Policy Research Journal
ISSN (E): 3006-7030 ISSN (P) : 3006-7022 Volume 3, Issue 3, 2025

MULTIMODAL REFERENCING IN THE TRADITIONAL CLASSROOM: REFERENTIAL TEACHING PRACTICES WITH TEXT ANNOTATION TOOLS

Dr Muhammad Habib Qazi[*1], Tahira Munir[2], Dr Muhammad Saqib Zaigham[3], Irfana Kunwar[4]

[*1]*Associate Professor, Department of English, Faculty of Languages & Literature, University of Central Punjab, Lahore, Pakistan*
[2]*Lecturer, English Language Centre, Faculty of Languages & Literature, University of Central Punjab*
[3]*Assistant Professor, Department of English, Capital University of Science and Technology, Islamabad, Pakistan*
[4]*Lecturer, English Language Centre, Faculty of Languages & Literature, University of Central Punjab, Lahore, Pakistan*

[*1]dir.elc@ucp.edu.pk

DOI: https://doi.org/10.5281/zenodo.15001978

Keywords
Multimodal (Inter)action Analysis; text annotation tools; referential practice; learning engagement; ESL/EFL

Article History
Received on 03 February 2025
Accepted on 03 March 2025
Published on 10 March 2025

Corresponding Author: *

Abstract
This experimental mixed-method study, conducted over a series of 42 one-hour-long sessions, investigated the integration of text annotation tools as a referential practice. The study drew on Multimodal (Inter)action Analysis as a research framework and used purposive sampling methods to observe 16 students and conduct focus group interviews with 5 instructors. To ensure the robustness of the research findings, the study also conducted observations and interview-based survey questionnaires on another group of 100 participants. The results of the study revealed a positive impact of using annotation tools as a referential practice on student motivation, attention, and task comprehension. The study suggests that annotation tools facilitate an enhanced interactive and focused learning environment, which aligns with contemporary digital literacy demands. The research contributes to the understanding of technology-mediated learning, proposing a blended design approach for integrating digital tools in face-to-face instruction.

INTRODUCTION

The rise of online learning platforms in recent years has promoted the integration of digital tools in traditional classrooms to enhance learning. Correspondingly, various applications and AI tools, for example, Memorise, Chat GPT, and Babbel offer more interesting and advanced teaching techniques than the traditional face-to-face teaching methods (Al-Malah, 2020). Several studies have explored the impact and effectiveness of technology-mediated learning (Al- Zhu et al., 2022). Their findings suggest that the use of technology has helped learners achieve desired learning outcomes. Equally, annotation tools can support referential practices and improve the performance of learners and instructors alike (see Benitez et al., 2020). Studies on referential practice in technologically advanced learning environments have emphasised the importance of professional learning for teachers to effectively integrate technology, such as Google Classroom (Martin, 2021). However, the existing

studies lack an overview of how text annotation tools such as highlighters, markers, and sticky notes work in traditional educational contexts.

In the context of Pakistan, where this study was conducted among undergraduate university students, the exigency to use technology in the ESL classroom arose from students' growing interest in social and text annotation tools used in online teaching platforms during the preceding years of the COVID-19 pandemic. Another factor contributing to it was learners' preference for smart applications and tools for learning English. Hence, a new digital course pack for English language learning was introduced to the 1st-semester students in Spring 2023, facilitating audio-visual learning (O'Neill et al., 2021). However, the referential practice in online teaching instructions involving markers, erasers, highlighters, sticky notes, and on-screen whiteboards remained incomplete. Thus, this research focuses on using text annotation tools, which enhance student learning and engagement by improving instructional norms and extrinsic motivators (see Bertino & Staines, 2019). Also, it explores the use of annotation tools as a referential practice in face-to-face teaching, investigating their capacity to capture learners' attention and facilitate understanding. Furthermore, by adopting a dual perspective, the study considers the perceptions of both learners and teachers regarding the use of annotation tools in the ESL context. Specifically, by adopting a mixed-method approach, this study aims to (a) explore the effects of integrating text annotation tools as a referential practice in traditional classrooms on student engagement and comprehension and (b) analyse the alignment between teachers' and students' perceptions of annotation tools.

Literature

Use of Annotation Tools

The rapid growth of internet technology has facilitated the use of multimedia pedagogical aids for instruction, learning and research in the field of education. They allow practitioners to access vast amounts of information, which they can use for educational purposes (Khaja et al., 2008). One of these digital teaching aids is annotation tools, which encompass a variety of digital instruments such as highlighters, markers, sticky notes, and magnifiers. Novak et al. (2021, p. 40) differentiate between text annotation tools and social annotation tools, emphasising that social ones facilitate collaborative online learning, whereas text annotation tools (the focus of the current study) assist in highlighting and marking the text. These highlighting and marking tools are considered essential for enhancing learners' learning experience and facilitating instructional strategies in the virtual learning environment. A study on Perusall, a social annotation platform, confirmed that these tools improve pre-class engagement and English language proficiency (Cui & Wang, 2023). Integrating selected face-to-face and online approaches and technologies in blended learning models enriches the learning experience with traditional methods and online education materials and tools (Siraj & Maskari, 2019).

Research studies have revealed the potential of annotations to enhance learning when combined with new technological affordances, such as social collaboration and online databases (Bjorn et al., 2022). Many researchers examined the effect of annotation tools on different fields of study, including science, technology, engineering, mathematics, humanities, and language learning (see Weingärtner et al., 2022). The findings suggest that they can facilitate better communication, redefine authority, and improve students' learning experiences. Similarly, various social annotation software applications, such as HyLighter, Diigo, and SpreadCrumbs, have been studied to evaluate their impact on reading comprehension and critical thinking skills in higher education. Novak et al.'s (2021) study synchronises the findings of all the comparative, experimental, and qualitative research studies, concluding that all existing literature supports a significant improvement and impact on the students due to social annotation. It is important to note that text annotation tools incorporate the use of social annotation tools except for the ability to collaborate from remote places. The current research is aimed at exploring the impact of annotation tools in traditional classrooms with the social aspect intact, but the focus is more on sustaining the engagement and comprehension of learners who are accustomed to and more inclined towards digital platforms due to their habitual use of digital communication channels. Furthermore, Sun et al.'s (2022) systematic

review concludes that research studies on these tools show positive cognitive and affective outcomes. They recommend that future studies should focus on blended designs and customised technologies. Hence, there is a need for more comprehensive studies that examine the effectiveness of different types of annotation tools across diverse educational contexts, including their impact on student engagement and learning outcomes. Therefore, this study investigates using annotation tools in traditional classrooms using a digital course pack as a blended design. Since youth's interest and learning mode have moved on to digital tools, introducing the same digital aspect in a traditional setting may lead to enhanced learners' engagement, motivation and enhancement in the language learning processes; thus, this makes a compelling research case.

Referential Practice in Classroom Instruction

Referential practice in teaching involves the deliberate use of referential questions and self-referential information to enhance learning (Richards & Lockhart, 1994). Using referential questions during classroom teaching can significantly impact students' participation and written production (Kemaloglu-Er, 2020). They can be employed to provide learners guidelines on planning outlines for meaningful writing tasks in a proper language (ibid.). Additionally, the incorporation of self-referential information alleviates retrieval inhibition and enhances source memory, which highlights its potential to improve information processing and retention in educational contexts (Mao et al., 2017).

The research studies on technology-mediated learning have changed the limited scope of referential practice by aiding it with annotation and digital tools. Many studies have explored using technology, such as computers, digital technologies, and mobile applications, to mediate interactions between instructors and students (Bower, 2019). This use of technology in classroom instructions has been found to involve mediated learning behaviours triggered by referential questions, which guide dialogical exchanges and interactions between instructors and students (Hui-fang & Gillies, 2021). On the other hand, integrating technology into classroom instructions has been influenced by instructors' beliefs, social dynamics, institutional culture, and perceptions of effective technology use in classroom instructions (Ross et al., 2010). Though research on technologically-mediated learning is progressive, the strategies and best practices for integrating technology into classroom instruction still need to be fully explored. Technology-mediated education's psychological and affective domains are also worth exploring as they address the temporal aspects, challenges, and skills required for successful learning (Terras & Ramsay, 2014). The current study identifies a notable gap in the usage of these tools, specifying the functionalities of annotation systems within traditional education contexts. By employing qualitative observation, the study explores the effects of integrating annotation tools on students' understanding and instructors' perception of these tools. Hence, the contribution extends beyond theoretical understanding to the practical implications of annotation tools, which can potentially inform educators, policymakers, and researchers about the effective integration of such tools in traditional classroom instructions. Since digital and annotation tools are dynamically used in online platforms and on-site learning environments, this research is vital in the evolving landscape of technology-mediated learning. Rashidi, Sarfraz (2025) explore the significance of writing and publishing scientific papers in the social sciences, highlighting its importance in advancing scholarly communication, professional advancement, and networking. Furthermore, it examines how these practices contribute to securing scholarships, research grants, and international mobility, all of which play a critical role in fostering both career growth and the well-being of individuals.

Multimodal (Inter)action Analysis (MIA)

Various analytical approaches in multimodality are in practice to extract holistic perspectives in educational research studies. This mixed-method study employs the theoretical framework of MIA to explore how introducing annotation tools in traditional language classrooms impacts learning. The aim of MIA is to 'explore how a variety of semiotic resources are brought into and are constitutive of social interaction, identities and relations' (Jewitt et al., 2016, p. 132). Norris (2021)

states that any interaction is a social-mediated action segregated into three levels: the higher level, lower level, and frozen actions. The higher-level actions include large-scale activities and major modes of communication; the lower-level actions include various modes of communication which engineer together to form a complete meaning; and frozen actions are the material artefacts and objects that contribute to the meaning-making (Jewitt et al., 2016). Norris divides the method of preparing data into three phases: the first two include collecting and producing the data, and transcribing the data for all possible social-mediated actions falls in the third phase; in the fourth phase, the data is analysed, exploring the meaning of all actions that are formed with modal complexity and intensity (2021). This study also incorporates the same method for the analysis of the data.

Methodology & Data

Research Design

This educational research study, based on an experimental mixed-methods design (QUAL-Quan approach), explores the effects of text annotation tools within a face-to-face learning experience. Conducted at a private university, it contains a one-group observational study of 16 students, a focused group interview with 5 instructors, and a survey of 100 students. The study was initiated to divulge two research questions examining (a) whether using text annotation tools in a language classroom instruction affects student engagement and comprehension and (b) whether instructors' perceptions of text annotation tools align with students' perceptions.

Theoretical Foundation

The study anchors its methodological framework in MIA, developed by Norris (2004). MIA finds its roots in three theories: mediated discourse, social interaction studies, and social semiotics (Jewitt et al., 2016). In earlier educational research studies, multimodality has been used to evaluate the conversation and other modes of communication that contribute to understanding student behaviour and perception of learning methods (Oittinen, 2023). MIA was selected for its relevance to the central theme and credibility for being rooted in multimodality as an active area of research. A sampled group of students was observed with MIA using software for linguistic annotation, ELAN 6.7 (2023). The focus-group instructors' interview questions and student survey questions were based on the observations with MIA. The qualitative approach to observing students' multimodal responses ensured that the exploration was aligned with the first research question, i.e., the impact of annotation tools on student engagement and comprehension. To address the second research question regarding the alignment of instructors' perceptions with students' perceptions, recorded interviews were analysed thematically and then compared with the statistical findings of the student survey.

Participants and Sampling

All sampled purposively from the pool of a private university, we selected 16 undergraduate 1st-semester students of the BS program for observation, 5 instructors for focus group interviews, and 100 students for a survey questionnaire. The participants for observation were only familiar with social annotation tools in online learning platforms but had no encounter with text annotation tools in traditional classroom settings. Their language proficiency level corresponded to CEFR A2 according to the road map of the university's curriculum. In the second data set for focus-group interviews, the English language instructors had 5–10 years of experience and Master's qualifications (English, Applied Linguistics, and TESOL) who used annotation tools in their respective classes. Lastly, the participating learners for the survey had recently attended classes of these instructors for a period of one semester and had the same CEFR A2 level.

Procedure for Data Analysis

Observation Study

The sampled group of students were familiar with the teaching method and design of the book before applying the referential practice of annotation tools. It was necessary as the problem was not only comprehension of text but also instructions, as due to L1 hindrance, they often miscomprehended instructions, which negatively affected their engagement in learning. This involved multiple practice rounds of English language skills, including

reading, writing, listening, and speaking. It was ensured that the students were accustomed to the instructions so that it did not hinder their responses to annotation tools during the observation phase. Following are the MIA stages as prescribed by Norris (2021):

1. Data Collection: For students' observation, two English language instructors utilised annotation tools with the sampled students in 42 one-hour-long classroom sessions held thrice a week. This marked the participants' first encounter with annotation tools in a traditional learning environment. These tools in the digital course pack, Cambridge Unlock Series 2E – were used as the teaching resource for this study (O'Neill et al., 2021). Figure 1 below displays the functions these tools serve.

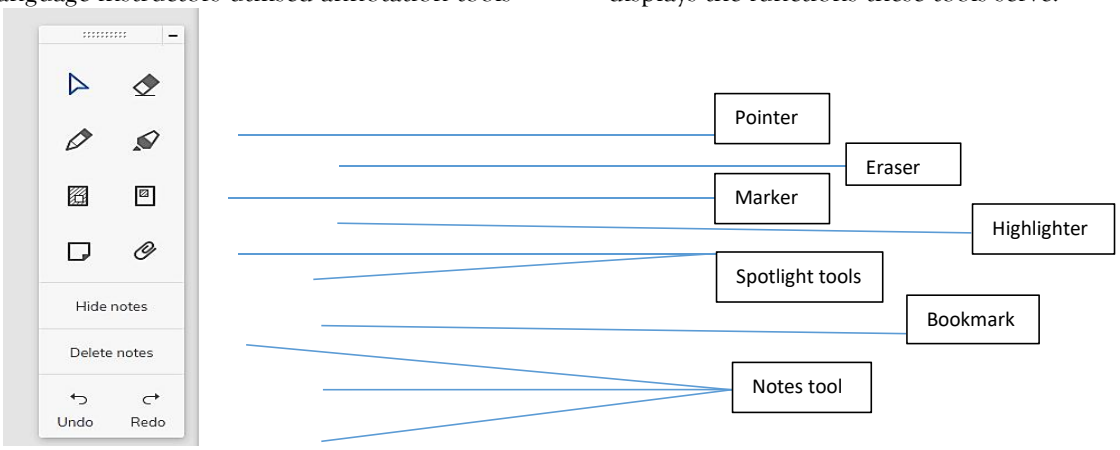

Figure 1. Annotation tools used for referential practice in the study.

One researcher conducted activities during observations, and the other recorded students' reactions as a non-participant observer. Three interaction artifacts (conversation, hand gestures, and facial expressions) were selected for observation.

2. Transcription: The data were collected as observation notes and recorded videos. After a thorough inspection, a video was selected and transcribed using the software ELAN 6.7, which facilitates the implementation of MIA (ELAN, 2023).

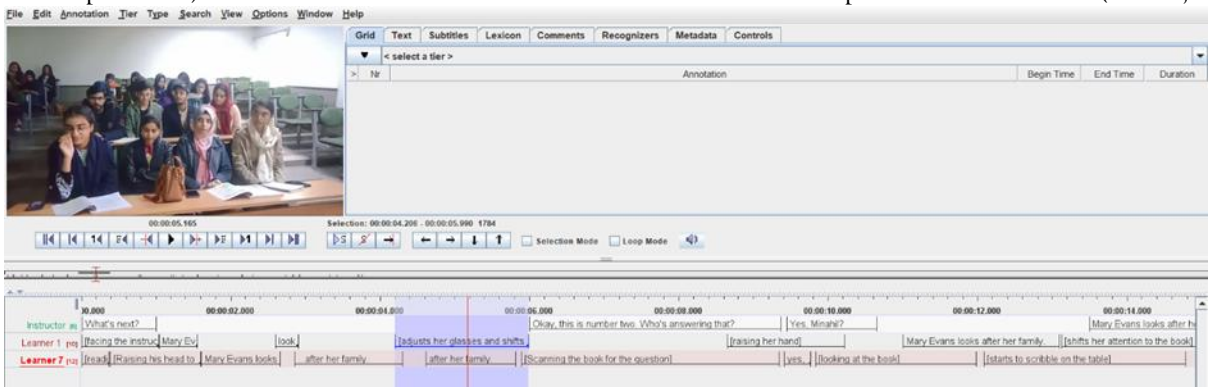

Figure 2. A screenshot of tiers-based annotation on ELAN

3. Analysis:

The data was analysed according to the MIA framework after repeated slow-motion views to capture each expression, gesture, and conversation. Verbal communication and the context of classroom activity addressed higher-level actions; hand gestures and facial expressions were selected for lower-level actions; and annotation tools and stationery were identified as frozen actions. The camera captured the video of the learners only as the focus of the study was on the response of the learners at the referential practice by the instructor.

Focus-Group Interviews

In focus group interviews, open-ended questions were posed to five instructors to collect their

perspectives on the usefulness of annotation tools in a traditional English language classroom (see Appendix 1). The questions were developed from the results of the MIA observations. We analysed these questions under the themes - of annotation tools as a referential practice in traditional classrooms and the effects of annotation tools on student engagement and comprehension based on the two research questions of the study. This qualitative data from the instructors complemented the student-focused approach, offering a multi-dimensional view of the impact and effectiveness of annotation tools in language learning.

Survey Study

For quantitative data, a fourteen-item Likert scale questionnaire was constructed, keeping in view the RQs and the findings of the observation and interview data. The first set of 7 items in the questionnaire addressed the factor of student engagement, and the other set of 7 more items addressed the factor of language comprehension (see Appendix 2). Sixteen students from the observation sample and 84 more students from the interviewees' classes were approached to complete the questionnaire. After the Shapiro-Wallis normality test proved the survey data non-normal, the non-parametric test, Spearman's Rank Correlation Coefficient, was applied to test the association between student engagement and comprehension. The survey data collection aimed to quantify and validate the observations of the interviewed instructors. Also, this triangulation approach enhanced the reliability and validity of the qualitative study (Cohen et al., 2017).

Findings

General Observations during the Data Collection Stage

MIA Higher-Level Actions

It is essential to understand the instructions and task first to produce the required results. Referring visually to the specific text while instructing aided the communication with clarity and increased students' comprehension. This resulted in their confidence, motivation, engagement, and comprehension. It was frequently observed that students participated more willingly by speaking even before the instructor finished her questions and by speaking instantly to avail themselves of the chance to participate instead of waiting for their turn (see Sample 1 and 2). This eagerness was coupled with sharing their arguments for a different answer that the answer key did not mention. It is evident in Figure 3b where the answer to exercise 4d is 7 in the answer key, but the students have given two different answers, i.e. 6 and 7. Also, their understanding of the tasks and comprehension skills for understanding the texts significantly improved as we identified better performance in feedback sessions. The students mostly gave correct answers in discussions and individual activities. In general, students actively participated in discussions and feedback in the beginning, but later, many remained silent, though attentively waiting for their turn due to the instructor's preference for individual feedback.

Following are two samples showing instances of students' interaction with the instructor:

Sample 1.

Conversation between the students and instructor while giving instructions:

Instructor Look at the highlighted question 1. What is it about?
Learners Sahara Desert (many mixed voices)
Instructor Take 2 minutes. Read questions 1 and 2 and pick options a, b, or c.
Learners (inaudible)
Instructor Will you complete sentences or pick options?
Learners Pick options. (altogether)

Sample 2.

Conversation between the students and instructor while taking feedback:

Instructor Ahmed, which is the remaining half of sentence number 1?
Learner Option d - at four o'clock in the morning. (Many speaking along with Ahmed)
Instructor Last row, answer = to number 2? =
Learners = C – The average amount of rain in a year is 70 mm. = (before the instructor finished the sentence, all speaking together)
Instructor Okay. Anyone, number 3?
Learners = Option a = (noisy response from several participants)

Instructor Raise your hand! Why not b? (...after students raised their hands) Yes, Aiza?
Learner Because option 'b' gives temperature, not time.
Instructor Good!

MIA Lower-Level and Frozen Actions

Observing hand gestures and facial expressions provided an all-inclusive analysis of students' reactions to different annotation tools. The study captured the participants' cognitive engagement and the emotional and interactive aspects of using these tools in a traditional classroom setting. The students' gaze during the use of the highlighter and marker and their intent observation of the text being highlighted indicated their interest in these tools (see Figure 3a).

Most students maintained eye contact when the instructor communicated and looked at the screen when the text was annotated. They frequently nodded while taking instructions; some slightly raised their eyebrows and had their eyes crinkling at the corners - showing an affirmative smile. None of the students looked at their mobile phones in the first four weeks, whereas by the remaining ten weeks of the observation study, a few students sometimes stole glances at their phones. Nevertheless, some students were distracted in the first week, flipping the textbook pages to trace where the instructor applied the annotation tools. When asked why they took their eyes off the projector screen, they said they were habitual in reading from their books. With the passage of time, they understood the process and looked at their books only when doing a task or giving feedback.

Many students smiled as their lips parted to show willingness to res
3b illustrates this instance of matching student responses with the answer key. The answers were first typed on the sticky notes while taking feedback and later compared with the answer key. It aroused interest as they liked their answers being written on the screen along with the answer key.

Some students gasped when the attachment tool with a paper clip icon was used for the first time to conduct a pre-reading activity on guessing the lesson topic and eliciting vocabulary from the images (see Figure 3c). Some students had their heads tilted slightly, indicating interest in understanding the activity. Further, the initial awe during applying the spotlight tool, followed by increased interactivity during speaking activities, indicates a positive impact on student engagement (see Figure 3d). After five weeks, the students had become well-acquainted with the referential style, so the excitement and surprise decreased, which also delimited the participation level.

The eagerness to participate was reflected in students' hand movements as they raised their hands many times while the instructor used annotation tools to take their feedback. Learners' physical reactions suggested that certain tools, like the sticky notes and spotlight tools, might have a more pronounced impact on them, eliciting surprise and heightened engagement.

Screenshots of annotation tools used as a referential practice in classroom activity

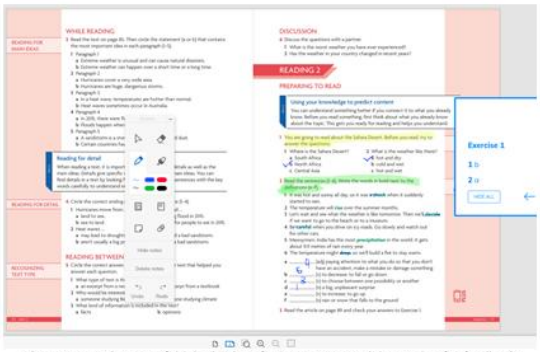

Figure 3a. Application of the highlighter for instruction, and the marker for feedback

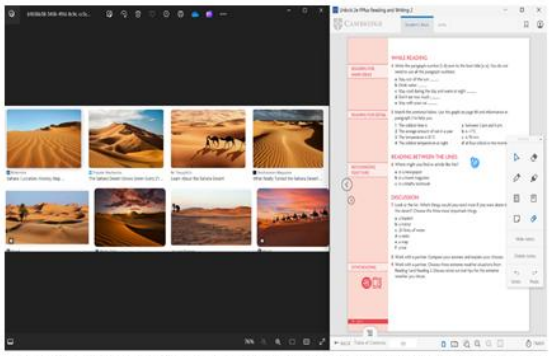

Figure 3c. Application of the paperclip for opening an attached screenshot from Google Images for the pre-reading activity

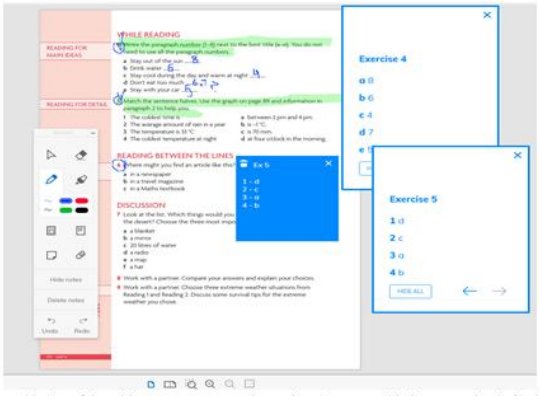

Figure 3b. Use of the sticky note to compare the students' answers with the answer key in feedback

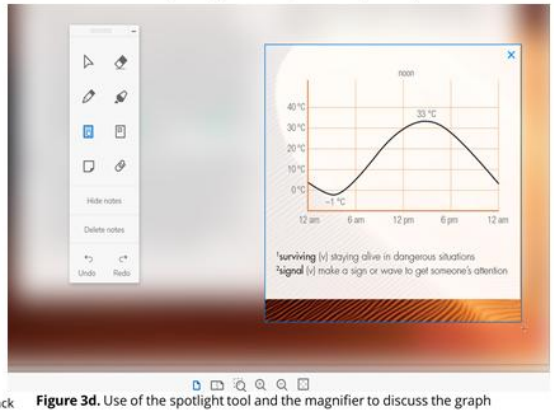

Figure 3d. Use of the spotlight tool and the magnifier to discuss the graph

Multimodal (Inter)action Analysis of a Sampled Recording

There are four participants in the selected 65 sec. conversation: Instructor, Learner 1, Learner 4, and Learner 7 (see Figure 4). It marks the 24th one-hour session in the 8th week. The teacher interacts with learners one by one. Two participants, Learner 1 and 7, contributed the most to this conversation. The camera focused on the students all along to capture their higher-level, lower-level, and frozen actions. The higher-level actions in this conversation included the main event of feedback on a comprehension exercise and the verbal communication between the participants, as these carried an intense modal density. The lower-level actions comprised the three learners' facial expressions and hand gestures. The course books, software used by the instructor and its annotation tools on the screen, the glasses worn by Learner 1, and the pen used by Learner 7 were identified as the frozen actions contributing to the success of this interaction. As stated above, both lower-level and frozen actions contributed to the modal complexity as these altogether give meaning to the higher-level actions more profoundly.

The conversation started with the instructor's question, 'What's next?'. The instructor repeated the question for the next sentence at 37 sec. in the clip. It shows that this was customary in the class activity to hint at the next answer. It is also worth noting how two learners participated in the conversation regardless of whether their instructor addressed them or not. However, the other students, like Learner 4, waited for the instructor to call them. It is evident in the beginning that when the instructor repeated her question without acknowledging the answers already given by Learners 1 and 7, the instructor was establishing a preference for individual participation. Also, the students were quite familiar with the process and how the instructor used annotation tools. For instance, when the instructor asked, 'Should I write it on the sticky note as well?' at 15 sec, and also, 'Should I write it?' at 1 min. 2 sec., all three learners gave her the letter 'A' and 'D' for annotating the text

on the screen, whereas when they were inquired about the answers, they gave phrases, 'looks after her family' at 2.8 sec. and 'climbed a mountain' at 43.6 sec. In the instructional context, the questions posed by the instructor serve as pivotal illustrations for investigating our first research question. The active participation of students in these moments indicates the tools' efficacy in enhancing comprehension through a more interactive and visually oriented approach to instruction.

Another mentionable element in the conversation was when the instructor took the name of Learner 4 wrong twice, yet the learner understood and responded to the call. Meanwhile, Learner 7 looked around to identify the person the instructor was referring to. Their attention during the entire conversation was pertinent, and it showed that they did their activity without getting distracted. Also, there was no use of mobile phones or chat with friends. All the learners were attentive and engaged in conversation only at minimum intervals; for example, Learner 7 engaged in an inaudible conversation for a few seconds. There was an element of eagerness on the part of Learners 1 and 7 as they spoke simultaneously while giving the instructor answers about both' Mary Evans' and 'the Singapore Women's Everest team'. Such interactions suggest that annotation tools are not merely additional aids but integral components that strengthen a deeper connection between students and the educational content. This engagement, evidenced by the students' responsive behaviour, shows the potential of these technologies to transform traditional learning environments into dynamic places of interactive learning. Therefore, incorporating annotation tools in educational settings appears to significantly enhance student comprehension. This is evidenced by the enriched interaction between the instructor and students.

It was incredible to see how the students shifted their gaze from the book to the instructor and to the screen. All three learners looked down at their books frequently. In the background for an altogether 'yes', the other learners (not recorded as participants) also contributed with their confirmation, but their gaze was mostly on their books. It was partly due to being conscious of the camera since it is not natural to be recorded with the camera hourly sessions. It seemed to the observer that they deliberately avoided looking straight at the projector screen as the camera was placed at the front. Even the act of adjusting the glasses repeatedly by Learner 1 could be interpreted as their consciousness regarding the camera. However, Learner 1 showed the most interest in the feedback session in the beginning, when the instructor asked the second time about question 2 at 6 sec., even though Learners 1 and 7 had already answered them, Learner 1 raised her hand to answer again.

Figure 4. Transcription and sample frames from 65 seconds long inter(action) between Instructor, Learner 1, Learner 4, and Learner 7 for MIA

Interviews of Instructors on Using Annotation Tools

Annotation tools as a referential practice in traditional classrooms

The five sampled interviewees used all the annotation tools in their referential practice. Interviewee 1 said that the most effective tools were the highlighting tool and sticky notes: 'When I highlighted something, it drew the students' attention and made the class more interesting by using colours for highlighting. So, it improved their comprehension.' They also found sticky notes useful because an instructor could write specific words for students, such as a question or a word for learners' better focus. The other interviewees also had the same experience, whereas interviewee 3 said:

I use that for circling a word that needs defining. I also used different colours to highlight different information. For example, for highlighting main ideas and others, even grammatical, [and] even to see grammatical patterns, I also used different, you can say, coloured pencils, and even at some point, I also used the razor.

Interviewees 1 and 2 mentioned the effective use of spotlight tools for foreshadowing and foregrounding the parts of the texts. They explained that instructors should use the blurring tool effectively. For example, they can arrange their tools on the screen and then use the shadow tools to hide the portion they want to show later in the practice exercise. Similarly, interviewee 3 shared his perspective, saying, 'It brings the text forward, and I saw the students' eyes; they lightened up.' Further, they found the highlighting tool effective, saying 'it's a bit of a jazzy thing that you're highlighting on the main screen. So, it really helps the student engagement.'

The instructors were asked if they faced any challenges while using the annotation tools as it was a newly introduced practice. Three interviewees reported minor technical malfunctions. Only interviewee 4 affirmed that the annotation tools were not adaptable for every instructor because some instructors might not like changing their traditional

teaching style. Interviewee 4 recommended it due to its growing potential in the digital age. Also, it prepares students for digital literacy in collaboration with critical thinking skills. The only participant who did not recommend had a neutral stance, pointing to inexperience in using these tools; they found them 'extra things' in their regular teaching method.

Effects of Annotation Tools on Student Engagement and Comprehension

The interviewees were asked to provide their perspectives on annotation tools' significant effect on student engagement during lessons and if these tools contributed to or hindered students' comprehension of the instructions. Interviewee 1 found these engaging because the colourful tools aroused interest and helped shift the students' focus towards learning. Interviewee 5 agreed that it helped the instructor in student engagement as the students, who usually asked their friends what instructions had been given for the task, became independent in comprehending the instructor's instructions. A participant explained: [The tools] affect student engagement during lessons, and they contribute to student comprehension of the instructions. I have found out that integrating annotation tools in classroom instruction, especially in reading classes, positively influences students' motivation and interaction with the instructor. I think integrating or using annotation is an active learning strategy that improves comprehension and retention of information. Besides this, I also found [while] using these annotation tools that it saves your time... even we can show attachment with our lessons if we have any.'

The last question for the interviewees was if they could share any instances where they observed a direct connection between using annotation tools and improved student learning outcomes. Interviewee 3 elaborated that in-class activities like listening and reading comprehension skills and highlighting specific words for definitions and meanings helped the students grasp the words and ideas in focus easily. Even in grammatical exercises, marking and highlighting the text clarified the concepts. These tools helped them familiarise themselves with the content and organisation of what they read.

Survey of Students on the Referential Practice of Annotation Tools

The two observers and 5 interviewed teachers concluded that annotation tools helped maintain the students' focus and interest and improved the students' comprehension skills. Hence, to study research question 2, i.e., alignment between teachers' perceptions of annotation tools and students' perceptions, a survey questionnaire was filled in by a hundred students. First, the Shapiro-Wilk test was applied to test the normality of the data. The null hypothesis stated that the data was normally distributed for the dependent variables, engagement and comprehension. Hence, the following non-parametric test, Spearman's rho Correlation, was applied to the data set to determine the students' insight into integrating annotation tools in classroom instructions. This test measured the correlation between dependent variables, engagement mean, and comprehension mean. Its null hypothesis stated that there was no correlation between engagement and comprehension.

Table 2. Spearman's rho correlation test result

			Engagement Mean	Comprehension Mean
Spearman's rho	Engagement Mean	Correlation Coefficient	1.000	.527**
		Sig. (2-tailed)	.	.000
		N	100	100
	Comprehension Mean	Correlation Coefficient	.527**	1.000
		Sig. (2-tailed)	.000	.
		N	100	100

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

Our analysis deduced a statistically significant correlation between student engagement and comprehension with a Sig. (2-tailed) value of 0.000. It is less than the p-value of 0.001, strongly

suggesting that the correlation surpasses mere chance, quite below the accepted significance mark of 0.05. Hence, the null hypothesis is rejected. A moderate positive correlation coefficient of 0.527 between Engagement Mean and Comprehension Mean reveals a substantive relationship, suggesting that increased engagement correlates with higher comprehension.

Discussion

During the General Observations stage, while data collection, both instructors and students needed a firm grasp of instructions and tasks to get the most out of the activities. Visual aids clarified communication and boosted students' understanding, confidence, and motivation, leading to better engagement. Apart from matching responses with the answer key, students were eager to offer alternative perspectives, leading the whole learning experience to richer discussions. There was a noticeable improvement in how well students understood the tasks and texts, especially during feedback sessions where they consistently gave correct answers and actively contributed to discussions and activities. Moreover, students' reactions to different tools were observed – from their attentive gazes and nods during instruction to the slight smiles indicating their willingness to participate. There were some distractions, like glancing at textbooks, initially; however, students gradually became proficient in annotation, focusing more on the tasks. Certain tools, like sticky notes and the spotlight feature, seemed to spark more interest and curiosity, leading to some surprised reactions. It is also noteworthy to mention that students' initial excitement gradually disappeared as they became more familiar with the approach over time, resulting in a slight dip in participation levels. Nonetheless, their hand movements and reactions during feedback sessions show their eagerness to participate and suggest that certain tools may significantly impact referential practice more.

The findings reveal that referential practices motivate students to participate actively. Learners 1 and 7 contribute eagerly to the discussion, such as feedback on comprehension exercises. This verbal communication practice is central to the modal density and higher-level actions. In contrast, lower-level actions, like facial expressions and hand gestures, also play a significant role. Frozen actions, such as using course books, software, glasses, and pens, disclose the students' focus. Moreover, the referential practice of the instructor and students' responses depict a preference for individual participation and familiarity with annotation tools. Learners' attentiveness and engagement throughout the conversation, without distractions like mobile phones or conversations with friends, denote that annotation tools enhance comprehension and foster deeper connections between students and educational content. However, as reflected in the analysis, students' frequent shifting of their gaze between books, instructor, and screen is possibly influenced by the awareness that they were being recorded.

The instructors' interviews on referential practice and the use of annotation tools provide a comprehensive outlook. Interviewees unanimously found annotation tools, particularly highlighting and sticky notes, effectively enhancing student engagement and comprehension. These tools drew attention, improved comprehension, and facilitated focus. Highlighting, sticky notes, spotlight, and blurring tools are useful for different purposes, such as emphasising main ideas, defining words, and foreshadowing parts of texts. They also utilised coloured pencils and the razor for further highlighting and marking. Even though a few interviewees reported some technical malfunctions, the use of annotation tools did not present any significant challenges. Hence, annotation tools significantly enhanced student engagement by making lessons more interesting and facilitating comprehension of instructions. Students became more independent in understanding instructions, increasing their motivation and facilitating more interaction with the instructor. Highlighting and marking helped students grasp words and ideas easily in activities like listening and reading comprehension and aided in clarifying concepts in grammatical exercises and familiarising students with content organisation.

The main findings from the student survey regarding the referential practice of annotation tools show a positive perception. To investigate the alignment between teachers' and students' perceptions of

annotation tools, we asked a hundred students conditioned with this teaching method to complete the survey. Their responses indicate that annotation tools helped maintain students' focus and interest, improving their comprehension skills. Spearman's rho correlation test revealed a statistically significant correlation between student engagement and comprehension, with a coefficient of 0.527. This indicates that the relationship between these variables is not due to chance. The moderate positive correlation suggests that increased engagement with annotation tools is associated with higher comprehension. This finding emphasises the potential benefits of enhancing engagement strategies to improve comprehension skills in educational settings.

Conclusion and Future Implications

In summary, the analysis from all three data sets triangulated the study's results. The MIA revealed that all three levels of multimodal interaction, higher, lower, and frozen, positively affect student engagement and comprehension in English language learning. The students are willing to participate in class activities and improve their comprehension of instructions and the text. The interviews discussed the practical aspect of using annotation tools in the traditional setting of classrooms by encouraging their application to facilitate blended learning and achieve the contemporary demands of the digital age, as encouraged in the recent studies on annotation tools (Sun et al., 2022). Lastly, the survey of students shows a highly significant correlation between enhancement in engagement and comprehension as an effect of annotation tools being integrated as a multimodal teaching practice. The study answers both research questions by exploring using text annotation tools in instruction and feedback to maintain the learners' focus and facilitate understanding. It suggests that both students and instructors support IT-integrated learning in traditional classrooms.

The findings of this study propose implications for a blended design in referential practices and invite further exploration into the combination of text annotation tools to meet the evolving needs of language learners in the digital age. In the context of higher education, this research is relevant to the design of language learning as it meets the current trends and goals of teaching and language learning. The study is well-founded in the educational research on multimodality as an approach to explore holistically how to engage and facilitate present-day learners. It compliments and contributes to the recent research studies on multimodal analyses in education (Oittenen, 2023). Moreover, the study provides tangible evidence for decision-makers and instructors on how and why to use text annotation tools in face-to-face learning, validating their use in practical and result-oriented ways. It complements the study on encouraging blended learning designs (Siraj & Maskari, 2019); it proposes a multimodal teaching approach, adding a visual mode in referential instructions that meets the needs of the young generation in this digital age, specifically for learning the English language.

REFERENCES

Al-Malah, D. (2020). The importance of educational technology and its impact on sustainability education: An exploratory study in Iraqi universities. *Proceedings of the 1st International Multi-Disciplinary Conference Theme: Sustainable Development and Smart Planning, IMDC-SDSP 2020*, [Conference session in Cyberspace]. https://doi.org/10.4108/eai.28-6-2020.2297910

Anugrah, A., Ibrahim, N., & Sukardjo, M. (2021). How flipped classroom helps the learning in the times of COVID-19 era?. *JTP - Jurnal Teknologi Pendidikan, 22*(3), 151-158. https://doi.org/10.21009/jtp.v22i3.17555

Azizpour, S. (2021). A probe into Iranian EFL university lecturers' perspectives toward online instruction during the Coronavirus pandemic. *International Journal of Foreign Language Teaching and Research*, *9*(39), 117–140. https://doi.org/10.52547/jfl.9.39.117

Benitez, C., Quiñones, A., González, P., Ochoa-Cueva, C., & Vargas, A. (2020). The impact of online annotation tools on students' academic performance in a distance university program. *Turkish Online Journal of Distance Education*, 167-177. https://doi.org/10.17718/tojde.728153

Bertino, A. & Staines, H. (2019). Enabling a conversation across scholarly monographs through open annotation. *Publications,* 7(2), 41. https://doi.org/10.3390/publications7020041

Bjorn, G., Quaynor, L., & Burgasser, A. (2022). Reading research for writing: co-constructing core skills using primary literature. *Impacting Education Journal on Transforming Professional Practice,* 7(1), 47-58. https://doi.org/10.5195/ie.2022.237

Bower, M. (2019). Technology-mediated learning theory. *British Journal of Educational Technology, 50*(3), 1035-1048. https://doi.org/10.1111/bjet.12771

Cohen, L., Manion, L., & Morrison, K. (2017). *Research methods in education*. Routledge.

Cui, T., & Wang, J. (2023). Empowering active learning: A social annotation tool for improving student engagement. *British Journal of Educational Technology*, *55*(2), 712–730. https://doi.org/10.1111/bjet.13403

ELAN (Version 6.7) [Computer software]. (2023). Max Planck Institute for Psycholinguistics. Retrieved from https://archive.mpi.nl/tla/elan

Güzel, S. (2023). Gamified lesson plan development with ELT pre-service teachers: A gamified Google Classroom experience. *Journal of Educational Technology and Online Learning,* 6(1), 202-220. Doi: http://doi.org/10.31681/jetol.1158404

Hui-fang, L. & Gillies, R. (2021). Teacher questions: mediated-learning behaviors involved in teacher-student interaction during whole-class instruction in Chinese English classrooms. *Frontiers in Education, 6*. https://doi.org/10.3389/feduc.2021.674876

Jewitt, C., Bezemer, J., & O'Halloran, K. (2016). *Introducing Multimodality* (1st ed.). Routledge. https://doi.org/10.4324/9781315638027

Kalboussi, A., Mazhoud, O., & Kacem, A. (2016). Functionalities provided by annotation systems for learners in educational context: An overview. *International Journal of Emerging Technologies in Learning (IJET), 11*(02), 4. https://doi.org/10.3991/ijet.v11i02.5166

Kemaloglu-Er, E. (2020). The effects of referential questions in pre-writing activities on students' in-class participation and written production. *Cumhuriyet International Journal of Education.* https://doi.org/10.30703/cije.753039

Khaja, K., Ouellette, P., Barkdull, C., & Yaffe, J. (2008). Online practice course development with action research: A case example. *Advances in Social Work, 9*(2), 91-105. https://doi.org/10.18060/4

Lai, C. (2015). Modeling teachers' influence on learners' self-directed use of technology for language learning outside the classroom. *Computers & Education, 82*, 74-83. https://doi.org/10.1016/j.compedu.2014.11.005

LaMantia, J., Deiorio, N., & Yarris, L. (2012). Executive summary: education research in emergency medicine—opportunities, challenges, and strategies for success. *Academic Emergency Medicine, 19*(12), 1319-1322. https://doi.org/10.1111/acem.12027

Mao, X., Wang, Y., Wu, Y., & Guo, C. (2017). Self-referential information alleviates retrieval inhibition of directed forgetting effects—an ERP evidence of source memory. *Frontiers in Behavioral Neuroscience, 11*. 187. https://doi.org/10.3389/fnbeh.2017.00187

Martin, B. (2021). Teachers perceptions of Google Classroom: Revealing urgency for teacher professional learning. *Canadian Journal of Learning and Technology, 47*(1). https://doi.org/10.21432/cjlt27873

Norris, S. (2004). *Analyzing multimodal interaction: A methodological framework*. Routledge.

Norris, S. (2021). Multimodal (inter)action analysis in a nutshell: Philosophy, theory, method and methodology. *QuiViRR: Qualitative Video Research Reports*, *2*(2021).

https://doi.org/10.5278/ojs.quivirr.v2.2021.a0004

Novak, E., Razzouk, R., & Johnson, T. E. (2012). The educational use of social annotation tools in higher education: A literature review. *The Internet and Higher Education*, *15*(1), 39–49. https://doi.org/10.1016/j.iheduc.2011.09.002

Oittinen, T. (2023). Highlighting as a referential and collaborative practice in multiparty video-mediated learning activities. *Classroom Discourse*, 1-23. https://doi.org/10.1080/19463014.2023.2259020

O'Neill, R., Lewis, M., & Sowton, C. (2021). *Reading, writing, and critical thinking.* In *Unlock: Level 2* (2nd ed.). Cambridge University Press.

Rashdi, Sarfraz (2025). THE SIGNIFICANCE OF WRITING AND PUBLISHING SCIENTIFIC PAPERS IN SOCIAL SCIENCES (REVIEW PAPER). *Contemporary Journal of Social Sciences Review.* 3 (1), 12-57-1260

Richards, J. C., & Lockhart, C. (1994). *Reflective Teaching in Second Language Classrooms.* https://doi.org/10.1017/cbo9780511667169

Ross, S., Morrison, G., & Lowther, D. (2010). Educational technology research past and present: balancing rigor and relevance to impact school learning. *Contemporary Educational Technology, 1*(11), 17-35. https://doi.org/10.30935/cedtech/5959

Siraj, K. K., & Maskari, A. A. (2019). Student engagement in blended learning instructional design: an analytical study. *Learning and Teaching in Higher Education: Gulf Perspectives, 15*(2), 61–79. https://doi.org/10.18538/lthe.v15.n2.283

Sun, C., Hwang, G., Yin, Z., Wang, Z., & Wang, Z. (2022). Trends and issues of social annotation in education: A systematic review from 2000 to 2020. *Journal of Computer Assisted Learning, 39* (2), 329-350. https://doi.org/10.1111/jcal.12764.

Terras, M. & Ramsay, J. (2014). A psychological perspective on the temporal dimensions of e-learning. *E-Learning and Digital Media, 11*(2), 108-122. https://doi.org/10.2304/elea.2014.11.2.108

Weingärtner, L., Saner, S., Brown, M., Twagiramariya, R., & Rabalais, G. (2022). Engaging online learners in health professions education: a comparison of asynchronous discussion methods. *Academic Medicine, 97*(11S), S181-S181. https://doi.org/10.1097/acm.0000000000004808

Zhu, J. & Gu, Y. (2022). The effects of multimodal communication classroom on the learning performance of EFL learners from the perspective of translanguaging. *International Journal of Education and Humanities, 4*(3), 223-230. https://doi.org/10.54097/ijeh.v4i3.1812

Zhu, Y., Xu, Y., Wang, X., Yan, S., & Zhao, L. (2022). The selectivity and suitability of online learning resources as predictor of the effects of self-efficacy on teacher satisfaction during the covid-19 lockdown. *Frontiers in Psychology, 13*. 1-11. https://doi.org/10.3389/fpsyg.2022.765832.

Appendix 1: Questions for Focus Group Interviews

1. How have you integrated annotation tools into your classroom instruction? Please share some specific examples.
2. From your perspective, do annotation tools affect student engagement during lessons: do they contribute to or hinder students' comprehension of the instructions?
3. Can you share any instances where you observed a direct connection between using annotation tools and improved student learning outcomes?
4. Have you encountered any challenges or limitations when using annotation tools in the classroom, and how have you addressed them?
5. Would you recommend using annotation tools as a referential practice in classroom instructions? Why/why not?

Appendix 2: Questionnaire

Thank you for participating in this study. Your participation is voluntary, and your responses will be kept confidential. Please mention your full name and attempt the questions thoughtfully and honestly so that it can benefit the educational research.

	Items	1 Agree	2 Neutral	3 Disagree
	Student Engagement			
E1	I am more motivated by my English teacher's instructions on the screen than without any visuals.			
E2	I watch the screen carefully when my teacher uses annotation tools while discussing answers.			
E3	I respond to my teacher more attentively when they use annotation tools.			
E4	Annotation tools in instructions for class tasks keep me interested.			
E5	When my teacher uses annotation tools on-screen, I am more confident doing my tasks.			
E6	Sticky Notes help me engage with my teacher in discussion more effectively.			
E7	Annotation tools used in instructions have helped me improve my focus in class.			
	Comprehension			
C1	When my teacher uses annotation tools on-screen, I understand my tasks better.			
C2	When my teacher uses annotation tools on-screen, I perform better in my tasks.			
C3	Annotation tools assist me in keeping my learning organized.			
C4	Annotation tools make it easier for me to finish my tasks quickly.			
C5	The use of a marker on the screen is helpful in comprehending the information.			
C6	The use of a marker on the screen is helpful in comprehending the instruction.			
C7	Highlighting tools help me understand the instructions in English clearly.			

Your name: _____