from the LMS system for all sections separately and transferred them to MS Excel spreadsheets, shared them with the investigator, and deleted them from their local LMS system.

The researcher created separate master Excel spreadsheets for RC&UoE and FCE-LT and analysed raw data meticulously when these were collected. In order to analyse the data and run different statistical apparatuses using IBM SPSS Statistics 25.0, the responses to the question items were graded and coded based on different variables such as age group, class, section, faculty, and university. After the data were sorted, at that point, the scores of individual participants were calculated based on two modes of assessments, i.e., RC & UoE and FCE-LT tests; afterwards, the means of scores on the two modes of assessments were gauged to find out the average grades of individual students in the tests.

Once these average grades were determined for the two assessment modes of the data gathered, the data exploration strategy included not just testing means, standard deviations and frequencies, but also checking inferential statistics, which examined this information once the data were sorted and coded. Descriptive and various inferential statistical analyses were used based on different variables, research questions and hypotheses in IBM SPSS 25.0.

3.7. Pilot Experiment

To verify the effectiveness and validity of the instruments, the investigator conducted a pilot research experiment (Asif et al., 2022) in autumn 2017 to elicit feedback and recommendations. The respondents of the pilot experiment made suggestions for improving the instruments before they were distributed to the actual participants of the study. The pilot experiment investigated whether the sample participants could comprehend and complete the assessment constructs of the test given (Creswell, 2012; Creswell & Clark, 2018; Creswell & Creswell, 2018). Piloting a sample experiment enables test items to be edited and revised, eliminating somewhat problematic questions or pinpointing ambiguous test constructs, and guarantees that every participant deciphers test items in the same way (Gall et al., 2007).

The researcher conducted the pilot experiment at the Faculty of Information Technology in a private sector university (U1) in Lahore, Pakistan, on sample size, $N = 525$, in autumn 2017. The students who took part in the pilot project did not participate in the final project. The faculty at U1 enrols an average of 600 students in the autumn semester each year. The whole intake in the faculty, in autumn 2017, took part in the pilot experiment conducted for this study. A total of 573 participants were initially enrolled into the BS Computer Science programme, followed by partitioning the intake into 13 sections, titled A to M, comprising about 45 students each. This partitioning was on a first-come, first-served basis. Some "students withdrew and did not participate in the pre-test and post-test; others dropped out of the programme later. Subsequently, the students reliably taking part in the program numbered 525" (Asif et al., 2022, p. 274).

The procedure of the pilot experiment was performed in two phases: a pre-test and a post-test. The pre-test was carried out in the first week of autumn 2017, whereas the post-test was conducted in week 16. Both tests were administered on LMS and were computer-based. The two low assessments (pre-test and post-test) were adapted from ETS TOEIC RC&UoE. The question items in both tests numbered 42, and the allocated time was 40 minutes. CEFR was utilised as an assessment benchmark to gauge the students' proficiency level in Functional English. The experiment lasted for 16 weeks, whereas instructional practice continued for 14 weeks between the two tests. Students were assigned 28 units from Transparent Language Online–two units per week–each lesson/ unit included four learning activities and one assessment. Both pre-tests and post-tests uploaded, conducted on LMS, with automated checking by the system. The data gathered were subjected to descriptive and inferential analysis using IBM SPSS 25.0.

As shown in Figure 3.2, the graph presents that the occurrence of errors was dispersed disproportionately among all error types. The histogram shows that students improved in

maximum constructs, whereas demonstrated worse results in conjunction and pronoun as -57.4% and -109.3% respectively.

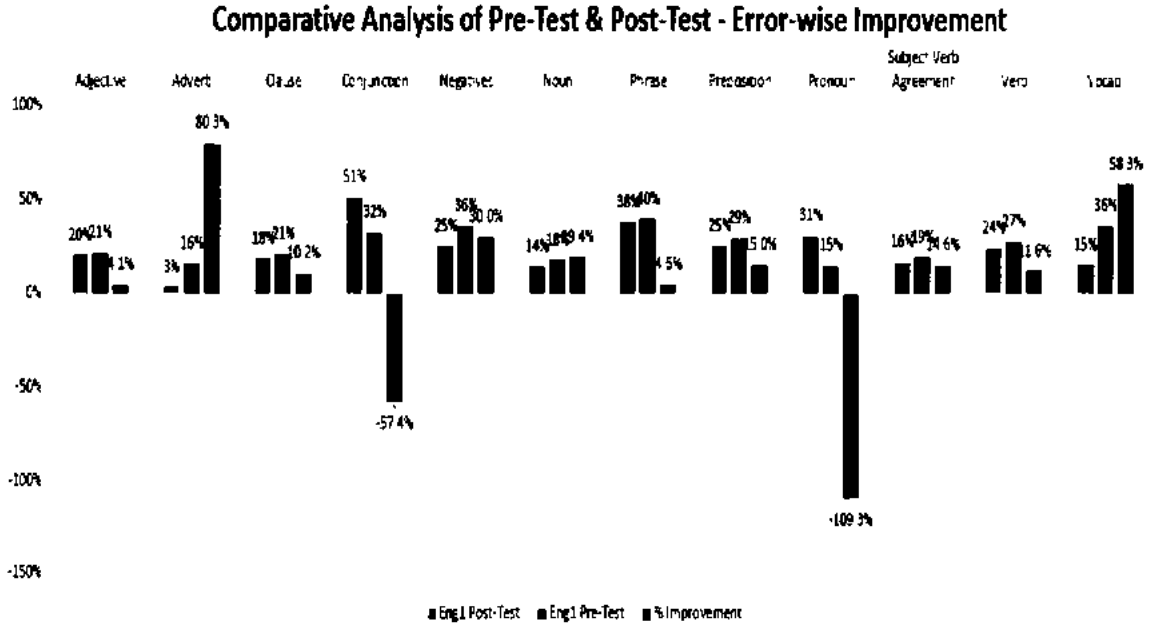

Figure 3 2. Error-wise observed improvement between pre-test and post-test

As shown in Figure 3.3, another unique viewpoint of the data showed up when dissected with a summated number of mistakes made independently in all 13 Functional English sections, i.e., an average of the errors made in each learning construct by a particular section. Most sections showed improvement when experiencing learning English through TLO for 16 weeks by making fewer errors. However, certain sections remained at the same level of errors or even worsened.

Total Percentage of Types of Errors Eng-1 (Section-wise Analysis)

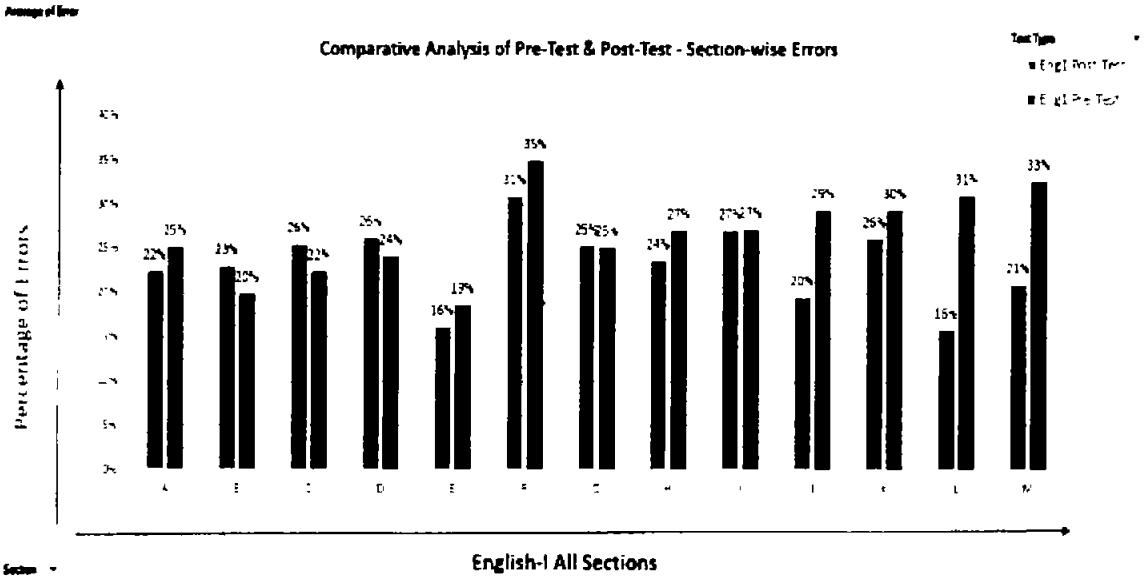

Figure 3.3. Section-wise comparative analysis of pre-test and post-test

The researcher observed the exact time of the experiment, from conducting a pre-test to a post-test, and investigated from language instructors from time to timc who incorporated TLO into their instruction and demonstrated comparatively higher and lower levels of improvement. Those instructors who were well acquainted with TLO and properly integrated the language-learning platform into their instruction showed more notable outcomes than those who did not effectively integrate the system and relied on conventional instructional apparatuses. The investigator presumed that instructors and learners were using TLO for the first time and did not take the maximum benefit from it. Therefore, after the pilot experiment, he suggested and requested that the authorities organise Continuous Profession Developmcnt (CPD) training sessions for EL instructors to utilise the system effectively. Students should likewise be provided with a thorough orientation to the system so that they could use the platform efficiently. Before the conduction of

the actual experiment, a thorough orientation session and various CPDs were organised for language educators and learners.

In light of the statistical data gathered in the pilot experiment, he assumed that this project was novel and doable at the tertiary level in Pakistan and would contribute significantly to the body of knowledge (Asif et al., 2022)

3.8. Assumptions

The researcher distributed the students into two different learning groups i.e., experimental and control. The partakers in the experimental group used technology, whereas those in the control group did not. The focal point of the present research validated the effectiveness of technology-based pedagogical apparatuses compared with the conventional direct one-on-one model for arriving at competence in the English language.

Subsequently, the investigator focused on four essential assumptions concerning the target population and the research design. First, he assumed that language teachers honoured their commitments and introduced instructional material blended with technology to fulfil academic norms. Second, all students who participated in this research did so diligently, and no methodical task was assigned to students or favoured specific teachers in any capacity. This supposition focused on learners' eagerness to excel in the tests; consequently, he expected the contributors to demonstrate their utmost performance in the assessments. Third, students' performance in low and high assessments showed that they had acquired high competency standards. Notwithstanding, this research focused on low assessment tools, i.e., pre-test, quizzes, assignments, and post-test. The advantage of the research's findings is that they show how TLO effectiveness might contribute to the future advancement of blended instructive approaches in the English language learning environment. The concluding assumption comprised the statistical analysis adhered to in the

quantitative experimental design, which presumed that the participants were primarily divided based on their enrolled faculties.

3.9. Validity and Reliability

While deciphering the research outcomes, the scholar ensured that the assessment instruments showed reliability, which alludes to the uniformity or strength of the gauging tool (Jackson, 2016). To certify that instruments were reliable and that no methodological error occurred, and to assess the Flesch-Kincaid reading level, Microsoft Word Readability Statistics was utilised to analyse the assessment instruments (Crossley et al., 2017; Kincaid et al., 1975; Petersen & Ostendorf, 2009; Schmitt, 2011; Shen et al., 2013; Xia et al., 2019).

Another essential characteristic of the quantitative method was to arrange the study so as to minimise threats to validity (Creswell, 2012; Creswell & Clark, 2018; Creswell & Creswell, 2018). The investigator understood potential threats to validity to ensure that the research study was valid and that threats to validity did not affect validation of the study. The procedure for selecting participants for the research was an instance of an external threat to validity because the sample might not be sufficient to signify results for the whole population. Jiménez-buedo (2011) elucidates that the external threat mentioned above can occur because the essential notion behind external validity is to generalise the results, which can then be applied to identical research with comparatively diverse individuals, times, and localities.

An external threat always arose because the instructors did not explain technology-based concepts sufficiently. Students might not have been well prepared to participate in technology-based lessons, and ineffective learning might result from this kind of external threat. Students should be sufficiently trained via a systematic procedure to accomplish anticipated technology-related assignments before commencing tasks (Dutro et al., 2011).

Learners have discrete disparity during the learning process that differs greatly from varying external effects, which might give preference to some students over others. The apparatus for gauging outcomes might not be able to arrive at the desired conclusion concerning the immediate impacts of technology.

In addition, the research instruments might be reliable if the results are consistent over a period of time, representing the precise portrayal of the entire population targeted in the research study. As a result, the grades gained from the participant responses in the present research were considered being an accurate description of the population focused on and thus reliable.

For this study, the researcher left no stone unturned to affirm the outcomes were reliable and ensure that the research methodology validated the results. If this research is rerun using the same research methodology, the results should be similar; thus, the research should be considered valid and reliable.

3.10. Ethical Considerations

The ultimate goal was to safeguard the study's participants from any odd situations and ensure that the research met established ethical standards of IIUI before any data collection. The utmost concern was to preserve the privacy and confidentiality of the data throughout this investigation.

After downloading the entire data records from U1 and U2 local LMS systems, the researcher requested LMS heads to delete data held in any form from their LMS systems to ensure confidentiality. Preliminary data included student names, registration numbers, email addresses, gender, age, course section, faculty, university, mode of instruction, instructor, test-type, time allowed in minutes, time taken in minutes and grades/ scores of students' performance on the tests. The collection of student names, registration numbers, email addresses and other personal information was not required. To maintain confidentiality, the primary researcher examined

preliminary raw data and then discards data not required. Coding in the form of letters and numbers was used to ensure participant identity. Pseudonyms were allocated to faculties and universities in this investigation.

Finally, data were securely stored until completion of the research project. Data gathered were safely and securely stored in multiple electronic gadgets (two laptops, two USBs and an external hard drive), which were secured under lock and key at all times, and access to the key was strictly restricted.

CHAPTER 4: RESULTS

This chapter presents the overall results of the present investigation. For this purpose, the researcher divided the chapter into four sections: nature of data, tests of normality, detailed results for Reading Comprehension and Use of English (RC&UoE) and First Certificate in English Listening Test (FCE-LT) instruments. The complete results are presented by analysing the data. They are illustrated through graphs, histograms, Q-Q plots, P-P plots and tables.

The researcher reports the results in a question-by-question format separately for RC&UoE and FCE-LT data. Research Question (RQ)1 is addressed utilising descriptive and inferential statistical analysis, emphasising how and to what extent the integration of TLO with pedagogy impacts on the academic performance of ELLs at the tertiary level. RQ2 concentrates on reporting significant differences, if any, in the English language proficiency scores of ELLs exposed to TLO instruction and those in a traditional classroom environment. This allows the investigator to compare the scores of the two groups and highlights whether TLO delivers better results in terms of students' learning than traditional modes of learning. RQ3 is addressed to explore any significant differences in ELLs' academic achievements when two sub-groups of TLO, i.e., U1CS and U2CS, are compared. Finally, RQ4 is considered by analysing the data and reporting the effect of TLO on enhancing the instructional methods of English language instructors at the tertiary level.

4.1. Nature of the Data

This study aims to determine TLO efficacy through focused research questions and statistical hypotheses, i.e., H_0 and H_a. The researcher collected data from a large student population, N = 1,000, who were placed in different setups. A total of 1,000 participants attempted ten different assessments in two different formats: RC&UoE containing six tests (pre-test, A1, A2, A3, A4, and

a post-test), and FCE-LT comprising four tests (pre-test, A1, A2, and a post-test). As a result, the investigator collected overall 10,000 observations as primary data from the two instruments.

To conduct a comprehensive analysis, in 2019 and 2020, the researcher collected and arranged the data in Microsoft Excel 2016 spreadsheets. He prepared two separate MasterData spreadsheets for RC&UoE and FCE-LT instruments. In this way, he collected 10,000 observations (RC&UoE = 6,000, FCE-LT = 4,000) from N = 1,000 students. The data gathered were organised in MS Excel, converted to IBM SPSS 25.0 files and subjected to a number of statistical analyses. The data are further dissected across different variables, addressing different constructs. This study also investigates whether the results confirm or refute previous studies in the field. It seeks empirical evidence to see the impact of technology tools on ELLs' proficiency scores. Also, it examines statistical differences for ELLs and EL instructors between the experimental and control groups. As the studies with different methodologies underscore sample size, from small data observations, no specific projections could be made about specific learners or explicit language constructs/ classifications.

Consequently, choosing suitable statistical tests depends on statistical hypotheses for devising inferences concerning the data sample. Despite slightly negatively skewed elements and rare outliers, the data gathered satisfy all normality assumptions. Parametric tests anticipate that data in a sample will have typical dispersion as well as equal means; yet, their non-parametric equivalents match skewed principles that diverge from a normal distribution (Neideen & Brasel, 2007).

The normality of data must be validated as a top priority before picking any statistical tests for exploration. By merely assuming that data in a sample follow a normal distribution without administering normality tests lacks rigour. There is a risk of obtaining wrong results, which

validates that such assumptions are incorrect. For this reason, the investigator analysed data distribution empirically in both samples of RC&UoE and FCE-LT instruments.

4.2. Measuring Normality

Normality can be measured both graphically and analytically. Graphically, Probability-Probability (PP) plots, Quantile-Quantile (QQ) plots, histograms, and boxplots are used to get a normal distribution. IBM SPSS 25.0 produced these plots, histograms and boxplots to measure the normality of data. Since these graphical plots are subject apparatus for evaluating normality, associating such plots with suitable analytical measures is proposed. Researchers such as Asar et al., (2017) and Yap & Sim (2011) suggest various goodness-of-fit analytical tests, explicitly Kolmogorov-Smirnov, Shapiro-Wilk. These tests can be utilised to gauge data in a sample and analyse a normal distribution. The scholar also checks whether data meet normality assumptions. For this purpose, he used Kolmogorov-Smirnov and Shapiro-Wilk tests, which showed that data were normally distributed. All statistical tests, including Kolmogorov and Shapiro-Wilk tests (Table 4.1) and a test of homogeneity of variance (Table 4.2) based on the variables, i.e., result, mode of instruction and test type, satisfied the normality assumption. The current study does not merely focus on what results Kolmogorov-Smirnov and Shapiro-Wilk tests produced. These statistical tests confirmed that data satisfy the normality assumption; therefore, the investigator chose parametric tests to answer the research questions and test statistical hypotheses H_0 and H_a.

Due to space constraints in this specific section, normality results for all variables using graphical measures for RC&UoE and FCE-LT cannot be presented here. Hence, just the results for focused variables, 'result' and 'test type', are explicated with the help of PP plots, QQ plots, histograms, boxplots and tables, respectively.

4.2.1. Measuring Normality: Reading Comprehension & Use of English

The investigator assumed that the RC&UoE data follow a normal distribution. To confirm this, he administered Kolmogorov-Smirnov and Shapiro-Wilk tests of normality using IBM SPSS 25.0. As shown in Table 4.1, all statistics generated by these tests, from pre-test to post-test, produced highly significant results for each type of test. The data satisfy normality assumptions; hence, the researcher applied parametric tests.

Table 4.1

Kolmogorov-Smirnov and Shapiro-Wilk tests of normality

	Test Type	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
		Statistic	Df	Sig.	Statistic	df	Sig.
Result	Pretest	.107	1000	.000	.961	1000	.000
	Assessment 1	.101	1000	.000	.968	1000	.000
	Assessment 2	.101	1000	.000	.963	1000	.000
	Assessment 3	.106	1000	.000	.958	1000	.000
	Assessment 4	.099	1000	.000	.965	1000	.000
	Post test	.114	1000	.000	.937	1000	.000

a. Lilliefors Significance Correction

Table 4.2 presents a test of homogeneity of variance based on the research variables 'result' and 'test type' to accept or reject statistical hypotheses, i.e., H_0 and H_a. The table additionally shows Levene statistics, illustrating results based on mean, median, median with adjusted df, and

trimmed mean as 10.063, 8.634, 8.634 and 9.654, respectively, producing very substantial results in every case.

Table 4.2

Test of homogeneity of variance

		Levene Statistic	df1	df2	Sig.
Res	Based on Mean	10.063	5	5994	.000
ult	Based on Median	8.634	5	5994	.000
	Based on median and median with adjusted df	8.634	5	5867.25 5	.000
	Based on trimmed mean	9.654	5	5994	.000

Moreover, the researcher includes graphical support using histograms with normality curves to further confirm the results of Kolmogorov-Smirnov, Shapiro-Wilk tests, and the test of homogeneity of variance. Nonetheless, the histograms and boxplots in Figures 4.1–4.3 include outliers; this proves that the data for all variables in the RC&UoE instrument satisfy the normality assumption and can be regarded as normally distributed.

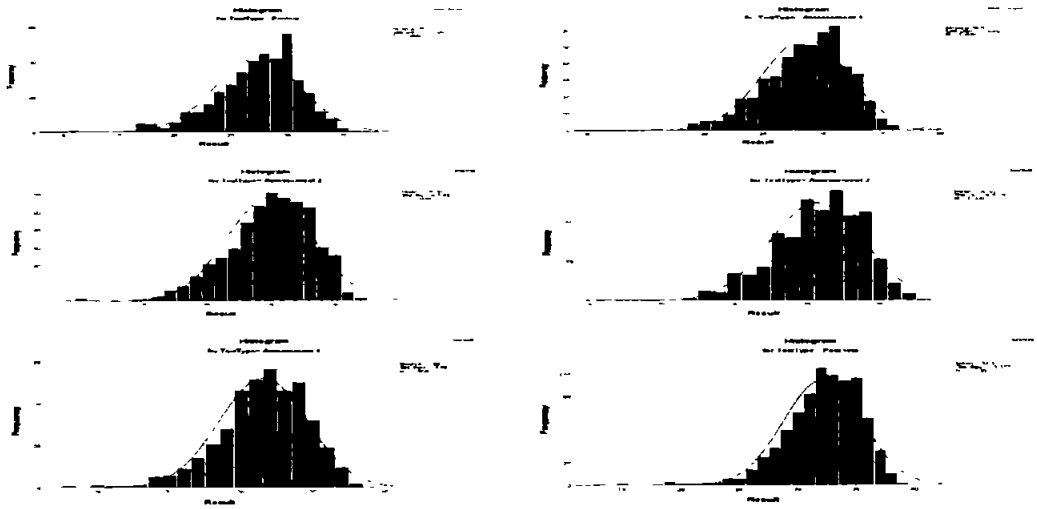

Figure 4.1. Test of normality: Histograms for test types

Q-Q plots show the overall trends of RC&UoE six assessments containing outliers. The expected line is straight, and dots are observed values. Dots far away from the straight line are outliers, which could be problematic, whereas outliers near the trend line are close outliers and could be less problematic. As shown in Figures 4.2 and 4.3, the Q-Q plots and boxplot show that the RC&UoE data satisfy the normality assumption, despite outliers.

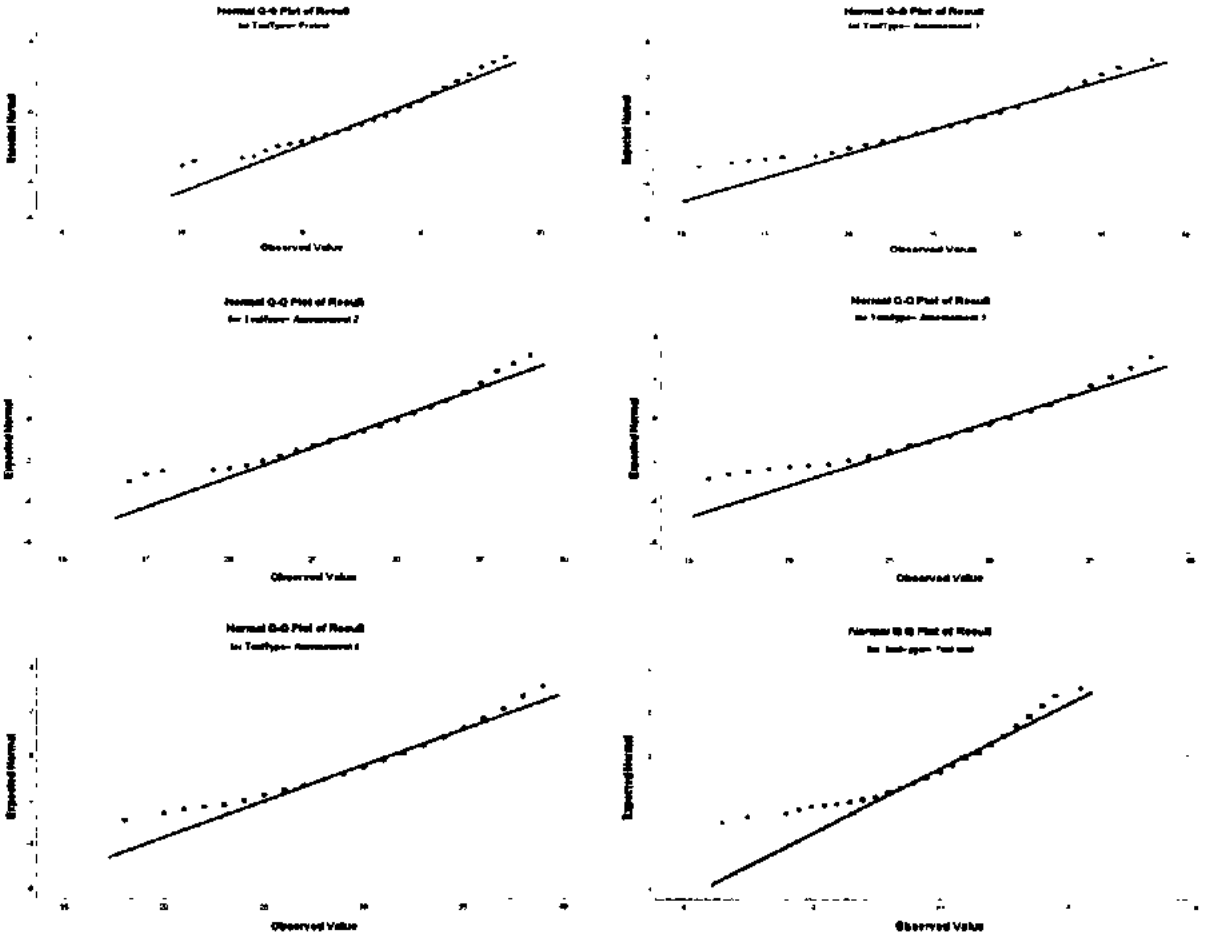

Figure 4.2. Test of normality: Normal Q-Q plot of result (pre-test to post-test)

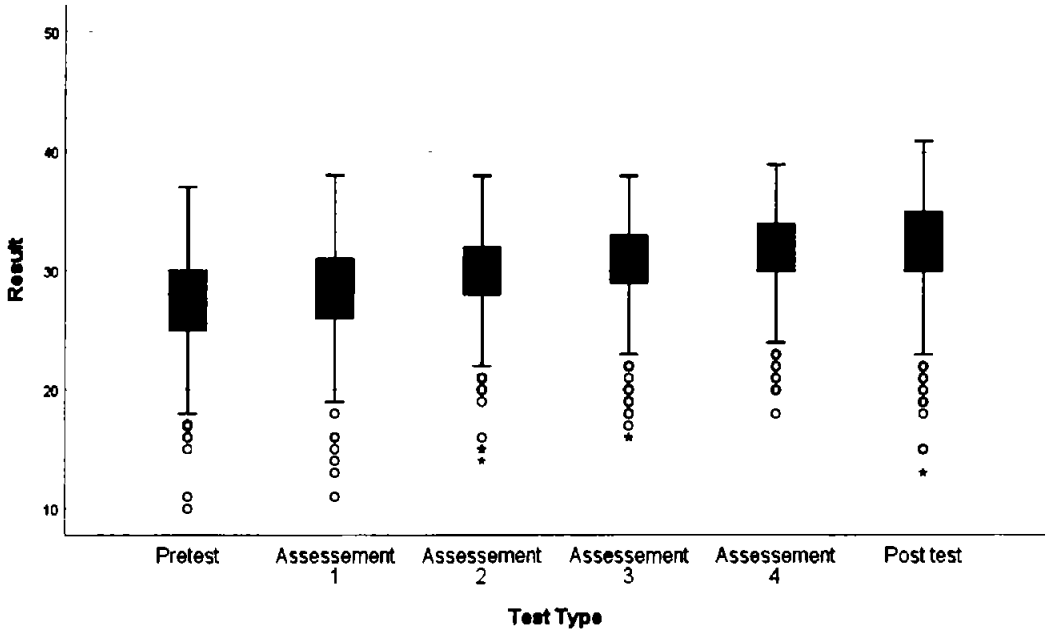

Figure 4.3. Test of normality: Boxplot of test types

The results show that even though the values attained for RC&UoE variables are slightly negatively skewed, most data satisfy the normality assumption. Therefore, parametric tests were applied to RC&UoE data to conduct additional inferential statistical analyses.

4.2.2. Measuring Normality: First Certificate in English Listening Test (FCE-LT)

The researcher assumed that First Certificate in English Listening Test (FCE-LT) data satisfy normality assumptions; therefore, he applied the Kolmogorov-Smirnov and Shapiro-Wilk normality tests using IBM SPSS 25.0. Table 4.3 confirms that the test statistics show notable results from pre-test to post-test. The FCE-LT data satisfy normality assumptions, and thus the scholar used parametric tests.

Table 4.3

Kolmogorov-Smirnov and Shapiro-Wilk tests of normality

	Test Type	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
Result	Pretest	.081	1000	.000	.989	1000	.000
	Assessment 1	.068	1000	.000	.992	1000	.000
	Assessment 2	.079	1000	.000	.990	1000	.000
	Post test	.066	1000	.000	.990	1000	.000

a Lilliefors Significance Correction

The histograms, QQ-plots and boxplot in Figures 4.4–4.6 also show that the FCE-LT data include rare outliers. This verifies that the FCE-LT data satisfy normality assumptions despite outliers and can be considered to be normally distributed.

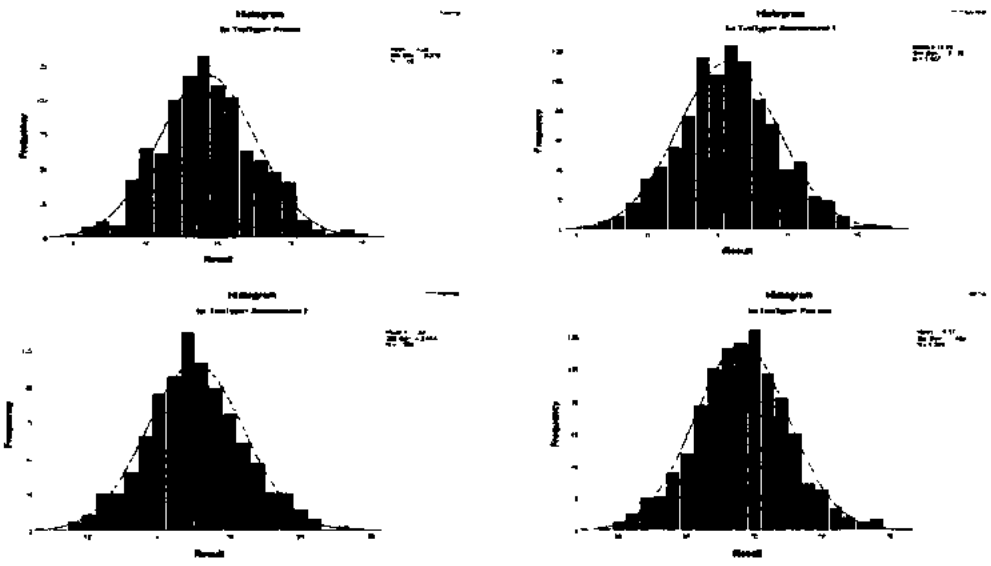

Figure 4.4. Test of normality: Histograms for test types

Normal Q-Q plots describe general patterns of four FCE-LT assessments including rare outliers. The projected line is straight, and dots are noticed values. According to Figures 4.5 and 4.6, the Q-Q plots and boxplot show that the FCE-LT data satisfy the normality assumption despite clear outliers.

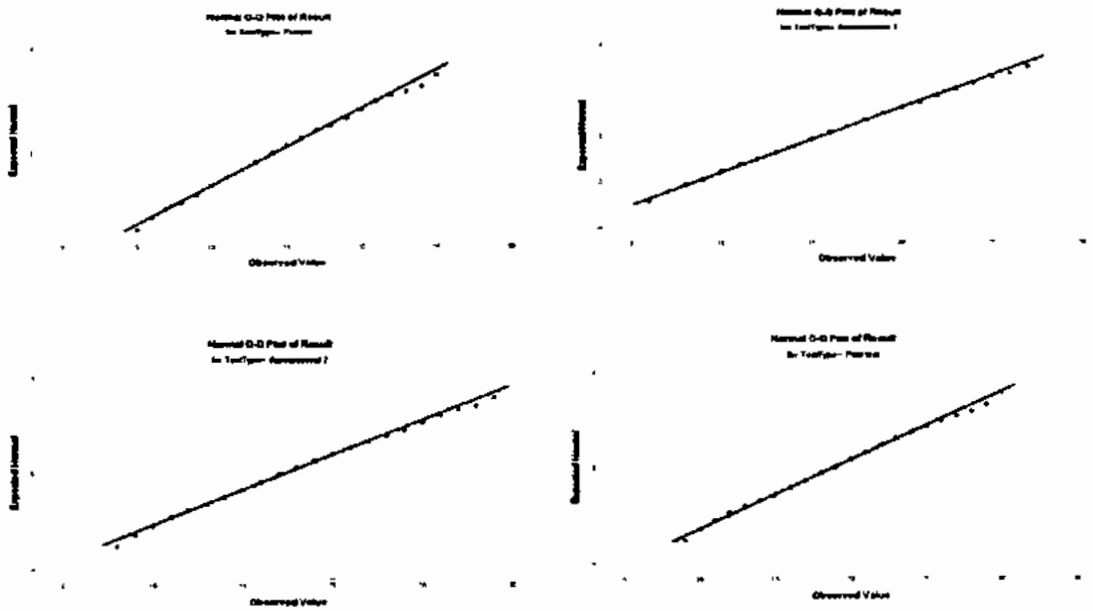

Figure 4.5. Test of normality: Normal Q-Q plots of results (pre-test to post-test)

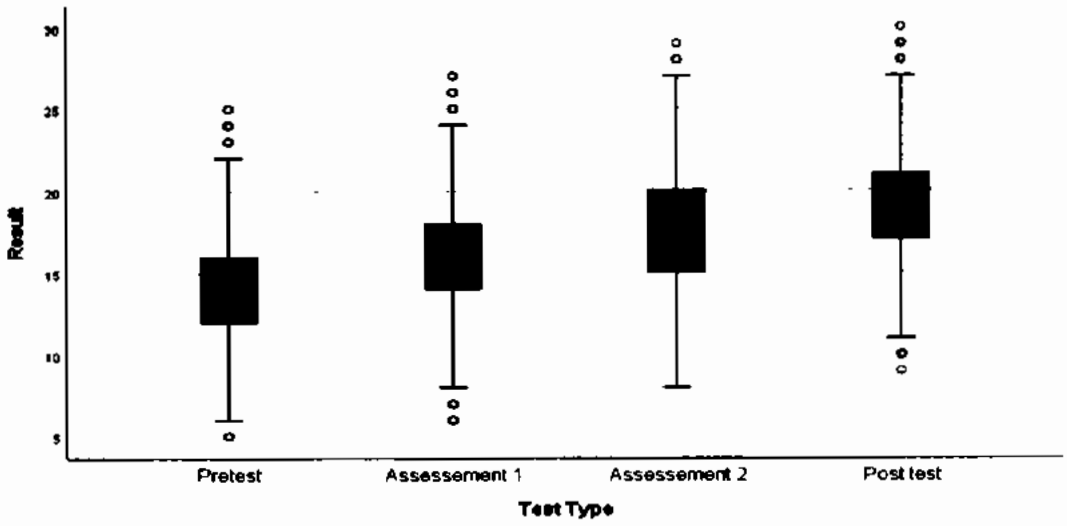

Figure 4.6. Test of normality: Boxplot of test types

As a result, the investigator proposed using a number of parametric tests on FCE-LT data.

4.3. Results: Reading Comprehension & Use of English (RC&UoE)

A total of 1,000 ELLs completed six Reading Comprehension and Use of English (RC&UoE) assessments (pre-test, A1, A2, A3, A4, and post-test) in an observed synchronous environment during a 16-week semester in autumn 2018. When the researcher data gathered and examined demographic information, the hypotheses exploration phase of research on the RC&UoE data began. He analysed the data gathered for precision and completeness in the primary stage through visually investigating data and gauging descriptive statistics. He used a codebook for RC&UoE data throughout the descriptive analysis, which helped to observe and recognise missing data values. The RC&UoE data did not need converse coding; thus, they did not require coding transformation. In light of the codebook, he concluded that further data cleansing and transformation was unnecessary.

The scholar obtained descriptive statistics for all research questions in two ways: (1) he applied frequency analysis in the form of percentages while deciding on RC&UoE test constructs among all the assessments that presented details; (2) he obtained mean, median, standard deviation and confidence intervals using IBM SPSS statistics 25.0 to re-confirm the descriptive statistics and prepare the stage for a comprehensive analysis to examine, and accept or reject hypotheses H_0 and H_a. He dissected the descriptive statistics following the elimination of incomplete test constructs and participants who missed any instrument, test, and/or project phase. After obtaining descriptive statistics, he applied various inferential statistical analyses to the RC&UoE data.

4.3.1. Research Question (RQ) 1

How and to what extent does the integration of Transparent Language Online with pedagogy impact on the academic performance of ELLs at the tertiary level?

This section addresses the extent to which the integration of Transparent Language Online with pedagogy impacts on ELLs' academic performance at the tertiary level and investigates statistical hypotheses.

4.3.1.1. Descriptive Statistics

Descriptive statistics obtained from RC&UoE data based on the variables 'result, mode of instruction' and 'test type' responded to RQ1. Figure 4.7 and Table 4.4 show the independent ordinal variables 'mode of instruction' and 'test type' and the dependent scale (continuous) variable 'result'.

Figure 4.7 presents a cluster of mean of results by mode of instruction and test type. The graph additionally shows a comparative analysis of the experimental and control groups at U1 and U2 among all test types. The histogram demonstrates that ELLs in the experimental group achieved higher scores than ELLs in the control group when mean results of the two groups for all six RC&UoE assessments are compared; for example, in the experimental group [M: 26, 28, 30, 31, 32, 34], there is a noticeable average improvement of 8 points from pre-test to post-test, and in the control group [M: 28, 29, 30, 30, 31, 31], an improvement of 3 points from pre-test to post-test.

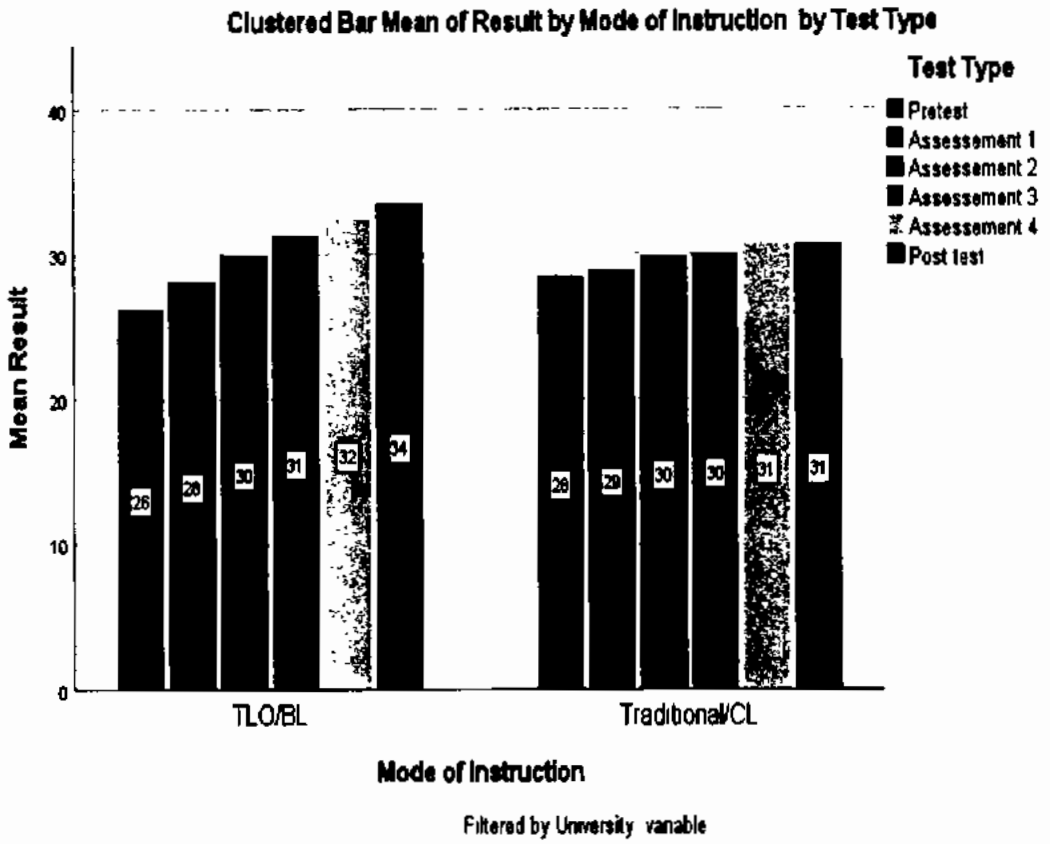

Figure 4.7. Descriptive statistics: Mean of result by mode of instruction and test type

Table 4.4 shows a comparative analysis of descriptive statistics for the dependent variable 'result' and the independent variable 'mode of instruction'. The table additionally presents overall mean, median, standard deviation, and confidence intervals. Table 4.4 supports Figure 4.7, verifying that ELLs in U1CS and U2CS have notable descriptive statistics compared to ELLs' accomplishments in U1BS and U2BS.

Table 4.4

Descriptive statistics: Mean of result by mode of instruction

		95% CIs for Mean						
Mode of Instruction	Mean	Lower Bound	Upper Bound	Median	Variance	Std. Deviation	Skewness	Kurtosis
TLO	30.27	30.12	30.42	31.00	18.173	4.263	-.804	.757
Traditional	29.76	29.64	29.88	30.00	10.669	3.266	-.739	1.298

As per the RC&UoE data, Figure 4.7 and Table 4.4 approve and support hypothesis H_a for RQ1 by demonstrating a significant impact of Transparent Language Online on ELLs' academic performance at the tertiary level. The research used different inferential statistical tests to corroborate hypothesis H_a, thus validating the descriptive statistics findings.

To justify statistical hypotheses, the following questions/ concerns must be answered before administering any test: (1) what parametric tests were used, (2) what critical value was generated by the test based on data, and (3) whether the values are statistically significant or insignificant. In addition, this research predominantly used scale and ordinal variables.

4.3.1.2. Investigating Equal Variances Using Classical Analysis of Variance (ANOVA)

The researcher presumed that the RC&UoE data had equal variances. Therefore, he applied classical ANOVA, a preliminary parametric test, on the independent ordinal variable mode of instruction to answer RQ1. As shown in Table 4.5, classical ANOVA shows that comparing two variables result and mode of instruction produced highly significant results with an F value of 27.302 at p-value = 0.05.

Table 4.5

Classical ANOVA: Comparing the variables result and mode of instruction

Result					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	393.728	1	393.728	27.302	.000
Within Groups	86499.768	5998	14.421		
Total	86893.496	5999			

4.3.1.3. Examining Unequal Variances Using Welch-ANOVA

As is standard practice in confirmatory analysis, the researcher used a test of homogeneity of variance, as shown in Table 4.6, to examine whether variances were equal or not, support the results of classical ANOVA, and acknowledge or dismiss statistical hypotheses. As presented in Table 4.6, a Levene's test of homogeneity of variance clarifies that the variances were not equal; however, they demonstrated very substantial results for each situation. Also, the scholar checked the equality of variance and analysed the two variance hypotheses generated based on the independent variable mode of instruction.

Table 4.6

Levene's test of homogeneity of variance

Result				
	Levene statistic	df1	df2	Sig.
Based on Mean	196.611	1	5998	.000
Based on Median	174.633	1	5998	.000
Based on median and with adjusted df	174.633	1	5630.07 7	.000
Based on trimmed mean	194.929	1	5998	.000

As Table 4.6 illustrates, the variances were not equal based on a Levene's test of homogeneity of variance, presenting highly significant values for each case, i.e., mean, median and/or trimmed mean. The test of homogeneity of variance prompted the researcher to apply another test called Welch-ANOVA. The most significant assumption of simple ANOVA is that, if data have unequal variances, using simple ANVOA might lead to misleading or erroneous outcomes. The strict assumption for simple ANOVA is that variances should be equal.

Since the test of homogeneity of variance proved that both the experimental and control groups did not have equal or similar variances and did violate the assumption of a classical ANOVA test, the investigator double-checked the results by applying Welch-ANOVA, which is a more prominent and enhanced form of classical ANOVA. Welch-ANOVA is insensitive to unequal variances, which further suggests the use of a Welch-ANOVA test. In addition, he used both classical ANOVA and Welch-ANOVA to obtain results, investigate significance/ insignificance (difference), and utilise both tests to support each other's findings. As shown in Table 4.7, Welch-ANOVA produces significant results with F value = 27.302 at p-value = 0.05.

Table 4.7

Welch-ANOVA. Analysing unequal variances

Result				
	Statistic[a]	df1	df2	Sig.
Welch	27.302	1	5617.754	.000

a. Asymptotically F distributed.

Surprisingly, Welch-ANOVA produced the same results, with F value = 27.302, as classical ANOVA, validated by Tables 4.5 and 4.7. These findings also confirm and support the

alternative hypothesis, indicating the significant impact of Transparent Language Online on ELLs' academic performance at the tertiary level.

4.3.1.4. Regression Analysis: Examining the Variables Mode of Instruction and Result

To verify the findings of classical ANOVA and Welch-ANOVA, the investigator used another parametric test, i.e., simple regression analysis, on the variables mode of instruction and result to investigate hypotheses H_0 and H_a. As shown in Tables 4.8–4.10 and Figures 4.8–4.9, the regression model generated highly significant results.

Table 4.8

Regression analysis: Model summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.067[a]	.005	.004	3.798

a. Predictors: (Constant), Mode of Instruction

b. Dependent Variable Result

Table 4.9 demonstrates that the regression analysis produced precisely the same results as classical ANOVA and Welch-ANOVA, with F value = 27.302**.

Table 4.9

Regression analysis: ANOVA [a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	393.728	1	393.728	27.302	.000[b]
	Residual	86499.768	5998	14.421		
	Total	86893.496	5999			

a. Dependent Variable. Result

b Predictors: (Constant), Mode of Instruction

Table 4.10 explains the coefficients for the dependent variable result, focusing on the independent variable 'mode of instruction' and denoting that constant and mode of instruction generated notable results. A simple regression model for the variables 'result' and 'mode of instruction' is given below.

$$\text{Result} = \beta_0 + \beta_1 \text{ MoI} + \text{Ei}$$

$$\text{Result constant} = 30.784 - 0.512 \text{ MoI} + \text{Ei}$$

Both intercept and slope produced substantial results. Hence, the researcher concluded that both constant and mode of instruction are highly significant.

Table 4.10
Regression analysis: Coefficients[a]

Model		Unstandardised Coefficients		Standardised Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	30.784	.155		198.564	.000
	Mode of Instruction	-.512	.098	-.067	-5.225	.000

a. Dependent Variable: Result

Table 4.11 describes the predictive value, residual, standardised predicted value and std. residual. Residuals are similar to errors, and errors distinguish between the values of the original model minus the values of the estimated model.

Error = values of the original model – values of the estimated model

Error = $y - \hat{y}$ $\hat{y}$ = estimated

The predictive value means $\hat{y}$, whose minimum observation is 29.76. The maximum observation is 30.27, having a mean value of 30.02 and a standard deviation of 0.256, with a total

of 6,000 observations. Also, residual presents the minimum value as -20.272 and the maximum value as 10.728, with mean 0 and SD 3.797.

Table 4.11 also depicts std. predicted value's range as minimum -1.000 and maximum 1.000, with mean 0 and SD of 1. Standardised residuals additionally follow 01. The model for this investigation is:

Result = Predictors + Ei

The result and Ei satisfy the normality assumption and follow a normal distribution, substantiating that the current model is the best one.

Table 4.11

Residuals statistics[a]

	Minimum	Maximum	Mean	Std. Deviation
Predicted Value	29.76	30.27	30.02	.256
Residual	-20.272	10.728	.000	3.797
Std. Predicted Value	-1.000	1.000	.000	1.000
Std. Residual	-5.338	2.825	.000	1.000

Figure 4.8 focuses on the regression standardised residual and shows a chart for the dependent variable result. The graph shows error terms in a standardised form, depicting that error follows a normal distribution, with mean = 0 and SD = 1. Moreover, the result follows (tilde ~) a normal distribution with sum mean μ and variance sigma squared.

Result ~ N (μ, σ^2)

Error also follows a normal distribution.

Error ~ N (0, 1)

This or something very similar would not have happened on the off chance, and so this is a violation of heteroscedasticity. The researcher conducted a test of homogeneity of variance and found no heteroscedasticity among additional terms; variances were not equivalent; however, assumptions were satisfied.

Subsequently, Figure 4.8 reinforces the findings of Tables 4.8–4.11. Figure 4.8 confirms that the regression standardised residual also satisfies the normality assumption.

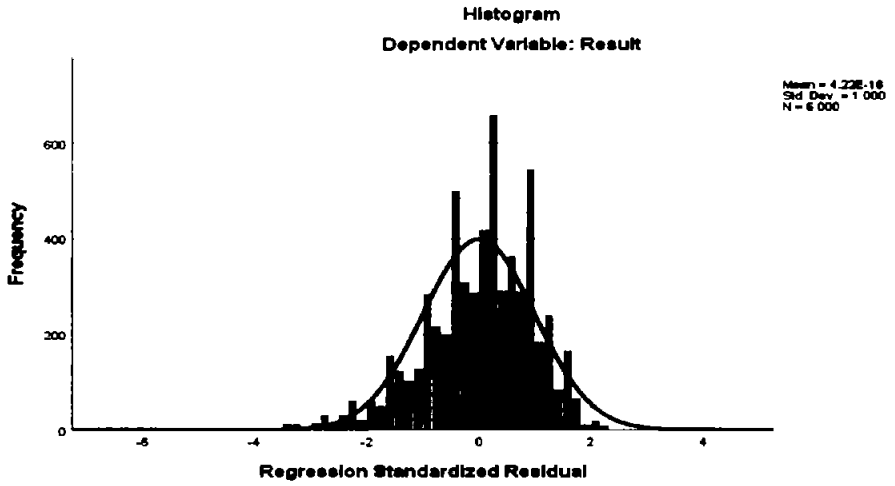

Figure 4.8. Regression standardised residual

Figure 4.9 shows that expected cum probability values were from 0.0 to 1.0, and the values of observed cum probability were 0.0 to 1.0. Maximum values were near the regression line and were neither exceptionally far nor scattered. In addition, Figure 4.9 shows that the normality assumption was satisfied.

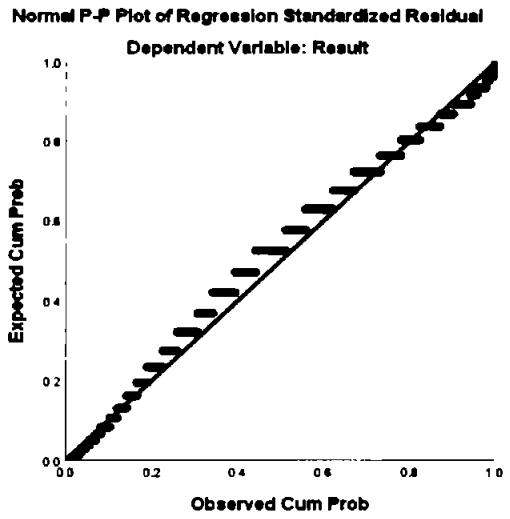

Figure 4.9. Normal P-P plot of regression standardised residual

Since the variables satisfy normality requirements, Figures 4.8 and 4.9, similar to a Kolmogorov-Smirnov test (Table 4.1), show that normality assumptions were satisfied and there was no heteroscedasticity residual term. As a final point, the stated parametric tests, i.e., classical ANOVA, Welch-ANOVA and simple regression analysis, prove the author's assumptions. As a result, this research can use the application of simple ANOVA, Welch-ANOVA or simple regression analysis; for the test statistics, F value is 27.302**[8], which is precisely the same value generated by all three tests, producing very substantial results.

In light of the classical ANOVA, Welch-ANOVA, simple regression analysis' results, and F value = 27.302** presented in Tables 4.8–4.11, the researcher supports hypothesis H_a for RQ1.

If it was assumed that (1) the RC&UoE data were non-normal and slightly negatively skewed, and (2) the dependent scale (continuous) variable result did not satisfy the normality assumption, then non-parametric statistical tests could be used to illustrate the results. Moreover,

[8] ** means highly significant at 0.000

the study predominantly uses scale and ordinal variables and applied non-parametric Kruskal-Wallis H and Median tests to re-check the hypotheses.

4.3.1.5. Kruskal-Wallis H Test

The investigator used a Kruskal-Wallis H test to assess the value of how in RQ1 and test hypotheses. The value to what extent was obtained after performing the test. As shown in Table 4.12, the mean rank results of the Kruskal-Wallis H test for TLO and traditional are 3180.53 and 2820.47, respectively.

Table 4.12

Kruskal-Wallis H test: Ranks

	Mode of Instruction	N	Mean Rank
Result	TLO/BL	3,000	3180.53
	Traditional/CL	3,000	2820.47
	Total	6,000	

Table 4.13 confirms Table 4.12's findings through test statistics. The scholar applied a Kruskal-Wallis H test to the same data with the grouping variable as the mode of instruction, which has two different points, i.e., Transparent Language Online and traditional learning.

The chi-square value generated by the Kruskal-Wallis H test, i.e., 65.289**, answers to what extent of the segment of RQ1 and proves that test results are statistically sound, i.e., Asymp. Sig. is .000, supporting H_a hypothesis for RQ1.

Table 4.13

Kruskal-Wallis H test: Chi-square value

Test Statistics[a,b]	
	Result
Chi-square	65.289
df	1
Asymp. Sig.	.000

a. Kruskal-Wallis Test

b. Grouping Variable: Mode of Instruction

NOTE:

Double stars (**) signify that the results are statistically significant at p-value 0.00, which is obviously less than the critical value at p-value = 0.05. Practitioners and researchers constantly compare the p-value at 0.05, implying the research has been given a 5% error margin. If the p-value is greater than 0.05, it cannot prove statistically substantial results (insignificant results). This value should be less than < 0.05. If the value is > 0.05, then there is no significant difference between hypotheses H_0 and H_a

4.3.1.6. Median Test

The researcher used another non-parametric test, i.e., a Median test, to double-check the findings of the Kruskal-Wallis H test on the RC&UoE data. As shown in Table 4.14, the Median is 30.00, a central value, so 50% of data are greater than 30.00) and 50% are less than 30.00. Table 4.14 illustrates that the Median results, which are greater than 30.00 in Transparent Language Online and traditional learning are 1,601 and 1,331, respectively, whereas those less than 30.00 in Transparent Language Online and traditional are 1,399 and, respectively. He also observed that ELLs using TLO obtained higher scores than traditional learning and produced significant results;

however, this significance needs to be tested.

Table 4.14

Median test: Frequencies

		Mode of Instruction	
		TLO/BL	Traditional/CL
Result	> Median	1601	1331
	<= Median	1399	1669

Table 4.15 further substantiates Table 4.14's findings through a Median test. The scholar applied a non-parametric Median test to the data, with the grouping variable as the mode of instruction. In the wake of applying the Median test to RC&UoE data, he obtained a non-parametric value of chi-square, 48.625, proving that the test results are statistically highly significant, i.e., Asymp. Sig. is .000.

Table 4.15

Median test statistics[a]: *Chi-square value*

	Result
N	6,000
Median	30.00
Chi-square	48.625[b]
df	1
Asymp. Sig.	.000

a Grouping Variable: Mode of Instruction

b. 0 cells (.0%) have expected frequencies less than 5. The minimum expected cell frequency is 1,466 0.

Both Kruskal-Wallis H and Median tests supported each other's results and proved that the results in Tables 4.12–4.15 are statistically substantial. As a result, Kruskal-Wallis H and Median tests further confirmed and supported the alternative hypothesis for RQ1, thus validating the significant impact of TLO on the academic accomplishment of ELLs at the tertiary level.

To determine whether the research follows normality with unequal variances or assumes that the dependent variable result does not satisfy the normality assumption, hypothesis H_a is accepted in both cases. It means that, in both situations, TLO has a significant impact on ELLs' academic performance at the tertiary level.

4.3.2. Research Question (RQ) 2

To what extent is there a difference in the English language proficiency scores of ELLs exposed to TLO instruction and those in a traditional classroom environment? Is this difference statistically significant?

4.3.2.1. Descriptive Statistics

Descriptive statistics obtained from the RC&UoE data based on the variables 'result, test type' and 'department' respond to RQ2 and examine statistical hypotheses, i.e., H_0 and H_a Figure 4.10 and Table 4.16 show the independent ordinal variables 'test type' and 'department' and the dependent scale (continuous) variable 'result'.

Figure 4.10 presents clusters of means of results by test type and department. The bar graph shows a mean-wise comparative analysis of four departments, i.e., U1CS, U1BS, U2CS, U2BS, among all assessments. The histogram confirms that when the researcher compared the means of ELLs' language proficiency scores among all test types, ELLs of U1CS and U2CS performed better and demonstrated more constant improvement than ELLs of U1BS and U2BS. For example,

ELLs in the experimental group showed a visible improvement in their mean values, from pre-test to post-test, in U1CS of 9 mean points, and in U2CS of 6 mean points. In contrast, ELLs in the control group, U1BS and U2BS, showed an improvement of 2 mean points, respectively, over a 16-week semester. Again, within the same group, experimental, placed in two different situations, i.e., U1CS and U2CS, ELLs in U1CS performed comparatively better (a visible improvement of 9 mean points) than U2CS (a visible improvement of 6 mean points) with a difference of 3 mean points between U1CS and U2CS.

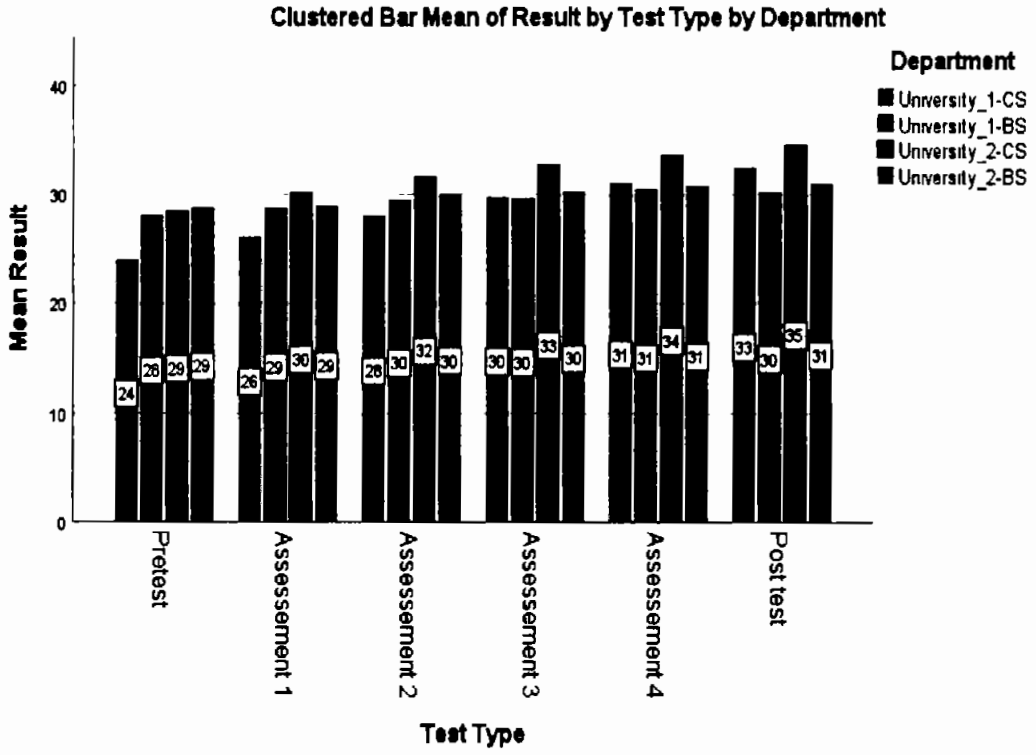

Figure 4.10. Descriptive statistics: Mean of result by test type and department

Table 4.16 presents an overview of descriptive statistics, including the overall mean, median, standard deviation, and confidence intervals for RC&UoE assessments. The table also

shows accumulative descriptives for all test types, in which ELLs demonstrated constant improvement when the investigator compared the means from pre-test to post-test.

Table 4.16

Descriptive statistics: Mean of result by test type

S. NO.	Test Type	Mean	95% CIs for Mean		Median	Variance	Std. Deviation	Skewness	Kurtosis
			Lower Bound	Upper Bound					
1	Pre-test	27.39	27.15	27.62	28.00	14.333	3.786	-.778	1.059
2	Assessment 1	28.53	28.31	28.76	29.00	13.292	3.646	-.692	.947
3	Assessment 2	29.86	29.64	30.07	30.00	11.695	3.420	-.737	1.125
4	Assessment 3	30.67	30.47	30.87	31.00	10.476	3.237	-.807	1.309
5	Assessment 4	31.53	31.34	31.73	32.00	9.488	3.080	-.700	1.036
6	Post-test	32.12	31.91	32.32	32.00	11.403	3.377	-1.132	3.028

Figure 4.10 and Table 4.16, in accordance with the data, validate and support the alternative hypothesis for RQ2 by corroborating that there is a significant difference in the EL proficiency scores of ELLs exposed to TLO instruction as compared to those exposed to a traditional learning environment. In addition, the investigator used a number of inferential statistical tests, both parametric and non-parametric, to verify hypotheses, confirm descriptives' findings, examine statistical differences between experimental and traditional groups, and respond to RQ2. First, he applied parametric tests because RC&UoE data satisfy the normality assumption and can thus be

regarded as normal despite including marginally negatively skewed elements and outliers. Then, he used non-parametric equivalents to double-check the findings of parametric tests.

4.3.2.2. Classical ANOVA: Examining Variances for Variable Test Type

Like RQ1, the investigator presumed that the RC&UoE data had equal variances for the independent ordinal variable test type. As a result, he utilised simple ANOVA on the independent variable 'test type' to address RQ2 and investigate hypotheses H_0 and H_a.

Classical ANOVA in Table 4.17 shows that the independent variable test type produced highly significant results with F value = 276.315**.

Table 4.17

Simple ANOVA: Result

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	16276.665	5	3255.333	276.315	.000
Within Groups	70616.831	5994	11.781		
Total	86893.496	5999			

4.3.2.3. Welch-ANOVA: Levene's Test of Homogeneity of Variance

The investigator used a Levene's test of homogeneity of variance, as shown in Table 4.18, to examine whether the variable test type had equal variances, verify classical ANOVA results, and support statistical hypotheses. Table 4.18 also shows Levene statistics confirming that the variances for the variable test type are not equal, but showing substantial outcomes dependent on mean and median.

The researcher also applied a test of equality of variance for RQ2 and examined (additional) variance hypotheses produced based on the variable test type. For example:

H_0: Test type has equal variances.

H_a: Test type does not have equal variances.

Table 4.18 supports H_a hypothesis and proves that the independent variable test type does not have equal variances.

Table 4.18

Test of homogeneity of variance

		Levene statistic	df1	df2	Sig.
Result	Based on Mean	10.063	5	5994	.000
	Based on Median	8.634	5	5994	.000
	Based on median and with adjusted df	8.634	5	5867.255	.000
	Based on trimmed mean	9.654	5	5994	.000

The results in Table 4.18 prompted the scholar to use a Welch-ANOVA test to confirm the findings of simple ANVOA, as shown in Table 4.17. He found in Table 4.18 that the variable test type does not include equal variances and similarly violates the assumption of simple ANOVA, i.e., if the data tested have unequal, inconsistent variances, using simple ANOVA might produce deceptive or incorrect results.

As mentioned in RQ1, the strict assumption for ANOVA is that variances should be equal. Common variances do not exist between and within groups, which also supports the Welch-ANOVA test application. Since Table 4.18 verifies hypothesis H_a for the variable test type and

disregards the assumption of simple ANOVA, this study acknowledges and supports the application of Welch-ANOVA.

As shown in Table 4.19, Welch-ANOVA produced significant results indicating an asymptotically F distribution value of 260.075**.

Table 4.19

Robust test of equality of means: Result

	Statistic[a]	df1	df2	Sig.
Welch	260.075	5	2795.092	.000

a. Asymptotically F distributed.

The researcher used both simple ANOVA and Welch-ANOVA to validate hypotheses, obtain results, investigate significance/ difference and both tests to back up each other. To his surprise, both simple ANOVA and Welch-ANOVA gave similar outcomes with F value = 276.315**. Based on these findings, hypothesis H_a is verified and accepted. It shows a significant difference in the EL proficiency scores of ELLs exposed to TLO instruction and those in a traditional classroom environment.

In addition, Table 4.20 illustrates Bonferroni's multiple comparisons. Bonferroni says that it at one's discretion what test one would like to use with respect to test type with the result as dependent and whatever test one compares, the results of all variables (assessments) are substantial. All assessments produced more notable results.

Table 4.20

Bonferroni multiple comparisons

(I) Test Type	(J) Test Type	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Pre-test	Assessment 1	-1.148*	.154	.000	-1.60	-.70
	Assessment 2	-2.470*	.154	.000	-2.92	-2.02
	Assessment 3	-3.284*	.154	.000	-3.73	-2.83
	Assessment 4	-4.148*	.154	.000	-4.60	-3.70
	Post-test	-4.729*	.154	.000	-5.18	-4.28
Assessment 1	Pre-test	1.148*	.154	.000	.70	1.60
	Assessment 2	-1.322*	.154	.000	-1.77	-.87
	Assessment 3	-2.136*	.154	.000	-2.59	-1.69
	Assessment 4	-3.000*	.154	.000	-3.45	-2.55
	Post-test	-3.581*	.154	.000	-4.03	-3.13
Assessment 2	Pre-test	2.470*	.154	.000	2.02	2.92
	Assessment 1	1.322*	.154	.000	.87	1.77
	Assessment 3	-.814*	.154	.000	-1.26	-.36
	Assessment 4	-1.678*	.154	.000	-2.13	-1.23
	Post-test	-2.259*	.154	.000	-2.71	-1.81

Assessment 3	Pre-test	3.284*	.154	.000	2.83	3.73
	Assessment 1	2.136*	.154	.000	1.69	2.59
	Assessment 2	.814*	.154	.000	.36	1.26
	Assessment 4	-.864*	.154	.000	-1.31	-.41
	Post-test	-1.445*	.154	.000	-1.90	-.99
Assessment 4	Pre-test	4.148*	.154	.000	3.70	4.60
	Assessment 1	3.000*	.154	.000	2.55	3.45
	Assessment 2	1.678*	.154	.000	1.23	2.13
	Assessment 3	.864*	.154	.000	.41	1.31
	Post-test	-.581*	.154	.002	-1.03	-.13
Post-test	Pre-test	4.729*	.154	.000	4.28	5.18
	Assessment 1	3.581*	.154	.000	3.13	4.03
	Assessment 2	2.259*	.154	.000	1.81	2.71
	Assessment 3	1.445*	.154	.000	.99	1.90
	Assessment 4	.581*	.154	.002	.13	1.03

*. The mean difference is significant at the 0.05 level.

Note: Dependent Variable: Result

4.3.2.4. Regression Analysis on the Variables Result and Test Type

The investigator conducted parametric simple regression analysis on the variables 'result' and 'test type' to examine statistical hypotheses and verify the results of simple ANOVA and Welch-ANOVA. As shown in Tables 4.21–4.24, regression analysis produced very substantial outcomes.

Table 4.21

Regression analysis: Model summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.429[a]	.184	.184	3.438

a. Predictors: (Constant), Test Type

b. Dependent Variable: Result

Table 4.22 shows that regression, F value = 1352.959, generated highly significant results.

Table 4.22

Regression analysis: ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	15992.924	1	15992.924	1352.959	.000[b]
	Residual	70900.572	5998	11.821		
	Total	86893.496	5999			

a. Dependent Variable. Result

b. Predictors: (Constant), Test Type

Table 4.23 presents coefficients for the dependent variable result based on the independent variable test type and signifying that constant and slope for test type demonstrated notable results. The model for simple regression for both variables is:

Result = $\beta_0 + \beta_1$ Test Type + Ei

Result constant = 26.670 + .956 Test Type + Ei

Both intercept and slope produced notable outcomes. Based on this, the researcher concluded that both coefficients were highly significant.

Table 4.23

Regression analysis: Coefficients[a]

Model		Unstandardised Coefficients		Standardised Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	26.670	.101		263.496	.000
	Test Type	.956	.026	.429	36.783	.000

a. Dependent Variable: Result

Table 4.24 illustrates the predictive value, residual, standardised predicted value and std. residual. Residuals were equivalent to errors, and errors differentiated between values of the original model minus values of the estimated model.

Error = values of the original model – values of the estimated model

Error = $y - \hat{y}$ $\hat{y}$ = estimated

The predictive value means $\hat{y}$, whose minimum observation is 27.63, and maximum observation is 32.41, with a mean of 30.02 and std. deviation 1.633, from 6,000 observations. Moreover, residual presents a minimum value of -19.406, and a maximum value of 9.418 with mean .000 and standard deviation 3.438. Table 4.24 additionally presents std. predicted value's range as minimum -1.464, maximum 1.464 with 01. Standardised residuals also follow 01.

The investigator's model is:

Result = Predictors + Ei

In short, Result follows a normal distribution, Ei also follows a normal distribution and validates this model being the best one.

Table 4.24

Residual statistics

	Minimum	Maximum	Mean	Std. Deviation
Predicted Value	27.63	32.41	30.02	1.633
Residual	-19.406	9.418	.000	3.438
Std. Predicted Value	-1.464	1.464	.000	1.000
Std. Residual	-5.644	2.739	.000	1.000

Figure 4.11 underscores the regression standardised residual and presents a graph for the variable result. The histogram shows error terms in standardised form, demonstrating that the error follows a normal distribution, with mean = 0 and SD = 1. In addition, the result follows (tilde ~) a normal distribution with sum mean μ and variance sigma squared.

Result ~ N (μ, σ^2)

Error also follows a normal distribution

Error ~ N (0, 1)

If this had not occurred or was not the same, this would have been a violation of heteroscedasticity. Also, the investigator conducted a test of homogeneity of variance and noticed no heteroscedasticity among other terms; variances were not equal, and assumptions were satisfied.

As a result, Figure 4.11 supports Tables 4.21–4.24. Figure 4.11 shows that the regression standardised residual satisfies the normality assumption.

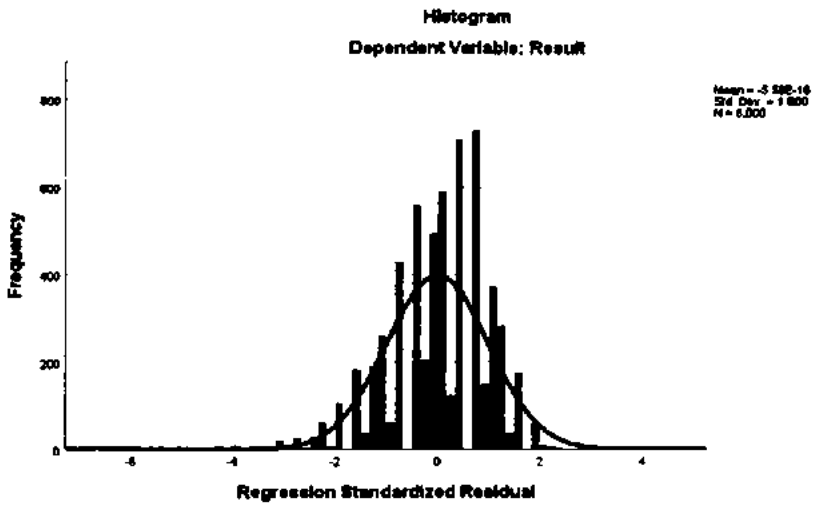

Figure 4.11. Regression standardised residual

Figure 4.12 shows that the values for expected cum probability were from 0.0 to 1.0, and values for observed cum probability were from 0.0 to 1.0. A majority of values were close to the regression line, and others were neither very far nor dispersed. Also, Figure 4.12 demonstrates that the normality assumption is satisfied.

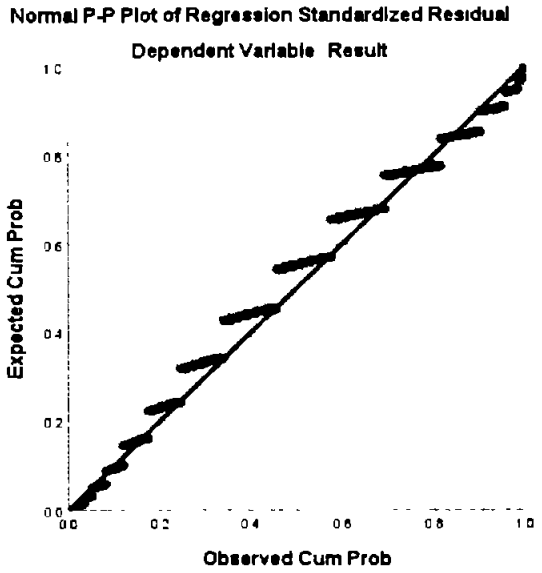

Figure 4.12. Normal P-P plot of regression standardised residual

Since the variables satisfy normality prerequisites, Figures 4.11 and 4.12, like the Kolmogorov-Smirnov test (Table 4.1), portray that normality assumptions were fulfilled and there was no heteroscedasticity among residual terms.

To conclude, the parametric tests mentioned, i.e., simple ANOVA, Welch-ANOVA and simple regression analysis, prove the investigator's assumptions. In light of the results of simple ANOVA (F = 276.315 **), Welch-ANOVA (F = 276.315**), a robust test of equality of means (statistic = 260.075**) and simple regression analysis (F = 1352.959**), this verifies and supports hypothesis H_a for RQ 2, so that there are significant mean differences in the English language proficiency scores of ELLs exposed to TLO instruction and those in a traditional classroom environment. If it was presumed that (1) RC&UoE data were non-normal with slightly negatively skewed elements, and (2) independent variable test type and dependent scale (continuous) variable results did not satisfy the normality assumption, then, non-parametric statistical tests could be used to illustrate the results.

4.3.2.5. Kruskal-Wallis H Test

Table 4.25 shows that the researcher collected 6,000 observations from $N = 1{,}000$ participants and utilised a Kruskal-Wallis H test. The table additionally presents the mean rank results of a Kruskal-Wallis H test for the independent variable test type.

Table 4.25

Kruskal-Wallis H test: Ranks

	Test Type	N	Mean Rank
Result	Pre-test	1000	1816.09
	Assessment 1	1000	2290.32
	Assessment 2	1000	2889.34
	Assessment 3	1000	3287.76
	Assessment 4	1000	3708.76
	Post-test	1000	4010.74
	Total	6000	

Table 4.26 confirms Table 4.25's findings via a Kruskal-Wallis H test. The scholar applied a non-parametric Kruskal-Wallis H test to a comparable data set with the grouping variable test type.

The chi-square value produced by the Kruskal-Wallis H test, i.e., 1183.185, proves that the test results are very substantial. Thus, the study supports hypothesis H_a based on Kruskal-Wallis ranks.

Table 4.26

Kruskal-Wallis test: Test statistics[a,b]

	Result
Chi-square	1183.185
df	5
Asymp. Sig.	.000

a. Kruskal-Wallis Test

b. Grouping Variable. Test Type

4.3.2.6. Median Test

The investigator used a non-parametric Median test on the RC&UoE data to further validate the results of the Kruskal-Wallis H test. Table 4.27 shows Median test frequencies from pre-test to post-test.

Table 4.27

Median test: Frequencies

Test Type		Pre-test	Assessment 1	Assessment 2	Assessment 3	Assessment 4	Post-test
Result	=> Median	185	327	462	560	667	731
	<= Median	815	673	538	440	333	269

Table 4.28 additionally confirms Table 4.27's findings using Median test statistics. The table also illustrates that 6,000 observations were collected. The study calculates a median of 30.00. A scholar used a Median test on the same data with a grouping variable test type. In the wake of applying a Median test to the data, a non-parametric value for chi-square of 859.151 was calculated, showing very substantial results.

Table 4.28

Median test statistics[a]

	Result
N	6,000
Median	30.00
Chi-Square	859.151[b]
df	5
Asymp. Sig.	.000

a. Grouping Variable: Test Type

b. 0 cells (.0%) have expected frequencies less than 5. The minimum expected cell frequency is 488.7.

Both Kruskal-Wallis H and Median tests supported each other's results and proved that the outcomes shown in Tables 4.25–4.28 were notably better. As a result, the Kruskal-Wallis and Median tests also justify and support the alternative hypothesis for RQ2.

4.3.3. Research Question (RQ) 3

Is there any significant difference in ELLs' proficiency results when two sub-groups of TLO, i.e., U1CS and U2CS, are compared?

4.3.3.1. Descriptive Statistics

Descriptive statistics based on the variables 'result, department' and 'test type' filtered by mode of instruction responded to RQ3 and investigated hypotheses H_0 and H_a. Figure 4.13 and Table 4.29 illustrate RC&UoE data based on the independent ordinal variables 'test type' and department and the dependent scale (continuous) variable 'result'.

Figure 4.13 shows clusters of mean of result by department and test type, filtered by mode of instruction (TLO). The histogram portrays a mean-wise comparative analysis of two sub-groups

of TLO, i.e., U1CS (n = 250) and U2CS (n = 250). The chart attests that when the scholar compared the means of U1CS and U2CS from pre-test to post-test, U1CS demonstrates better results, having a lead of 3 mean points over U2CS.

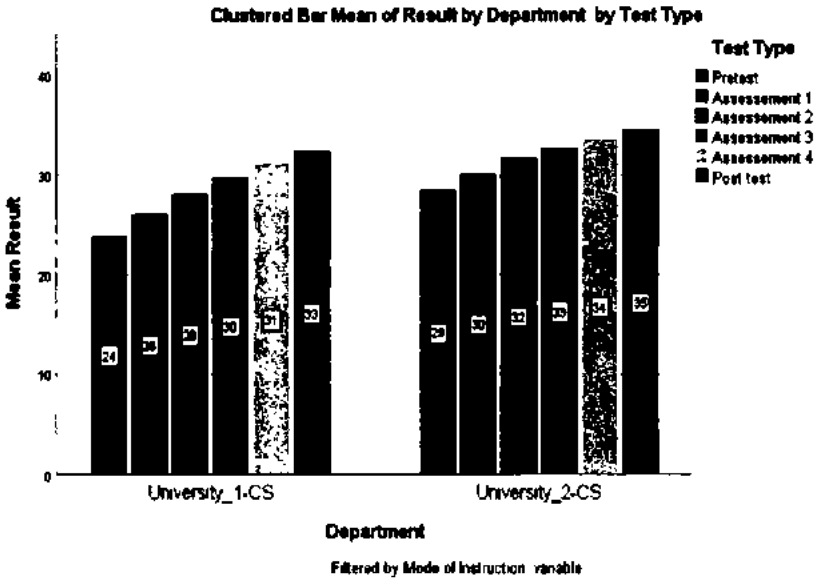

Figure 4.13. Descriptive statistics: Mean of result by department and test type

Table 4.29 presents a mean-wise comparative analysis of descriptive statistics for the dependent variable result and the independent variables department and test type. The table additionally explains the overall mean, median, standard deviation, and confidence intervals for both variables focused on the two sub-groups of TLO experimented on in the faculties of computer science at the two universities. In short, Table 4.29 shows mean-wise results for the experimental group in two different arrangements, for example, in U1CS [M: 28.62, SD: 4.407] and U2CS [M: 31.92, SD: 3.388].

Table 4.29

Descriptive statistics: Mean of result by department by test type

Department	Mean	95% CIs for Mean		Median	Variance	Std. Deviation	Skewness	Kurtosis
		Lower Bound	Upper Bound					
U1CS	28.62	28.40	28.84	29.00	19.418	4.407	-.583	.489
U2CS	31.92	31.75	32.10	32.00	11.479	3.388	-.912	1.194

As per RC&UoE data, Figure 4.13 and Table 4.29 examine, corroborate and support hypothesis H_a for RQ3 by validating a statistically significant difference in ELLs' academic achievement when two sub-groups of TLO, i.e., U1CS and U2CS, are compared. To further verify hypothesis H_a and thoroughly observe statistical differences in ELLs' academic performance, the investigator used varied inferential statistical analyses to check and confirm the findings of descriptive statistics.

4.3.3.2. Two-Sample T-Test: Exploring the Mean Difference between U1CS and U2CS

Research Question 3 looks for a significant mean difference between the two sub-groups of TLO. The investigator proposed the use of a t-test. When he compared the means of U1CS and U2CS, the question was whether he obtained significant differences. Table 4.30 shows a case processing summary for mode of instruction, TLO. TLO comprises two sub-groups, i.e., U1CS [n = 250] and U2CS [n = 250] and overall n = 500 ELLs from U1 and U2 attempted six different RC&UoE assessments. Thus, the total of gathered observations from both departments, i.e., U1CS and U2CS, was 3,000, 100% of the participants.

Table 4.30

Mode of instruction (TLO): Case processing summary

	Cases					
	Included		Excluded		Total	
	N	Percent	N	Percent	N	Percent
Result * Department	3000	100.0%	0	0.0%	3000	100.0%

Table 4.31 shows a total of 1,500 observations separately for U1CS and U2CS, where the mean and std. deviation for U1CS are 28.62 and 4.407, and for U2CS 31.92 and 3.388, respectively.

Table 4.31

Mode of instruction (TLO). Report

Result			
Department	Mean	N	Std. Deviation
University 1 (CS)	28.62	1500	4.407
University 2 (CS)	31.92	1500	3.388

When the researcher applied a two-sample t-test to explore the difference in means when comparing values for U1CS and U2CS, he obtained results for 'between groups' (combined) and 'within groups'. The results for 'within groups' were not required; therefore, he restricted himself to 'between groups'. Table 4.32 shows that the sum of squares for between groups (combined) is 8187.312, df is 1, mean square is 8187.312, and F value is 529.973. Statistically, there is a significant difference in ELLs' academic achievements when two sub-groups of TLO, i.e., U1CS and U2CS, are compared. Thus, the t-test results attest hypothesis H_a for RQ3.

Table 4.32

T-test: ANOVA table[a]

			Sum of Squares	df	Mean Square	F	Sig.
Result * Department	Between Groups	(Combined)	8187.312	1	8187.312	529.973	.000
	Within Groups		46314.736	2998	15.449		
	Total		54502.048	2999			

a. Mode of Instruction = TLO/BL

4.3.3.3. Pearson Correlation

To double-check the findings of the two-sample t-test, the investigator used Pearson's correlation between two sub-classifications of TLO, i.e., U1CS and U2Cs. What is the level of strength, and how much is the degree of interdependence between the two sub-groups? The level of strength between these two departments is .409, as shown in Table 4.33, which implies a 40.9% degree of strength, which is positive. When the outcomes of one department increase, the results of the second department will likewise increase. If one department's results move down and decline based on the variable mode of instruction, others will suffer too. The more educators and administrators emphasise TLO integration with pedagogy, the higher the proficiency scores that ELLs achieve. The level of strength as instructors incorporate TLO into their instruction identifies an observed correlation between U1CS and U2CS. Is there any negative correlation, weak observed relation, and weak interdependence? The correlation denotes how much is the degree of interdependence. How do they depend on each other, having different instructors, modes of instruction, and departments? Table 4.33 presents the correlation between U1CS and U2CS, 0.409, which is significant at 0.01 level (2-tailed).

Table 4.33

Pearson's correlations

		U1CS	U2CS
U1CS	Pearson Correlation	1	.409**
	Sig. (2-tailed)		.000
	N	1500	1500
U2CS	Pearson Correlation	.409**	1
	Sig. (2-tailed)	.000	
	N	1500	1500

**. Correlation is significant at the 0.01 level (2-tailed).

Figure 4.14 shows a boxplot for the mean of result and department and demonstrates that the mean of U1CS is higher than that of U2CS. In addition, U2CS contains extreme outliers as compared to U1CS.

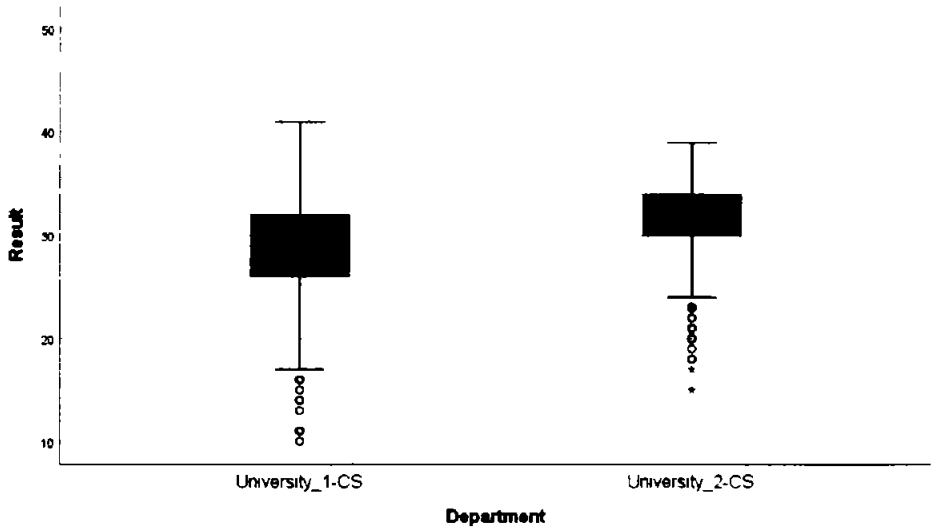

Figure 4.14. Boxplot: Mean of result by department

Thus, Tables 4.30–4.33 and Figure 4.14 support the researcher's claim, verify descriptive statistics' findings and t-test results, and corroborate the alternative hypothesis for RQ3.

4.3.4. Research Question (RQ) 4

What is the effect of TLO on enhancing the instructional methods of English language instructors at the tertiary level?

4.3.4.1. Descriptive Statistics

Descriptive statistics based on the variables result, test type and instructors, filtered by mode of instruction, answer RQ4 and examine statistical hypotheses. Figures 4.15 and 4.16, and Tables 4.34 and 4.35 illustrate the independent variables test type and instructor and the dependent scale (continuous) variable result. Figures 4.15 and 4.16 present clusters of mean of result by test type and instructor, filtered by mode of instruction. The histograms conduct mean-wise comparative analyses of six RC&UoE assessments separately for the experimental and control groups. English language (EL) instructors in the experimental group (n = 12) taught different EL sections in U1CS and U2CS; whereas EL instructors in the control group (n =10) taught different EL sections in U1BS and U2BS. EL instructors in the experimental and control groups demonstrated improvement when the scholar compared means of pre-test and post-test.

The charts also show that EL instructors in the experimental group have a notably higher mean difference. ELLs showed substantial improvement in the sections taught by EL instructors using Transparent Language Online. The researcher presents a comparative analysis of the two groups for clarity and corroboration of statistical hypotheses.

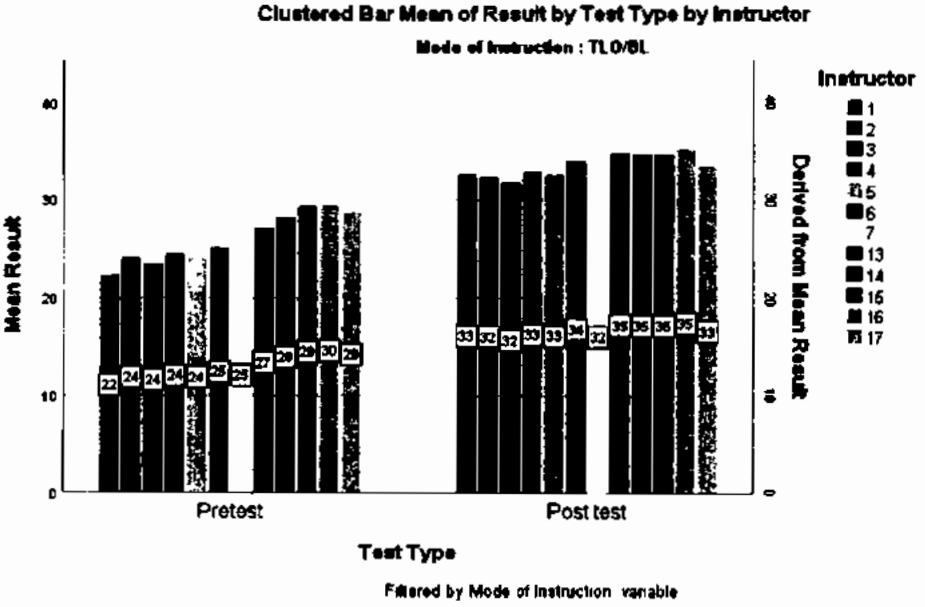

Figure 4.15. Descriptive statistics: Mean of result by test type and instructor (filtered by mode of instruction, TLO)

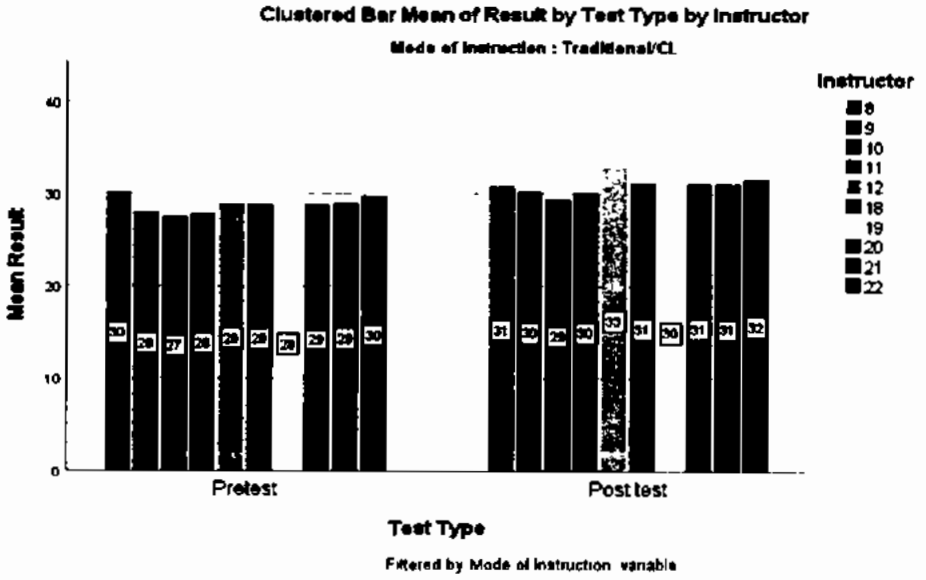

Figure 4.16. Descriptive statistics: Mean of result by test type and instructor (filtered by mode of instruction, traditional).

The investigator examined Figures 4.15 and 4.16 and found that EL instructors in the experimental group, see Figure 4.15, performed substantially better with an average of 7.6 mean points compared to EL educators in the control group, see Figure 4.14, having an average of 2.1 when mean points were compared. He witnessed throughout this study that EL instructors in the experimental group, n = 12, more notably improved their teaching methods. They also incorporated the most up-to-date pedagogical techniques into their instruction, compared to their counterparts in the control group.

Figure 4.15 proves the investigator's claim and verifies a significant difference in the mean points of both Figures 4.15 and 4.16. Figure 4.15 also supports hypothesis H_a, thus proving the significant effect of TLO on improving the instructional strategies of EL educators explicitly in the experimental group.

To support the results of Figures 4.15 and 4.16, the researcher includes a corroborative analysis in Tables 4.34 and 4.35 to explore statistical hypotheses. Tables 4.34 and 4.35 present an overview of descriptive statistics for all instructors in the experimental and control groups and give overall mean, median, standard deviation, and confidence intervals.

Table 4.34

Descriptive statistics: Mean of result by instructor and mode of instruction (TLO)

S. No.	Instructor	Mean	95% CIs for Mean Lower Bound	95% CIs for Mean Upper Bound	Median	Variance	Std. Deviation	Skewness	Kurtosis
1	1	27.94	27.24	28.63	29.00	17.835	4.223	-.669	-.175
2	2	28.55	28.13	28.96	29.00	17.369	4.168	-.948	1.475
3	3	28.19	27.62	28.75	28.50	22.612	4.755	-.469	.280
4	4	28.95	28.42	29.49	30.00	17.109	4.136	-.314	-.170

5	5	28.73	28.16	29.29	29.00	19.730	4.442	-.275	-.369
6	6	29.68	28.86	30.49	30.00	18.090	4.253	-.217	-.088
7	7	28.88	27.93	29.83	30.00	24.929	4.993	-1.044	1.406
8	13	31.49	31.06	31.91	32.00	15.779	3.972	-.913	.998
9	14	31.93	31.56	32.29	33.00	10.557	3.249	-.889	.502
10	15	32.28	31.99	32.57	33.00	6.137	2.477	-.578	.329
11	16	32.70	32.31	33.08	33.00	11.623	3.409	-.877	.948
12	17	31.24	30.83	31.64	32.00	11.274	3.358	-.854	.977

Table 4.35

Descriptives: Mean of result by mode of instruction, test type and instructor (traditional)

			95% CIs for Mean						
S. NO.	Instructor	Mean	Lower Bound	Upper Bound	Median	Variance	Std. Deviation	Skewness	Kurtosis
1	8	30.12	29.60	30.64	30.50	9.084	3.014	-.626	.345
2	9	29.29	28.90	29.67	30.00	14.173	3.765	-.820	1.279
3	10	28.87	28.51	29.22	29.00	15.683	3.960	-.645	.588
4	11	29.85	29.52	30.19	30.00	11.073	3.328	-.712	.925
5	12	30.76	30.12	31.40	31.00	14.563	3.816	-.219	-.446
6	18	30.06	29.81	30.31	30.00	7.015	2.649	-.574	.628
7	19	28.84	28.43	29.24	29.00	9.643	3.105	-.193	-.270
8	20	30.20	29.92	30.49	30.50	8.836	2.973	-.597	1.029
9	21	30.10	29.83	30.36	30.00	4.176	2.043	-.597	1.227
10	22	30.81	30.52	31.10	31.00	4.217	2.053	-.158	-.470

Thus, Figures 4.35 and 4.16 and Tables 4.34 and 4.35 support the investigator's claim, verify descriptive statistics' results and acknowledge hypothesis H_a corroborating a significant effect of TLO on enhancing the teaching methods of EL educators at the tertiary level.

4.3.4.2. Levene's Test of Homogeneity of Variance

ANOVA is applied to the variables result, test type, instructor, department and mode of instruction and is presented separately for the experimental and control groups. A total of 22 English language (EL) educators took part in this investigation and were further divided into two major groups, i.e., experimental (n = 12) and control (n = 10), and four sub-classifications, i.e., U1CS, U1BS, U2CS, and U2BS. EL teachers in the experimental group (n = 12) trained ELLs using TLO. In contrast, EL instructors in the control group (n = 10) prepared ELLs via a typical conventional methodology. IBM SPSS 25.0 generated separate results for both groups.

RQ4 emphasises EL educators (n = 12) in U1CS and U2CS, who successfully integrated TLO into their instruction; however, the researcher produced inferential statistics for the control group to re-check the experimental group results and make a comparison. RQ4 similarly investigated statistical hypotheses and explored TLO's effect on improving EL instructors' teaching practice at the tertiary level.

Tables 4.36 and 4.37 show a Levene's test of homogeneity of variance based on the variable instructor, filtered by mode of instruction, to examine, verify, acknowledge, or dismiss the statistical hypotheses for RQ4. The tables also portray whether the variances are equal or unequal, and support the researcher's claim. Levene's statistics present results based on mean, median, median with adjusted df, and trimmed mean, showing very substantial results in every case.

Table 4.36

Test of homogeneity of variance: ONEWAY result by instructor (experimental group)

		Levene statistic	df1	df2	Sig.
Result	Based on Mean	13.562	11	2988	.000
	Based on Median	11.910	11	2988	.000
	Based on median and median with adjusted df	11.910	11	2729.478	.000
	Based on trimmed mean	13.170	11	2988	.000

Table 4.37

Test of homogeneity of variances: ONEWAY result by instructor (control group)

		Levene statistic	df1	df2	Sig.
Result	Based on Mean	21.449	9	2990	.000
	Based on Median	19.717	9	2990	.000
	Based on median and median with adjusted df	19.717	9	2592.248	.000
	Based on trimmed mean	20.359	9	2990	.000

The researcher also checked the equality of variance and found that variances between the groups were not equal, as shown and confirmed by Tables 4.36 and 4.37.

4.3.4.3. Classical ANOVA: Comparing the Variables Result and Mode of Instruction

Considering the prerequisites of RQ4, the investigator used classical ANOVA to answer the research question and examine statistical hypotheses. Tables 4.38 and 4.39 show that when comparing the two variables 'result' and 'mode of instruction', these generated notable outcomes.

Table 4.38

Classical ANOVA (experimental group)

Result					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	8869.858	11	806.351	52.800	.000
Within Groups	45632.190	2988	15.272		
Total	54502.048	2999			

Table 4.39

ANOVA (control group)

Result					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1188.356	9	132.040	12.814	.000
Within Groups	30809.364	2990	10.304		
Total	31997.720	2999			

4.3.4.4. Welch-ANOVA: Analysing Overall Results by Instructor

Tables 4.40 and 4.41 present instructor-wise results separately for the experimental and control groups and likewise show a robust test of equality of means. As shown in Tables 4.40 and 4.41, Welch statistics illustrate significant results, with F values = 56.958 and 13.662, respectively, at p-value =0.05.

Table 4.40

Robust test of equality of means (experimental group)

Result				
	Statistic[a]	df1	df2	Sig.
Welch	56.958	11	954.464	.000

a. Asymptotically F distributed.

Table 4.41

Result of robust test of equality of means (control group)

	Statistic[a]	df1	df2	Sig.
Welch	13.662	9	962.747	.000

a. Asymptotically F distributed.

As a result, Tables 4.38–4.41 answer RQ4, investigate and support hypothesis H_a for RQ4, corroborating a significant effect of TLO on enhancing the teaching methods of English language instructors at the tertiary level. This is also evident from the facts provided by the analyses of RQ1, RQ2 and RQ3, i.e., that those instructors who incorporated TLO into their instruction performed notably more efficiently. Their sections and learners showed significantly higher proficiency scores, higher academic achievement, and improved confidence in using the technology.

4.4. Results: First Certificate in English Listening Test (FCE-LT)

In this part of the research project, the same group of students, *N=1,000,* participated and attempted four English Listening assessments (pre-test, A1, A2, and post-test) in an observed synchronous atmosphere during a 16-week semester in autumn 2018. When the investigator collected data and analysed demographic information, the hypotheses testing stage of the study on the FCE-LT data started. The data gathered were examined for accuracy and completeness in the initial phase through visually evaluating data and measuring descriptive statistics. Like the RC&UoE data, he utilised the codebook for FCE-LT data during the descriptive investigation, which helped to examine and identify missing data values. Considering the FCE-LT codebook, he concluded that additional data transformation and cleansing were not required.

The scholar achieved descriptive statistics for the four research questions in two ways, i.e., (1) frequency examination in percentage form, and (2) mean, median, standard deviation, and confidence intervals using IBM SPSS 25. He investigated the descriptive statistics to remove unfinished assessments, test items, and partakers who did not participate in any assessment instrument, i.e., RC&UoE or FCE-LT, or venture stage. After obtaining and examining descriptive statistics, he applied different inferential statistical apparatuses to the FCE-LT data to verify, acknowledge, or dismiss hypotheses H_0 and H_a.

4.4.1. Research Question (RQ) 1

How and to what extent does the integration of Transparent Language Online with pedagogy impact on the academic performance of ELLs at the tertiary level?

This part deals with the degree to which the integration of TLO with pedagogy impacts on ELLs' academic performance at thc tertiary level, investigates and verifies the null or alternative hypotheses for the first research question.

4.4.1.1. Descriptive Statistics

Descriptive statistics based on the variables 'result, mode of instruction' and 'test type', responded to RQ1. Figure 4.17 shows a cluster of mean of result by mode of instruction and test type. The histogram illustrates a comparative exploration of the experimental and control groups at U1 and U2 among all FCE-LT assessments. The chart also presents that ELLs in U1CS and U2CS achieved higher proficiency scores as compared to U1BS and U2BS when mean results of all test types are compared; for instance, in U1CS and U2CS (TLO) [M: 14, 16, 18, 20], and in U1BS and U2BS (traditional) [M: 15, 16, 17, 18].

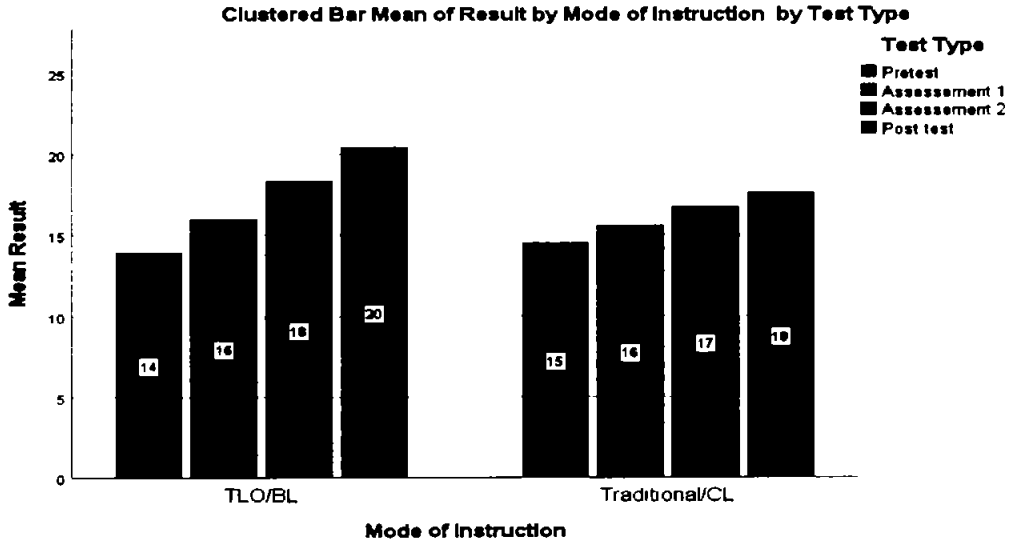

Figure 4.17. Descriptive statistics: Mean of result by mode of instruction and test type

Table 4.42 shows a comprehensive analysis of descriptive statistics and presents overall mean, median, standard deviation and confidence intervals for the same variables 'result' and 'mode of instruction'. Table 4.42 supports Figure 4.17, proving that the experimental group has substantial descriptive statistics compared to the control group.

Table 4.42

Descriptive statistics: Mean of result by mode of instruction

		95% Cls for Mean						
Mode of Instruction	Mean	Lower Bound	Upper Bound	Median	Variance	Std. Deviation	Skewness	Kurtosis
TLO	17.20	17.02	17.39	17.00	17.732	4.211	.047	-.234
Traditional	16.14	15.99	16.29	16.00	12.109	3.480	-.035	-.094

According to the FCE-LT data, Figure 4.17 and Table 4.42 validate and accept the alternative hypothesis for RQ1 by verifying a significant impact of Transparent Language Online on ELLs' academic performance at the tertiary level. The study utilised varied inferential analyses to confirm the findings of the descriptive statistics and corroborate hypothesis H_a.

4.4.1.2. Classical ANOVA: Exploring the Variables Result and Mode of Instruction

The investigator assumed that the FCE-LT data had equal variances. Thus, he applied the parametric classical ANOVA test on the variable mode of instruction to address RQ1, and examine its hypotheses. As shown in Table 4.43, classical ANOVA shows that analysing two variables 'result' and 'mode of instruction' generated notably substantial outcomes, with an F value of 75.447 at p-value = 0.05.

Table 4.43

Classical ANOVA: Result

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1125.721	1	1125.721	75.447	.000
Within Groups	59652.630	3998	14.921		
Total	60778.351	3999			

4.4.1.3. Welch-ANOVA: Investigating Variances Using Leven's Test of Homogeneity of Variance

The investigator utilised a test of homogeneity of variance, as presented in Table 4.44, to check his assumption, verify findings of classical ANOVA, and find whether variances were equal or unequal. As shown in Table 4.44, a Levene's statistics demonstrates that the variances for the variable 'mode of instruction' were not equal; nonetheless, they showed highly significant results.

Table 4.44

Result of test of homogeneity of variance

	Levene statistic	df1	df2	Sig.
Based on Mean	76.216	1	3998	.000
Based on Median	74.516	1	3998	.000
Based on median and with adjusted df	74.516	1	3897.141	.000
Based on trimmed mean	75.811	1	3998	.000

As Table 4.44 proves, the variances were not equal based on a Levene's test of homogeneity of variance; showing notably substantial values for each case, i.e., mean, median or even on the basis of trimmed mean. Since the test of homogeneity of variance confirmed the

alternative variance hypothesis that the two key groups, i.e., experimental and control, had unequal variances and they did violate the strict assumption of a classical ANOVA, i.e., variances should be equal; the researcher applied Welch-ANOVA test because of its insensitive nature toward unequal variances. Utilising the application of classical ANOVA may lead to misleading or erroneous results. This verifies the utilisation of Welch-ANOVA test. As shown in Table 4.45, Welch-ANOVA generates notable results with F = 75.447**.

Table 4.45

Welch-ANOVA: Robust tests of equality of means

Result				
	Statistic[a]	df1	df2	Sig.
Welch	75.447	1	3860.919	.000

a. Asymptotically F distributed.

Unexpectedly, Welch-ANOVA produced the same results, with F value = 75.447, as classical ANOVA. As a result, the findings of classical ANOVA and Welch-ANOVA–F value = 75.447–approve, and support hypothesis H_a for RQ1.

4.4.1.4. Regression Analysis on Variables Mode of Instruction and Result

The researcher applied simple regression analysis on the variables 'mode of instruction' and 'result' to examine statistical hypotheses for RQ1 and approves the results of Welch-ANOVA. As shown in Tables 4.46–4.48, and Figures 4.18–4.19, the regression produced substantial results.

Table 4.46

Regression analysis: Model summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.136[a]	.019	.018	3.863

a. Predictors: (Constant), Mode of Instruction

b Dependent Variable: Result

Table 4.47 shows that the regression analysis generated similar outcomes as simple ANOVA and Welch-ANOVA, with an F value = 75.447**.

Table 4.47

Regression Analysis: ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1125.721	1	1125.721	75.447	.000[b]
	Residual	59652.630	3998	14.921		
	Total	60778.351	3999			

a. Dependent Variable Result

b. Predictors: (Constant), Mode of Instruction

Table 4.48 presents the coefficients for variables result and mode of instruction, signifying that constant and mode of instruction produced significant results. A simple regression model for the stated variables is provided hereunder:

$$\text{Result} = \beta_0 + \beta_1 \text{ MoI} + \text{Ei}$$

$$\text{Result constant} = 18.263 - 1.061 \text{ MoI} + \text{Ei}$$

Both intercept and slope produced notable significant. Thus, the investigator summarised that both constant and mode of instruction are highly significant.

Table 4.48

Regression analysis: Coefficients[a]

Model		Unstandardised Coefficients		Standardised Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	18.263	.193		94.560	.000
	Mode of Instruction	-1.061	.122	-.136	-8.686	.000

a. Dependent Variable: Result

Table 4.49 illustrates the predictive value, residual, standardised predicted value and std. residual. Residuals are like errors, and errors differentiate between the values of the original model minus the estimated model.

Error = Values of the original model – values of the estimated model

Error = $y - \hat{y}$ $\hat{y}$ = estimated

The predictive value means $\hat{y}$, whose minimum observation is 16.14. The maximum observation is 17.20, having a mean value of 16.67 and a standard deviation of .531, with total observations of 4,000. In addition, residual addresses the minimum value as -12.202, and the maximum value as 12.798, with mean .000 and SD 3.862.

Table 4.49 shows std. predicted value's range as minimum -1.000 and minimum as 1.000, with mean .000 and SD of 1.000. Standardised residuals also follow as minimum = -3.159, maximum = 3.313, mean = .000 and SD = 1.000. The model for the present study is:

Result = Predictors + Ei

The result and Ei satisfy the normality assumption and follow a normal distribution, validating that the present model is the best one.

Table 4.49

Residuals statistics[a]

	Minimum	Maximum	Mean	Std. Deviation
Predicted Value	16.14	17.20	16.67	.531
Residual	-12.202	12.798	.000	3.862
Std. Predicted Value	-1.000	1.000	.000	1.000
Std. Residual	-3.159	3.313	.000	1.000

a. Dependent Variable: Result

Figure 4.18 emphasises on the regression standardised residual and shows a histogram for the variable result. The diagram illustrates error terms in the standardised form, representing that error follows a normal distribution, with mean = 0 and SD = 1. Also, the result follows (tilde ~) a normal distribution with sum mean μ and variances sigma squared

Result ~ N (μ, σ^2)

Error also follows a normal distribution.

Error ~ N (0, 1)

The researcher applied a test of homogeneity of variance and found no heteroscedasticity among additional terms; variances were unequal; however, assumptions were satisfied.

Figure 4.18 verifies the findings of Tables 4.46–4.49. Figure 4.18 shows that the regression standardised residual satisfies the normality assumption.

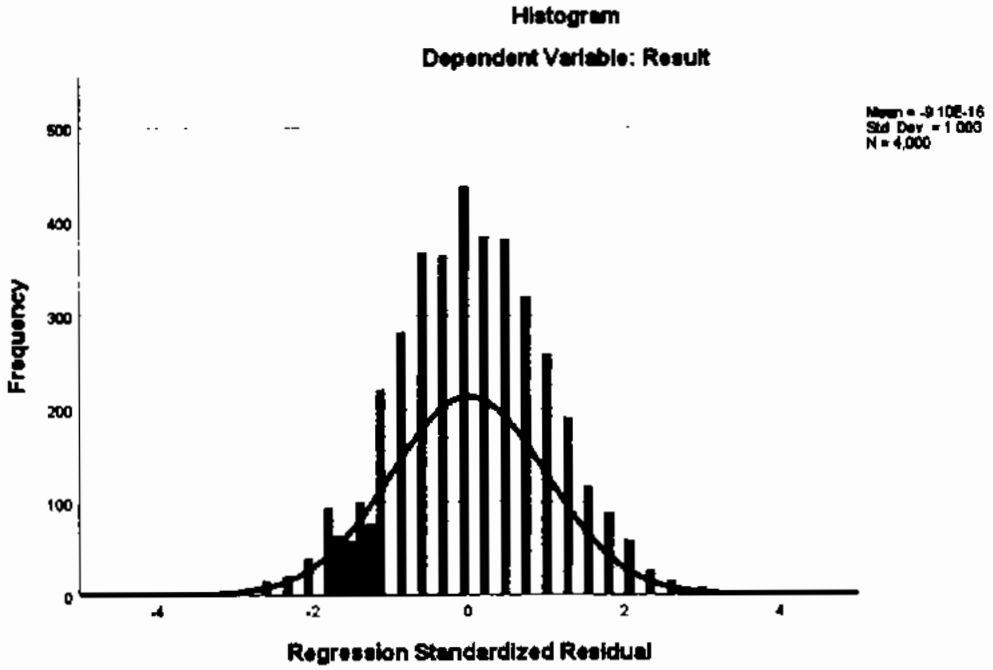

Figure 4.18. Regression standardised residual

Figure 4.19 illustrates that expected cum probability values were from 0.0 to 1.0, and the values of observed cum probability were 0.0 to 1.0. Maximum values were close to the regression line and were neither very far nor dispersed. Moreover, Figure 4.19 presents that the normality assumption was satisfied.

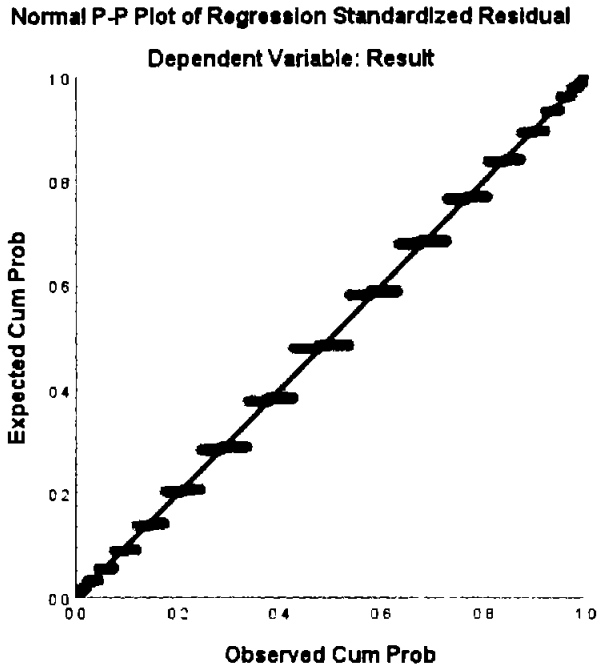

Figure 4.19. Normal P-P plot of regression standardised residual

Since the variables satisfy normality prerequisites, Figures 4.18 and 4.19, like a Kolmogorov-Smirnov test (Table 4.3), show that normality assumptions were met, and there was no heteroscedasticity residual term. In short, the mentioned parametric tests, i.e., simple ANOVA, Welch-ANOVA, and simple regression analysis, validate the researcher's assumptions. Consequently, the current investigation can use simple ANOVA, Welch-ANOVA or simple regression analysis; for the test statistics, F value is 75.447**, which is precisely a similar value produced by all three tests, producing substantial results.

Considering the simple ANOVA, Welch-ANOVA, simple regression analysis' results, and F value = 75.447** showed in Tables 4.43, 4.45, and Table 4.47; the investigator examines and acknowledges the alternative hypothesis, i.e., H_a, indicating the significant impact of Transparent Language Online on ELLs' academic performance at the tertiary level. He also assumed that if the FCE-LT data were non-normal and marginally negatively skewed, and the variable result did not

satisfy the normality assumption; at that point, non-parametric statistical tests could be utilised to produce the results and support the findings of Welch-ANOVA. For this purpose, he used Kruskal-Wallis H and Median tests to investigate hypotheses H_0 and H_a.

4.4.1.5. Kruskal-Wallis H Test

The researcher used a Kruskal-Wallis H and Median tests to examine the value how in RQ1 and check hypotheses. The value to what extent was achieved after conducting the test. Table 4.50 shows the mean rank outcomes of the Kruskal-Wallis H test for TLO and traditional groups as 2149.30 and 1851.70, respectively.

Table 4.50

Kruskal-Wallis Test: Ranks

	Mode of Instruction	N	Mean Rank
Result	TLO/BL	2000	2149.30
	Traditional/CL	2000	1851.70
	Total	4000	

Table 4.51 verifies Table 4.50's outcomes using test statistics. The investigator used a Kruskal-Wallis H test to the same data set with the grouping variable as the mode of instruction, having two distinct focuses, i.e., Transparent Language Online and conventional real-life learning.

The chi-square value, produced by the Kruskal-Wallis H test, i.e., 66.813**, responds to what extent of the component of RQ1 and confirms that the results are very significant. Based on the chi-square results, the study confirmed the H_a hypothesis for RQ1.

Table 4.51

Kruskal-Wallis: Test statistics[a,b]

	Result
Chi-Square	66.813
df	1
Asymp. Sig.	.000

a. Kruskal-Wallis Test

b. Grouping Variable: Mode of Instruction

4.4.1.6. Median Test

The scholar used the non-parametric Median test to verify the outcomes of the Kruskal-Wallis H test on the FCE-LT data. Table 4.52 shows that Median test result is 17.00, a central value, so the data which are greater than 17.00, in TLO and traditional learning, are 939 and 700, respectively and those less than 17.00, in TLO and traditional learning, are 1061 and 1300, respectively. In addition, he observed that TLO learners and traditional learners have a significant difference, which is to be tested for its significance.

Table 4.52

Median test: Frequencies

		Mode of Instruction	
		TLO/BL	Traditional/CL
Result	> Median	939	700
	<= Median	1061	1300

Table 4.53 confirms Table 4.52's results using a Median test. The investigator proposed a non-parametric test to the FCE-LT data, with the grouping variable as the mode of instruction. After applying the Median test to FCE-LT data, he achieved a non-parametric value of chi-square,

59.045 in test statistics, and 58.552 in Yates' continuity correction, presenting that the test results are statistically substantial.

Table 4.53

Median test statistics[a]

		Result
N		4,000
Median		17.00
Chi-Square		59.045
df		1
Asymp. Sig.		.000
Yates' Continuity Correction	Chi-Square	58.552
	df	1
	Asymp. Sig.	.000

a. Grouping Variable: Mode of Instruction

Both Kruskal-Wallis H and Median tests confirmed the results of the parametric tests, i.e., classical ANOVA, Welch-ANOVA and simple regression analysis. Thus, Kruskal-Wallis H and Median tests also verified the alternative hypothesis for RQ1, thus demonstrating the significant impact of TLO on the academic achievement of ELLs at the tertiary level.

Regardless of whether the investigation follows normality with unequal variances or presumes that the variable 'result' does not satisfy the normality assumption; in either case, the alternative hypothesis for RQ1 is accepted.

4.4.2. Research Question (RQ) 2

To what extent is there a difference in the English language proficiency scores of ELLs exposed to TLO instruction and those in a traditional classroom environment? Is this difference statistically significant?

4.4.2.1. Descriptive Statistics

Descriptive statistics obtained from the FCE-LT data focused on the variables 'result, test type' and 'department' address RQ2 and examine statistical hypotheses H_0 and H_a. Figure 4.20 and Table 4.54 illustrate the dependent variable 'result' and independent variables 'test type' and 'department'.

Figure 4.20 shows cluster of mean of result by test type and department and describes a comparative analysis of four focused departments, i.e., U1CS, U1BS, U2CS, and U2BS, of both universities among all test types. The chart confirms that ELLs of U1CS and U2CS demonstrated more constant results and performed higher scores compared to ELLs of U1BS and U2BS when means of ELLs' English language (EL) proficiency scores were compared among all FCE-LT assessments.

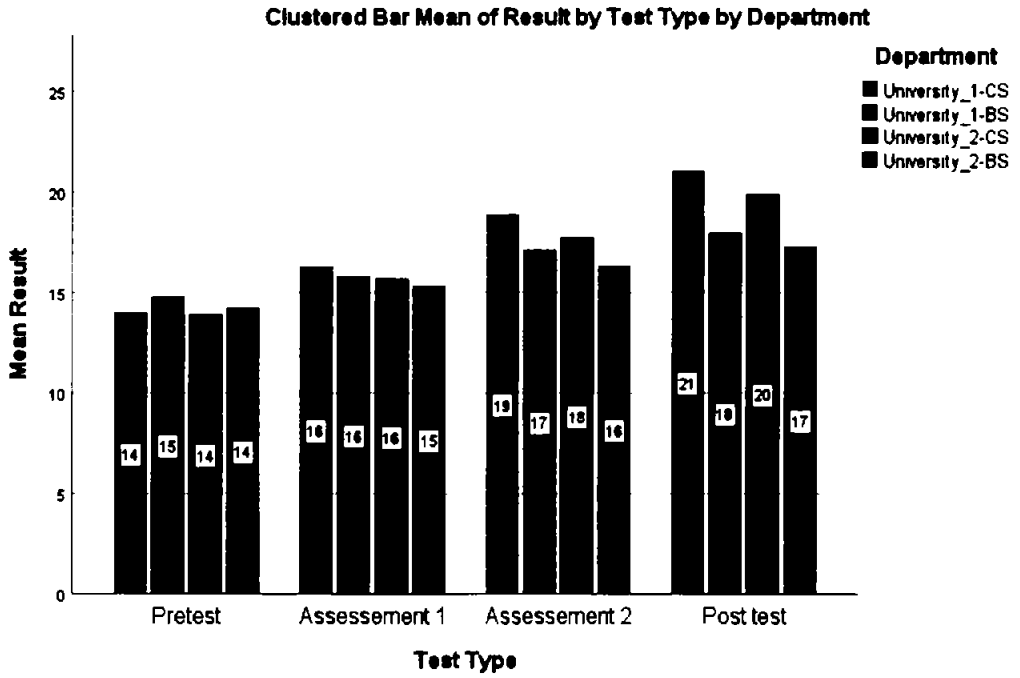

Figure 4.20. Descriptive statistics: Mean of result by test type and department

Table 4.54 shows detailed descriptive statistics together with overall mean, median, standard deviation, and confidence intervals for FCE-LT test types (pre-test, A1, A2, and post-test). Table 5.54 demonstrates collective descriptive statistics of all test types, in which ELLs showed continuous improvement when the means of pre-test to post-test were compared.

Table 4.54

Descriptive statistics: Mean of result by test type

S. NO.	Test Type	Mean	95% CIs for Mean		Median	Variance	Std. Deviation	Skewness	Kurtosis
			Lower Bound	Upper Bound					
1	Pre-test	14.27	14.06	14.47	14.00	11.412	3.378	.171	.021
2	Assessment 1	15.81	15.59	16.03	16.00	12.495	3.535	.082	.029

3	Assessment 2	17.54	17.33	17.76	17.00	11.862	3.444	.160	.053
4	Post-test	19.07	18.85	19.28	19.00	12.031	3.469	.065	.183

As per the FCE-LT data, Figure 4.20 and Table 4.54 confirm and acknowledge hypothesis H_a for RQ2 by substantiating a significant mean difference in the EL proficiency scores of ELLs exposed to TLO and those in a traditional classroom learning environment.

The investigator used different inferential statistical tests to verify the findings of descriptive statistics and corroborate statistical hypothesis. He accepts and supports the application of parametric tests because the FCE-LT data satisfy the normality assumption and can be normal despite containing marginally negatively skewed components and rarer outliers.

4.4.2.2. Levene's Test of Homogeneity of Variance to Examine Variances

The researcher used a test of homogeneity of variance, as shown in Table 4.55, to examine whether the independent ordinal variable 'test type' had equal or unequal variances. Levene's statistics, as shown in Table 4.55, indicates that the FCE-LT variable test type has equal variances.

Before applying any specific test, the investigator also used the test of equality of variance for RQ2, and investigated (added) variance hypotheses, given below, generated based on the variable test type.

H_0: Test Type has equal variances.

H_a: Test Type does not have equal variances.

Table 4.55 accepts the null variance hypotheses, i.e., H_0, and validates that the variances are equal for the variable test type.

Table 4.55

Test of homogeneity of variance

		Levene statistic	df1	df2	Sig.
Result	Based on Mean	.481	3	3996	.696
	Based on Median	.556	3	3996	.644
	Based on median and with adjusted df	.556	3	3991.656	.644
	Based on trimmed mean	.518	3	3996	.670

Since the value of Levene statistic is not significant, the researcher could not apply Welch-ANOVA because this type of ANOVA is highly recommended for unequal variances. However, the findings of Table 4.55 guided him to use the application of classical ANOVA. Table 4.55 confirms the null variance hypothesis, i.e., H_0, for the variable test type and satisfies the classical ANOVA strict assumption; the research supports the use of classical ANOVA.

4.4.2.3. Classical ANOVA to FCE-LT Variable Test Type

The researcher used simple ANOVA on the independent variable 'test type' to answer RQ2, verify the findings of the descriptive statistics, and examine statistical hypotheses.

As shown in Table 4.56, classical ANOVA proves that the independent ordinal variable 'test type' delivered highly significant results with F value = 363.352 at p-value = 0.05.

Table 4.56

Simple ANOVA: Result

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	13026.173	3	4342.058	363.352	.000
Within Groups	47752.178	3996	11.950		
Total	60778.351	3999			

As confirmed by Table 4.56, the findings of the simple ANOVA, F = 363.352, verify and accept hypothesis H_a for RQ2.

Table 62 shows Bonferroni multiple comparisons. Bonferroni indicates that it at one's discretion, what test one would like to use regarding test type and whatever test one compares, the results of all variables (assessments) are significant. All assessments produced highly significant results.

Table 4.57

Bonferroni multiple comparisons

(I) Test Type	(J) Test Type	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Pre-test	Assessment 1	-1.547*	.155	.000	-1.96	-1.14
	Assessment 2	-3.277*	.155	.000	-3.69	-2.87
	Post-test	-4.802*	.155	.000	-5.21	-4.39
Assessment 1	Pre-test	1.547*	.155	.000	1.14	1.96
	Assessment 2	-1.730*	.155	.000	-2.14	-1.32
	Post-test	-3.255*	.155	.000	-3.66	-2.85
Assessment 2	Pre-test	3.277*	.155	.000	2.87	3.69
	Assessment 1	1.730*	.155	.000	1.32	2.14
	Post-test	-1.525*	.155	.000	-1.93	-1.12
Post-test	Pre-test	4.802*	.155	.000	4.39	5.21
	Assessment 1	3.255*	.155	.000	2.85	3.66
	Assessment 2	1.525*	.155	.000	1.12	1.93

*. The mean difference is significant at the 0.05 level.

Dependent Variable: Result

4.4.2.4. Regression Analysis on the Variable Result and Test Type

The researcher applied simple regression analysis on variables 'result' and 'test type' to respond to RQ2, analyse the hypotheses, and support the outcomes of classical ANOVA. He observed from Tables 4.58–4.60 that regression analysis also produced significant results.

Table 4.58

Regression analysis: Model summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.463[a]	.214	.214	3.456

a Predictors: (Constant), Test Type

b. Dependent Variable: Result

Table 4.59 presents that regression results, F value = 1089.788, are highly significant.

Table 4.59

Regression analysis: ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	13018.525	1	13018.525	1089.788	.000[b]
	Residual	47759.826	3998	11.946		
	Total	60778.351	3999			

a Dependent Variable. Result

b. Predictors. (Constant), Test Type

Table 4.60 shows coefficients for the dependent variable result dependent upon the independent variable test type, signifying that constant and slope for test type presented significant results. The model for simple regression for variables 'result' and 'test type' is:

Result = $\beta_0 + \beta_1$ Test Type + Ei

Result constant = 12.637 + 1.614 Test Type + Ei

Both intercept and slope are highly significant. Based on this, the researcher concluded that both coefficients were highly significant.

Table 4.60

Regression analysis: Coefficients[a]

Model		Unstandardised Coefficients		Standardised Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	12.637	.134		94.407	.000
	Test Type	1.614	.049	.463	33.012	.000

a. Dependent Variable: Result

Table 4.61 portrays the predictive value, residual, standardised predicted value, std. residual. Residuals were equal to errors and errors distinguished between values of the original model minus values of the estimated model.

Error = Original model values – estimated model values

Error = $y - \hat{y}$ $\hat{y}$ = estimated

The predictive value means $\hat{y}$, whose minimum observation is 14.25, and maximum observation is 19.09, with a mean of 16.67and std. deviation 1.804, from a total 4,000 observation. Furthermore, residual shows a minimum value of -10.092, and a maximum value of 11.522 with a mean .000 and standard deviation 3.456. Table 4.61 also demonstrates std. predicted value's range as minimum -1.341, maximum 1.341 with 01. Standardised residuals likewise follow 01.

This researcher's model is:

Result = Predictors + Ei

In a nutshell, Result follows a normal distribution, Ei also follows a normal distribution and corroborates this model being the best one.

Table 4.61

Residual statistics

	Minimum	Maximum	Mean	Std. Deviation
Predicted Value	14.25	19.09	16.67	1.804
Residual	-10.092	11.522	.000	3.456
Std. Predicted Value	-1.341	1.341	.000	1.000
Std. Residual	-2.920	3.334	.000	1.000

Figure 4.21 shows the regression standardised residual and demonstrates a histogram for the dependent variable result. The chart depicts error terms in standardised form, illustrating that the error follows a normal distribution, with mean = 0 and SD = 1. Moreover, outcomes follow (tilde ~) a normal distribution with sum mean μ and variance sigma squared.

Result ~ N (μ, σ^2)

Error also follows a normal distribution.

Error ~ N (0, 1)

The researcher conducted a test of homogeneity of variance and found no heteroscedasticity among other terms; variances were not equal, and assumptions were satisfied.

Consequently, Figure 4.21 reinforces the findings of Tables 4.58–4.61. Figure 4.21 shows that the regression standardised residual equally satisfies the normality assumption.

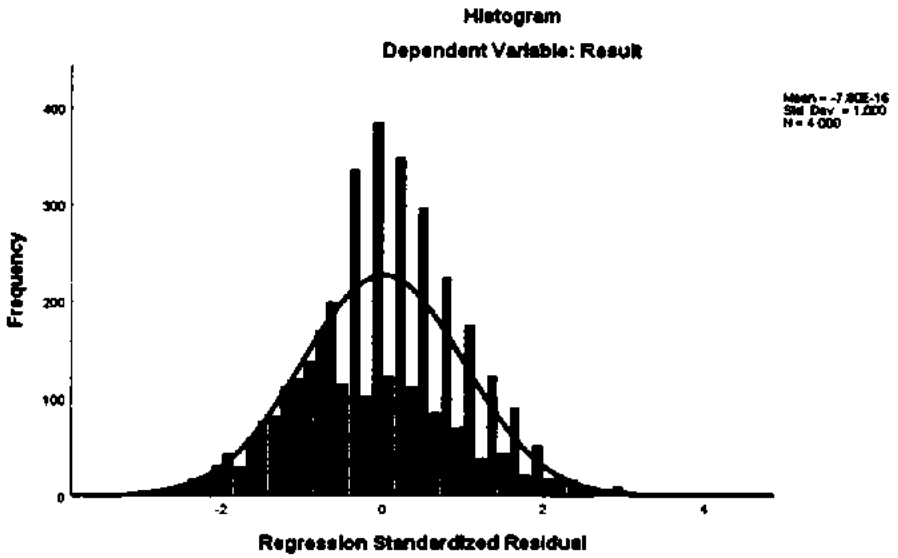

Figure 4.21. Regression standardised residual

Figure 4.22 demonstrates that the values for expected probability were from 0.0 to 1.0, and the values for the observed cum probability were from 0.0 to 1.0. Most values were near the regression line, and others were neither very far nor scattered. In addition, Figure 4.22 presents that the normality assumption is satisfied.

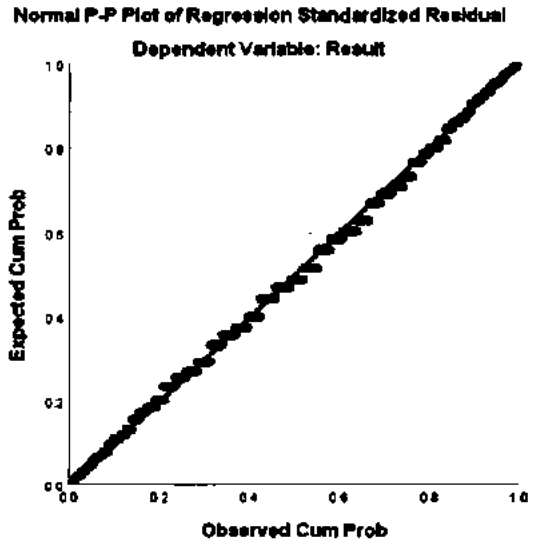

Figure 4.22. Normal P-P plot of regression standardised residual

As the variables satisfy normality requirements, Figures 4.21 and 4.22, like the Kolmogorov-Smirnov test (Table 4.3), confirm and satisfy the normality assumptions and deduce that there was no heteroscedasticity among residual terms.

Considering the outcomes of classical ANOVA, robust tests of equality of means and simple regression analysis, the scholar confirms, reinforces and acknowledges hypothesis H_a for RQ2 that there are statistically significant mean differences in the English language proficiency scores of ELLs exposed to TLO and those in a traditional classroom environment. If it was assumed that FCE-LT data were non-normal with negatively skewed, having extreme outliers, and the variables test type and result did not follow the normality assumption, at that point, Kruskal-Wallis H and Median tests could be used to explore hypotheses, i.e., H_0 and H_a, for RQ2.

4.4.2.5. Kruskal-Wallis H Test on Variable Test Type

Table 4.62 shows that the investigator gathered a total 4,000 observations from N=1,000 students. The table also presents the mean rank results of a Kruskal-Wallis H test for the independent variable test type.

Table 4.62

Kruskal-Wallis test: Ranks

	Test Type	N	Mean Rank
Result	Pre-test	1000	1281.32
	Assessment 1	1000	1743.51
	Assessment 2	1000	2262.89
	Post-test	1000	2714.29
	Total	4000	

Table 4.63 affirms Table 4.62's results using a Kruskal-Wallis H test. The researcher conducted a non-parametric Kruskal-Wallis H test to FCE-LT data with the grouping variable as a test type that contained four assessments, i.e., pre-test, A1, A2, and post-test.

The chi-square value, created by the Kruskal-Wallis H test, i.e., 876.272, verifies that the test results are statistically highly significant. Hence, the research supports hypothesis H_a based on Kruskal-Wallis H ranks.

Table 63

Result of Kruskal-Wallis H test statistics[a,b]

Chi-Square	876.272
df	3
Asymp. Sig.	.000

a. Kruskal-Wallis Test

b. Grouping Variable: Test Type

4.4.2.6. Median Test

To double-check the results of the Kruskal-Wallis H test, the investigator utilised another non-parametric test, i.e., the Median test, on the FCE-LT data. Table 4.64 shows the Median test results using frequencies from pre-test to post-test.

Table 4.64

Median test: Frequencies

Test Type		Pre-test	Assessment 1	Assessment 2	Post-test
Result	> Median	174	300	484	681
	<= Median	826	700	516	319

Table 4.64 approves Table 4.63's findings using Median test statistics and portrays N = 4,000 observations gathered from four FCE-LT assessments. The researcher conducted a Median

test on a similar data set with the grouping variable test type. After employing a Median test to the FCE-LT data, the researcher obtained a non-parametric value for chi-square of 606.615 was calculated, advocating that test outcomes were statistically highly significant.

Table 4.65

Result of Median test statistics[a]

N	4000
Median	17.00
Chi-Square	606.615[b]
df	3
Asymp. Sig.	.000

a. Grouping Variable: Test Type

b. 0 cells (0%) have expected frequencies less than 5. The minimum expected cell frequency is 409.8.

To sum up, both Kruskal-Wallis H and Median tests confirmed each other's results and demonstrated that the results were statistically significant. Thus, Kruskal-Wallis H and Median tests support the findings of the test of homogeneity of variance and classical ANOVA and investigate, verify, and reinforce statistical hypothesis H_a for RQ2.

4.4.3. Research Question (RQ) 3

Is there any significant difference in ELLs' proficiency results when two sub-groups of TLO, i.e., U1CS and U2CS, are compared?

4.4.3.1. Descriptive Statistics

Descriptive statistics achieved from the FCE-LT instrument based on the variables 'result, university', and 'test type' answered to RQ3 and explored hypotheses, i.e., H_0 and H_a. Figure 4.23

and Table 4.66 show FCE-LT data focused on the dependent result and independent variables test type and university.

Figure 4.23 presents clusters of mean of result by university and test type, filtered by mode of instruction (TLO). The graph illustrates a mean-wise comparative analysis of two sub-categories of TLO, i.e., U1CS and U2CS, among all test types. The histogram proves that U1CS, group 1, shows improved results and performed slightly better than U2CS, group 2, when the scholar compared the means of both groups from pre-test to post-test.

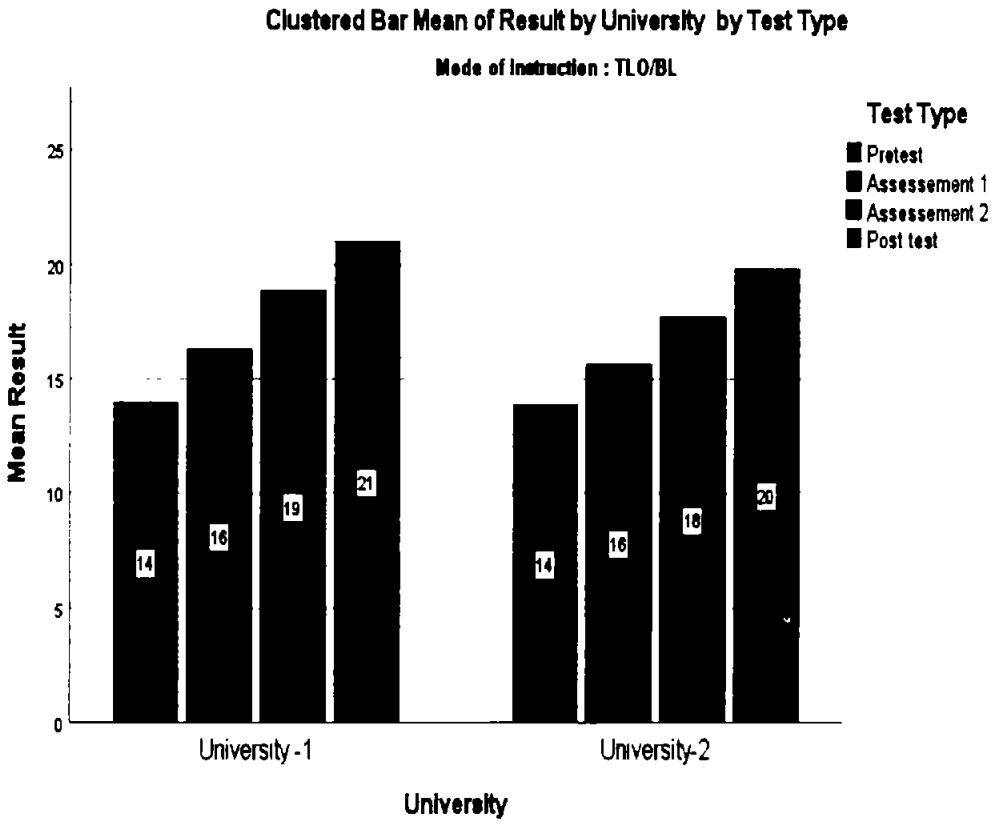

Figure 4.23. Descriptive statistics: Mean of result by university and test type

Table 4.66 shows a mean-wise comparative analysis of descriptives for the independent variable university and dependent variable result. It explicates the overall mean, median, standard

deviation, and confidence intervals for both variables emphasised on U1CS and U2CS. In short, Table 4.66 demonstrates mean-wise results for the experimented group, TLO, in two different situations, for instance, in U1CS [M: 17.59, SD: 4.871] and U2CS [M: 16.81, SD: 3.385].

Table 4.66

Descriptive statistics: Mean of result by university by test type

		95% CIs for Mean						
University	Mean	Lower Bound	Upper Bound	Median	Variance	Std. Deviation	Skewness	Kurtosis
U1 (CS)	17.59	17.29	17.89	18.00	23.724	4.871	-.022	-.559
U2 (CS)	16.81	16.60	17.02	17.00	11.457	3.385	-.120	-.463

As a result, Figure 4.23 and Table 4.66 investigate, verify and support hypothesis H_a for RQ3 by presenting a statistically substantial difference in ELLs' academic performance when two sub-groups of TLO, i.e., U1CS and U2CS, are compared. In any case, to corroborate the alternative hypothesis, i.e., H_a, and notice statistical difference in ELLs' language achievements, the researcher applied inferential statistics to endorse the findings of descriptive statistics.

4.4.3.2. Two-Sample T-Test

Research question (RQ)3 investigates a significant mean difference between two sub-classifications of the experimental group. The experimental group, TLO, comprises two sub-groups, i.e., U1CS [n = 250], and U2CS [n = 250], and overall n = 500 students for TLO from both universities, who completed four different FCE-LT tests. The investigator used a t-test to compare the means of U1CS and U2CS. Table 4.67 generates the report, result dependent on the variable department. Table 4.67 also presents the total of gathered observations from U1CS and U2CS as

1,000 each, where the mean and standard deviation for U1CS is 17.59 and 4.871, and U2CS as 16.81 and 3.385, respectively.

Table 4.67

Mode of instruction (TLO): Report

Result			
Department	Mean	N	Std. Deviation
University 1 (CS)	17.59	1000	4.871
University 2 (CS)	16.81	1000	3.385

The researcher applied the independent sample t-test to examine the difference in means and check the equality of variance. Levene's test in Table 4.68 shows that the variables had equal variances. Since the variances are equal, the scholar conducted a t-test on the two variables of the experimental group, i.e., U1CS and U2CS. Levene's test presents significant results, and the independent sample t-test likewise provides substantial results. That implies that ELLs in the experimental group on the listening assessments performed differently.

Table 4.68

Independent Samples Test

	Levene's Test for Equality of Variances		t-test for Equality of Means						
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
								Lower	Upper

Result	Equal variances assumed	134.544	.000	4.137	1998	.000	.776	.188	.408	1.144
	Equal variances not assumed			4.137	1781.418	.000	.776	.188	.408	1.144

4.4.3.3. Pearson Correlation on U1CS and U2CS

The investigator used Pearson's correlation between two sub-groups of the experimental group, i.e., U1CS and U2CS, to confirm the findings of the t-test. How much is the degree of strength and the level of interdependence between the two groups? The strength level between U1CS and U2CS is .377, as shown in Table 4.69, which proposes a 37.87% degree of strength, which is positive strength. When the results of one sub-group increase, the outcomes of another group will, in like manner, increase. ELLs scored higher, the more efficiently EL instructors concentrated TLO. The degree of strength dependent on TLO as educators integrated it into their instruction examined an observed correlation between two sub-classifications. Is there any adverse correlation, weak noticed association, and negative or weak interdependence? The correlation signifies what amount is the level of reliance. How do they rely upon one another, having various teachers, methods of guidance, and groups? Table 4.69 demonstrates that the correlation between U1CS and U2CS is 0.377, which is highly significant at the 0.01 level (2-tailed).

Table 4.69

Pearson correlations between the two sub-group of TLO

		U1CS	U2CS
U1CS	Pearson Correlation	1	.377**
	Sig. (2-tailed)		.000
	N	1000	1000
U2CS	Pearson Correlation	.377**	1
	Sig. (2-tailed)	.000	
	N	1000	1000

**. Correlation is significant at the 0.01 level (2-tailed).

Figure 4.24 shows a boxplot for the mean of result and department and depicts that the mean of U1CS is higher than that of U2CS. Furthermore, U2CS contains outliers.

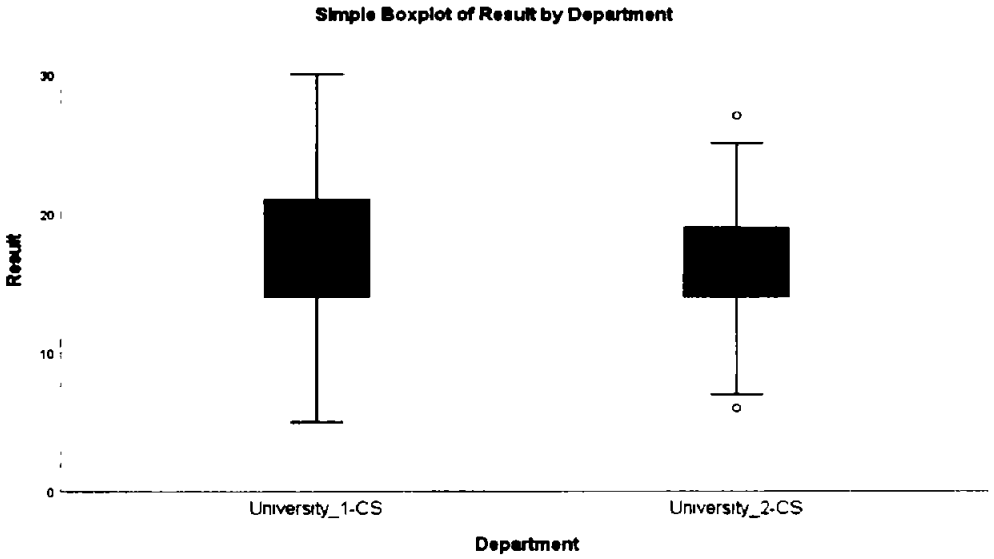

Figure 4.24. Boxplot: Mean of result by department

As a result, Tables 4.67–4.69 and Figure 4.24 investigate, justify and accept the researcher's assumption, findings of the descriptive statistics and results of the t-test.

4.4.4. Research Question 4

What is the effect of TLO on enhancing the instructional methods of the English language instructors at the tertiary level?

4.4.4.1. Descriptive Statistics

Descriptive statistics obtained from FCE-LT data focused on variables result, test type, and instructors filtered by mode of instruction respond to RQ4 and investigate statistical hypotheses. Figures 4.25, 4.26 and Tables 4.70, 4.71 describe the independent ordinal variables test type, instructor and the dependent variable result. Figures 4.25 and 4.26 present clusters of mean of result by test type and instructor, filtered by mode of instruction. The graphs conduct mean-wise comparative analyses of FCE-LT assessments, i.e., pre-test and post-test, separately for the English language (EL) instructors of the two targeted groups (1) experimental group, n = 12, instructors took part and trained learners in U1CS, and U2CS, and (2) control group, n = 10, instructors participated and trained learners in U1BS and U2BS. EL teachers in the experimental and control groups showed improved results once the pre-test and post-test means were compared.

The charts also show that EL teachers in the experimental group have a substantial mean difference. ELLs demonstrated outstanding improvement in U1CS and U2CS, where the instructors trained ELLs through TLO. The investigator presents a comparative analysis of the experimental and control groups for lucidity and authentication of hypotheses H_0 and H_a.

The researcher analysed Figures 4.25 and 4.26 and found that EL teachers in the experimental group, see Figure 4.25, showed notable results with an average of 6.67 mean points contrasted with instructors in the control group, see Figure 4.26, having an average of 3.1 when he compared mean points from pre-test to post-test. Throughout this project, he observed that EL educators in the experimental group, i.e., $n = 12$, re-examined their teaching strategies and adopted novel instructional practices than their colleagues in the control group.

Figure 4.25 verifies the scholar's claim and certifies a substantial difference in the mean points of both Figures 4.25 and 4.26, with average mean points of 6.67 and 3.1, respectively, having a visible difference of 3.57 mean points between the two graphs.

To confirm the findings of Figures 4.25 and 4.26, the investigator conducts a confirmatory investigation in Tables 4.70 and 4.71 to analyse hypotheses. Tables 4.70 and 4.71 present an overview of the descriptive statistics for all EL teachers in the experimental and control groups and provide overall mean, median, standard deviation, and confidence intervals.

Table 4.70

Descriptive statistics: Mean of result by instructor and mode of instruction (TLO)

S. No.	Instructor	Mean	95% CIs for Mean		Median	Variance	Std. Deviation	Skewness	Kurtosis
			Lower Bound	Upper Bound					
1	1	18.25	17.31	19.19	18.00	21.642	4.652	.246	-.397
2	2	18.32	17.77	18.87	18.00	20.203	4.495	.057	-.392
3	3	17.02	16.23	17.80	17.00	29.328	5.415	.162	-.709
4	4	18.31	17.59	19.04	19.00	21.185	4.603	-.150	-.485
5	5	18.02	17.24	18.79	19.00	24.710	4.971	-.411	-.579
6	6	17.31	16.27	18.34	18.00	19.342	4.398	-.461	-.417
7	7	13.31	12.53	14.08	13.50	10.976	3.313	.091	-.554

8	13	16.78	16.38	17.18	17.00	9.391	3.065	-.007	-.562
9	14	16.30	15.80	16.80	17.00	13.372	3.657	-.117	-.692
10	15	15.76	15.28	16.23	16.00	11.084	3.329	-.191	-.315
11	16	18.18	17.71	18.65	18.00	11.525	3.395	-.146	-.587
12	17	17.03	16.60	17.47	17.00	8.770	2.961	-.145	-.838

Table 4.71

Descriptive statistics: Mean of result by instructor and mode of instruction (traditional)

			95% CIs for Mean						
S. No.	Instructor	Mean	Lower Bound	Upper Bound	Median	Variance	Std. Deviation	Skewness	Kurtosis
1	8	16.75	16.13	17.37	16.00	8.534	2.921	.194	-.334
2	9	16.71	16.20	17.22	17.00	16.733	4.091	.022	-.339
3	10	16.33	15.92	16.74	16.00	14.086	3.753	.033	-.272
4	11	16.69	16.27	17.10	17.00	11.000	3.317	-.306	.341
5	12	15.22	14.62	15.81	15.00	8.282	2.878	.425	-.072
6	18	15.80	15.45	16.14	16.00	8.587	2.930	-.265	.260
7	19	14.37	13.89	14.85	14.00	8.870	2.978	-.175	-.478
8	20	16.49	16.07	16.92	17.00	13.133	3.624	-.365	-.391
9	21	16.75	16.17	17.33	17.00	13.089	3.618	-.106	-.783
10	22	15.15	14.70	15.60	16.00	6.801	2.608	-.866	1.181

As a result, Figures 4.25 and 4.26, Tables 4.70 and 4.71 investigate and support the hypothesis H_a for RQ4. Indeed, Transparent Language Online helped EL teachers discover, acquire, upgrade, and integrate novel instructional strategies, familiarise students with the most updated material accessible on the web, and prepare learners for upcoming challenges.

4.4.4.2. Levene's Test of Homogeneity of Variance

The researcher applied ANOVA to the variables result, test type, instructor, department and mode of instruction. A total of 22 English language (EL) instructors partook in this experiment and were placed in two major groups, i.e., experimental (n = 12) and control (n = 10), and four sub-categorisations, i.e., U1CS, U1BS, U2CS, and U2BS. As mentioned previously, EL instructors in the experimental group (n = 12) trained ELLs via TLO, whereas EL teachers in the control group (n = 10) guided ELLs via traditional methods. The IBM SPSS 25.0 produced separate results for the two groups in RQ4. This research question likewise investigated the hypotheses and explored the role of TLO on improving EL teachers' teaching methods at the tertiary level.

Tables 4.72 and 4.73 present a test of homogeneity of variance dependent on the variable instructor (filtered by mode of instruction) to analyse, validate, and accept or reject hypotheses H_0 and H_a for RQ4. The tables also illustrate whether the variances are equal or unequal. Levene's statistics presents results based on mean, media, median with adjusted df, and trimmed mean, presenting highly significant results in every case.

Table 4.72

Test of homogeneity of variance: ONEWAY result by instructor (experimental group)

Mode of Instruction			Levene statistic	df1	df2	Sig.
TLO	Result	Based on Mean	14.477	11	1988	.000
		Based on Median	13.604	11	1988	.000
		Based on median and median with adjusted df	13.604	11	1689.726	.000
		Based on trimmed mean	14.460	11	1988	.000

Table 4.73

Test of homogeneity of variance: ONEWAY result by instructor (control group)

Mode of Instruction			Levene statistic	df1	df2	Sig.
Traditional	Result	Based on Mean	7.992	9	1990	.000
		Based on Median	7.293	9	1990	.000
		Based on median and median with adjusted df	7.293	9	1899.320	.000
		Based on trimmed mean	7.985	9	1990	.000

The investigator, in like manner, researched the equality of variance and observed that the variances between the groups were not equal, as shown and validated by Tables 4.72 and 4.73.

4.4.4.3. Classical ANOVA: Exploring the FCE-LT Variables Result and Mode of Instruction

In view of the requirements of RQ4, the researcher utilised simple ANOVA to respond to RQ4 and investigate the research hypotheses. Tables 4.74 and 4.75 show that when comparing the two variables, result and mode of instruction, these produced substantial results.

Table 4.74

Result of classical ANOVA

Mode of Instruction		Sum of Squares	df	Mean Square	F	Sig.
TLO	Between Groups	2627.565	11	238.870	14.470	.000
	Within Groups	32818.827	1988	16.508		
	Total	35446.392	1999			

Table 4.75

Result of classical ANOVA

Mode of Instruction		Sum of Squares	df	Mean Square	F	Sig.
Traditional	Between Groups	1009.254	9	112.139	9.620	.000
	Within Groups	23196.984	1990	11.657		
	Total	24206.238	1999			

4.4.4.4. Welch – ANOVA

Tables 4.76 and 4.77 present instructor-wise results separately for the experimental and control groups and also illustrate a robust test of equality of means. Welch statistics, as shown in Tables 4.76 and 4.77, present notable results, with F values = 17.797 and 11.678, respectively, at p-value = 0.05.

Table 4.76

Result of robust tests of equality of means

Mode of Instruction		Statistic[a]	df1	df2	Sig.
TLO	Welch	17.797	11	637.261	.000

a. Asymptotically F distributed

Table 4.77

Result: Robust tests of equality of means

Mode of Instruction		Statistic[a]	df1	df2	Sig.
Traditional	Welch	11.678	9	641.785	.000

a. Asymptotically F distributed.

In conclusion, Tables 4.76 and 4.77 respond to RQ4, meet the researcher's assumptions, and examine and accept hypothesis H_a that TLO has a significant impact on improving the pedagogical practices of English Language educators at the tertiary level. This is verified throughout this project and proved from the facts provided by the analyses of RQ1, RQ2, and RQ3, i.e., that those teachers who integrated TLO competently into their instruction achieved substantial results. Their learners learned multiple languages and demonstrated outstanding results, higher proficiency scores, and improved academic accomplishments.

CHAPTER 5: DISCUSSION

The current investigation is novel in the domains of applied linguistics, instructional technologies, and second language acquisition, in that, up to the present time, researchers have not directly studied the effectiveness of Transparent Language Online (TLO) for teaching and learning English language at the tertiary level. A subsidiary motivation of this study was to analyse TLO's impact on ELLs' academic performance, assist learners in acquiring higher proficiency scores in English language, help students overcome their linguistic and technological blocks and increase their confidence when using new technology platforms in an L2 environment. A tertiary standpoint is how TLO impacts on the teaching methods of English language teachers and facilitates them using, practising, and incorporating such Web-based language learning platforms in their instruction and trains students to get the maximum benefit from it. The findings of this research will raise awareness and provide new perceptions pertaining to the conspicuous facets of TLO efficacy in the field. This integration of TLO with language pedagogy could help higher education institutions in Pakistan transform their English language pedagogy, which needs serious attention.

Each of the variables focused on works out in a different manner throughout this project. The study variables are 'mode of instruction, test type, department, university, instructor', and 'result'. Result is the only dependent scale continuous variable; the rest are independent ordinal (categorical) variables. These variables investigate how they influence the language learning environment in different situations, i.e., four departments and the circumstances of two universities. The study results provide corroborative proof that the investigation's variables are, without doubt, predictors of ELLs' academic achievement over a 16-week semester. To this end, the investigator administered six Reading Comprehension & Use of English (RC&UoE) and four FCE Listening Tests (FCE-LT) assessments in synchronous observed environments. He collected

10,000 observations from N = 1,000 ELLs at U1CS, U1BS, U2CS and U2BS. He applied descriptive and a number of inferential statistical analyses to the data gathered, which show the impact of the aforementioned variables on ELLs' learning environment and their combined impact on language pedagogy in Pakistan. Also, he tested the variables based on two instruments, i.e., RC&UoE and FCE-LT, which produced precise results. As a result, he presents a discussion of all the substantial classifications of RC&UoE and FCE-LT data sets, i.e., normality assumption, variable, hypotheses, variances, test type, statistical tests and question-wise results.

Here, the investigator discusses the results in a question-by-question format. First, he deciphers the outcomes of RQ1, concentrating on the extent to which the integration of TLO with pedagogy impacts on the academic performance of ELLs at the tertiary level. Next, he addresses the results of RQ2 concerning how TLO helps ELLs achieve higher proficiency scores and demonstrates statistically significant differences between experimental and control groups. Then, he considers the results for RQ3, exploring the differences in ELLs' academic accomplishment between U1CS and U2CS. In addition, he addresses TLO's impact on EL teachers' instruction methods and how they integrate novel learning technologies into their instruction. Finally, he discusses the study's limitations and makes recommendations for English language learners, instructors, language schools, government, and TLO administrators. He closes the chapter by suggesting a direction for further studies based on the results of this investigation.

5.1. Discussion of the Data

This investigation explores the effectiveness of TLO through focused research questions and statistical hypotheses, i.e., H_0 and H_a. To answer the research questions and verify hypotheses for each question efficiently, the scholar collected data from a total of 1,000 ELLs who were categorised into two major groups: experimental (n = 500) and control (n = 500), and further sub-

divided into four sub-classifications: U1CS (n = 250), U1BS (n = 250), U2CS (n = 250) and U2BS (n = 250). The experiment was conducted in autumn 2018. The investigator also examined how the same group of students performed in two different situations. For example, he divided the experimental group into two sub-groups, i.e., U1CS and U2CS, where he trained students using Transparent Language Online (TLO). In contrast, EL educators trained ELLs in two-sub groups of the control group, i.e., U1BS and U2BS, using traditional methodology without technological interference.

The fundamental reason the researcher divided the groups into sub-groups was to analyse how learners with the same cultural, linguistic and technological backgrounds perform in different situations. A subsidiary purpose was to determine whether learning the same content through a similar mode of instruction impacts on learners' performance and affects their L2 proficiency scores. A tertiary aim was to investigate mean differences among all four sub-classifications, i.e., U1CS, U1BS, U2CS, and U2BS. Are these differences statistically significant?

ELLs completed ten different assessments in two different formats: (1) six RC&UoE tests, i.e., pre-test, A1, A2, A3, A4, and a post-test, and (2) four FCE-LT assessments, i.e., pre-test, A1, A2, and a post-test. In this way, overall, the researcher gathered 10,000 observations as primary data from the two instruments, i.e., RC&UoE (6 x 1000 = 6,000) and FCE-LT (4 x 1000 = 4,000) in autumn 2018. He arranged the data gathered in Microsoft Excel 2016, imported them into IBM SPSS 25.0, subjected them to different statistical analyses and dissected them across various variables addressing different hypotheses. He used initial descriptive statistics to investigate statistical hypotheses and explore differences in mean, median, standard deviation, and confidence intervals. Inferential statistical tests were used to support the descriptive statistics and further examine the hypotheses H_a and H_a.

The present exploration likewise examines whether the results follow or disprove previous literature in the field. It seeks empirical evidence to explore the impact of technology tools on ELLs' academic performance. It also investigates statistical differences between the experimental and control groups, and the four departments and situations focused on. Moreover, the investigations with different methodologies depended on smaller sample sizes collected as small data observations; no specific projections could be made regarding explicit learners' groups or explicit language constructs/ classifications. Thus, deciding on appropriate tests for devising inferences concerning the data relies upon hypotheses, normality, a test mark pertaining to the course of data in the sample.

The RC&UoE and FCE-LT data satisfied all normality assumptions, notwithstanding some marginally negatively skewed components and rare outliers. Parametric tests expect that the data in a sample will have general dispersion and equal means; nonetheless, their non-parametric counterparts match skewed principles that diverge from a normal distribution (Neisdeen & Brasel, 2007). Consequently, the normality of data must be corroborated as a top priority prior to choosing any parametric or non-parametric tests for investigation since the data in a sample, without administering normality tests, lack empirical justification. There is a credible danger of obtaining incorrect results, suggesting such hypotheses are inaccurate. Thus, the researcher examined the data distribution empirically in the two data sets, i.e., RC&UoE and FCE-LT.

5.2. Discussion of Normality

Normality can be measured graphically using P-P plots, Q-Q plots, histograms, and boxplots, and analytically to attain a normal distribution. These graphical plots, produced by IBM SPSS 25.0, are a subject instrument for examining normality. Using such plots with suitable analytical measures. Investigators have found that various goodness-of-fit tests, i.e., Kolmogorov-Smirnov

and Shapiro-Wilk tests, should be utilised to determine if the distribution of data in a sample is normal (Asar et al., 2017; Yap & Sim, 2011). The investigator focuses on whether the data fulfil the normality assumption and can thus be considered normal or not.

To corroborate this assumption and see whether the RC&UoE and FCE-LT data are normality distributed, the researcher used the Kolmogorov-Smirnov and Shapiro-Wilk tests for both RC&UoE and FCE-LT instruments. Tables 4.1 and 4.3 and Figures 4.1–4.5 show that the data were normally distributed. He observed that all statistics produced by Kolmogorov-Smirnov and Shapiro-Wilk tests, for both RC&UoE and FCE-LT data, produced very substantial results with df = 1000 for each test type, despite the fact that the data contained some slightly negatively skewed elements and rare outliers. Normality tests, histograms, Q-Q plots, and boxplots show that, despite outliers, the data satisfied the normality assumption. Due to spatio-temporal limitations, the study is restricted to the variables 'result, mode of instruction, test type, instructor, department' and 'university', for both RC&UoE and FCE-LT data.

Once again, it is confirmed that the data satisfied the normality assumption and can be considered normally distributed; the researcher used different parametric tests, i.e., classical ANOVA, Welch-ANOVA, simple regression analysis, t-tests, and Pearson's correlation, to answer the research questions, verify descriptive statistics findings, and check hypotheses. He utilised Kruskal-Wallis H and Median tests to check the data from a different viewpoint and re-confirm the results of parametric tests.

5.3. Impact Analysis

The investigator performed several parametric and non-parametric tests on the data gathered. Based on the findings of normality tests on RC&UoE and FCE-LT data, he assumed both data sets satisfied the normality assumption; thus, they can be expected to be normally distributed.

However, the data contained some marginally negatively skewed elements and outliers. Also, he presumed that the data had equal variances for the independent ordinal variables mode of instruction and test type in both the RC&UoE and FCE-LT instruments and proposed using classical ANVOA to examine the hypotheses for RQ1 and RQ2. As proved by Tables 4.5, 4.17, 4.43 and 4.56, classical ANOVA showed notable results supporting hypothesis H_a for RQ1 and RQ2 for RC&UoE and FCE-LT data.

However, when the investigator performed tests of homogeneity of variance, see Tables 4.6, 4.18, 4.44, and 4.55 on RC&UoE and FCE-LT, he found that except for RQ2 in the English listening component all the variances of the data concerned data with the variables, 'mode of instruction' and 'test type', were not equal, and violated the strict assumption of classical ANOVA. He used Welch-ANOVA as the variances were not equal between the two groups of mode of instruction. As discussed in the results section, Welch-ANOVA is insensitive towards unequal variances, and common variances do not exist between and within groups. To the researcher's surprise, Welch-ANOVA generated highly significant results when he explored, verified, and supported the alternative hypothesis.

As is common practice in confirmatory analysis, the scholar performed a simple regression test. Also, like classical ANOVA and Welch-ANOVA, simple regression analysis portrayed the same significant results and approved hypothesis H_a for RQ1 and RQ2 in the RC&UoE component. All variables mode of instruction, test type, instructor, university and department, significantly and positively impacted on ELLs' academic performance, specifically in the experimental group, U1CS and U2CS, thus supporting the statistical hypothesis, i.e., H_a, for RQ1 and RQ2 in RC&UoE and RQ1 in the listening component. In addition, the researcher used non-parametric Kruskal-Wallis H and Median tests to determine if the data were non-normal. He was surprised to see that

these tests produced notable results. He observed that the RC&UoE and FCE-LT data were so powerful and rich that significant results were generated in any circumstance. The statistical hypothesis, i.e., H_a, is verified in most cases.

The variables focused on variances and tests validated that the study is highly significant and positively corroborates hypothesis H_a, which proves TLO's efficacy. TLO generated higher scores and better results than traditional groups. TLO, if incorporated effectively, can change the whole course of language pedagogy in Pakistan. In this manner, it will significantly enhance youth's ability, prompt them to further develop the economy, and improve their conceptual understanding.

5.4. Descriptive Statistics

This section does not just conduct a discussion on descriptive statistics for the two instruments, i.e., RC&UoE and FCE-LT, emphasising the four research questions and statistical hypotheses, it additionally illustrates the impact of the independent ordinal variables, i.e., mode of instruction, test type, instructor, and university, on the dependent continuous scale variable, i.e., result. The investigator obtained descriptive statistics for all research questions in two formats: (1) he implemented frequency analysis in the form of percentages while determining RC&UoE and FCE-LT among all the test types, six RC&UoE and four FCE-LT assessments, that describe details; (2) he calculated mean, median, standard deviation and confidence intervals utilising IBM SPSS 25.0 to approve descriptive statistics and validate statistical hypotheses.

First, the descriptive statistics produced were dependent on the variables mode of instruction, test type and result and answered RQ1 and investigated hypotheses H_0 and H_a. As shown in Figures 4.7 and 4.17 and Tables 4.4 and 4.42, a comparative mean-wise analysis of U1CS, U1BS, U2CS and U2BS showed notable differences between U1 and U2. Histograms

confirmed that the experimental group, TLO, achieved higher scores and had higher mean outcomes than the control, or traditional, group when mean results of the two groups from pre-test to post-test were compared, for example, in RC-TLO [M: 26, 28, 30, 31, 32, 34] there is a visible improvement of 8 mean points, in traditional [M: 28, 29, 30, 30, 31, 31] an improvement of 3 mean points; whereas, in FCE-LT-TLO [M: 14, 16, 18, 20] a visible improvement of 6 mean points, and in traditional [M: 15, 16, 17, 18] an improvement of 4 mean points. Tables 4.4 and 4.42 verify the results of Figures 4.7 and 4.17 and prove that ELLs in the experimental group produced substantial descriptive statistics in RC-TLO [M: 30.27, SD: 4.263] and FCE-LT-TLO [M: 17.20, SD: 4.211] as compared to ELLs' accomplishment in the control group, RC-traditional, [M: 29.76, SD: 3.266] and FCE-LT-traditional [M: 16.12, SD: 3.480]. Figures 4.7 and 4.17 and Tables 4.4 and 4.42 support hypothesis H_a.

Next, descriptive statistics based on the variables test type, department, and result, responded to RQ2 and examined statistical hypotheses. These descriptive statistics helped the scholar determine statistical differences in ELLs' proficiency scores when exposed to TLO and traditional in-person classroom environments. Figures 4.10 and 4.20, and Tables 4.16 and 4.54 present a mean-wise comparative analysis of U1CS, U2CS, U1BS and U2BS, among all the assessments. The histograms and tables mentioned present that when the mean results of ELLs' proficiency scores among all ten assessments were compared, the ELLs of U1CS and U2CS produced exceptionally significant results and achieved higher proficiency scores than ELLs in U1BS and U2BS. Consequently, Figures 4.10 and 4.20 and Tables 4.16 and 4.54 analyse, authenticate and reinforce hypothesis H_a.

Moreover, descriptive statistics based on the variables university, test type and result, answer RQ3 and analyse the hypotheses. Figures 4.13 and 4.23 depict a mean-wise comparative

analysis of two sub-groups of the experimental group: U1CS [$n = 250$] and U2CS [$n = 250$], from pre-test to post-test, and prove that when the researcher compared the means of the two groups, U1CS demonstrated very substantial results having a lead of 3 mean points over U2CS. Tables 4.29 and 4.66 corroborate the results of Figures 4.13 and 4.23 by signifying the overall mean-wise results of the sub-groups of the experimental group, for example, in RC-U1CS [M: 28.62, SD: 4.407], FCE-LT-U1CS [M: 17.59, SD: 4.871], RC-U2CS [M: 31.92, SD: 3.388] and FCE-LT-U2CS [M: 16.81, SD: 3.385]. These figures and tables support hypothesis H_a.

Finally, descriptive statistics based on the variables instructor, test type, and result responded to RQ4 and investigated the hypotheses. Figures 4.15, 4.16, 4.25, 4.26 and Tables 4.34, 4.35, 4.70 and 4.71 conduct a mean-wise comparative analysis of test types, RC&UoE and FCE-LT separately for EL instructors in the experimental group: U1CS and U2CS ($n = 12$), and EL instructors in the control group: U1BS and U2BS ($n = 10$). When the investigator compared the means of RC&UoE and FCE-LT pre-tests and post-tests, U1CS and U2CS instructors improved their teaching methods, and learners in the experimental group performed notably better. Although RQ4 and its statistical hypotheses put emphasis on EL instructors in U1CS and U2CS departments ($n = 12$), the results for the instructors in U1BS and U2BS ($n = 10$) are presented to examine the hypotheses from a different perspective and check for clarity and confirmation of them.

Moreover, the researcher witnessed throughout this study that EL instructors in the experimental group, TLO, significantly revisited their instructional methods and integrated the most novel and up-to-date techniques into their teaching as opposed to their counterparts in the control group. He concluded that TLO integration with pedagogy helped EL instructors to investigate, learn, and incorporate innovative pedagogical strategies, introduce ELLs to the most up-to-date content accessible on the Web, and prepare them for future challenges. Figures 4.15

and 4.25, and Tables 4.34 and 4.70 accepted and validated his claim, signifying very substantial mean differences supporting the alternative hypothesis.

5.5. Variances

The researcher assumed that RC&UoE and FCE-LT data, based on the independent ordinal variable mode of instruction underscoring RQ1, contained equal variances. He applied classical ANOVA. For confirmatory analysis, he used tests of homogeneity of variance, as shown in Tables 4.6 and 4.44, to analyse whether the variances were equal or not and to support his assumption. A Levene's test of homogeneity of variances, Tables 4.6 and 4.44, proved that variances for the independent ordinal variable mode of instruction were not equal. He also utilised equality of variances and dissected the two variance hypotheses based on the variable mode of instruction. He applied Welch-ANOVA since Levene's test of homogeneity of variance and equality of means, as shown in Tables 4.6 and 4.44, supported the variance hypothesis H_a that both groups, i.e., experimental and control, had unequal variances and consequently violated the strict assumption of a classical ANOVA test whereby variances should be equal. Also, common variances did not exist between and within groups, which similarly authenticates a Welch-ANOVA test.

Next, similar to RQ1, the investigator assumed that RC&UoE and FCE-LT data comprised equal variances for the independent variable test type. He used a classical ANOVA test to check the statistical hypotheses for RQ2. For corroborative purposes, he utilised a Levene's test of homogeneity of variance, Tables 4.19 and 4.55, to examine whether the variances were equal for the independent variable test type and justify his assumption. Levene's test of homogeneity of variance, as shown in Table 4.19, verified that the RC&UoE variable test type variances were not equal. In contrast, as shown in Table 4.55, Levene statistics present that variances for the FCE-LT variable test type are equal.

The scholar used a test of equality of variances to verify the findings of Levene statistics for both RC&UoE and FCE-LT data, check specific variables, test type, and examine the additional variances hypotheses, given below, produced based on the variable test type. For example:

H_0: Test Type has similar or equal variances.

H_a: Test Type does not have similar or equal variances.

Levene's test of homogeneity of variance, on the one hand, in Table 4.19 in the RC&UoE instrument, supports hypothesis H_a and corroborates that the independent variable test type does not have equal variances. On the other hand, in Table 4.55, the FCE-LT instrument acknowledges hypothesis H_0 and validates that the variable test type has equal variances.

The striking results in Table 4.19 directed the scholar to use a Welch-ANOVA test for the research question in the RC&UoE instrument. In contrast, Table 4.55 demonstrates that the value of Levene statistics is not significant, and Welch-ANOVA cannot be used because this type of ANOVA is strongly recommended for unequal variances. Hence, in the listening component of RQ2, he relied on classical ANOVA. As a result, Table 4.55 corroborates the null variance hypothesis, i.e., H_0, for the variable test type, thus supporting the use of simple ANOVA and satisfying its strict assumption.

5.6. Results

The present section commences with a discussion of significant results based on the four research questions, statistical hypotheses, their impact on ELLs' academic accomplishment and EL instructors' pedagogical practice at the university level. As this investigation presents results for each instrument, i.e., RC&UoE and FCE-LT, separately, the investigator critically analyses how some findings are highly significant for specific variables validating the research question(s) and

hypotheses in one data set. In contrast, others are more notable for other variables corroborating the other data set.

The researcher gathered 10,000 observations, from RC&UoE (6,000) and FCE-LT (4,000), to answer the research questions and test the research hypotheses. He obtained descriptive statistics for RQ1, RQ2, RQ3 and RQ4 that gave a platform to investigate, corroborate, and support the hypotheses for each question. Descriptive statistics produced very substantial results verifying hypothesis H_a. The researcher used different inferential statistical analyses on the RC&UoE and FCE-LT data using IBM SPSS 25.0 to attest to the findings of the descriptive statistics and support hypothesis H_a. As a result, he conducts a discussion in a question-by-question format.

5.6.1. Impact of Transparent Language Online on ELLs' Academic Performance at the Tertiary Level

To begin with, the investigator deciphers and discusses the findings for RQ1 addressing the extent to which the integration of TLO with pedagogy impacts on the academic performance of English language learners (ELLs) at the tertiary level. This part expounds on the inclusive influence of technology tools on ELLs' academic accomplishment, determined through their performance on different RC&UoE and FCE-LT assessments. The variables focused on are mode of instruction and result. Outcomes are generated in a manner that emphasises the dependent continuous scale variable result, based on the ordinal variable mode of instruction.

Descriptive statistics for RQ1 confirm that the results presented in Figures 4.7 and 4.17 and Tables 4.4 and 4.42 are highly significant and support hypothesis H_a. In addition, the researcher painstakingly examined diverse inferential statistical analyses from different standpoints, both parametric and non-parametric, to investigate and vindicate the findings of descriptive statistics. He applied a classical ANOVA test to corroborate hypotheses and attest to

the descriptive statistics' findings since he assumed that both data sets, RC&UoE and FCE-LT, emphasise the independent variable mode of instruction and encompass equal variances. Tables 4.5 and 4.43 show that simple ANOVA demonstrates notable results for RC&UoE and FCE-LT instruments and confirms the alternative hypothesis. For verificatory analysis, he applied a test of homogeneity of variance to the same variable, as shown in Tables 4.6 and 4.18, to check if the variances were equal. Surprisingly, Levene statistics, as shown in Tables 4.6 and 4.18, proved his assumption wrong, i.e., the variable mode of instruction contains equal variances, proving that variances are not equal, thus demonstrating highly significant results validating the alternative (H_a) hypothesis.

Consequently, a Levene's test of homogeneity of variance, Tables 4.6 and 4.8, guided the scholar to use a Welch-ANOVA test–a more prominent form of classical ANOVA–due to its insensitivity towards unequal variances. He strictly followed the assumptions for each test. Likewise, he addressed one such strict assumption of simple ANOVA (variances should be equal) that if the data have unequal variances, utilising simple ANOVA may produce misleading results. Welch-ANOVA fulfilled this assumption and generated exceptionally significant results. As a result, he noticed that classical ANOVA and Welch-ANOVA, as shown in Tables 4.5, 4.7, 4.43 and 4.45, produced almost the same results with F value = 27.302** and supported each other despite unequal variances. Both tests support hypothesis H_a. For further corroborative investigation, he used simple regression on the variables mode of instruction and result based on the RC&UoE and FCE-LT data to re-examine the statistical hypotheses for RQ1 and validate the findings of simple ANOVA and Welch-ANOVA. As shown in Tables 4.8–4.10 and 4.46–4.48 and Figures 4.8–4.9 and 4.18–4.19, the simple regression likewise generated exceptionally significant results.

In a nutshell, all three tests generated similar results, having F values 27.302** and 75.447**, respectively, in the RC&UoE and FCE-LT components. In light of simple ANOVA, Welch-ANOVA and simple regression analysis, F = 27.302** and 75.447**, presented in Tables 4.5, 4.7, 4.9, 4.43, 4.50, and 4.47, the investigator confirmed the descriptive statistics' findings and supported the alternative statistical hypothesis, proving the significant impact of TLO on ELLs' academic achievement at the tertiary level. He presupposed that if (1) the RC&UoE and FCE-LT data were non-normal, negatively skewed and comprised severe outliers, and (2) the dependent scale (continuous) variable result did not satisfy the normality assumption, at that point, non-parametric tests could illustrate the results and test hypotheses. In addition, this study primarily uses scale and ordinal variables.

Considering the aforementioned presumptions, the investigator used non-parametric Kruskal-Wallis H and Median tests to check and confirm the hypotheses, i.e., H_0 and H_a. The Kruskal-Wallis H test produced chi-square values as shown in RC&UoE Table 4.13, i.e., 65.289, and FCE-LT Table 4.51, i.e., 66.813, which statistically are very significant results. Thus, the Kruskal-Wallis test statistics support H_a. Finally, he used a non-parametric Median test to confirm the findings of the Kruskal-Wallis test based on the RC&UoE and FCE-LT data. In the wake of applying the Median test to RC&UoE and FCE-LT data, he achieved the non-parametric chi-square values of 48.625 for the RC&UoE data, and 59.045 for the FCE-LT data, as shown in Tables 4.15 and 4.53, indicating statistically highly significant results. Both the Kruskal-Wallis H and Median tests corroborated each other's findings. They confirm that the outcomes shown in Tables 4.12–4.15 in RC&UoE and Tables 4.51–4.53 in FCE-LT, are notably higher. Thus, the Kruskal-Wallis H and Median tests confirm and support hypothesis H_a.

To conclude, irrespective of whether the study met normality with unequal variances or assumed that the research dependent variable result did not follow the normality presumption, whether the research used parametric tests or non-parametric tests, in all cases, the results are very substantial and hypothesis H_a is proven and accepted. It means that there is a significant impact of TLO on the academic performance of English language learners at the tertiary level.

5.6.2. Differences in the English Language Proficiency Scores of English Language Learners

The researcher has discussed the results for RQ2 explicating the extent to which the study explores statistically significant differences in the English language proficiency scores of ELLs exposed to TLO and a traditional classroom environment. The variables were 'result, test type', and 'department'. The descriptive statistics for RQ2, produced dependent on the variables test type, department and result, denote that the results are highly significant. As shown in Figures 4.10 and 4.20, and Tables 4.6 and 4.54, the research supports hypothesis H_a by showing a significant mean difference in the EL proficiency scores of ELLs exposed to TLO as compared to those exposed to a traditional learning environment. He carefully used different inferential statistical apparatuses, both parametric and non-parametric tests, to explore, verify, support, and accept or reject hypotheses and justify the descriptive statistics' results.

Similar to RQ1, the investigator presumed for RQ2 that both RC&UoE and FCE-LT data, emphasising the independent variable test type, had equal variances and merited the use of classical ANOVA to validate statistical hypotheses as well as corroborate the findings of descriptive statistics. Tables 4.17 and 4.56 prove that simple ANOVA showed more notable results for RC&UoE and FCE-LT data.

To defend his assumption and examine if the variances for the variable test type were equal or not, the researcher used a Levene's test of homogeneity of variance. As shown in Table 4.18, Levene statistics show that the RC&UoE independent variable test type had unequal variances. In contrast, as shown in Table 4.55, Levene statistics present that the FCE-LT independent variable test type had equal variances. These findings astonished the scholar, so he decided to re-check the findings of Levene statistics for both RC&UoE and FCE-LT data and used a test of equality of variance to investigate additional variance hypotheses. The test of equality of variance confirmed the findings of the Levene statistics. On the one hand, the test of homogeneity of variance, as described in Table 4.18, in RC&UoE supports the alternative variance hypothesis, H_a, and ratifies that the variable test type had unequal variances. On the other hand, as shown in Table 4.55, the FCE-LT instrument supports and validates the null variance hypothesis, H_0, and corroborates that the variable test type had equal variances.

The findings for RC&UoE data, Table 4.18, led the investigator to utilise a Welch-ANOVA test on the variable mentioned above. In contrast, the findings for FCE-LT data, Table 4.55, confirm that the value of Levene statistics is not significant, which generated equal variances; therefore, Welch-ANOVA cannot be applied because FCE-LT data, focusing on the independent variable test type, fulfil the classical ANOVA assumption. Hence, he used a classical ANOVA test for the FCE-LT instrument as Table 4.55's findings authenticate the null variance hypothesis and satisfy the strict ANOVA assumption. He also administered simple regression analysis based on the RC&UoE and FCE-LT variables 'result' and 'test type' to investigate the hypotheses, i.e., H_0 and H_a, for RQ2 and validate the findings of simple ANOVA and Welch-ANOVA. He observed from Tables 4.21–4.23 and 4.58–4.60 that regression analysis produced very substantial results.

As a final point, the parametric tests mentioned, i.e., simple ANOVA, Welch-ANOVA and simple regression analysis, verified hypothesis H_a.

Considering the findings of simple ANOVA, Welch-ANOVA, a robust test of equality of means, and simple regression analysis in both data sets, the investigator supports hypothesis H_a for RQ2, thus validating substantial mean differences in the EL proficiency scores of ELLs exposed to TLO and the traditional learning environment. In addition, RC&UoE and FCE-LT data had negatively skewed elements as well as limited outliers. He conducted non-parametric tests to investigate the hypotheses for RQ2, assuming that RC&UoE and FCE-LT data were not normal but comprised negatively skewed elements and outliers. The study used ordinal and scale variables that could be another factor to validate the use of non-parametric Kruskal-Wallis H and Median tests.

In view of the declared assumptions, the investigator utilised a Kruskal-Wallis H test to examine and corroborate both hypotheses, i.e., H_0 and H_a. The Kruskal-Wallis H test generated chi-square values as shown in Table 4.26, i.e., 1183.185, and Table 4.63, i.e., 876.272, demonstrating highly significant results. The Kruskal-Wallis H test statistics endorse the alternative hypothesis. Last, he used a non-parametric Median test to affirm the Kruskal-Wallis test's results for RC&UoE and FCE-LT data. After using the Median test on the RC&UoE and FCE-LT data, he obtained non-parametric chi-square values of 859.151 for RC&UoE and 606.615 for FCE-LT data verified by Tables 4.28 and 4.65, substantiating statistically significant results.

Both the Kruskal-Wallis and Median tests validated each other's findings. They confirmed the results are highly statistically significant, as shown in Tables 4.25–4.29 in the RC&UoE instrument and Tables 4.62– 4.65 in the FCE-LT instrument. Thus, like the parametric tests, the Kruskal-Wallis and Median tests also support hypothesis H_a for RQ2.

In conclusion, irrespective of whether the study followed the normality assumption with unequal variances or presumed that the research's dependent variable result did not fulfil normality requirements, and regardless of whether the investigation utilised parametric or non-parametric tests, in all circumstances, the results for the variable test type were highly significant, and the hypothesis H_a is supported, implying substantial mean differences in the EL proficiency results of ELLs exposed to TLO instruction and a traditional classroom environment.

5.6.3. Examining ELLs' Language Proficiency Results between U1CS and U2CS

The researcher has discussed the findings for RQ3, examining significant differences in the language proficiency scores and academic accomplishments of ELLs when U1CS and U2CS are compared. The variables were result, department and test type, filtered by mode of instruction. Descriptive statistics were obtained based on these variables, demonstrating notable results. As presented in Figures 4.13 and 4.23 and Tables 4.29 and 4.66, the research supports the alternative hypothesis, i.e., H_a, signifying a substantial difference in ELLs' language proficiency scores when the two groups are analysed.

Moreover, the scholar utilised t-tests and Pearson's correlation to confirm the results of descriptive statistics, address the research question, and re-check statistical hypotheses. He used a two-sample t-test on the RC&UoE data to compare the means of U1CS and U2CS, but an independent sample t-test to examine the difference of means and check the equality of variance of the FCE-LT data. Table 4.32 demonstrates significant differences in ELLs' academic achievement between the two sub-groups in the RC&UoE instrument. Similarly, Table 4.68 in the FCE-LT data shows that a Levene's test of equality of variance and a t-test for equality of means produced notable results. However, ELLs performed differently according to the RC&UoE and FCE-LT data. He used Pearson's correlation between U1CS and U2CS to double-check the results

of t-tests and descriptive statistics. Tables 4.33 and 4.69 show that the correlations between U1CS and U2CS are 0.409 and 0.377, respectively, significant at the 0.01 level (2-tailed). Figures 4.14 and 4.24 show that the mean of U1CS is higher than that of U2CS. Nonetheless, U2CS comprised extreme outliers compared to U1CS in the RC&UoE data and minimal outliers in the FCE-LT data. As a result, Tables 4.33 and 4.69, and Figures 4.14 and 4.24 support the investigator's claim, confirm the findings of descriptive and inferential statistics, and validate hypothesis H_a.

5.6.4. Transparent Language Online to Enhance the Instructional Methods of English Language Instructors at the Tertiary Level

The investigator analysed the results of RQ4 investigating the effect of TLO on improving the pedagogical techniques of English language instructors at the tertiary level. The variables were result, test type and instructor filtered by mode of instruction. Descriptive statistics were based on these variables, demonstrating significant results. Figures 4.15 and 4.25, and Tables 4.34 and 4.70 prove that English language (EL) educators in the experimental group, n = 12, performed significantly better with an average of 7.6 mean points in contrast with EL instructors in the control group, n = 10 (as shown in Figures 4.16 and 4.26, and Tables 4.35 and 4.71) having an average of 2.1 mean points. He witnessed throughout this investigation that EL teachers in the experimental group re-examined their instructional techniques and incorporated innovative pedagogical practice more than their counterparts in the control group. Consequently, the descriptive statistics' findings support H_a hypothesis for RQ4, showing a significant effect of TLO on enhancing the teaching techniques of EL educators at the tertiary level.

Next, the scholar applied a Levene's test of homogeneity of variance on the variables result, test type, instructor, department and mode of instruction for the experimental and control groups. Tables 4.36, 4.37, 4.72 and 4.73 were checked thoroughly to see if the variances were equal.

Levene's statistics gave very substantial results, presenting that the variances between the groups were unequal. Therefore, he conducted classical ANOVA to further verify Levene's statistics. Tables 4.39, 4.40, 4.74, and 4.75 show that comparing the two variables 'result' and 'mode of instruction' produced substantial outcomes. He also utilised a robust test of equality of means, employing Welch statistics separately for the experimental and control groups. Tables 4.41, 4.42, 4.76, and 4.77 demonstrate notable results, presenting F values of 56.958, 13.662, 17.797, and 11.678, respectively, at p-value = 0.05.

To conclude, Tables 4.39–4.42 in RC&UoE, and Tables 4.74–4.77 in FCE-LT, corroborate hypothesis H_a for RQ4, verifying that TLO had a huge impact on upgrading the instructional strategies of English language educators at the tertiary level. It is also corroborated throughout this research project that those instructors who incorporated TLO effectively and efficiently improved their teaching practice. Their learners performed notably better, obtained higher proficiency scores and increased their academic accomplishment in a diverse range of RC&UoE and FCE-LT assessments.

CHAPTER 6: CONCLUSION

6.1. Overview of the Investigation

The overarching objective of the current investigation was to evaluate the effectiveness of Transparent Language Online (TLO) for teaching and learning English language at the tertiary level. The efficacy of TLO has been methodically and empirically investigated, corroborated, and discussed. Also, substantial indications were observed to explore the impact of TLO on ELLs' academic achievements, educators' pedagogical practices, and the overall teaching and learning process at the university level in Pakistan. More formally, the dissertation centres on these hypotheses:

$H_0$1. There is no significant impact of Transparent Language Online on the academic performance of ELLs at the tertiary level.

H_a1. There is a significant impact of Transparent Language Online on the academic performance of ELLs at the tertiary level.

$H_0$2. There are no significant differences in the English language proficiency scores of ELLs exposed to TLO instruction and those in a traditional classroom environment.

H_a2. There are significant differences in the English language proficiency scores of ELLs exposed to TLO instruction and those in a traditional classroom environment.

$H_0$3. There is no significant difference in ELLs' academic performance when two sub-groups of TLO, i.e., U1CS and U2CS, are compared.

H_a3. There is a significant difference in ELLs' academic performance when two sub-groups of TLO, i.e., U1CS and U2CS, are compared.

$H_0$4. There is no effect of TLO in enhancing the instructional methods of English language instructors at the tertiary level.

H_a4. There is a significant effect of TLO in enhancing the instructional methods of English language instructors at the tertiary level.

Because of these suppositions, Chapter 1 pinpointed the problem of the study and underscored its importance with regard to Pakistan. Chapter 2 recapitulated the investigation of existing literature in the field and the documented progression of findings via a further exploration pertaining to new digital and instructional technologies and learning platforms. The investigator underscored the Pakistani context while reviewing previous literature on learning technologies being used for foreign language teaching. Chapter 3 focused on methodological problems affecting the current investigation. As the present study used a quantitative experimental research method, picking appropriate descriptive and inferential statistical tests and procedures and reporting their results was explained in Chapter 4. Chapter 5 discussed key findings of the data, normality, variances, variables and the results of two instruments, i.e., Reading Comprehension and Use of English (RC&UoE) and FCE Listening Tests (FCE-LT). Chapter 6 summarises the research's key findings and considers the investigation's limitations. It also makes recommendations for future researchers, pedagogues and experts to replicate this research in different public and private institutions of higher study in Pakistan and concludes the project.

6.2. Summary of Key Findings

This research has investigated the effectiveness of Transparent Language Online for teaching and learning English language at the tertiary level. To this end, 1,000 students were selected using a convenience sampling technique from computer science and business departments and further

categorised into four different groups: U1CS (n = 250), U2CS (n = 250), U1BS (n = 250) and U2BS (n = 250). The participants attempted ten different assessments of two credible instruments, i.e., ETS TOEIC Reading Comprehension and Use of English and Cambridge FCE Listening Skills, in two formats: RC&UoE comprising six tests (pre-test, A1, A2, A3, A4, and a post-test), and FCE-LT comprising four tests (pre-test, A1, A2, and a post-test). Overall, the researcher collected 10,000 observations (RC&UoE = 6,000, FCE-LT = 4,000) as primary data from the two instruments. The data gathered were organised in MS Excel and converted to IBM SPSS 25.0, followed by normality tests and subjected to descriptive and inferential statistical analyses. The results have been explicated in a question-by-question format. The investigation met its particular goals and made the following key findings.

6.2.1. Impact of Transparent Language Online on ELLs' Academic Performance

The researcher analysed a number of statistical hypotheses, employing different descriptive and inferential statistical analyses. Descriptive statistics produced highly significant results and accepted the alternative hypothesis, i.e., H_a. He utilised different inferential statistical apparatuses, i.e., parametric and non-parametric tests, from different standpoints to verify the findings of the descriptive statistics. First, he assumed that RC&UoE and FCE-LT data encompassed equal variances; he used classical ANOVA on the variables, i.e., result and mode of instruction. Classical ANOVA produced substantial results. Then, he used Levene's test of homogeneity of variance to check his assumption of whether variances are equal or unequal. Levene's statistics proved his assumption wrong and showed unequal variances; however, it produced significant results validating the alternative (H_a) hypothesis.

Consequently, the scholar used Welch-ANOVA on the aforementioned variables due to its insensitivity towards unequal variances. Welch-ANOVA satisfied the assumption and generated

highly significant results. As a result, classical ANOVA and Welch-ANOVA produced the same results with F value = 27.302** and supported each other's findings, despite unequal variances. Once again, he used a third parametric test, a simple regression analysis on the same variables, to investigate the findings of descriptive statistics, classical ANOVA and Welch-ANOVA. A simple regression analysis produced significant results. Surprisingly, all three parametric tests generated similar results with F values of 27.302** in RC&UoE and 75.447** in the FCE-LT data, respectively, and supported the alternative hypothesis for RQ1.

The investigator also applied non-parametric Kruskal-Wallis H and Median tests to the RC&UoE and FCE-LT data, assuming RC&UoE and FCE-LT data to be non-normal, containing negatively skewed elements and extreme outliers. He utilised non-parametric tests to check the results and test the hypotheses from a different perspective. Both Kruskal-Wallis H and Median tests verified each other's findings. The chi-square values generated by Kruskal-Wallis H and Median tests delivered highly significant results. Thus, the Kruskal-Wallis H and Median tests confirmed and supported hypothesis H_a.

Regardless of whether the investigation follows normality with unequal variances or expects that the research variable 'result' is not fulfilling normality assumptions, or whether the study utilised parametric tests or non-parametric instruments, in all cases, the outcomes are highly significant and the alternative statistical hypothesis, i.e., H_a, is confirmed and accepted. It implies a significant impact of Transparent Language Online on ELLs' academic performance at the tertiary level.

6.2.2. Difference in ELLs' Language Proficiency Scores

The second research question examined differences in ELLs' English language proficiency scores when they were exposed to TLO and a conventional classroom environment. The variables focused

on were result, test type, and department. Descriptive and inferential statistical analyses were used to research null and alternative hypotheses. Descriptive statistics generated significant results, highlighted considerable differences in ELLs' language proficiency scores, and supported hypothesis H_a. The investigation used both parametric and non-parametric statistical tests to verify the findings of descriptive statistics and re-check the hypotheses.

Like RQ1, the researcher expected that RC&UoE and FCE-LT concentrating on the variable test type would have equal variances, hence he used classical ANOVA. Classical ANOVA delivered notable outcomes for both RC&UoE and FCE-LT data. He used Levene's test of homogeneity of variance to confirm whether the variable test type encompassed equal or unequal variances. Levene's statistics demonstrated substantial results validating unequal variances for the variable test type in the RC&UoE data and equal variances for the same variable in the FCE-LT data. He also used a test of equality of variance to verify the findings of Levene's statistics. Thus, the test of equality of variance supported the findings of Levene's statistics, confirmed the alternative variance hypothesis (H_a) for the RC&UoE data and supported the null variance hypothesis (H_0) in the FCE-LT data.

In light of these findings, the research proposed Welch-ANOVA for the variable test type on RC&UoE data and classical ANOVA on the FCE-LT data. Both generated significant results. Again, the author utilised regression analysis on the variables result and test type to confirm the aforementioned findings. Regression analysis produced significant outcomes. In short, classical ANOVA, Welch-ANOVA and regression analysis produced substantial results and supported the alternative statistical hypothesis.

To check the results from a different standpoint, the study used Kruskal-Wallis H and Median tests on the RC&UoE and FCE-LT variable test types, presuming that both data comprised

severe outliers and negatively skewed components. The chi-square values delivered by both Kruskal-Wallis H and Median tests produced significant results supporting the H_a hypothesis. To conclude, the results based on the variable test type produced highly significant results in all circumstances and affirmed, accepted, and supported the alternative (H_a) hypothesis.

6.2.3. Analysing ELLs' Language Proficiency Scores between the Two Sub-groups of TLO

Research question 3 investigated the differences in ELLs' academic achievement and proficiency scores when U1CS and U2CS were compared. The investigator used descriptive and inferential statistical analyses to examine hypotheses H_0 and H_a. Descriptive statistics demonstrated significant outcomes supporting statistical hypothesis H_a. To confirm the findings of descriptive statistics, he used two-sample t-tests and Pearson's correlation on the variables result, department and test type, filtered by mode of instruction. He applied a two-sample t-test to the RC&UoE data to compare the means of U1CS and U2CS and an independent sample t-test to FCE-LT to analyse the differences in means and check equality of variance. Also, he used Pearson's correlation to double-check the results of the t-tests and descriptive statistics. All tests delivered significant results and supported the alternative hypothesis, i.e., H_a.

6.2.4. Transparent Language Online in improving EL Instructors' Pedagogical Practices

The last research question explored the effect of Transparent Language Online on improving the instructional strategies of English language educators at the university level. The variables focused on were result, test type, instructor filtered by mode of instruction. Descriptive statistics produced notable outcomes and confirmed that English language (EL) instructors in the experimental group, $n = 12$, delivered highly significant results, with an average of 7.6 mean points, compared to EL teachers in the control group, $n = 10$. Those educators ($n = 12$) who productively incorporated

TLO into their instruction improved their pedagogical practice, and their students secured notably better results and higher proficiency scores.

Moreover, Levene's test of homogeneity of variance produced notable outcomes for RC&UoE and FCE-LT data. Again, classical ANOVA verified Levene's statistics and delivered substantial results. Finally, the investigator used a robust test of equality of means employing Welch-ANOA separately for the control and experimental groups, which also produced significant results with F values of 56.958, 13.662, 17.797, and 11.678, respectively, at p-value = 0.05. In conclusion, all tests produced very significant results and supported the alternative hypothesis, thus confirming that Transparent Language Online has a significant impact on upgrading the instructional strategies of English language educators at the tertiary level.

6.3. Limitations of the Study

The present investigation, without doubt, has certain limitations that may impact on the outcomes.

First, the study carried out ten different assessments in two formats, i.e., six RC&UoE tests (pre-test, A1, A2, A3, A4, and post-test) and four FCE-LT assessments (pre-test, A1, A2, and a post-test). These assessments were administered in two different setups, i.e., computer-based in the experimental group and paper-based in the control group, in an observed synchronous environment that might have affected ELLs' academic achievement, as well as confidence, because of linguistic, pedagogical, technical or technological constraints.

Second, this exploration was restricted to undergraduate university students studying computer science and business in Lahore, Pakistan. The total student population, N = 1,000, who participated in this study were partitioned into two groups, i.e., experimental (n = 500) and control (n = 500) groups. To investigate the four research questions and hypotheses focused on, these two key groups were further categorised into four sub-groups, i.e., U1CS (n = 250), U2CS (n = 250),

U1BS (n = 250), U2BS (n = 250). English language learners (ELLs) in the experimental group, i.e., U1CS and U2CS, were trained through Transparent Language Online in faculties/ departments of computer science in the target universities due to the availability of advanced technology-equipped classrooms. In contrast, ELLs in the control group, i.e., U1BS and U2BS, were trained using traditional teaching methods in faculties/ departments of business management.

Third, because of insufficient human labour, inadequate resources, limited funds and spatio-temporal constraints, the present research was delimited to the use of English (grammar), reading and listening skills and ignored productive skills, i.e., speaking and writing modules.

Fourth, a couple of educators taught different sections because of monetary issues. Thus, ELLs' academic achievement might have been affected because of the teachers' prejudiced pedagogical approaches and preconceived thoughts concerning incorporating new advanced technology tools and language learning applications into their teaching.

Fifth, the study also used specific variables and was limited to a dependent scale (continuous) variable results and independent categorical variables mode of instruction, test type, instructor, and department.

Despite these limitations, the current investigation will be viewed as a helpful start to facilitating language pedagogy in Pakistan, incorporating Web-delivered language learning platforms in language teaching, and encouraging empirical research in the domain of instructional technologies in second language teaching and learning.

6.4. Recommendations for Future Research

The current investigation suggests better approaches to evaluate the efficacy of technological tools for second and foreign language instruction and validates some potential guidelines, directions,

and propositions for future investigators and practitioners as regards cutting-edge technological apparatuses and Web-delivered language learning platforms.

To begin with, the participants–English language learners, $N = 1{,}000$,–in this research came from computer science (CS) and business studies (BS) backgrounds. Even in their first semester, these undergraduates–CS students–had established fundamental cognisance of established technologies, learning applications, and Web-based platforms. Considering students at different levels, i.e., undergraduate, graduate, and post-graduate, from diverse domains might enrich our understanding of how accessible technology tools utilised for learning affect L2 learners in general. English language learners, specifically, require additional consideration.

Second, this study was conducted in two private sector universities, i.e., U1 and U2, in Lahore, Pakistan; in any case, this endeavour could be expanded to other public and private sector universities and colleges throughout the country, which could help to investigate the questions and hypotheses raised more thoroughly and prepare a platform for planned Web-based instruction, and pre-mediated for crisis-prompted virtual instruction (Gacs et al., 2020).

Third, additional variables, i.e., gender, age, sections, time points and constructs, impacting on ELLs' achievement, proficiency scores, and confidence could be researched, discovered, recognised, and included in a rerun of this exploration of what encourages and impedes learners to use such apparatuses to surmount technology affordances and improve integrated language skills.

Fourth, this research has evaluated the effectiveness of TLO in English language instruction and examined ELLs' performance and EL instructors' attitudes towards TLO. However, TLO offers 115 foreign languages. This platform could be further explored to evaluate

TLO efficacy in other languages, in different setups, and at different levels to truly explore its significance and efficacy.

To sum up, further developments in instructional technologies used for teaching and learning foreign languages could be established by developing an indigenous software/ learning platform that can transform language pedagogy and facilitate foreign language learning.

6.5. Conclusion

The inclusion of Transparent Language Online in language pedagogy enhanced ELLs' academic performance and raised their English language proficiency scores, increased their confidence using new technology tools and Web-based language learning platforms, provoked their curiosity and improved EL instructors' instructional apparatuses. This likewise explicates how Web-delivered language learning platforms and technology tools, when incorporated efficiently and utilised effectively, can develop ELLs' academic accomplishments, facilitate them by advancing their perspective, and produce significant results, as corroborated by the investigation's results.

The findings, in a similar manner, demonstrate that technology, because of its customisation, speed and adaptability, efficaciously instils the declarative element of language. A computer can present numerous learning encounters each minute, recognise and describe results, and constantly adjust the content until learners preserve learning material in their declarative memory. Utilising TLO witnessed learners having higher proficiency scores and better results on various test types with TLO speedily familiarising ELLs with grammatical constructions, various reading passages, listening extracts, and a wide range of vocabulary. ELLs became better acquainted with the system and foreign language by using different educational games, interactive and engaging learning activities and drills pertaining to the integrated language skills of the English language from scratch until completion of a given task. TLO ended up being a

comprehensive solution that presented differently in relation to other online language learning platforms. It synchronised explicitly with ELLs' requirements and assisted them with increased confidence in utilising English as a foreign and/or additional language.

The investigator is convinced that the findings are valuable in corroborating what is beneficial for English language educators concerning the usage of transmissive, shared and interactive technological apparatuses in English teaching at the university level. The present research has confirmed the effectiveness of these technology platforms and digital tools with regard to ELLs' academic performance and advanced EL instructors' pedagogical practices at the tertiary level.

A rerun of the current research could offer deeper comprehension of the impact of computerised broadcasts, e-assessments, Web-based glossaries, and forums on different skills, such as listening and speaking, and different variables, such as vocabulary and culture. Also, the present investigation was carried out at the university level in Lahore, Pakistan, to analyse TLO efficacy and enhance ELLs' confidence while interacting with such online systems; comparable investigations might better measure such technological platforms' effectiveness and suitability in the K-12 sector. In addition, TLO inclusion assisted the educators to improve their teaching practices and to plan, prepare, and execute technology-driven exercises to address the cognitive and learning needs of 21st-century students.

Consequently, the results authenticate the goal of the current project. Descriptive and inferential statistical tests produced highly significant results, verified and accepted the alternative hypotheses for all four research questions, which substantiates that TLO positively impacted on ELLs' academic accomplishments and helped them achieve better proficiency scores. TLO also facilitated EL instructors to improve their existing teaching practices and help them incorporate

novel pedagogical techniques. The efficient implementation of Transparent Language Online in EL pedagogy, specifically in Pakistan, can increase ELLs' knowledge of the English language, impart confidence in utilising it in diverse circumstances, improve EL educators' instructional apparatuses and encourage indigenous empirical research and development.

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APPENDICES

Appendix. A

Reading Comprehension & Use of English
14 Lexical and Grammatical Constructs

S. No	Types of Construct
1	Noun
2	Pronoun
3	Verb and Verb Tense
4	Adjective
5	Adverb
6	Determiner
7	Preposition
8	Conjunction
9	Phrase
10	Clause
11	Negative
12	Subject Verb Agreement
13	Punctuation
14	Vocabulary

Appendix. B

Reading Comprehension & Use of English
Placement of Constructs/ Errors (Autumn 2018)

No. of Questions in Pre-test	Types of Error in Pretest	Types of Error in Assessment - 1	Types of Error in Assessment – 2	Types of Error in Assessment - 3	Types of Error in Assessment - 4	No. of Questions in Post-test
Week of Conduction	**22-26 /10/18**	**29/10/18 to 2/11/2018**	**8/11/2018**	**31/12/18 6/1/19**	**14-19/1/2019**	**21-26/1/2019**
1	Conjunction	Conjunction	Conjunction	Conjunction	Conjunction	Conjunction
2	Verb	Verb	Verb	Verb	Verb	Verb
3	Phrase	Phrase	Phrase	Phrase	Phrase	Phrase
4	Verb	Verb	Verb	Verb	Verb	Verb
5	Vocabulary	Vocabulary	Vocabulary	Vocabulary	Vocabulary	Vocabulary
6	Clause	Clause	Clause	Clause	Clause	Clause
7	Determiner	Determiner	Determiner	Determiner	Determiner	Determiner
8	Adjective	Adjective	Adjective	Adjective	Adjective	Adjective
9	Adverb	Adverb	Adverb	Adverb	Adverb	Adverb
10	Noun	Noun	Noun	Noun	Noun	Noun
11	Punctuation	Punctuation	Punctuation	Punctuation	Punctuation	Punctuation
12	Vocabulary	Vocabulary	Vocabulary	Vocabulary	Vocabulary	Vocabulary
13	Adverb	Adverb	Adverb	Adverb	Adverb	Adverb
14	Preposition	Preposition	Preposition	Preposition	Preposition	Preposition
15	Phrase	Phrase	Phrase	Phrase	Phrase	Phrase
16	Noun	Noun	Noun	Noun	Noun	Noun
17	Negatives	Negatives	Negatives	Negatives	Negatives	Negatives
18	Adjective	Adjective	Adjective	Adjective	Adjective	Adjective
19	Subject Verb Agreement	Subject Verb Agreement	Subject Verb Agreement	Subject Verb Agreement	Subject Verb Agreement	Subject Verb Agreement

20	Pronoun	Pronoun	Pronoun	Pronoun	Pronoun	Pronoun
21	Determiner	Determiner	Determiner	Determiner	Determiner	Determiner
22	Subject Verb Agreement	Subject Verb Agreement	Subject Verb Agreement	Subject Verb Agreement	Subject Verb Agreement	Subject Verb Agreement
23	Negatives	Negatives	Negatives	Negatives	Negatives	Negatives
24	Clause	Clause	Clause	Clause	Clause	Clause
25	Conjunction	Conjunction	Conjunction	Conjunction	Conjunction	Conjunction
26	Preposition	Preposition	Preposition	Preposition	Preposition	Preposition
27	Punctuation	Punctuation	Punctuation	Punctuation	Punctuation	Punctuation
28	Pronoun	Pronoun	Pronoun	Pronoun	Pronoun	Pronoun
29	Noun	Noun	Noun	Noun	Noun	Noun
30	Pronoun	Pronoun	Pronoun	Pronoun	Pronoun	Pronoun
31	Adjective	Adjective	Adjective	Adjective	Adjective	Adjective
32	Verb	Verb	Verb	Verb	Verb	Verb
33	Adverb	Adverb	Adverb	Adverb	Adverb	Adverb
34	Determiner	Determiner	Determiner	Determiner	Determiner	Determiner
35	Preposition	Preposition	Preposition	Preposition	Preposition	Preposition
36	Conjunction	Conjunction	Conjunction	Conjunction	Conjunction	Conjunction
37	Phrase	Phrase	Phrase	Phrase	Phrase	Phrase
38	Clause	Clause	Clause	Clause	Clause	Clause
39	Negatives	Negatives	Negatives	Negatives	Negatives	Negatives
40	Subject Verb Agreement	Subject Verb Agreement	Subject Verb Agreement	Subject Verb Agreement	Subject Verb Agreement	Subject Verb Agreement
41	Punctuation	Punctuation	Punctuation	Punctuation	Punctuation	Punctuation
42	Vocabulary	Vocabulary	Vocabulary	Vocabulary	Vocabulary	Vocabulary

Appendix. C

ENGLISH-I
(TEST OF READING COMPREHENSION AND USE OF ENGLISH)
PRE-TEST
FALL 2018

Directions

In the Reading and Use of English test, you will read a variety of texts and answer 42 questions found in seven different texts.
Within each text are boxes that contain four possible ways to complete a sentence.
Choose the word or words in each box that correctly complete each sentence.

Here are two example questions:

1. The idea that rocks last forever and that rocks

(A) still
(B) very
(C) quite
(D) never

change

is not completely true. If you have ever stood next to a rushing river, you

2.

(A) saw
(B) seen
(C) are seeing
(D) may have seen

the water hammering away at the rocks.

The correct answer to **Example 1** is (D), "never." The correct answer to **Example 2** is (D), "may have seen.

****

PART – 1 (READING TEST)

Questions 1-3 refer to the following note.
Erlin:

1.

(A) So
(B) While
(C) Because
(D) Although

you were at basketball practice today, your teacher,

2. Mr. Morris called on the phone to talk with you. He

(A) take
(B) to take
(C) is taking
(D) was taken

one of his other classes on a field trip to the aquarium this Saturday. A student in that class is sick and will not be able to go. Mr. Morris wants to know

3. whether you'd like to take

(A) that student's place
(B) that student's place is
(C) of that student's place
(D) that student's place, which

on the trip. He said that he is offering you the chance first because of the great report you wrote about whales. You will need to let him know tomorrow.

Love,
Mom.

Questions 4 - 6 refer to the following announcement.

4. A man's wristwatch

(A) finds
(B) finding
(C) has found
(D) was found

in the lobby of Luigi's Pizza

5. Restaurant on Tuesday, February 16. A restaurant worker

(A) seemed
(B) intended
(C) discovered
(D) influenced

the watch after the restaurant had closed that evening. Anyone who was a guest at the restaurant that day and is missing a watch should call Luigi's at 555-1953.

6. Callers will be asked

(A) a detailed description is given
(B) to give a detailed description
(C) giving a detailed description
(D) a detailed description gave

of the watch.

Questions 7–10 refer to the following announcement.

7.

(A) Because a student
(B) Being a student
(C) It was a student
(D) A student

from Barksdale High School won this year's regional mathematics competition. Ellen Murphy was among ten finalists in

8. the last round of the competition. The final question was a very

(A) wide
(B) difficult
(C) physical
(D) powerful

9. algebra problem. The first student to answer the question

(A) currently
(B) corruptly
(C) **correctly**
(D) directly

was

10. named the

(A) failure
(B) loser
(C) blooper
(D) **winner**

. One student finished the problem faster than Ms. Murphy, but his answer was incorrect. Ms. Murphy solved the problem accurately and took the grand prize.

Questions 11-16 refer to the following notice.

11. Beginning

(A) Tuesday__
(B) Tuesday?
(C) Tuesday,
(D) Tuesday!

next the science building will be under construction. Workers will be making repairs to the outside of the building for

12. approximately four weeks. While this work is being

(A) done,
(B) made,
(C) taken,
(D) entered,

most classes will continue as usual inside the building.

13. However, if any classes need to be moved to

(A) greatly
(B) temporarily
(C) successfully
(D) thoughtfully

other rooms,

14. teachers will inform their students.

(A) At
(B) On
(C) Over
(D) During

the construction, the front entrance to the science building will be closed.

15.

(A) As a result
(B) Even though
(C) All of a sudden
(D) On the other hand

all students will have to use the doors on the north side to enter the building. Also, please remember to keep out of the way of all

16.

(A) instruction
(B) correction
(C) conduction
(D) construction

equipment. Anyone who has questions about the upcoming

manufacture work should contact the school's main office.

Questions 17-24 refer to the following magazine article.

17. Unlike some other sharks, the basking shark is

(A) no threat to
(B) no threatening to no
(C) not to threaten to no
(D) a threat is not to no

18. humans. Growing to a size

(A) as large
(B) is larger
(C) many large
(D) much larger

than that of the average human,

this giant fish simply ignores divers who swim up to it. The diet of a basking

19. shark

(A) consist
(B) consists
(C) consisted
(D) is consisting

of fish and small animals such as squid, shrimp,

20. and crabs. When it is hungry, it looks for places

(A) what
(B) where
(C) which
(D) whose

great numbers

of these small animals can be found. Once it locates an area crowded with fish,

21.

(A) an basking shark
(B) any basking shark
(C) another basking shark
(D) a basking shark

simply opens its huge mouth and slowly swims

22. through it.

(A) Water flow
(B) Water flows
(C) Water flowed
(D) Water will flow

into its mouth and continues out through a

special filter structure that traps the small fish and other creatures. Although

23. this method

(A) does not require no eating
(B) does require not of none eating
(C) of eating does not require
(D) not of eating does require nowhere

the shark to move quickly,

24. it still requires a lot of effort.

(A) Enough food is obtained
(B) To obtain enough food
(C) Enough food obtaining
(D) It obtains enough food

a basking

shark will filter up to two thousand tons of water per hour.

Questions 25-28 refer to the following part of a short story.

When Dan knocked on the door of the old gray house, he was a little nervous. His friends at

25. school had said that the woman who lived in house was unfriendly,

(A) while
(B) lest
(C) but
(D) during

Dan

was sure that the cat he had found in his yard was hers. He wanted to take it to her.

"Hello," a woman's voice responded to his knock. "Who is it?"

26. "Hi. I'm your neighbor from down the street," Dan said

(A) as
(B) that
(C) which
(D) during

she opened the door a few centimeters. "Is this cat yours?"

27.

(A) "Oh! my goodness:"
(B) "Oh-my-goodness."
(C) "Oh, my goodness,"
(D) "Oh. my goodness?"

the woman said with a big smile. She pulled the door

open wide. "Yes, this is Daisy, and I've been worried about her! Thank you so

28. much for bringing

(A) me
(B) it
(C) her
(D) them

her back!"

PART – 2 (USE OF ENGLISH TEST)

Directions: A word or phrase is missing in each of the sentences below. Four answer choices (A), (B), (C), or (D) are given below each sentence. Select the best answer to complete the sentence.

29. The report focused on the _____ of the study.

A. funding
B. founding
C. foundlings
D. findings

30. Our friend, _____ we invited for the party, arrived early.

A. Whose
B. That
C. **Whom**
D. Them

31. The Empire State Building is one of _____ buildings in the United States of America.

A. Most tall
B. Taller than
C. **The tallest**
D. The most tall

32. It _____ that, by 2050, world population _____twice as much as it is now.

A. appeared / would have been rising
B. **appears / will have risen**
C. has appeared / will be rising
D. will appear / would rise

33. There has been a strong competition; _____, the new company has made great profits.

A. then
B. instead
C. heretofore
D. **nonetheless**

34. If we do not move faster, we will miss our transfer to Munich. There is not _____ time to waste.

A. little
B. **any**
C. many
D. few

35. You have to leave your shoes _____ the door when you enter the house.

A. in
B. over
C. to
D. **by**

36. Experts estimate that we are losing 137 plant, animal and insect species every single day _____ rainforest deforestation.

A. as
B. while
C. as a result
D. **due to**

37. _____, Maria went for a jog at the Civitan Park.

A. Although it were raining
B. **Although it was raining**
C. Though it will raining
D. Even though it were raining

38. My friend asked me to go the cinema, but I said that _____.

A. I had already see the movie.
B. I had already sawe the movie.
C. **I had already seen the movie.**
D. I already saw the movie.

39. _____ eggs in the fridge.

A. There isn't no
B. There aren't none
C. There isn't neither
D. **There aren't any**

40. The mascot, as well as the hockey players, _____ at the school.

A. volunteer
B. **volunteers**
C. have volunteered
D. were volunteering

41 Select the correctly punctuated sentence.

A. She always enjoyed sweet's, chocolate, marshmallow's and toffee apple's.
B. She always enjoyed sweets chocolate marshmallows and toffee apples.
C. She always enjoyed: sweets, chocolate, marshmallows and toffee apples.
D. **She always enjoyed sweets, chocolate, marshmallows and toffee apples.**

42. The rain will _____ for most of the morning, but we are expecting a brighter afternoon.

A. consist
B. insist
C. **persist**
D. resist

Appendix. D

ENGLISH-I
(TEST OF READING COMPREHENSION AND USE OF ENGLISH)
FALL 2018
ASSESSMENT - 1

Directions

In the Reading and Use of English test, you will read a variety of texts and answer 42 questions found in different texts.

Within each text are boxes that contain four possible ways (A), (B), (C) or (D) to complete a sentence. Select the best answer to complete the text.

Here are two example questions:

2. The idea that rocks last forever and that rocks

(A) still
(B) very
(C) quite
(D) never

change

is not completely true. If you have ever stood next to a rushing river, you

2.

(A) saw
(B) seen
(C) are seeing
(D) may have seen

the water hammering away at the rocks.

The correct answer to **Example 1** is (D), "never." The correct answer to **Example 2** is (D), "may have seen".

PART – 1 (READING TEST)

Questions 1-5 refer to the following email.

To: IEP Group All
From: Karin O 'Flaherty
Subject: Office procedures

Dear Teachers,
Our new school year is starting. I would like to remind everyone about the rules for using our office during this exciting and busy time. Please review these procedures carefully.
A. Door Code: You need a code to unlock the office door. New teachers, your code will arrive this week.
B. Telephone: Everyone shares the same telephone number.

1. (A) Because
(B) While
(C) Lest
(D) If

you answer a call for another teacher, please take a message and leave it in the teacher's mailbox.

2. **C. Computers:** Please share the computers. Remember to

(A) sign in
(B) sign up
(C) sign out
(D) sign to

3. after using the computer.

(A) For help above the computer,
(B) For help with the computer,
(C) Of help for the computer,
(D) That help for the computer,

please call Mario at extension 421.

D. Copying: Copying can be very costly, so please make only a few copies.

4. **E. Eating:** Please eat in the lunchroom. After eating,

(A) will throw
(B) is throwing
(C) throw
(D) thrown

all trash in the bin. Keep this room clean at all times.

We have some new teachers this semester. They are not yet familiar with our office

5. | (A) purchasers
(B) producers
(C) procures
(D) procedures | . Please help these new teachers, and welcome them to our program. Thank you.

Best Wishes,
Karin
Program Coordinator

Questions 6-10 refer to the following letter.

R D A Company
5943 Alton Lane
Irvine, CA 91628

Office Services, Incorporated
Ms. Misato Sakai
1300 Lincoln Lane
San Francisco, CA 94043
Dear Ms. Sakai:

6. | (A) My boss recommend you the company
(B) My boss recommended your company
(C) My boss discredited your company
(D) My boss demeaned you company | as the fastest at the shipping office supplies. I work at RDA Company, and we urgently need some supplies.

7. I hope that you can ship | (A) any
(B) other
(C) that
(D) these | items quickly.

8. We need two | (A) precise
(B) gray
(C) large
(D) neat | desks, model 156A, one dark brown and the other black. We also need two chairs for the new desks. We would like the colors to match the

9. desks,

(A)	altogether
(B)	**so**
(C)	soon
(D)	forthwith

please send one dark brown and one black chair.

We need one new computer, model ABG439, with a medium-sized, flat-screen monitor. Please include two speakers.
We also need ten boxes of white, letter-sized paper.

10. Please send everything immediately. Our new

(A)	**employees**
(B)	employers
(C)	employment
(D)	appointments

need these supplies as soon as possible. Thank you for your assistance.

Regards
Naser Abdelwali, Human Resources Director

Questions 11-13 refer to the following magazine article.

Is dentistry the career for you? Today's dentists have many more opportunities than they used to.

11.

(A)	In the past a dentists life was predictable
(B)	In the past a 'dentist's, life was predictable.
(C)	In the past, a 'dentist's, life was predictable!
(D)	**In the past, a dentist's life was predictable.**

Most were men who would leave home for a few years to study at a dental school, then return to their hometown, open up an office, and work there their whole life. Most dentists looked forward to this or something similar. Today, dentists are more mobile.

12. Men and women can

(A)	**attend**
(B)	attained
(C)	attuned
(D)	at end

dental school in different places.

Some still return to their hometown to work. Others move on to new cities.

Dentists today may specialize in one or more areas. Two common ones are oral surgery and dental public health. Oral surgery focuses on treating diseases and problems through operations. Dental public health concentrates on improving the dental health of a community.

13. For example, these dentists go to schools to teach children

(A)	then
(B)	afterwards
(C)	**how**
(D)	now

to brush their teeth. Some dentists work only in their specialty areas while others do both general and specialty work.

Questions 14-23 refer to the following essay.

14. People's behavior

(A)	at
(B)	upon
(C)	against
(D)	**during**

public events has changed over the years,

15. perhaps because views on

(A)	**what is considered**
(B)	considering what
(C)	they considered it
(D)	that it is considered

appropriate have changed.

16. During a classical music

(A)	contract
(B)	**concert**
(C)	concord
(D)	concordat

17. for example,

(A)	neither people to clap
(B)	clapping people do not
(C)	**people do not clap**
(D)	people are not clapping

18. until the musicians finish playing the composition. It would be

(A)	kind
(B)	cozy
(C)	comfortable
(D)	**hard**

to imagine the audience clapping in the middle of a performance. It may come as a

surprise to many, however, that long ago, this is exactly what people did.

19. The audience laughed loudly, clapped, and

(A) cheers
(B) cheered
(C) are cheered
(D) has cheered

great moments.

20.

(A) That
(B) Who
(C) What
(D) Which

was how people showed their regard for

21.

(A) enough
(B) all
(C) a
(D) the

performer's skills. One reason that people's behavior was so

22. different may be that in the past, classical music concerts

(A) is
(B) are
(C) was
(D) were

more like

23. today's pop music shows. Long ago, classical music

(A) weren't thought neither to be
(B) **was not thought to be**
(C) shouldn't thought not to be
(D) couldn't thought no more

as serious as it is now.

For Questions 24-28, we will be referring to a passage from *'The Adventures of Huckleberry Finn'* by Mark Twain. The story is set in the nineteenth century, in the USA. The main character, the narrator, is a boy called Huckleberry. He lives with Widow Douglas, who has been teaching him about Moses.

Pretty soon, I wanted to smoke and asked the widow to let me. But she wouldn't.

24.

(A) **She said it was a mean practice**
(B) She said it is a clean practice
(C) She said it was a hygienic practice
(D) She said it were a sterile practice

and was not clean, and I must try

to not do it anymore. That is just the way with some people. They get down on a thing when they don't know anything about it. Here she was a-bothering about Moses, which was no kin to her, and no use to anybody, being gone, you see, yet finding a power of fault with me for doing a thing that had some in it. And she took snuff, too; of course, that was

25. all right, (A) although (B) while (C) **because** (D) nevertheless she has done it herself.

Her sister, Miss Watson, a tolerable, slim unmarried woman, with goggles on, had just come to live with her and took a set at me now with the spelling-book.

26. She worked me middling hard for (A) in (B) by (C) upon (D) **about** an hour, and then the widow made her ease up. I could not stand it much longer, then for an hour, it was deadly dull, and I was

27. fidgety. Miss Watson would say, (A) **"Don't put your feet up there, Huckleberry;"** (B) "Don't put your feet up there Huckleberry." (C) "Don't put your feet up there; Huckleberry!" (D) Don't put your feet up there Huckleberry? and "Don't scrunch up like that, Huckleberry – set up straight;" and pretty soon she would say, "Don't gap and stretch like that, Huckleberry – why don't you try to behave?"

28. Then she told (A) her (B) him (C) **me** (D) them all about the bad places, and I said I wished I were there. She got mad then, but I did no harm. All I wanted was to go somewhere; all I wanted was a change, I was not particular.

PART – 2 (USE OF ENGLISH TEST)

Directions: A word or phrase is missing in each of the sentences below. Four answer choices (A), (B), (C), or (D) are given below each sentence. Select the best answer to complete the sentence.

29. Dr. Naismith wrote thirteen rules for basketball. _____ is a common noun in this sentence.

A. Dr. Naismith
B. Wrote
C. Thirteen
D. **Rules**

30. Some of these clothes are _____, and the rest of _____ belong to Zack.

A. yours / it
B. my / them
C. **mine / them**
D. hers / their

31. This test is _____ than the test we took last week.

A. **more difficult**
B. most difficult
C. the most difficult
D. difficult

32. Everyone was disappointed to hear that the company's proposal was _____.

A. Turned up
B. **Turned down**
C. Turned on
D. Turned away

33. Marketing is important; _____ we're hiring a new public relations firm.

A. nevertheless
B. however
C. **therefore**
D. heretofore

34. You can buy these maps at _____ station. They all have them

A. a lot of
B. several
C. some
D. **any**

35. Both companies are _____ the same business.

A. **in**
B. with
C. from
D. through

36. _____the stockbrokers said the market was healthy; they refused to invest more money.

A. Because
B. While
C. **Although**
D. If

37. When a sentence has several elements in a series, all of the elements should _____

A. refer to concrete objects.
B. have more than three words.
C. have the same subject.
D. be in grammatically parallel form.

38. When a source uses technical language,

A. the reporter should translate it into plain English.
B. the reporter should reproduce it exactly as the source stated it.
C. the reporter should try to guess its meaning.
D. the reporter should expect readers to look it up on Wikipedia.

39. Didn't he tell you not to come here?

A. No, nobody told me nothing.
B. **No, nobody told me anything.**
C. No, nobody told me everything.
D. No, anybody told me anything.

40. After re-evaluating the proposal, the agency _____ the contract to us.

A. is awarding
B. had awarded
C. **awarded**
D. awards

41. Select the correctly punctuated sentence.

A. We had coffee, cheese, and crackers, and grapes.
B. **We had coffee, cheese and crackers, and grapes.**
C. We had coffee, cheese and crackers and grapes.
D. We had coffee cheese and crackers and grapes.

42. If you turn off the central heating if you are away from home for more than a couple of day, you will _____ a lot of money

A. earn
B. gain
C. win
D. **save**

Appendix. E

ENGLISH-I
(TEST OF READING COMPREHENSION AND USE OF ENGLISH)
FALL 2018
ASSESSMENT - 2

Directions

In the Reading and Use of English test, you will read a variety of texts and answer 42 questions found in different texts.
Within each text are boxes that contain four possible ways (A), (B), (C) or (D) to complete a sentence. Select the best answer to complete the text.

Here are two example questions:

3. The idea that rocks last forever and that rocks

(A) still
(B) very
(C) quite
(D) never

change

is not completely true. If you have ever stood next to a rushing river, you

2.

(A) saw
(B) seen
(C) are seeing
(D) may have seen

the water hammering away at the rocks.

The correct answer to **Example 1** is (D), "never." The correct answer to **Example 2** is (D), "may have seen".

PART – 1 (READING TEST)

Questions 1-5 refer to the following letter.

Office Works
544 Hudson Street
Boston, MA 34602
Tel: (617) 555-7664 Fax: (617) 555-7670

October 10, 2018

Mary Briddock
Banqueting Director
Wynd's Garden Hotel
219 Center Circle
Boston, MA 03299

Dear Ms. Briddock:
Our company, Office Works, is seeking a place to host a banquet. We will honor our top employees at this event, which will include dinner followed by speeches

1.
(A) nor
(B) and
(C) because
(D) though

the presentation of awards.

At the same time, we plan to celebrate an addition to our company.

2. We
(A) has purchase
(B) shall purchase
(C) purchase
(D) **purchased**

recently the Office Supply Store, and we are now

3.
(A) the region's office supplies of largest seller.
(B) the office supplies of region's largest seller.
(C) **the region's largest seller of office supplies.**
(D) the largest seller of region's office supplies.

We expect approximately 100 guests. We would like to have our event on Saturday, August 15.

4. If no room is available for that on the
(A) **could consider**
(B) wouldn't consider
(C) have been considered
(D) shall neither considered

date, we having it

subsequent Saturday, August 22.

Could you please mail me your latest price list, descriptive brochure, and menus?

5. I am services.
(A) bewildering
(B) disregarding
(C) mystifying
(D) **learning**

interested in more about your facilities and

Thank you.
Lynn Ishii
Event Coordinator

Questions 6-10 refer to the following notice.

GLOBAL AIRLINES POLICY STATEMENT

Baggage

6.

(A) Each passengers may carry two item onto the plane.
(B) Each passengers may carries two items onto the plane,
(C) **Each passenger may carry two items onto the plane:**
(D) Each passenger may carry item two onto the plane –

one small suitcase and one personal item. The personal item may be

7.

(A) that purse, laptop computer, or briefcase.
(B) **a purse, laptop computer, or briefcase.**
(C) any purse, laptop computer, or briefcase.
(D) each purse, laptop computer, or each briefcase.

8. The items overhead

(A) bizarre
(B) **fit**
(C) incompatible
(D) ludicrous

should under the seat in front of you or in the

9. bin. These bins fill , attendant

(A) **quickly**
(B) slowly
(C) sluggishly
(D) progressively

so in case of overload, the flight

may place your suitcase in the back of the plane.
In addition to the two carry-on items, each passenger may check two suitcases to be transported

10. in the

(A) entirety
(B) deportment
(C) comportment
(D) **compartment**

airplane's luggage .

These suitcases must meet the airline's size limits excess baggage charges apply to oversized and additional pieces. These charges must be paid at the time of check-in. Please contact a customer service representative if you have questions about this policy.

Questions 11-15 refer to the following email.

To: front office 1
From: Geraldine Bennett
Re: Doing our part

Dear Mr. Cobalt:

11. I am writing to you to express

(A) my concern about pascal reputation as a wasteful company
(B) my concern about "Pascal's reputation as a-wasteful-company.
(C) my concern about Pascal's reputation as a "wasteful" company,
(D) **my concern about Pascal's reputation as a wasteful company.**

I am sure you read the recent letter to the editor in the *Sydney Daily News* regarding our non-recyclable plastic bottles and caps.

12. Since the letter was printed, we have hundreds

(A) compendiums
(B) compliments
(C) **complaints**
(D) commendations

received from

of customers who are threatening to boycott our company if we do not change our practices. We have also received flyers from various manufacturing companies offering to help us become a more environmentally friendly company.

13. I have but

(A) long-windedly
(B) **briefly**
(C) permanently
(D) imperturbably

looked into some of these options on my own time

would like to ask your permission to do more.

I would like to devote 20 hours of my upcoming workweek to this cause in hopes of coming up with a viable plan for Pascal's future as a company that cares about recycling.

14. I hope you

(A) at
(B) **with**
(C) over
(D) about

will agree me that

15.

(A) our making us worth environment is
(B) our worth us is making environment
(C) our worth environment is making us
(D) **our environment is worth us making**

an effort.

Please respond as soon as possible.

Sincerely,
Geraldine Bennett, Administrative Assistant
Pascal's Pharmaceuticals

Questions 16-21 refer to the following fax.

One Devonshire Gardens

7 Nov 2018

Fax to: P. Peterman
Fax number: 0101-202-555-6666
Dear Mr. Peterman:

16. Thank-you pleasure in

(A) consolation
(B) conciliation
(C) **confirmation**
(D) cancellation

for your fax of today. We take great

confirming your reservation of one superior double room for the evenings of 28 through 30 July. 'The cost of this room will be £ 135 a night, inclusive of tax, newspaper, and continental breakfast. The total charge of £405 will be made to the credit card number, which you previously provided to us.
I would like to take this opportunity to remind you that we have a fully equipped exercise

17. room, as well as an indoor swimming pool,

(A) for neither the exclusive use of our guests nor no extra charge.
(B) for no exclusive use of our guests at no extra charge nowhere.
(C) **the exclusive use of our guests at no extra charge.**
(D) the exclusive use of our guests never extra charge.

18. We also have a may

(A) locked
(B) **located**
(C) guaranteed
(D) fastened

restaurant on the premises at which you purchase lunch or dinner at your discretion.

19. Should you require transportation from the airport when you

(A) **arrive**
(B) arrived
(C) have arrived
(D) will arrive

20. arrive in our city, we can arrange a special airport shuttle for .

(A) her
(B) him
(C) **you**
(D) them

21. Just call the hotel located

(A) **the**
(B) those
(C) most
(D) enough

from one of white courtesy phones throughout the arrivals terminal. Press 15 to reach the One Devonshire Gardens front desk. We look forward to welcoming you at One Devonshire Gardens. Please do not hesitate to contact me should you have any questions regarding your reservations or our accommodations.

Yours sincerely,
Debbie Smith
Reservation Manager

Questions 22-28 refer to the following excerpt taken form Paulo Coelho's *The Alchemist.*

"Even though I complain sometimes it (his heart) said, it's because I am the heart of a person, and people's hearts are that way. People are afraid to pursue their most important

22. dreams because they

(A) were feeling
(B) had felt
(C) felt
(D) **feel**

they don't deserve them, or that they won't be able to achieve them. We, their hearts, become fearful just thinking of loved ones who go away, or of moments that could have been good, but were not, or treasures that might have been found but were forever hidden in the sands. Because when these things happen we suffer terribly."

"My heart is afraid it will have to suffer," said the boy.
"Tell your heart that the fear of suffering is worse than the suffering itself.

23. And that

(A) no heart has nowhere
(B) no heart has never
(C) **no hear has ever**
(D) no heart have never ever

suffered when it goes in search of its dreams because every second of the search is an encounter with God.

When I have been truly searching for my treasure every hour has been luminous because every hour has been a part of the dream. When I have been truly searching for my treasure I discover things along the way that I never would have seen had I not had the courage to try things that seemed impossible to achieve.

24.

(A) On earth everyone has awaits them that a treasure
(B) A treasure on earth that everyone has awaits them.
(C) Everyone awaits a treasure on earth that has them.
(D) **Everyone on earth has a treasure that awaits them.**

Unfortunately, very few follow the path laid out for them. They just go along and see the world as a threatening place, and because they do, the world does indeed turn out to be a threatening place. We, their hearts, speak more and more softly for we don't want people to suffer because they don't follow their hearts."
"Why don't people's hearts tell them to continue to follow their dreams?" asked the boy.

25. "_____that's what makes hearts suffer most, _____ hearts don't like to suffer."

(A) After / because
(B) Even though/ while
(C) **Because/ and**
(D) And / unless

26. "What you still need to know is this: Before a dream is realized, the soul

(A) in
(B) **of**
(C) with
(D) from

the world tests everything that was learned along the way. It does this so

27.

(A) that we can in addition to realizing our dreams master
(B) that we can, in-addition 'to realizing' our dreams-master
(C) that we can, in addition to realizing our dreams, master,
(D) **that we can, in addition to realizing our dreams, master**

the lessons we have learned as we've moved toward that dream.

That's the point at which most people give up.

28. That's the point,

(A) they
(B) **we**
(C) each
(D) none

as we say in the desert, that one dies of thirst just as the palm trees have appeared on the horizon. Every search begins with beginner's luck and ends with being severely tested. The darkest hour of the night comes just before the dawn."

PART – 2 (USE OF ENGLISH TEST)

Directions: A word or phrase is missing in each of the sentences below. Four answer choices (A), (B), (C), or (D) are given below each sentence. Select the best answer to complete the sentence.

29. The chairman said his _____ would continue his strategies.

A. succor
B. **successor**
C. success
D. soccer

30. Our dog is of a very good breed as _____ is the offspring of two very champion dogs and inherited _____ features.

A. this/ its
B. that/ his
C. **it/their**
D. he/ them

31. Our future will be _____ on what services we can provide.

A. basic
B. bad
C. base
D. **based**

32. We have all been _____ about you

A. Thought
B. **Thinking**
C. to think
D. thinks

33. Which is the correct spelling of the adjective "pleasant" when it becomes an adverb?

A. pleasantely
B. pleasantelly
C. **pleasantly**
D. pleasantiely

34. I did not have _____ trouble getting the passports. I only had a problem with my photo because it was an old one.

A. much
B. any
C. no
D. several

35. For Motor Company reported a drop _____ quarterly profits.

A. to
B. from
C. in
D. with

36. The electricity went out _____ we were making coffee.

A. because
B. for
C. so
D. while

37. Only a man with plenty of money can buy a car _____

A. of roughness and subservience
B. of offensiveness and rudeness
C. **of such beauty and power**
D. of crudeness and inelegance

38. It is too bad _____

A. next year that Mr Morrison will not be teaching.
B. that not Mr Morrison will be teaching next year.
C. that Mr Morrison teaching will not be next year
D. **that Mr Morrison will not be teaching next year.**

39. Unfortunately, we _____ find the part we needed.

A. neither couldn't nor
B. never couldn't or
C. never couldn't
D. **never could**

40. Gold, as well as platinum, _____ recently risen in price.

A. is
B. was
C. **has**
D. have

41. Select the correctly punctuated sentence.

A. I can't see Tim's car, there must have been an accident.
B. I cant see Tim s car- there must have been an accident.
C. I can't see Tim's car there must have been an accident.
D. I can't see Tim's car; there must have been an accident.

42. Much of the neighborhood was demolished in the 1940s when living _____ had deteriorated.

A. situations
B. conditions
C. circumstances
D. states

Appendix: F

ENGLISH-I
(TEST OF READING AND USE OF ENGLISH)
FALL 2018
ASSESSMENT – 3

Directions

In the Reading and Use of English test, you will read a variety of texts and answer 42 questions found in different texts.
Within each text are boxes that contain four possible ways (A), (B), (C) or (D) to complete a sentence. Select the best answer to complete the text.

Here are two example questions:

4. The idea that rocks last forever and that rocks

(A) still
(B) very
(C) quite
(D) never

change

is not completely true. If you have ever stood next to a rushing river, you

2.

(A) saw
(B) seen
(C) are seeing
(D) may have seen

the water hammering away at the rocks.

The correct answer to **Example 1** is (D), "never." The correct answer to **Example 2** is (D), "may have seen".

PART – 1 (READING TEST)

Questions 1-5 refer to the following magazine brochure.

Checklist for Starting Your Own Business

Are you thinking of starting your own business? Before you come up with a name and register your business, it's important to do a bit of homework.

1. | (A) In case
(B) Unless
(C) Lest
(D) While | most people think that starting a business is one of the most difficult things to do, this is actually not true. It is fairly easy to get a business started. The difficult part is keeping a business running; especially for the first few years, starting off on the right foot is very important, however.

2. This brochure you | A. will help
B. has helped
C. was helping
D. helped | launch your business by following these steps.

3. **Preparation:** This section guides you

A. through the brainstorming process and helped us write a business plan. B. through the brainstorming process and helps you write a business plan. C. through the brainstorming process and were helping you written a business plan. D. through the brainstorming process and help you wrote my business plan.

Learn to start thinking like an entrepreneur.

Hiring: Who can you trust to help you run a business? Here we will discuss the pros and cons of employing family and friends.

4. **Maintaining Control:** So you've got your business name and you've

A. hire B. hiring C. hired D. rehire

your staff. Now, you need to let everyone know who is boss and how your operation is going to run.

5. You | A. Expunging:
B. Expounding:
C. Expending:
D. Expanding: | are following the plan and everything is going great.

Are you ready to take your business to the next level? It is time to make a profit.

Questions 6-12 refer to the following advertisement.

6.

A.	How would you like on a rental car to save 50%?
B.	How would you like to save 50% on a rental car?
C.	How would you like 50% to save on a rental car?
D.	How would you save to like 50% on a rental car?

Contact National Car Rental today!

7. You pay just half on

A.	a usual rate
B.	an usual rate
C.	the usual rate
D.	this usual rate

weekend rentals of compact cars.

8. What a deal! But you have to hurry! This

A.	special
B.	usual
C.	meager
D.	indistinctive

bargain is

available only for a short time.

9. National Car Rental has

A.	ferociously
B.	unreasonably
C.	optionally
D.	additionally

luxury cars, trucks, and sports

utility vehicles and all are equipped with air-conditioning, a radio, and a CD player.

10. With offices at every major airport and in

A.	hardihoods
B.	knighthoods
C.	neighborhoods
D.	livelihoods

throughout the

city, there is always a National Car Rental location close to you.

11.

A.	Renting a car from us is easy.
B.	Renting a car from us is easy,
C.	Renting a car from us is easy!
D.	"Renting a car from us is easy"

Call now to reserve your vehicle and be sure to ask about the 50% discount.

12. Note that this discount does not include

A.	unsureness
B.	insurance
C.	insolence
D.	insurgence

and is only available on certain weekends. Just go to our website to find the National Car Rental office closest to you!

Questions 13-16 refer to the following magazine memorandum.

From: Jun Oh, Benefits Manager
To: Marcus Mains
Re: Special Retirement Opportunity

Thank you for requesting information about the Early Retirement Program. Please review these requirements.

13. If you qualify, act

A.	hastily
B.	slowly
C.	leisurely
D.	gradually

. Applications are due December 1.

Early **Retirement Program**

I. Employees must meet these requirements:

14. **(a)** Be age 50

A.	in
B.	at
C.	with
D.	against

20 years of employment at this company.

(b) OR have 25 years of employment at this company (age is not a factor).

15. (c) Retirement funds

A.	reduce that by 2% for each year
B.	will reduce each year by 2% for that
C.	is reduced by each year for 2% that
D.	are reduced by 2% for each year that

you are under age 55.

II. Interested employees should apply by December 1, 2017.

16.

A.	The attirement
B.	The retirement
C.	The retardment
D.	The retrievement

program will begin on January 1, 2018.

Attend a workshop to learn more. E-mail my office to request the workshop schedule.

Questions 17-25 refer to the following excerpt taken from *Mark Twain's The Adventure of Huckleberry Finn.*

You don't know about me, without you have read a book by the name of The Adventures of Tom Sawyer; but that ain't no matter. That book was made by Mr. Mark Twain, and he told the truth, mainly. There was things, which he stretched, but mainly he told the truth. That is nothing.

17.

A.	I never seen nothing but lied neither one time nor another,
B.	I never seen none body but lied one time nor another,
C.	I never seen nobody but lied one time or another,
D.	I never seen anybody but lied one time or another,

without it was Aunt Polly, or the widow, or maybe Mary. Aunt Polly—Tom's Aunt Polly, she is—and Mary and the Widow Douglas is all told about in that book, which is mostly a true book, with some stretchers, as I said before. Now the way that the book winds up is this: Tom and me found the money that the robbers hid in the cave,

18. and it made us .

A.	flat
B.	poor
C.	rich
D.	bankrupt

We got six thousand dollars apiece—all gold.

It was an awful sight

A.	took
B.	take
C.	takes
D.	have taken

of money when it was piled up.

19. Well, Judge Thatcher he

it and put it out at interest,

and it fetched us a dollar a day apiece all the year round—more than a body could tell what to do with. The Widow Douglas she took me for her son, and allowed she would civilize me;

20. But was

A. who
B. it
C. what
D. they

rough living in the house all the time,

considering how dismal regular and decent the widow was in all her ways; and so when I couldn't stand it no longer I lit out. I got into my old rags and my sugar-hogshead again, and was free and satisfied. But Tom Sawyer he hunted me up and said he was going to start

21. and

A. a band of robbers,
B. the band of robbers,
C. one band of robbers,
D. any band of robbers,

I might join if I would go back to the widow and be

respectable. So I went back.

22. The widow she

A. cry
B. cries
C. cried
D. have cried

over me, and called me a poor lost lamb, and she called

23. me a lot of other names, too, but she

A. never meant no harm by it.
B. never meant any harm by it.
C. never meant none harm by it.
D. never meant neither harm nor by it.

She put me in them new clothes again, and I couldn't do nothing but sweat and sweat, and feel all cramped up. Well, then, the old thing commenced again.

24. and

A. The widow are rung a bell for supper,
B. The widow runged a bell for supper,
C. The widow ringing a bell for supper,
D. The widow has rung a bell for supper,

you had to come to time.

When you got to the table you couldn't go right to eating, but you had to wait for the widow to tuck down her head and grumble a little over the victuals, though there weren't really anything the matter with them,—that is, nothing only everything was cooked by itself. In a barrel of miscellaneous items, it is different; things are mixed up, and the juice kind of swaps around and the things go better.

25. After supper, she got out her book and learned me about

A. Moses or the Bulrushers,
B. Moses nor the Bulrushers,
C. Moses and the Bulrushers,
D. Moses although the Bulrushers,

and I was in a sweat to find out all about him; but by and by she let it out that Moses had been dead a considerable long time; so then I didn't care no more about him, because I don't take no stock in dead people.

Questions 26-28 refer to the following letter.

GUESS CONSULTING
121 Market St., New York, NY 10012

J. P. Thompson, Esq.
14, Rue du Mont Blanc
1201 Geneva, Switzerland

Dear Mr. Thompson:

26. I have enclosed that I

A. a copy of the evaluation
B. a copy with the evaluation
C. a copy at the evaluation
D. a copy in the evaluation

was hired to prepare for the project "Improving Employee Performance." You will see that the evaluation is divided into three sections,

27. as we agreed upon in

A. our discussion: Employee Relations Physical Environment and Training Opportunities.
B. our discussion: Employee Relations, Physical Environment, and Training Opportunities.
C. our discussion Employee Relations, Physical Environment and Training Opportunities.
D. our discussion, Employee Relations, Physical Environment, and Training Opportunities

The appendices include all forms and outlines of other methods used to gather information for the evaluation. I have attempted to present everything in as clear a manner as possible. If, however, you have any questions or desire any additional information, please do not hesitate to contact me.

28. I have enjoyed working with law

A. mine
B. your
C. her
D. their

firm on this project and look forward to working with you again in the future.

Sincerely,
Amanda Guess
Consultant

PART – 2 (USE OF ENGLISH TEST)

Directions: A word or phrase is missing in each of the sentences below. Four answer choices (A), (B), (C), or (D) are given below each sentence. Select the best answer to complete the sentence.

29. Boston and Chicago have had great teams. _____ is a common noun in this sentence.

A. Boston
B. Chicago
C. Teams
D. Great

30. William Shakespeare is _____ who I have always admired.

A. someone
B. no one
C. everyone
D. anyone

31. The food at this supermarket is always _____.

A. gentle
B. fresh
C. hopeful
D. empty

32. What is a verb?

A. A verb describes a noun.
B. A verb denotes the action taking place in a sentence.
C. A verb describes what the subject of the sentence did, thought or said or what the subject's state of being is.
D. B & C

33. Which of these adverbs can be used to complete this sentence? The sun shone _____.

A. loudly
B. brightly
C. luckily
D. awkwardly

34. The accident was terrible. He had _____ luck that he survived.

A. a few
B. many
C. much
D. a lot of

35. He said that he was very pleased _____ my work.

A. to
B. at
C. with
D. for

36. _____ Harry Clinton was the best candidate; she did not win the elections.

A. Although
B. Because
C. And
D. Or

37. Price quotes _____

A. have daily been announced.
B. daily have been announced.
C. have been daily announced.
D. have been announced daily.

38. It is too bad _____

A. that Mr Morrison next year will be not teaching.
B. that Mr Morrison will be teaching not next year.
C. that Mr Morrison will not be teaching next year.
D. that Mr Morrison teaching will not be next year

39. A small piece of pie

A. won't do nothing harm to your diet.
B. won't do no harm to your diet.
C. won't do neither harm to your diet.
D. won't do any harm to your diet.

40. You should decide which one of the three choices A, B, or C best _____ the question.

A. answer
B. answers
C. answered
D. will answer

41. Select the correctly punctuated sentence.

A. I can't see Tim's car there must have been an accident.
B. I can't see Tim's car, there must have been an accident!
C. I can't see Tim's car; there must have been an accident.
D. I cant see Tim's car; there must have been an accident.

42. Writing her memoirs, Doreen, _____ lost a daughter to cancer, admitted that she had contemplated suicide on many an occasion.

A. who had herself
B. would have
C. who must
D. have

Appendix: G

ENGLISH-I
(TEST OF READING AND USE OF ENGLISH)
FALL 2018 – 2019
ASSESSMENT – 4

Directions

In the Reading and Use of English test, you will read a variety of texts and answer 42 questions found in different texts.
Within each text are boxes that contain four possible ways (A), (B). (C) or (D) to complete a sentence. Select the best answer to complete the text.

Here are two example questions:

5. The idea that rocks last forever and that rocks

(A) still
(B) very
(C) quite
(D) never

change

is not completely true. If you have ever stood next to a rushing river, you

2.

(A) saw
(B) seen
(C) are seeing
(D) may have seen

the water hammering away at the rocks.

The correct answer to **Example 1** is (D), "never." The correct answer to **Example 2** is (D), "may have seen".

PART – 1 (READING TEST)

Questions 1 – 5 refer to the following e-mail.

To: Reiko Ono
From: Junko Lee
Re: Transfer

Hi Reiko,
I heard the news this morning about your transfer. I was sad to learn that you will be

moving to the Yokohama warehouse.

1. It seems like half of the staff is leaving for one

(A) and
(B) or
(C) nor
(D) whilst

reason another.

I considered transferring, too, but my husband would never agree to it.

If you need any help packing or making arrangements in Yokohama, let me know.

I have many relatives in Yokohama if you and your husband need anywhere to stay for a short time while you are looking for a new home.

2. Of course, those arrangements may already

A. has been made
B. has had been made
C. had have been made
D. **have been made**

by the company.

3. I will miss our

A. staff conversations in the room.
B. staff in the room conversations.
C. **conversations in the staff room.**
D. conversations room in the staff.

4. You always

A. **tell**
B. conceal
C. renounce
D. mislead

the best stories about your family members, and I feel like I know them personally.

I am sure you will be busy this month, but I would love to get together for lunch or

5. dinner before you go if you can

A. aspartame
B. space time
C. **spare time**
D. spartan

.

Tuesdays or Thursdays are the best days for me.

If you cannot make lunch or dinner, I hope we can at least make one last date for coffee.

Talk to you soon,
Junko

Questions 6 – 10 refer to the following letter.

The Accounting Firm
P.O. Box 90900
Pretoria
0083 South Africa

Alice Michaels
Michaels Enterprises
190 Church Street
Pretoria
0083 South Africa

Dear Mrs. Michaels, April 02, 2018

6. | A. Your email I received last week, / B. Your email last week I received, / C. I received your last week e-mail / D. **I received your e-mail last week,** | stating that you will not require my services for the upcoming tax year this came as a surprise to me, as I have always provided you with timely service.

7. My records show | A. **that your company received a** / B. what your company received either / C. a little your company received the / D. much your company received any | large refund from the government last year.

I understand that you, like many small business owners, have decided to use a do-it-yourself tax kit this year.

8. While this method may seem less

A.	parsimonious
B.	**expensive**
C.	tightfisted
D.	worthless

because it saves money on an accountant's fees, there are hidden costs.

It takes a lot of time to gather all the data needed to prepare your own taxes.

9. My firm, on the other hand,

A.	annually
B.	delightfully
C.	equally
D.	**already**

has this information on file, and we know the best ways to save you money on your taxes.

10. I hope you will think over your

A.	decagon
B.	derision
C.	**decision**
D.	delusion

to forego professional accounting services this year.

If you do change your mind about this, I would be more than happy to provide you with the same efficient and accurate service that I have in years past.

Sincerely,
Peter Jones

Questions 11 – 18 refer to the following advertisement.

White Shoe Kleen-Kit

White shoes are a handsome addition to any summer wardrobe, but they have always

11.

A.	**been difficult to keep clean . . . until now.**
B.	been difficult to keep clean . . . until now,
C.	been difficult to keep clean . . . until now:
D.	been difficult to keep clean. until now!

Wright and Perry, the same company that has been providing you with top quality shoe

12. finishes and other fine shoe care

A.	projects
B.	**products**
C.	prospects
D.	protests

for years, has developed a solution to the problem of cleaning white shoes. Thorough research and careful testing of trial products have resulted in Kleen-Kit, the fantastic new twostep, two-minute product that will keep YOUR white shoes sparkling white. Our special formula not only cleans

13. your shoes to their whitest, it

A.	accidently
B.	anxiously
C.	**additionally**
D.	adventurously

protects them from dirt and water and preserves the leather, giving your shoes longer life.

14. If you own a pair

A.	at
B.	**of**
C.	on
D.	in

white shoes, or plan to enjoy that extra sparkle that they can add to your wardrobe, this kit is a must.

15. It solves the problem you have always had ...

A.	white keeping shoes of white.
B.	keeping white shoes of white.
C.	white shoes of keeping white.
D.	**of keeping white shoes white.**

And, at a price you can afford.

Kleen-Kit sells for only $7 each, or $5 with each shoe order.

16. Kleen-Kit is available at most shoe retail

A.	**outlets**
B.	outlooks
C.	outlays
D.	outlaws

and anywhere shoe-care products are sold.

17.

A.	If not you are convinced.
B.	**If you are not convinced.**
C.	If neither you are not convinced.
D.	If not you are neither convinced.

Ask your local shoe dealer for a free trial sample or request one from our website.

18. Your shoes will be

A.	emblematic
B.	dormant
C.	cimmerian
D.	**sparkling**

white in no time!

Questions 19 – 28 refer to the following article.

19. Surveys

A.	finds
B.	found
C.	**have found**
D.	were found

that wages and benefits are not always the major determining factor for employees who are looking to move between jobs.

David Bikowski is a case in point.

20. Last year he was laid off from

A.	her
B.	**his**
C.	their
D.	our

production job at a factory where he had worked for close to eight years.

21. After several months of searching for

A.	**a**
B.	the
C.	all
D.	those

new job, he found employment at another factory in a nearby town.

Although he would earn $100 a week less in the new position than he did at his old one,

22. he

A.	takes
B.	**took**
C.	taken
D.	will take

the job.

23. He has a family to support and

A.	couldn't afford to stay out of work no longer.
B.	couldn't afford to stay out of no work much longer.
C.	couldn't afford to stay out of no work any longer.
D.	**couldn't afford to stay out of work much longer.**

Just a few months after starting at his new position, he received an offer to return to his old job at his old salary.

24.

A.	Bikowski to turn the decided offer down.
B.	Bikowski to offer the decided turn down.
C.	**Bikowski decided to turn the offer down.**
D.	Bikowski decided the turn to offer down.

Why? Because, he says, he finds that his new workplace is much less stressful than the old one. "We've been able to get by on what I've been earning at Strathmore (his new

25. employer),

A.	but
B.	**and**
C.	yet
D.	however

I know I'll be getting the usual raises as time goes on," he explains.

26. "And it's better

A.	**for**
B.	at
C.	from
D.	among

my family in ways that money can't pay for.

I am more relaxed when I get home; I have better quality time with my kids.

27.

A.	Thats worth more than money to me
B.	That's worth more than money to me:
C.	That's worth more than money to me,"
D.	**That's worth more than money to me."**

28.

A.	It
B.	Their
C.	**He**
D.	Your

represents a growing sentiment among the country's workforce.

More and more workers are looking for less stressful lives, sociologists say.

Work conditions are often given equal weight with wages and benefits when job

decisions are made.

PART – 2 (USE OF ENGLISH TEST)

Directions: A word or phrase is missing in each of the sentences below. Four answer choices (A), (B), (C), or (D) are given below each sentence. Select the best answer to complete the sentence.

29. While living in Massachusetts, he invented the game. _____ is a proper noun in this sentence.

A.	While
B.	Living
C.	**Massachusetts**
D.	Game

30. A baby learns the meaning of words as_____ are spoken by others and later uses _____in sentences.

A.	their / they
B.	**they / them**
C.	they/ themselves
D.	it/ them

31. Pass me the _____ cups.

A. plastic big blue
B. plastic blue big
C. big plastic blue
D. **big blue plastic**

32. Does the statement "to be or not to be" contain an action verb?

A. Yes, 'to be' is an action verb.
B. **No, because there is no physical or mental action in the phrase 'to be or not to be'.**
C. No, because there are no verbs in the phrase 'to be or not to be'.
D. No, because 'to be or not to be' is not a complete sentence.

33. Which adverb would you use to complete the sentence:
The rain fell _____ against the windowpane.

A. awkwardly
B. wickedly
C. **heavily**
D. smugly

34. The police spoke separately to _____ suspect.

A. any
B. some
C. every
D. **each**

35. We moved the bookcase ___ the bedroom ___ the living room.

A. **From, to**
B. In, of
C. On, in
D. From, in

36. _____ Lenny was watching the planes his wife was reading in the car.

A. Although
B. **While**
C. Because
D. So

37. Only a man with plenty of money can buy a car _____

A. of roughness and subservience
B. of crudeness and inelegance
C. of offensiveness and rudeness
D. **of such beauty and power**

38. When a source uses technical language,

A. the reporter should expect readers to look it up on Wikipedia.
B. the reporter should reproduce it exactly as the source stated it.
C. **the reporter should translate it into plain English.**
D. the reporter should try to guess its meaning.

39. _____ until he eats his vegetables.

A. Marcus can't have no desert
B. **Marcus can't have any desert**
C. Marcus can't have neither desert
D. Marcus can't have none desert

40. One of the most intelligent students who _____ full marks _____ John.

A. Scored / was
B. Scored / had
C. Scores / are
D. **Score / is**

41. Select the correctly punctuated sentence.

A. The train stopped at Chennai, Hyderabad, Nagpur, Bhopal, and Agra before it reached New-Delhi.
B. The train stopped at Chennai Hyderabad, Nagpur, Bhopal, and Agra before it reached New Delhi
C. **The train stopped at Chennai, Hyderabad, Nagpur, Bhopal and Agra before it reached New Delhi.**
D. The train stopped at Chennai, and Hyderabad, and Nagpur, and Bhopal, and Agra before it reached New Delhi.

42. In the Middle Ages, the ____ of the great cathedrals did not enter into the architects' plans; almost invariably, a cathedral was positioned haphazardly in ____ surroundings.

A. **situation – incongruous**
B. location - apt
C. durability - convenient
D. majesty - grandiose

Appendix: H

ENGLISH – I (FUNCTIONAL ENGLISH)
(TEST OF READING COMPREHENSION AND USE OF ENGLISH)
POST-TEST
(FALL 2018 – 2019)

Directions

In the Reading and Use of English test, you will read a variety of texts and answer 42 questions found in varied texts.
Within each text are boxes that contain four possible ways to complete a sentence.
Choose the word or words in each box that correctly complete each sentence.

Here are two example questions:

1. The idea that rocks last forever and that rocks [(A) still / (B) very / (C) quite / (D) never] change is not completely true. If you have ever stood next to a rushing river, you

2.

(A) saw
(B) seen
(C) are seeing
(D) may have seen

the water hammering away at the rocks.

The correct answer to **Example 1** is (D), "never." The correct answer to **Example 2** is (D), "may have seen.

PART – 1 (READING TEST)

Questions 1 – 3 refer to the following email.

Hi there Isabella,

Thanks for your email. I would love to meet for dinner sometime. I know you said

1. you'd like to meet during the week,

A. although
B. because
C. and
D. but

the problem is,

I usually go to the volleyball club on Tuesdays, and on Thursdays,

2. I

A. has
B. have
C. shall
D. had had

my music lesson, So on Mondays and Wednesdays, I am busy

doing my homework. So, if it is okay with you, can we meet up at a weekend instead?

I am really looking forward to seeing you again.

3.

A. I've got so many
B. I've got such many
C. I've got such a lot
D. I've got so much

of things to tell you!

Bye for now,

Lucy.

Questions 4 – 6 refer to the following announcement.

I am pleased to announce the employee of the year. Although there were many outstanding candidates, Mr Ridge was our final choice.

4. Mr Ridge's unique and brilliant ideas

A. contribute
B. shall contribute
C. has contributed
D. have contributed

greatly to our company.

5. We are giving this award to Mr Ridge to show our

A. monopoly
B. monophony
C. monophagy
D. monopsony

for what he has been doing for our company.

6.

A. Mr Ridge seriously takes customers' satisfaction always,
B. Mr Ridge takes customers' satisfaction always seriously,
C. Mr Ridge always takes customers' satisfaction seriously,
D. Mr Ridge takes always seriously customers' satisfaction,

and he has set an excellent example for all our employees.

The award banquet will be held at Diamond River, so come and congratulate him.

Questions 7 – 10 refer to the following announcement.

AERONAUTIC SYSTEMS, INC.,

7.

A. That
B. The
C. Some
D. Each

Berlin-based company also known as AeroSys, has made an agreement

8. with three of the world's

A. diminutive
B. miniature
C. major
D. inconsiderable

international airlines to provide a satellite

system for voice and data communications, a company spokesperson announced last week.

This agreement is a major leap forward for the company, which began operations

9. just three years ago and has

A. now
B. ultimately
C. conclusively
D. henceforth

gained the business of three of the airline industry's largest companies.

The agreement with Skyways, Air One, and Travelers International will provide

10.

A. altercations
B. controversies
C. disagreements
D. correspondences

between aircraft and on-ground systems for operational control and air-traffic services. The agreement was signed last month, and AeroSys will begin providing services to the airlines before the end of the year.

Questions 11 – 16 refer to the following magazine article.

11.

A. Lake Victoria located in central Africa
B. Lake Victoria located in central Africa ....
C. Lake Victoria, located in central Africa,
D. Lake Victoria! located in central Africa.

is a very unusual lake.

12. Not only it is one of the largest

A. lacks
B. lakes
C. larks
D. leaks

in the world; it is also one of the youngest.

Estimated to be about 15,000 years old, it is a relative baby compared with Earth's other very large lakes, which can be more than two million years old.

13. | A. Yet
B. Often
C. Seldom
D. Sometimes | judging by the variety of life in it, Lake Victoria resembles a much older body of water.

14. Usually, lakes need a much longer time to become populated | A. at a diverse array to
B. a diverse array of
C. on a diverse array into
D. from a diverse array in by | life forms.
It is common for new lakes to contain only a small number of species.

15. Lake Victoria, however, is | A. most notably cichlids packed with colorful fish.
B. cichlids most notably packed with colorful fish.
C. with most notably packed colorful cichlids fish.
D. packed with colorful fish, most notably, cichlids.

16. They are as many as 500 different | A. spices
B. species
C. spies
D. spears | of just this one type of fish.

Questions 17-23 refer to the following short story.

Joe stepped onto the airplane and was met by one of the cabin crew who showed him to his

17. seat. This was his first flight and | A. he wasn't feeling no more confident.
B. he wasn't feeling nothing confident.
C. he wasn't feeling quite confident.
D. he wasn't neither feeling nor confident.

18. His hands were trembling slightly and he was

A. breathing
B. breathless
C. deceased
D. sterile

deeply.

He walked along the aisle of the plane and found his seat.

19. Joe

A. spends
B. shall spend
C. had spent
D. is spending

a lot of time on planning his holiday; given this was the first time he had been abroad.

20. Sitting next to

A. them
B. him
C. her
D. us

was an 8-year-old boy who also appeared to be quite nervous.

Joe knew he was quite good with children, so he decided to try to calm the boy.

21. After conversing with the boy for a few minutes, Joe produced

A. these
B. much
C. every
D. some

chocolate and gave it to him.

The youngster then became quite cheerful as he explained that he loved chocolate so much.

The man and the boy found that they got on well together as they chatted for the whole flight.

22. Joe

A. discovered
B. have discovered
C. will discover
D. discover

that they were on the same return flight the following

week, which pleased them both. When they disembarked at the terminal,

23. Joe

A. didn't believe about not a very good
B. didn't believe about what a very good
C. didn't believe neither about a very good
D. didn't believe no one about what a very good

flight he'd had.

The young boy agreed, saying that he was looking forward to catch up with Joe again on the return flight.

Questions 24 – 28 refer to the following report.

RADIO SIGNALS

24. The first radio signals were sent twenty years after

A. was invented the telephone.
B. telephone was the invented.
C. the telephone was invented.
D. invention was the telephone.

The first person to send such signals was the Italian Guglielmo Marconi.

His first radio transmissions were only sent about one mile, but Marconi realized that the technology had great potential. He approached the Italian government with his invention.

25. However, the Italian government turned it down,

(A) although
(B) so
(C) because
(D) additionally

Marconi moved to England to continue his experiments.

26.

A. In 1899,
B. On 1899,
C. Upon 1899,
D. Against 1899,

he opened his first radio factory and within two years, he had established a radio link between British and the USA.

27.

A. However: Marconi's 'wireless telegraph' only transmitted
B. However Marconis wireless telegraph only transmitted
C. However! Marconi's wireless telegraph only transmitted.
D. However, Marconi's 'wireless telegraph' only transmitted

signals in the form of Morse code or 'dots and dashes'.

These transmissions were useful for communication between ships but were nothing like

28. the radio broadcasts

A. they
B. we
C. it
D. he

hear today.

Voices were not heard over the radio until 1921.

PART – 2 (USE OF ENGLISH TEST)

Directions: A word or phrase is missing in each of the sentences below. Four answer choices (A), (B), (C), or (D) are given below each sentence. Select the best answer to complete the sentence.

29. Select the answer choice that identifies the noun in the sentence.
The Trojans' rash decision to accept the wooden horse led to their destruction.

A. Their
B. Led
C. Accept
D. Destruction

30. Choose the appropriate pronoun to complete the sentence.
Hello Henry, Kate, Peter. Help_____ to some food and I will be with you in a moment.

A. themselves
B. yourselves
C. yours
D. you

31. How many adjectives are there in this sentence?
Lauren has excellent managerial skills and is a superb listener.

A. 1
B. 2
C. 3
D. 4

32. Complete the sentence with the correct form of the verb.
Nick learned from his science class that water _____ at 100 degrees centigrade.

A. is boiling
B. boiling
C. boil
D. boils

33. Which sentence has the adverb in the correct position?

A. The team played brilliantly.
B. She played softly the piano.
C. I am going to carry carefully the eggs.
D. We went last year to Morocco on holiday.

34. Choose the appropriate determiner to complete the sentence.
According to the studies, dolphins, whales and_____ other sea creatures use highly sophisticated navigation systems.

A. any
B. a little
C. many
D. each

35. Choose the correct preposition to complete the sentence.
This degree appeals to students who are interested ___ working in the new fields and occupations created by digitization.

A. from
B. in
C. on
D. of

36. Complete the sentence using the correct coordinating conjunction.
Carol wanted to drive to Colorado, _____ Bill insisted that they fly.

A. or
B. and
C. but
D. nor

37. Complete the sentence using the correct phrase.
Christa left home at 4:00 a.m. _____ for a meeting.

A. she had to drive to Atlanta since
B. had she to drive to Atlanta since
C. to Atlanta since had she to drive
D. since she had to drive to Atlanta

38. Complete the sentence using the correct independent clause.
Although it was raining, _____.

A. Maria for a jog went at Civitan Park
B. Maria went for Civitan Park at a jog
C. Maria went for a jog at Civitan Park
D. Maria went at a jog for Civitan Park

39. Complete the sentence using the correct negatives.
_____to someone she did not trust.

A. Janna wouldn't give nothing
B. Janna wouldn't give anything
C. Janna wouldn't neither give nothing
D. Janna wouldn't give nobody nothing

40. Read the sentence to decide whether the verbs should be singular or plural.
The boss, as well as his colleagues, _____ been robbed by the robber.

A. has
B. have
C. will have
D. are

41. Select the correctly punctuated sentence.

A. The children's books were all left in the following places: Mrs Smith's room, Mr Powell's office and the caretaker's cupboard.
B. The children's books were all left in the following places; Mrs Smith's room, Mr Powell's office and the caretaker's cupboard.
C. The childrens books were all left in the following places: Mrs Smiths room, Mr Powells office and the caretakers cupboard.
D. The children's books were all left in the following places, Mrs Smith's room, Mr Powell's office and the caretaker's cupboard.

42. Complete the sentence using the correct grammatical item.
Part of the reason Chris wanted to apply for the job _____ that employees were given plenty of room to grow within the company.

A. he had recognized
B. realizing
C. was his recognition
D. was mainly

Appendix: I

FCE Listening Pre-Test
Fall 2018

Part 1

You will hear people talking in eight different situations. For questions 1-8, choose the best answer (A, B or C).

1. You hear part of an interview with a crime writer. - What does he say about his hometown?
   A. It was a good background for the writing, he does.
   B. He generally feels uncomfortable returning there.
   C. People there tend to treat him differently now.

2. You hear a careers adviser talking to a woman who has applied for two jobs. - What suggestion does he make?
   A. find out more information about the first job
   B. withdraw the application for the second job
   C. ask the first company to be flexible

3. You hear a girl talking about a psychology textbook. - What does she say about it?
   A. It is not very interesting.
   B. It is good value for money.
   C. It is going to come in useful.

4. You hear the mother of a famous skier talking about a competition. - She says that her daughter _____
   A. expected to win the competition.
   B. didn't tell her mother she was entering it.
   C. gave up her job to practice for it.

5. You hear a film director talking about the actors she works with. - How does she feel about the actors in her current film?
   A. She sympathizes with their problems.
   B. She admires the sacrifices they make.
   C. She approves of their attitudes.

6. You hear a man talking about his first job interview. - How did he feel during the interview?
   A. **confident that he was right for the job**
   B. embarrassed because of the long silences
   C. relieved he could answer most of the questions

7. You hear two friends talking about a popular television programme. - What is the programme about?
   A. Retirement
   B. Cookery
   C. Teaching

8. You hear two people talking about a place they have visited. - What kind of place is it?
   A. a museum
   B. a library
   C. a shop

Part 2

You will hear a girl called Laura Beamer talking about being a volunteer at a summer school for 7–14 year old, which is called the Children's University. For questions 9–18, complete the sentences with a word or short phrase.

Volunteer at the Children's University

- The Children's University was started by a **(9)** _____ five years ago. **(local charity, charity)**

- The focus of this year's Children's University was the topic of **(10)** _____. **(industry)**
- Laura's partner was Mark, who works as a **(11)** _____ when he is not volunteering. **(lawyer)**

- Laura's group of volunteers gave some workshops about how **(12)** _____ is made. **(chocolate)**

- Laura says the children had a booklet called a **(13)** '_____' which was stamped to show their progress. **(passport)**

- Laura and the children went to the graduation ceremony in the **(14)** _____ hall of the local University. **(concert)**
- Some children received a **(15)** _____ for attending a lot of workshops. **(gold medal)**

- Laura said the scheme allowed her to develop skills such as **(16)** _____. **(problem-solving, solving problems)**

- Laura will most probably become a **(17)** _____ in the future. **(social worker)**

- Laura says she can give people in her audience something called an **(18)** _____ for volunteers. **(information pack)**

PART 3

You will hear five different people talking about why they have applied to go on a space journey to the planet Mars. For questions, 19–23, choose from the list (A–H) each speaker's reason for applying to go on the trip to Mars. Use the letters only once. There are three extra letters, which you do not need to use.

A. to discover new natural resources
B. to learn new skills
C. to take advantage of a rare opportunity
D. to be involved in advancing scientific knowledge
E. to become a famous personality
F. to face an extreme challenge
G. to provide others with inspiration
H. to be among the first to have the experience

19. Speaker – 1 _____
20. Speaker – 2 _____
21. Speaker – 3 _____
22. Speaker – 4 _____
23. Speaker – 5 _____

Answers:
19. D
20. H
21. F
22. G
23. C
PART 4

You will hear an interview with a man called Mark Phillips, who is talking about his work as a potter. For questions 24–30, choose the best answer (A, B or C).

24. Why did pottery not appeal to Mark when he was younger?

A. **He was put off by his mother's achievements.**
B. His many attempts always seemed to end in failure.
C. He was too busy playing in a band to take an interest.

25. Why did Mark decide to take up pottery?

A. His business wasn't as successful as he wanted it to be.
B. He saw how enjoyable pottery classes could be.
C. **He realized he needed to be more creative.**

26. What did Mark say about being a student again?

A. He missed having responsibility.
B. He was made to feel that he was different.
C. **He felt physically challenged.**

27. Mark describes the pots he makes as _____

A. reflecting shapes in nature.
B. **objects that are to be used.**
C. similar to his mother's in design.

28. What has surprised Mark about the pottery community?

A. **how supportive they have been to a newcomer**
B. how willing other potters are to share ideas
C. how content they are with their lifestyle

29. What advice from his mother has Mark valued most?

A. to concentrate all his efforts on perfecting pottery
B. to remember the skill of potters from the past
C. to be realistic about the money-making possibilities of pottery

30. In the future, Mark says he would like to be able to _____.

A. develop some new colors for his pots.
B. exhibit his pots in a gallery.
C. **explore different techniques for making pots**

Appendix: J

FCE Listening Test 2
Fall 2018

Part 1

You will hear people talking in eight different situations. For questions 1-8, choose the best answer (A, B or C).

9. You hear a woman talking on her mobile phone about a missing piece of furniture. How does she feel?

A. irritated with the removals company
B. unsure what's happened
C. anxious to find it quickly

10. You hear two students talking about their current course topic. What do they agree about?

A. how boring it is.
B. how difficult it is.
C. how relevant it is.

11. You hear two business people talking about a contract. How does the man feel now?

A. frustrated because of the time wasted
B. surprised about their cancellation of the contract
C. sympathetic towards the other company's problems

12. You hear an artist telling a friend about an art prize he has just won. What is he doing?

A. expressing surprise
B. admitting that he's excited
C. explaining why he thinks he was chosen

13. You overhear a women talking to a friend on her mobile phone. Why is she telephoning?

A. to explain a delay
B. to change some plans
C. to make an arrangement

14. You hear a guitarist talking about his profession. What is the purpose of his talk?

A. to warn about the challenges of becoming a musician
B. to give step-by-step guidance on setting up a band
C. to emphasize the importance of having loyal fans

15. You hear a woman talking to a sales assistant. Why can't she have a refund for her trainers?

A. The receipt is wrong.
B. She is not in the right shop.
C. The trainers are no longer new.

16. You hear a woman talking about a radio chat show. What does she like about the show?

A. The presenter makes her laugh.
B. Guests reveal quite a lot about themselves.
C. Information is given in an interesting way.

Part 2

You will hear a photographer called Ian Gerrard talking about his career. For questions 9-18,
complete the sentences with a word or short phrase.

Ian Gerrard – Photographer

- The subject that Ian studied at university was **(9)** _____ **(geography)**
- Ian did a presentation on **(10)** _____ as part of his final year. **(street markets, markets)**
- Ian worked for a **(11)** _____ in the USA for a year after leaving university. **(magazine)**
- When he travelled around the USA, Ian chose **(12)** _____ as the theme for his photographs. **(horses)**
- Ian says that **(13)** _____ is the season when he takes the best photographs. **(winter)**
- When Ian came back to Britain, he travelled around by **(14)** _____ taking photographs.**(motorbike, motor bike)**
- Ian says he was surprised by how few photographers specialize in shots of **(15)** _____ communities. **(fishing)**

- Ian's book will be available in bookshops in **(16)** _____ next year. **(March)**

- The title of Ian's book is (17) _____ **(Images).**

- Ian has chosen (18) _____ as the theme of his next tour. **(farming)**

PART 3

You will hear five short extracts in which people are talking about the benefits of learning another language. For questions **19-23,** choose which benefit (A-H) each speaker has experienced. Use the letters only once. There are three extra letters, which you do not need to use.

I. It has boosted my intellectual abilities
J. It has improved my Chances in education.
K. It has made me sensitive to global issues.
L. It has allowed me to gain faster promotion.
M. It has made getting around in other countries easier.
N. It has allowed me to help other people.
O. It has advanced my awareness of the way language works.
P. It has helped me make friends.

19. Speaker – 1 _____
20. Speaker – 2 _____
21. Speaker – 3 _____
22. Speaker – 4 _____
23. Speaker – 5 _____

Answers:

19. E
20. H
21. B
22. G
23. D

PART 4

You will hear an interview with a woman called Patricia Jones, who is a naturalist. For questions
24-30, choose the best answer (A, B or C).

24. Looking back at her work, Patricia feels _____
- **A.** surprised that her projects still attract volunteers.
- **B. proud of the wide influence she's had.**
- C. pleased by how she's regarded in Africa.

25. How does Patricia spend her time nowadays?
- **A. persuading people to alter their behavior**
- B. advising governments on conservation
- C. studying wildlife in its natural habitat

26. How does Patricia feel about zoos?
- A. They all ought to be closed down.
- B. They should have an educational purpose.
- **C. They still have a role to play in conservation.**

27. In her new book, Patricia hopes to give _____
- **A. encouragement to young scientists.**
- B. advice on helping endangered animals.
- C. guidance to other environmentalists.

28. Patricia believes that children should spend time in the natural world because _____
- A. it is the only way to find out about it.
- **B. it is essential for their development.**
- C. it is a chance to change their view of animals.

29. The organization called In Touch encourages young people to _____
- A. be tolerant of each other.
- **B. actively work for change.**
- C. talk about their problems.

30. What does Patricia particularly want to do next?
- A. to help girls who want to be scientists
- B. to get scientists to be more responsible
- **C. to change people's attitudes to science**

Appendix: K

Listening Test 3
Fall 2018

Part 1
You will hear people talking in eight different situations. For questions 1-8, choose the best answer (A, B or C).

1. You hear a man talking about how his business became successful. Where did his additional funding come from?
   A. the local bank
   B. a family friend
   C. his own savings

2. You hear a woman talking about a journey. How did she travel?
   A. by boat
   B. by train
   C. by coach

3. You overhear a man talking to his wife on the phone. What is he talking about?
   A. buying a car
   B. booking a holiday
   C. moving abroad

4. You hear two students talking about their course. What does the woman think about the course?
   A. It is quite difficult.
   B. It is worth doing.
   C. It is becoming more interesting.

5. You hear a woman talking about roller derby, a hobby which involves speed racing on skates. What is she doing?
   A. explaining what made her decide to take it up
   B. appreciating her friends' attitude to the sport
   C. describing how she feels when she's taking part

6. **You hear part of a radio programme. What is the woman talking about?**
   A. a new shop
   B. a new exhibition
   C. a new leisure centre

7. You overhear two students discussing a reading project they did with young children. What do they agree about it?

   A. The venue was perfect.
   B. The material was well received.
   C. The number of participants was surprising.

8. You hear an actor talking about the character she plays in a TV drama series. How does she feel about the character?
   A. She is envious of her life-style.
   B. She sympathizes with her current problems.
   C. She admires her intelligence.

Part 2

You will hear a woman called Gina Purvis, who is a pilot for a commercial airline, talking about her job. For questions, 9-18, complete the sentences with a word or short phrase.

- Gina disliked her first job as a **(9)** _____ **(teacher)**

- The airline that Gina works for insists on at least **(10)** _____ hours of flying experience from their captains. **(3000, 3,000, three thousand)**

- Gina says that because her husband is a **(11)** _____ he is tolerant of her job. **(travel writer)**

- The 'Notices to Pilots' provides information about any **(12)** _____ that are experiencing problems. **(airports)**

- Gina says that if she has extra **(13)** _____ she will need more fuel for her flight. **(passengers)**

- Gina explains that many pilots she works with did a degree in **(14)** _____ at university. **(science)**

- Gina says that all the **(15)** _____ must be within reach of the two pilots in the cockpit. **(controls)**

- The pilots look at a **(16)** _____ to check if anyon~ is standing at the cockpit entrance. **(monitor)**

- Gina gets information from a **(17)** _____ about any small problems on the plane. **(report)**

- Gina says what she really appreciates is a **(18)** _____ flight. **(night)**

PART 3

You will hear five short extracts in which students are talking about a trip they have taken.
For questions, **19-23**, choose from the list (A-H) what each student says about their trip.
Use the letters only once. There are three extra letters, which you do not need to use.

Q. Someone I met while he was there coming to visit me soon.
R. I plan to do things a little differently on my next visit.
S. I learnt more about some friends while I was with them.
T. I enjoyed myself thanks to one person's efforts.
U. My experience was different when I returned to a place.
V. Some people there offered to take me on a tour.
W. I did not take to the city at first.
X. I went back to a place I had never expected to see again.

19. Speaker – 1 _____
20. Speaker – 2 _____
21. Speaker – 3 _____
22. Speaker – 4 _____
23. Speaker – 5 _____

Answers:

19. D
20. B
21. G
22. C
23. E

PART 4

You will hear an interview with a musician called Jarrold Harding, who is talking about his career. For questions, 24-30, choose the best answer (A, B or C).

24. How did Jarrold's interest in music begin?

A. He went to one of his father's concerts.
B. He was given lessons by an orchestra violinist.
C. He watched musicians practicing.

25. Jarrold played in his first concert_____

A. together with his mother.
B. **when he was away on holiday with his parents.**
C. to make his father happy.

26. What impressed Jarrold about his mother's musical ability?

A. She never made any mistakes.
B. **She could memorize music very quickly.**
C. She could adapt piano music for his violin.

27. What does Jarrold say about his interest in conducting?

A. **It began at an early age.**
B. It was encouraged by his father.
C. It increased when he heard famous musicians.

28. How did Jarrold feel when he was at college?

A. relieved to find he didn't have to work too hard
B. pleased at how well he played compared to everyone else
C. glad he could cope with things that some students struggled with

29. What did Jarrold do after leaving college?

A. He tried to devote all his time to conducting.
B. He was introduced to a good conducting teacher.
C. He had lessons with a famous conductor.

30. Jarrold thinks that being both a violinist and a conductor ____

A. has given him opportunities to develop as a musician.
B. has allowed him more freedom to play where he wants.
C. has earned him the respect of other professionals.

Appendix: L

Listening Test
Post Test
Fall 2018-19

PART 1

You will hear people talking in eight different situations. For questions 1–8, choose the best answer (A, B or C).

1. You hear two people discussing a sports event.
   How did the female speaker feel about the event?
   A. Apologetic.
   B. Encouraged.
   C. Disappointed.

2. You hear someone describing a film.
   What is the speaker's objective?
   A. To explain something.
   B To convince people
   C. To persuade people.

3. You hear a speaker describe a sports activity.
   What benefit does she get from doing this activity?

   A. It improves her relationships with people.
   B. It makes her more flexible.
   C. It makes her fitter.

4. You hear a woman speaking about her company.
   What is her objective?

   A. To explain how good her staff are.
   B. To explain how they use technology.
   C. To explain how well they understand the market.

5. You hear a woman describing her childhood memories.
   Why is she doing that?

   A. To explain the good and bad sides to being a pilot.
   B. To convince other people to become pilots.

C. **To explain why she chose her job.**

6. You hear a teacher describing her job.
   What is her main message?

   A. She would prefer less interference.
   B. Her job is too difficult.
   C. Her students are difficult to handle.

7. You hear someone describing their new job.
   What is the speaker doing?

   A. Speaking to lots of people.
   B. Speaking to her boss.
   C. Speaking to a friend.

8. You hear a discussion on the radio about some developments to local transport.
   How does the caller feel?

   A. He is against the development.
   B. He is in two minds about how he feels.
   C. He strongly supports the development.

PART 2

You are given a piece of audio and some text with spaces. Use the information from the audio, for questions 9–18, to complete the sentences with a word or short phrase.

- A **(9)** _____ of the Netherlands was once legally part of Scotland. **(portion)**

- The Netherlands was chosen because it was considered to be a **(10)** _____ country. **(neutral)**

- While this land was under Scottish administration, it had Scottish **(11)** _____ Officers. **(Police)**

- This land was finally returned to the Netherlands after the trial and a subsequent **(12)** _____. **(appeal)**

- Two Scottish islands are famous for having the shortest regularly **(13)** _____ commercial flight between them. **(scheduled)**

- The distance between these two islands is about the same as the **(14)** _____ of the airport of Edinburgh. **(runway)**

- Edinburgh of the Seven Seas is said to be the most remote **(15)** _____ place on earth. **(inhibited)**

- The inhabitants of St Helena can only get off the island by **(16)** _____ a ride on a fishing boat. **(hitching)**

- Victoria Island in Canada is famous for having the most **(17)** _____island in the world. **(remote)**

- It is impossible to access Point Roberts from the US without **(18)** _____Canada. **(crossing into)**

The Herald

PART 3

You will hear five short extracts in which people are talking about cycling. For questions 19–23, choose from the list (A–H) what each speaker felt. Use the letters only once. There are three extra letters, which you do not need to use.

Y. I was glad I took adequate precautions.

Z. I feel let down because I did not get the support I should have got.

AA. I have a lot to learn about this event.

BB. I was disappointed, though I had done everything I could.

CC. My equipment breaking down robbed me of the success I had worked for.

DD. I lost because I was given poor advice.

EE. I underestimated how demanding the event could be.

FF. My fellow competitors behaved very badly.

19. Speaker – 1 _____
20. Speaker – 2 _____
21. Speaker – 3 _____
22. Speaker – 4 _____

23. Speaker – 5 _____

Answers:

19. D

20. G

21. A

22. B

23. E

PART 4

You are given a piece of audio and seven questions, which correspond to the audio.

Each given question has three options A, B and C. Choose the best option for each question.

24. The original inspiration for the nature of the house was given by _____

A. the architect.

B. **the client.**

C. a magazine.

25. The architect decides _____

A. **where to position all the elements the client wants.**

B. how high the building needs to be.

C. where to position the garden.

26. The architect mentions locating the kitchen so that _____

A. it gets sunlight throughout the day.

B. it gets sunlight in the evening.

C. it get sunlight in the morning.

27. The courtyard was designed to _____

A. protect the inhabitants from the wind.

B. give the inhabitants uninterrupted views of the ocean.

C. allow the inhabitants easy access to the pool.

28. The water used in the design _____

A. has important functions other than being a place to spend time in.

B. is meant for aesthetic reasons only.

C. is meant only for the inhabitants to use as a pool.

29. The architect defines the concept and then _____.

A. prefers to do the project himself.

B. **passes the detail work to his staff.**

C. employs another firm to define the details.

30. How does the architect feel about the project?

A. It was hard work but worth it.

B. The cost was high but justified.

C. He is proud of what has been achieved.