



EXPLORING MULTIMODAL STRATEGIES TO RESHAPE WRITING SKILLS AND LEARNER MOTIVATION AMONG INTERMEDIATE COLLEGE STUDENTS IN PAKISTAN

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Abstract

This research aimed to investigate the impact of multimodal learning strategies to improve writing skills of intermediate students in Islamabad colleges. A quasi-experimental design was used for 100 students based on control groups and experimental groups, 50 students were selected from first year and 50 from second year. This quantitative research design was based on the syllabus learning outcomes (SLOs) of the students, which helped them to be more engaged for the improvement of English language skills in the process for data collection. For instructional tasks, summary writing and dialogue writing were assigned to first-year students, whereas essay writing and report writing were assigned to second-year students. The experimental group practiced four genres using different multimodal strategies, which included Cornell note taking for summary writing, YouTube videos for dialogue and report writing, and mind mapping for essay writing. Data collection methods included pre and post-tests and a Likert scale questionnaire. Results showed significant improvement in the content and vocabulary, and moderate improvement in organization and grammar skills. Students also expressed positive attitudes about multimodal approaches. The results show the potential of multimodal approaches in developing writing proficiency and innovative pedagogical strategies for teaching English in the classrooms at the college level.

Keywords: *Attitude, Cornell Note Taking, Mind Maps, Motivation Writing Skills, Multimodal Learning, Videos.*

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1. Introduction

Writing skill is an essential practice for students because it helps them express ideas clearly, arrange thoughts in a logical way and succeed in both academic and professional contexts. Despite this significance, writing appears to be challenging for many intermediate-level learners due to the continued use of traditional, text-based teaching practices that do not adequately engage learners and foster advanced writing skills. The fast-growing technology and the availability of digital tools have transformed the way students learn and explore information. Multimodal learning, which combines text, visuals, audio, and interactive approaches, has become an effective way to improve student engagement and academic performance. Research has shown that techniques such as mind mapping, video-based instruction, and structured note-taking (e.g., the Cornell method) can promote creativity, better organization of ideas, and greater retention, all of which are essential for successful writing development (Kress & van Leeuwen, 2001; Archer, 2017).

Gunther Kress, has made noteworthy scholarly contributions to the examination of the cooperative interplay of many modalities of communication, including text, picture, and sound, in the process of meaning construction. Throughout the process of acquiring knowledge, individuals continuously acquire information via many means, both through conscious as well as subconscious capabilities (Anderson, 1982). According to Kress & van Leeuwen (2001), the use of multiple modalities such as text, image, and sound creates a richer, more engaging learning environment that helps students develop a deeper understanding of content. Multimodal learning integrates tools like videos, which provide visual and auditory stimuli that enhance conceptual understanding, while mind mapping aids in organizing ideas, and Cornell note-taking fosters structured information retention, all of which are crucial for enhancing writing skills. These modalities not only stimulate engagement but also help students enhance their cognitive abilities, including creativity and critical thinking.

Archer (2017), has also evidenced the positive impact of multimodal learning on improvements in the writing skills of students. They argue that students achieve higher standards of proficiency in their writing in terms of organization, language use, and mechanics after having learned through multimodal learning (Archer, 2017). Although there is an increased emphasis on teaching English writing at the intermediate levels of classrooms, students often continue to face unresolved problems in areas like structure organization, vocabulary building and textual coherence. In earlier studies, multimodal strategies such as videos, mind mapping and structured note-taking have been studied in terms of their effectiveness in improving second language writing. However, empirical studies examining the effectiveness of such methods in the Pakistani intermediate settings are limited to some extent.

The technology development in today's world, leading to the use of different technologies to give out and absorb information is quite fast. Educational institutions are aware of the positive impact of media components in the classrooms' teaching techniques to meet the various requirements of students. Through the use of multimodal learning approaches, teachers can offer students a more exciting and interactive experience that can enhance the development of all of their skills, including the improvement of writing skills. The impact of multimodal learning in the development of writing skills of intermediate-level students at an Islamabad College has been evaluated in this study. More than one multimodal like videos, mind mapping, and Cornell note-taking have been used to find out how these multimodal become effective for students to improve their writing skills. The study focuses on intermediate students from Islamabad Modal College for girls. This age group is acknowledged as the most critical in the mastery of writing ability because students advance from simple writing tasks to more complex and advanced literacy. By exploring the impact of multimodal learning in this specific context, the study aims to provide valuable insights into the effectiveness of multimodal in the teaching of writing.

To achieve the ultimate objectives of the study, three research questions motivated the study:

1. What is the relative influence of multimodal on the enhancement of writing proficiency among intermediate students?
2. How do students' perceptions of multimodal learning impact their engagement and motivation in improving writing skills?
3. How does multimodal learning enhance students' ability to organize and express their ideas in writing?

The research aimed to assess the influence of multimodal methods on the development and enhancement of writing skills for the intermediate students. It also explores students' engagement and motivation for writing tasks in multimodal learning environments. The study evaluates whether the use of multimodal learning techniques may have a positive impact on the writing performance of intermediate learners that includes summary, dialogue, essay and report writing. By investigating the impact of these strategies on both achievement and motivation, the study aims to offer insight into the efficacy of multimodality in teaching writing proficiency.

2. Literature Review

2.1. Multimodal Learning and Writing Abilities

Multimodal learning refers to an educational approach that uses multiple modes or methods of instruction to engage students and enhance their learning experience. According to Gunther Kress, "Multimodal learning involves the use of several modes (like text, images, video, etc.) in combination to create meaning" (Kress, 2010). Graham & Perin's (2007) demonstrate that focused instruction and consistent practice significantly

enhance writing skills. According to Bereiter and Scardamalia (1987) the prewriting, drafting revising, editing and publishing stages have long been a part of writing pedagogy and are highly valued in the Writing Process. Multimodal learning has emerged as a promising model that combines different modalities like text, images, sound and interactive tools to promote deeper learning and creativity (Kress & van Leeuwen, 2001).

“Writing” as a noun refers to the written text while “writing” as a verb means the act of forming a text. Widdowson (1983) emphasizes that writing is a communicative activity rather than just text production, adhering to the broader principles of language use in communication (Sharma, 1986). Grabe & Kaplan (1996) pointed out that writing is a set of skills that “must be practiced and learned through experience”. According to Kroll (1990), writing is a complicated task for native speakers, and is particularly challenging for non-native speakers. Deane et al. (2008) explain that the most important written skills are those which refer to the organization of the written text. Writing skills are the core element of language and also have a major influence on academic and career achievements (Bezemer & Kress, 2008).

Theoretical support of the role of multimodal learning in writing development is based on Mayer and Moreno (1998) who show that learners have separate cognitive channel processing visual and verbal inputs. Complementary modes of instruction distribute the cognitive load, thus not overwhelming a specific channel and leading to deeper processing and better retention. This principle is useful in providing an explanation for the possible effects of multimodal strategies in improving writing development specifically, because writing involves the coordination of several cognitive processes such as idea generation, organization, and language encoding and the instruction that is presented through multiple modes which might support these processes better than a single mode of instruction.

2.2. Cornell Note-Taking, Videos and Mind Mapping in Writing Instruction

The Cornell method was created by Pauk in 1974 to assist students at Cornell University, is a systematic approach for organizing and summarizing notes. Pauk (2001) highlights that this method improves students’ abilities to summarize and synthesize information, which are critical skills for effective writing. Studies have shown that structured note-taking can significantly enhance comprehension and retention of material, which supports the development of coherent and well-organized written content (Jacobs, 2008). A study by Al-Ashkar (2014) demonstrated that note-taking, including the Cornell method, enhances writing ability. Jacobs (2008) research reviewed earlier studies on the impact of note-taking techniques, finding that the Cornell method positively affects student-achievement.

Duffy (2008) emphasizes that videos are an effective teaching and motivational tool, facilitating student discovery and engagement. Teachers can use short video clips (3

to 5 minutes) as supplemental material to introduce or elaborate on topics, enhancing lesson plans (Richards & Renandya, 2002). Sherin and Elizabeth (2005) highlight the role of videos in teacher education, guiding the development of video-based professional learning activities. Eick and King (2012) found that videos spark curiosity, enhance comprehension, and support memory retention by providing visual cues and connections. Online videos also act as complementary educational tools, promoting increased engagement and deeper interaction with the content, which leads to improved academic performance (Greenberg & Zanetis, 2012). In the context of writing skills, videos are valuable for demonstrating report structures, language use, and tone.

Mind mapping is a visual representation of ideas and their relationships, facilitating better planning and organization of written work. Buzan (2006) suggests that mind mapping aids in brainstorming, structuring essays, and ensuring logical flow. Previous studies indicate that mind maps can help students organize their thoughts and improve the coherence and quality of their writing (Al-Jarf, 2009). Mind-mapping involves structuring and linking thoughts, identifying the key points and the supporting details, and visually represent the relations between different ideas. According to Liu et al. (2014), the mind map is a tool used for drawing a man's inner thoughts and crystallizing them into the main idea with all its sub-branches and ideas with the help of drawings and lines. These visual elements capture the reader's attention and serve as triggers to help recall information in the short term. Tucker, Armstrong, and Massad (2010) referred to mind maps as visual tools to organize and correlate topics, themes, and the interrelationships between them using images and drawings.

Anderson's (1982) cognitive skill acquisition (CSA) model can be used to explain the effectiveness of these three strategies by defining learning as the development of knowledge (declarative) and the skill of applying the knowledge (procedural). Structured, repeated exposure to writing activities (via Cornell notes, video and mind-mapping) provides students with multiple opportunities to encode and rehearse the same underlying skills in various ways, which may result in a more rapid transfer of knowledge to fluent application. Al-Jarf (2011) expanded her previous study on mind-mapping software to show that the use of such software also helped her students with their spelling skills, implying that the benefits of mind mapping have more than one dimension of writing skills.

2.3. Student Motivation and Attitudes towards Writing

Gardner (1985) described attitudes and motivation as significant because they involve the whole process of second language acquisition by the student. The factors that affect second language acquisition shows that motivation has a positive interaction with attitude. There is a significant difference in the performance of learners with positive attitudes and motivation towards and with other learners (Galy et al., 2012). According to

Sarnoff (1960), attitude is the favorable or unfavorable reaction one makes to a class of objects. Attitude is the evaluation of an object that is dispositional, involves sentiments, and can be negative or positive and long-standing (Almani, 2007-08). Attitudes can be 'switched' by some sort of incentive. They can play different roles and serve to convey values, emotions, Perceived attitudes, and perceived worth. Interpersonal attitudes are categorized according to the strength of feeling. According to Child (1986), is an internal drive that compels us to pursue objectives and achieve goals to satisfy some needs. Pintrich & Schunk (1996) state motivation as "something that cannot be seen but can only be inferred from the actions such as selection of tasks, the amount of energy expended on tasks, the duration over which the tasks are performed and the utterances of the individuals". Dornyei (2001) defines motivation as the ultimate force through which human beings make decisions on tasks to perform, how long they will be consistent, and the amount of effort they invest (Grant & Archer, 2019).

The multimodal approach seems to impact the affective aspects of writing pedagogy as well. Archer (2017) discovered that students were more engaged with the writing process when university writing centers adopted multimodal pedagogies, including visual feedback in addition to written feedback, than when they adopted text-only feedback approaches. Choi and Yi (2015) also found that teachers who used multimodal resources in their teaching of ELLs noted increased comprehension and class engagement among the students. This indicates that the advantages of multimodal methods are not only related to the cognitive processing, but also to students' attitudes towards writing tasks, including their motivation, confidence, and willingness to write.

3. Theoretical Framework

A diversifying instructional method enables students to engage more deeply with content, leading to improved comprehension and retention. The use of instructional videos, mind mapping, and Cornell note taking engages different cognitive pathways, allowing students to conceptualize and retain information more effectively. These interventions are designed to improve writing skills across multiple genres, including essays, dialogues, reports, and summaries, by addressing diverse learning styles and enhancing long-term retention. Multimodal learning is crucial in developing writing skills. Multimodal Learning Theory states that the incorporation of different modalities or approaches in instruction encompasses better learning outcomes. Research supporting Multimodal Learning Theory demonstrate that students who internalize information through multiple modes are more successful in academic tasks (Mayer 2009). For example, videos provide a dynamic visualization of the concepts, mind mapping enhances critical thinking and organization skills, and the Cornell note-taking method enhances summarization skills. By integrating this into the writing instructions, students can engage in a more comprehensive

and holistic learning experience, leading to improved performance and positive attitudes toward writing assignments.

4. Methodology

4.1. Research Design

The study applied a quasi-experimental design to examine the effect of multimodal learning on writing skills enhancement. This study employed a quasi-experimental design since it was very difficult to fully randomize in a naturalistic classroom setting. A random assignment of individual students to the control and experimental conditions in the same school can disrupt pre-existing classroom groupings and create artificial situations that do not reflect the actual teaching and learning situations. This design has been used extensively in the field of education research when it is not possible to randomly assign subjects to different conditions, and has been proven to be valid in research on the effects of education interventions in natural settings. The research design included a sequence analysis to determine the relationship between the independent variable (multimodal learning) and the dependent variables (writing skills improvement and attitudes towards multimodal learning). The investigation used the technique of cross-sectional study to reveal the students' attitudes that were collected before and after the intervention, and also during the process of writing development.

4.2. Participants

This research included the first and second-year students of the Islamabad Model College for girls, I-14, Islamabad which were between 15 to 20 years of age. Overall, 100 students were selected hence 50 were from the first year and 50 from the second academic year. The groups were divided into control or experimental group, and the task was assigned to 25 students of control group and 25 students for experiment group for first year. Similarly, 25 students for control group and 25 students for experiment group from second year. The selection of participants was based on non-random sampling techniques to achieve representativeness in the sample. Purposive sampling was used because it enabled the sample to be representative of the target population, which was intermediate level college students who were receiving formal teaching of English writing. This was determined as the most suitable methodology when the study was focused on a specific academic level and institutional context where the selected participants had the relevant characteristics required to be able to respond meaningfully to the multimodal interventions. Purposive sampling provides depth and relevance to the findings within the context of the specific education being studied.

4.3. Data Collection and Data Analysis

Data collection involved two phases, pre-testing and post-testing. While the first pre-testing stage of the experiment included writing skills evaluation, both the control and experimental groups applied traditional teaching techniques. Then the experimental group

was taught through multimodal learning strategies. They were taught how to write dialogues and reports by watching videos. For essay writing, mind mapping was used, and Cornell note-taking was used for summary writing. Similarly, both the control and experimental groups were tested once again after the intervention by using the same testing techniques. Besides, a questionnaire for students was conducted to know their inclinations towards multimodal learning as well.

Quantitative analysis of written data techniques, such as mean scores and percentages, were used to judge students' progress in writing skills and their attitudes towards multimodal learning. Descriptive statistics were used to analyze the data, and it was also utilized in inferential statistics, such as correlation analysis, to explore the relationships among variables. The questionnaire survey is designed to determine students' attitudes towards multimodal learning along with those the students' perceptions of multimodal learning about their writing skills enhancement. The questionnaire has been derived from the previous research studies and only approved by the subject matter experts. It contains a 1 to 5 Likert scale format, with 1 being "strongly disagree" and 5 being "strongly agree." It will also involve recording the students' perspectives of their confidence level, motivation, engagement, and effectiveness of multi-modal learning interventions.

4.4. Study Instruments and Time duration

The study employed writing skills tests covering four genres, which involved dialogue writing, report writing, essay writing, and summary writing. According to their SLO based syllabus the marks division was: 10 marks of dialogue writing, 8 marks for summary writing, 12 marks for essay writing and 8 marks for report writing. The IELTS general test rubric was used for test marking and assessment. The information was gathered by means of pre and post-tests, and questionnaire surveys. The data collection process took place over a period of 2 months, involving a total of 100 students, divided equally between 1st-year and 2nd-year classes. 1st-year and 2nd-year group was further divided into 25 students for the control group and 25 students for the experimental group. Both groups received 20 sessions, each lasting 30 minutes, scheduled 5 days a week. After one month, a follow-up study was conducted, in which teachers were asked to assign an essay to the students as a post-test measure. This follow-up aimed to assess the retention and application of writing skills learned during the initial phase of the study.

5. Results

The results of the study are shown in this section in three dimensions. The first dimension reflects performance in writing skill, which is the performance of pre- and post-intervention in four types of writing skill, namely summary writing and dialogue writing for first-grade students and essay writing and report writing for second-grade students. Four skill dimensions are considered for each genre: content, vocabulary, grammar, and

organization. The second-dimension deals with students' perception of multimodal learning and focuses on attitudinal, cognitive and motivational responses obtained by using a structured questionnaire. In the third dimension, results are reported in the order of the research questions followed by the follow-up study conducted to determine retention and application of writing skills one month after the intervention.

RQ1: What is the relative influence of multimodal on the enhancement of writing proficiency among intermediate students?

To answer the first question, pre and posttest measurements were made as part of the intervention to show the effectiveness of the multimodal approaches adopted in enhancing writing skills of the students. A rubric was used to assess four writing skills categories.

Table 1: Rubric for Writing Skills

Levels	Writing types	Total Marks	Skills				
			Criteria	Content (Ideas and Information)	Organization (Coherence and structure)	Vocabulary (Word choice and usage)	Grammar (Spelling and Punctuation)
First year	Dialogue	8	2		2	2	2
	Summary	10	2.5		2.5	2.5	2.5
Second year	Report	12	3		3	3	3
	Essay	10	2.5		2.5	2.5	2.5

The table contains the mean score for the respective skill, along with the average percentage score. This format allows for a clear understanding of the performance levels before and after implementing multimodal learning techniques.

5.1. Data Analysis of Summary Writing for First Year Students

Summary writing for first-year students is evaluated out of a total of 8 marks according to their Student Learning Outcomes (SLO) syllabus. These 8 marks are divided equally among four skills: 2.5 marks each for content, organization, vocabulary, and grammar. In the content section, the data focuses on the ideas and information that students included in their summaries. In summary writing, students have been taught through Cornell note taking strategy by taking a topic from their book.

Table 2 presents the evaluation of summary writing for both the control and experiment groups, with pre- and post-intervention. The control group students were taught using traditional methods, whereas the experiment group was instructed using the Cornell note taking strategy.

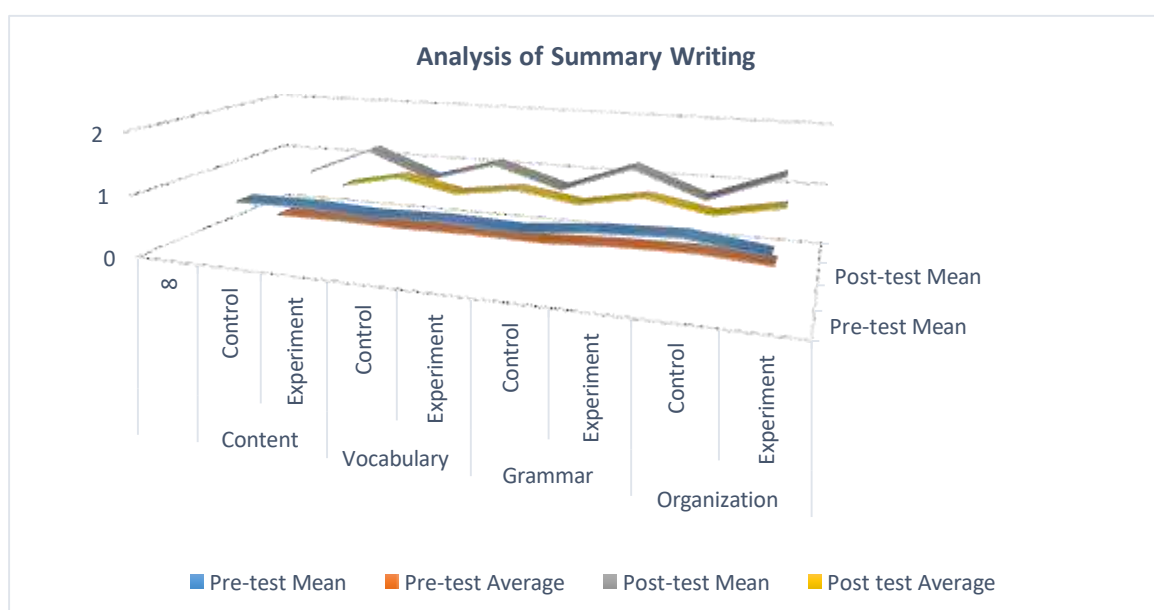
Table 2: Pre and Post-test Analysis of Summary Writing Performance

Genre	Skills	Groups	Pre-test	Pre-test	Post-test	Post test
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Summary writing		Total marks 8	Mean	Average	Mean	Average
	Content	Control	0.968	48.4%	0.98	49%
		Experiment	0.98	49%	1.42	72%
	Vocabulary	Control	0.932	46.6%	1.02	51%
		Experiment	0.96	48%	1.34	67%
	Grammar	Control	0.92	46%	1.02	51%
		Experiment	1.02	51%	1.44	72%
	Organization	Control	1.06	53%	1.04	52%
		Experiment	0.92	46%	1.48	74%

The results indicate considerable distinctions between the control and experiment groups, in their scores regarding the independent variable, both before and after the manipulation. The mean score for content was also similar for the control and experiment groups in the pre-test thus the two groups were comparable in their level of mastery of this content area. The experiment group gains a respectable boost in the content, as the mean score rises from 0.98 to 1.42, meaning that there is significant percentage increase from 49 percent to 72 percent on average or there is an increase of 23 percent. The experiment group also recorded better grades particularly in grammar skills as score rose from 1.02 to 1.44, while the calculated average percentage increase stands at a good 21% rise from a base of 51% to a new high of 72%. Figure 1 illustrate the analysis of pre and post-test of summary writing after multimodal intervention.

Figure 1: Analysis of Summary Writing



5.2. Data Analysis of Dialogue Writing of First year students

Dialogue writing for first-year students is evaluated out of a total of 10 marks according to their Student Learning Outcomes (SLO) syllabus. These 10 marks are divided equally among four skills: 2.5 marks each for content, organization, vocabulary, and grammar. Dialogue writing has been taught to students through YouTube videos.

Table 3 presents analysis of dialogue writing for both the control and experiment groups, pre- and post-intervention. The control group students were taught using traditional methods, whereas the experiment group was instructed using videos strategy.

Table 3: Pre and Post-test Analysis of Dialogue Writing Performance

Genre	Skills	Groups	Pre-test	Pre-test	Post-test	Post test
Dialogue writing		Total marks 10	Mean	Average	Mean	Average
	Content	Control	1.136	45.44%	1.212	48.48%
		Experiment	1.164	46.56%	1.46	58.4%
	Vocabulary	Control	0.868	34.72%	0.96	38.4%
		Experiment	0.988	39.52%	1.392	55.68%
	Grammar	Control	0.924	36.96%	0.904	36.16%
		Experiment	0.972	38.88%	1.364	54.56%
	Organization	Control	1.3	52%	1.372	54.88%
		Experiment	1.244	49.76%	1.504	60.16%

The control group which received instruction using conventional techniques showed only modest gain or even slight regressions in some domains like grammar. The significant improvement in content scores for the experimental group indicates that students were able to better comprehend and develop the content of their dialogue writing with the aid of multimodal learning resources (Al- Zyoud et al., 2017). This suggests heightened interest and a more thorough understanding of the material. Significant improvements in the experimental groups' vocabulary scores suggest that exposure to a variety of multimedia content expanded their lexical resources. Grammatical concepts are effectively reinforced by multimodal learning as evidenced by the significant improvement in the experimental groups' grammar scores. Students who participated in multimodal learning appeared to have improved their writing structure based on the experimental groups increased their organizational skills.

Figure 2: Analysis of Dialogue Writing

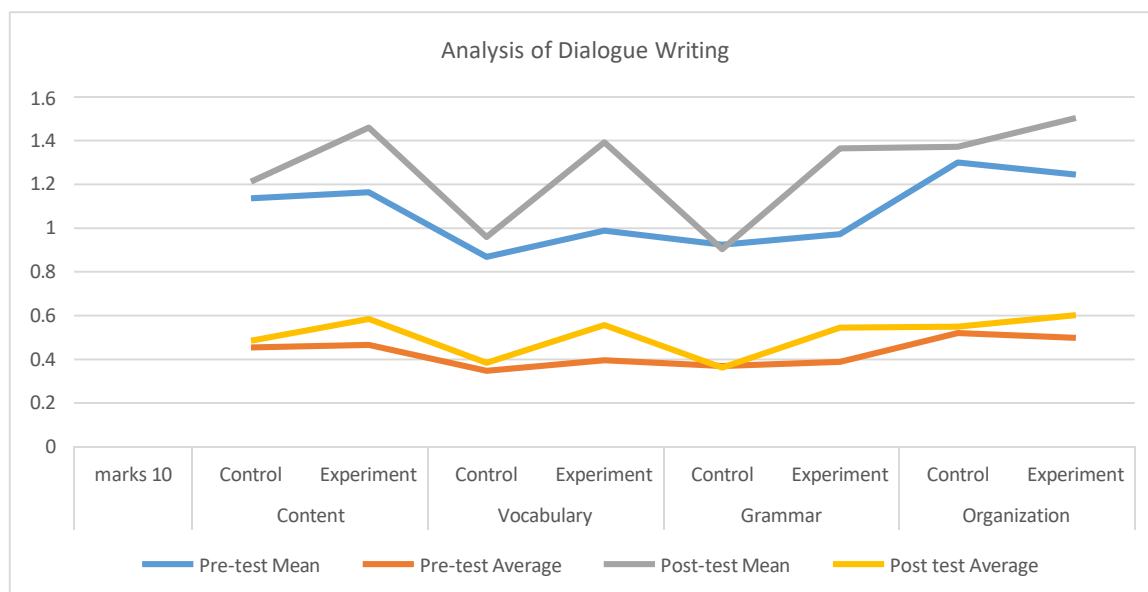


Figure 2 illustrate the changes in pre and post-test dialogue writing by using video strategies. Students show significant improvement in their writing after watching videos.

5.3. Data Analysis of Essay Writing of Second Year Students

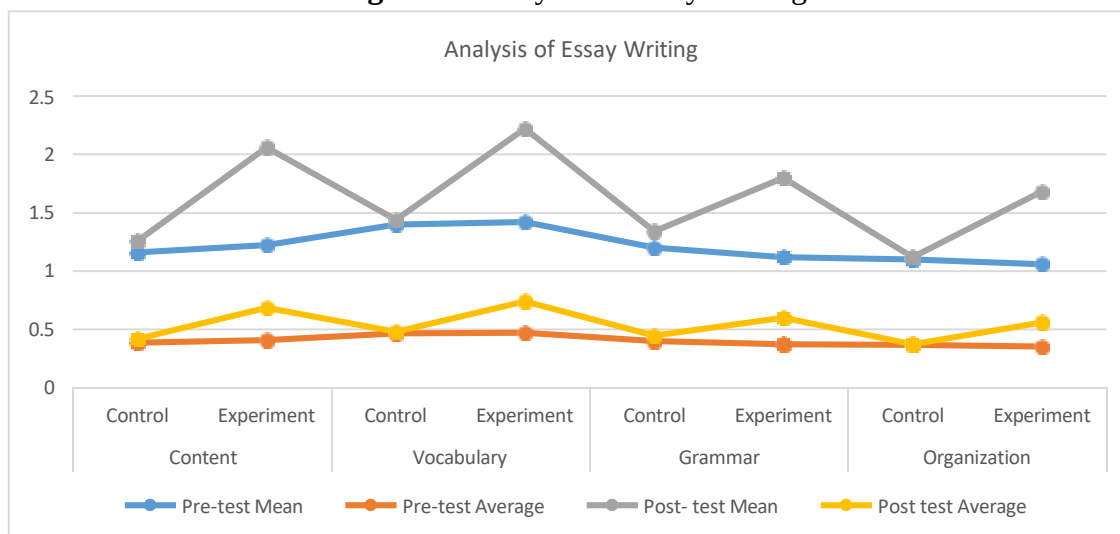
For data analysis of essay writing of second year students, essay writing has total 12 marks according to their students learning outcome (SLO) syllabus. The 12 marks is divided into 3 each for content, organization, vocabulary and grammar. In content part, the data has been observed on the ideas and information that students added in the topic. Mind mapping strategy is used for teaching essay writing skills. Table 4 presents the analysis of essay writing for both the control and experiment groups, pre- and post-intervention. The control group students were taught using traditional methods, whereas the experiment group was instructed using mind map strategy.

Table 4: Pre and Post test Analysis of Essay Writing Performance

Genre	Skills	Groups	Pre-test	Pre-test	Post-test	Post test
Essay writing		Total 12	Mean	Average	Mean	Average
	Content	Control	1.16	38.66%	1.26	42%
		Experiment	1.224	40.8%	2.06	68.6%
	Vocabulary	Control	1.4	46.66%	1.44	48%
		Experiment	1.42	47.33%	2.22	74%
	Grammar	Control	1.2	40%	1.34	44.66%
		Experiment	1.12	37.33%	1.8	60%
	Organization	Control	1.1	36.66%	1.12	37.33%
		Experiment	1.06	35.33%	1.68	56%

With a mean score that increased from 1.224 to 2.06 the experimental group however showed a noteworthy improvement in content quality. The results indicate that the experimental intervention in the form of targeted instructional strategies or extra assistance had a noteworthy impact on students' capacity to produce and arrange information in essays in an efficient manner.

Figure 3: Analysis of Essay Writing



Vocabulary skills improved in both groups although the experimental group showed a noticeably higher rate of improvement similar to content development. A significant improvement in lexical richness and word choice was evident in the experimental groups mean vocabulary score which rose from 1.42 to 2.22. The experimental groups mean grammar score increased from 1.12 to 1.8 demonstrating a notable improvement in grammatical accuracy and proficiency. A moderate improvement in essay structure and coherence was indicated by the experimental groups mean organization score which rose from 1.06 to 1.68.

5.4. Data Analysis of Report Writing of Second Year Students

Table 5 presents the analysis of report writing for both the control and experiment groups, pre- and post-intervention.

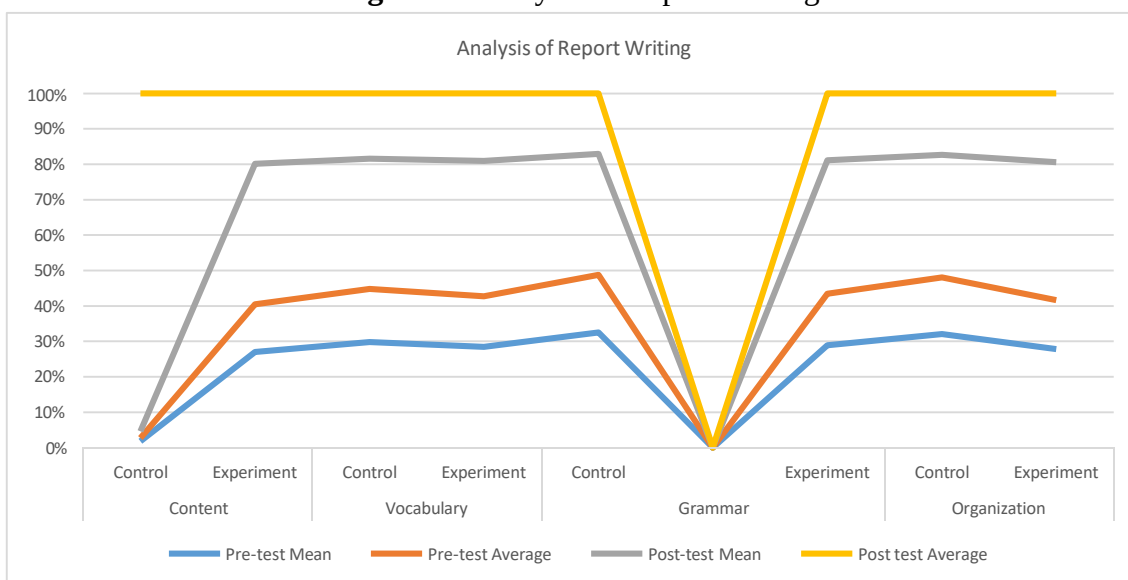
Table 5: Pre and Post-test Analysis of Report Writing Performance

Genre	Skills	Groups	Pre-test	Pre-test	Post-test	Post test
Report writing		Total marks 8	Mean	Average	Mean	Average
	Content	Control	0.96	48%	1.02	51
		Experiment	0.992	49.6%	1.46	73%
	Vocabulary	Control	0.94	47%	1.16	58%
		Experiment	1	50%	1.34	67%
	Grammar	Control	1.16	58%	1.22	61%

		Experiment	1.12	56%	1.46	73%
	Organization	Control	1	50%	1.08	54%
		Experiment	1	50%	1.4	70%

The results of the pre- and post-tests reveal how well students performed on various report writing-related skills both before and after the intervention. The control groups mean content score improved from 0.96 (48%) in the pre-test to 1.02 (51%) in the post-test. The experiment groups mean score increased from 0.992 (49. 6%) in the pre-test to 1.46 (73%) in the post-test.

Figure 4: Analysis of Report Writing



For the control group the mean score in vocabulary increased from 0.94 (47 %) in the pre-test to 1.16 (58 %) in the post-test. Mean score for the experiment group increased from 1 (50 %) in the pre-test to 1.34 (67%) in the post-test. The control groups mean grammar score improved from 1.16 (58%) in the pre-test to 1.22 (61%) in the post- test. For the experiment group the mean score increased from 1.12 (56 %) in the pre-test to 1.46 (73 %) in the post-test. The mean score for the control group improved in organization from 1 (50 percent) in the pre-test to 1.08 (54 percent) in the post-test. The pre-test mean score increased to 1 (50 %) while the post-test mean score increased to 1.4 (70 %).

RQ2 How do students' perceptions of multimodal learning impact their engagement and motivation in improving writing skills?

The second research question aimed at identifying the students' attitude, behavior, and difference motivation before and after applying the multimodal learning in the learning- teaching process and in the writing skills of the students.

To explore this research question, the data has been collected from a total of 50 students, with 25 students from the first year and 25 students from the second year. The

data was gathered through a comprehensive questionnaire designed to assess key aspects: students' attitudes towards multimodal learning, their cognition and their motivation levels in the context of improving writing skills. The questionnaire was divided into three sections, containing a total of 28 questions for each group at the intermediate level.

Findings of First year Based on the pre-assessment and feedback on multimodal learning perception through survey questionnaire are:

5.5. Cognitive Assessment

Participants struggled less with making outlines and to arrange sentences logically. They indicated a moderate level of limitation in vocabulary and grammar skills. There was a moderate level of reported lack of motivation and engagement in writing tasks.

5.6. Multimodal Learning Perception

Both first-year and second-year participants reported moderate cognitive impact from multimodal learning interventions. However, perceptions of multimodal learning were highly positive among both groups, indicating increased confidence, motivation, and engagement in writing tasks (Penney, 1989).

5.7. Students Motivation Towards Multimodal Learning

Participants perceived improvement in essay writing with the use of mind maps. Mind maps were reported to enhance the ability to organize ideas. Participants perceived enhanced comprehension of report writing with the use of videos. Videos were helpful in content organization for report writing. Participants reported an increase in confidence and motivation with the multimodal approach. Participants perceived multimodal learning as potentially helpful in achieving better grades.

Students mentioned that their difficulties were mostly associated with keeping their thoughts in order, using language that is understandable (rather than it being too wordy or unclear) and feeling like they were unable to express themselves as well as they would have liked. Besides, these students had difficulties in inventing the topics for writing and in rearranging the sentences in a chronological order.

Table 6: Sub-scale wise analysis of the questionnaire

Subscales	Mean	Average (%)	Level
Attitude	3.8	77.8%	Moderate
Perception	4.06	81.2%	Highly positive
Motivation	4.05	81.1%	Highly positive
Total	4.0	80%	Highly positive

Both first-year and second-year participants reported moderate cognitive impact from multimodal learning interventions. However, perceptions of multimodal learning were highly positive among both groups, indicating increased confidence, motivation, and engagement in writing tasks. The students said they were more confident in creating

outlines, sequencing sentences well, expanding vocabulary and grammar, being passionately involved in their writing tasks, as well as making ideas more easily (Penney, 1989).

The Cronbach alpha of the questionnaire of first year and second year students has been found from the SPSS. The result indicates that Cronbach alpha for 28 questions of the first-year students is 0.909 and 0.979 for the second-year students, which shows the reliability of the findings.

Reliability Statistics of 1st year

Cronbach's Alpha	N of Items
.909	28

Reliability Statistics of 2nd year

Cronbach's Alpha	N of Items
.979	28

RQ3: How does multimodal learning enhance students' ability to organize and express their ideas in writing?

A longitudinal study was conducted involving first and second-year students. Initially, students were taught using various multimodal strategies: Cornell note-taking for summary writing, videos for dialogue writing, mind mapping for essay writing, and videos for report writing. This comprehensive approach aimed to develop and enhance their writing skills in a structured manner. The proficiency of these skills was evaluated through a follow-up study where the researcher revisited the college, giving students' specific writing tasks to determine their retention and application of the learned strategies.

5.8. Follow-Up Study

To determine if these multimodal strategies became proficient skill-sets for students, a follow-up study was conducted. One month after the initial instruction, the researcher revisited the college and asked the current teachers to assign writing tasks that required the application of the previously learned skills. Table shows the improvement in students writing skills by using multimodal strategies.

Table 7: Essay writing

Essay writing					
Content (Ideas and information)		Organization (sentence structure and coherence)	Vocabulary (Word choice and usage)	Grammar (Spelling and punctuation)	
Marks divided	(3)	(3)	(3)	(3)	Total 12
Student 1	3	2	3	2	Obtained 10
Student 3	2	2	2	1.5	7.5

Report writing					
Marks divided	2	2	2	2	8
Student 1	2	2	2	1	7
Student 2	1.5	2	2	2	7.5
Dialogue writing					
Marks divided	2.5	2.5	2.5	2.5	Total 10
Student 1	2.5	2.5	2	2	9
Student 2	2	1.5	1.5	2	7
Summary writing					
Marks divided	2	2	2	2	8
Student 1	2	2	1.5	1.5	7
Student 2	1.5	1.5	1.5	1.5	6

The data collected from the follow-up study indicated that multimodal learning strategies had a lasting impact on the students' writing skills. The significant improvements observed in the students' post-test performance in report, summary, dialogue and essay writing suggest that these multimodal strategies have been internalized as proficient skillsets.

6. Discussion

The findings confirm that multimodal learning interventions positively impacted students' writing skills across all four genres. These results align with Mayer (2009), who demonstrated that students engaging with content through multiple modes achieve stronger academic outcomes than those relying on a single instructional method. The improvements observed in the experimental group across summary, dialogue, essay, and report writing collectively support this theoretical position.

The effectiveness of Cornell note-taking in improving summary writing is consistent with Pauk (2001), who highlighted this method's capacity to develop summarization and synthesis skills. Similarly, the gains in essay writing following mind mapping instruction support Al-Jarf (2009), who found that mind maps enhance the coherence and quality of student writing, and Buzan (2006), who identified mind mapping as particularly effective for brainstorming and structuring written arguments.

The improvement in dialogue and report writing following video-based instruction reflects Graham and Perin's (2007) finding that focused, structured instruction significantly enhances writing performance. The multimodal nature of video content, combining visual and auditory input, aligns with Kress and van Leeuwen's (2001) argument that combining different modalities promotes deeper engagement and comprehension.

Student attitudes and motivation also improved following the interventions, with both first and second-year participants reporting increased confidence and engagement. Second-year participants showed marginally higher mean scores across all sub-scales, suggesting that older students may respond slightly more positively to multimodal approaches, though this difference warrants further investigation. These findings reinforce the value of integrating multimodal strategies into writing instruction and extend existing literature by demonstrating their effectiveness across multiple writing genres within an intermediate-level Pakistani college context.

The positive attitudes and motivation outcomes as reported by the students in both groups correspond with the theoretical frameworks on motivation in language learning. Attitude and motivation were among the most important aspects of second language (L2) acquisition as Gardner (1985) stated that positive affective orientations to language tasks can have a direct and measurable impact on learner performance. The high mean scores obtained in the various subscales of the questionnaire in this study indicate that in addition to measurable gains in writing, multimodal learning interventions had the effect of fostering a more positive affective context in which writing development occurs. This is in line with the conceptualization of motivation as the energy and dynamism that propel learners to engage in the language learning task with effort and persistence (Dornyei 2001). The resulting confidence and engagement of the participants after the interventions indicate that the multimodal strategies might serve as cognitive tools as well as motivational scaffolds that lessen writing apprehension and promote positive attitudes toward writing tasks among intermediate college learners.

7. Pedagogical Implications

This study has several implications in terms of practice for EFL/ESL writing classes at intermediate college level. The improvement in summary writing after the instruction in using the Cornell note-taking technique indicates that this technique is not only a study skill but can be used as a purposeful writing intervention. Regular writing instruction incorporating structured note taking could aid students in the organization of source material prior to writing, for those writing genres that involve synthesizing multiple ideas.

The results for dialogue and report writing after the video lessons suggest that short and precisely targeted video clips can provide effective models for conventions in a genre. Teachers teaching genres with clear structures e.g. dialogue exchanges, report forms, find it helpful to introduce short video models before giving the students independent writing tasks, instead of just providing written models and/or explanation verbally.

The high scores for essay writing after the mind mapping teaching further proves that the introduction of visual planning tool can be integrated into the pre-writing stage. Because an essay requires a well-organized sequence of several supporting ideas, it seems

as if mind mapping might be especially appropriate for extended argumentation genres, and teachers might want to devote a portion of a class to planning for such a mind map instead of leaving it as an option.

A continual growth in students' motivation and confidence in both groups indicates that multimodal approaches are useful for students who suffer from writing apprehension. For students who are reluctant or nervous to write, adding some variety in the form of note taking, video, and visual mapping reduces the perceived difficulty of writing tasks, even before measurable skill gains.

Second-year students demonstrated a marginally larger growth in scores than the first-year students, which may indicate that students with a little more academic experience are better equipped to utilize effective multimodal strategies. This means that scaffolding might be necessary for some learners in these strategies as they are introduced before carrying an assumption that all are ready at different grade levels.

8. Conclusion

This study demonstrates that multimodal learning interventions, specifically Cornell note-taking, videos, and mind mapping significantly enhance writing skills across four genres among intermediate-level students. The study has significant applied worth as

it provides educators with important information on how implementing multimodal processes in the classroom can be helpful. The results highlighted the importance of using of particular techniques which can improve the students' writing skills. For instance,

Cornell notes make it easy for the students to have a format of how to note down information and how to extract out relevant information in the form of key points while mind maps assist in arranging the essays in good logical and meaningful sequences. The study has several limitations. The sample was restricted to 100 students from a single college in Islamabad, which limits the generalizability of findings to broader student population. The intervention period of two months was relatively short, and the follow-up study involved only a small number of students. Future studies should address these constraints by employing larger samples, diverse settings, and extended follow-up periods.

Building on the findings and addressing the limitations of this study, several directions are suggested to further explore and validate the impact of multimodal learning on writing skills. Such research would contribute to a better understanding of how multimodal learning strategies can be adjusted and applied in different contexts and with different student populations. Apart from the empirical results, this study is also significant for EFL pedagogy in the context of Pakistani intermediate college as it has not been adequately explored in the vast literature of multimodal learning. The study highlights the effectiveness of Cornell note taking, video-based instruction, and mind mapping at the classroom level within four different writing genres and offers a classroom-based, evidence-based model for multimodal writing instruction for teachers and writers.

The results are especially important when considering education settings where there are limited resources and teachers need to make conscious decisions on which instructional strategies to focus on. In this context, the findings of this study indicate that even if there is a small amount of multimodal integration in regular writing instruction, students' writing performance and motivation can be improved, which can provide a feasible and replicable model to enhance writing performance at the intermediate level. Longer-term longitudinal studies are required to assess the long-term impacts of multimodal learning strategies on writing skills. Future research should involve larger and more diverse student populations across different geographical contexts to improve generalizability. Longer longitudinal studies are needed to assess the sustained impact of multimodal learning on writing skills development. Additionally, emerging tools such as virtual reality, interactive digital platforms, and collaborative writing environments warrant investigation as potential multimodal strategies. More research should be done to determine how effective multimodal approaches are, such as virtual reality, interactive digital tools and collaborative writing groups. Knowing the different ways that multimodal learning can enhance writing skills will make it easier for teachers to select and implement the best teaching strategies for their students. Teachers can improve students writing ability motivation and long-term skill retention by incorporating a variety of interesting strategies that will help them succeed academically.

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Appendix

Teaching schedule and Time Duration

Teaching Schedule and Time Duration				
First year			Second year	
Control group		Experiment group	Control group	Experiment group
Skills		Dialogue writing, Summary writing	Essay writing, Report writing	
No. of students100	25	25	25	25
Writing Genres	Content, Organization, vocabulary, grammar	Content, Organization, vocabulary, grammar	Content, Organization, vocabulary, grammar	Content, Organization, vocabulary, grammar
Subject	Arts + Science		Arts + Science	
Schedule	20 lesson plans for each group			
Teaching Method	Traditional	Multimodal	Traditional	Multimodal

Materials	Text book sample provided for dialogue writing and summary writing	Format of Dialogue writing provided with videos as a method of teaching	Template of summary provided with Cornell note taking as a method of teaching	Text book for Essay and report Writing as a teaching method	Format of Essay writing provided and Mind mapping strategy as a method of teaching	Template of report writing provided with Videos as a teaching method
Activities	Read text follow the format and write dialogue and summary	Watch video follow the format and write dialogue	Write on Cornell notes first and then summarize the text	Read the text and follow the format then write report and essay	Make a Mind Map, follow the format then write essay by following the mind map strategy	Watch video, follow the format and then write Report