



## Effects of Communicative Teaching on Lab Report Writing Skills at Secondary Level Schools in Islamabad (Pakistan)

Vol. IV, No. III (Summer 2019) | Page: 412 – 424 | DOI: 10.31703/grr.2019(IV-III).46

p- ISSN: 2616-955X | e-ISSN: 2663-7030 | ISSN-L: 2616-955X

Aftab Ahmad\*

Abdul Majeed Khan<sup>†</sup>

Muhammad Samiullah<sup>‡</sup>

### Abstract

*The key objective of the research was to find the effect of communicative language teaching (CLT) on report writing skills among 9th graders. Relevant literature revealed that report writing skills can be enhanced with the help of communicative teaching. A quasi-experimental design was used. To experiment, two classes from one school were selected conveniently for gathering data to achieve the intended objective. Communicative lessons were intervention material. Results showed that communicative teaching had a significant effect on 9th graders' skills of a laboratory report in terms of writing. The outcome of research tells that CLT is valuable for educationists. Further, it is recommended for the teaching of writing any literary genre.*

**Key Words:** Grammar Translation Method (GTM), English Language Teaching (ELT), Communicative Language Teaching, Report Writing.

### Introduction

Teaching laboratory report writing to science students is a difficult task. The science teachers are not aware of the proper approach of teaching laboratory report writing to science students. In Pakistan, teachers remain active most of the time in the classroom and the student is the silent listener or observer of the activities of the teacher. In Pakistan, there is no proper attention to teaching laboratory report writing to science students. The rote-memorization is common in laboratory report writing. Students pass the exam by the cramming of ready-made material i.e. practical manuals available in the market. The communicative approach focuses on open-ended discussion activities related to real-life situations having the potential to develop communicative competence in learners. In the communicative approach of teaching, the teacher has a role of facilitator that involves the learner in different communicative activities. Fluency has given prime importance in the communicative approach than accuracy (Samiullah, 2019). The researchers used a communicative approach to study its effect on laboratory report writing skills of learners at the secondary level in Islamabad.

Science laboratory can be used as a means of ameliorating the written communication of students. The science teachers do not put particular consideration in teaching laboratory report writing to science students due to a lack of apprehension of this goal of a science laboratory. There is more weightage of marks of content-based knowledge of science subject and less weightage of marks for laboratory report writing in the examination. (Wiebe, Brawner, Carter, & Ferzli, 2005). This is the reason that students meditate more on attaining good marks through cramming of ready-made material. i.e. Practical manuals relevant to the laboratory work and do not know how to present their laboratory work in written form. (Communication, curriculum, & technology, 2007). Fatima (2012) described that Pakistan is struggling hard to keep pace with other countries in education. Due to the drawbacks of our education system, science teachers and students do not focus on teaching and learning of laboratory report writing. Students satiate the written work relevant to the science laboratory to attain good grades in the exams. Power (2003) said that the target of communicative approach is open-ended discussion activities in the classroom. The purpose of the communicative approach is to produce communicative

\* Lecturer, Department of Science Education, Allama Iqbal Open University Islamabad, Pakistan.

<sup>†</sup> Assistant Professor, Department of Education, University of Mianwali, Punjab, Pakistan.

<sup>‡</sup> Assistant Professor, ECE&ETE, Allama Iqbal Open University Islamabad, Pakistan. Email: [sami.ullah@aiou.edu.pk](mailto:sami.ullah@aiou.edu.pk)

competence in learners. Musthafa (2015) aforementioned that during writing through the communicative approach, students become competent to construct their ideas into sufficiently good written form according to the goal of writing in the existing situation. According to Ahmad and Rao (2013), research work is needed for the communicative syllabus design. Students' attitudes towards the communicative approach can be measured by teaching them through the adoption of the communicative approach and observing its effects. (Muhammad, 2016). Communicative teaching has been proved effective in improving the learning of the English language in Pakistan. So, there is a need to study its effects in the field of science, more specifically on the development of lab report writing skills at the secondary level.

### **The Teaching of Writing to Science Students**

Teaching writing to science students is a controversial matter. One of the views of educationists is to use the science laboratory as a means of improving the written communication of students. The science teachers are not aware of this goal that laboratory work can be used to improve the writing skills of students. The science teachers use traditional methods for the instruction of laboratory work which demolishes the effectiveness of lab work for science. Science teachers focus more on content-based knowledge of the subject and have no time to teach the lab report writing through the use of the proper approach. The current situation demands to eliminate the past practice of evaluation of lab reports in terms of grades and to evaluate them by providing feedback to improve the lab report writing skills of students. Science teachers can use approaches of humanities discipline to teach writing to students. Science teachers usually have no command on the proper approach of teaching lab report writing and they think that it is better to put the responsibility of teaching writing on English teachers (Wiebe, Brawner, Carter, & Ferzli, 2005). Students generally follow the cut, copy, and paste mechanisms to write the reports of their laboratory work in schools. Students concentrate more on attaining good marks through the cramming of ready-made material relevant to the laboratory work. They do not know how to present their laboratory work in written form. The report also includes events that have been mentioned in the literature. The central idea of report writing is to convey the reader about the results derived from the happenings related to the above issues. Simplicity and objectivity of report writing attract the reader's attention and interest conveniently. The report is a well-organized pattern of your work. Riordan and Pauley (2003) described that the act of concentrating interest in reports is to fulfill the function of communication to different sorts of readers. Today, it is the demand for real life i.e., the job market to be proficient in technical skills such as report writing (Neeley, 2012).

### **Laboratory Report**

A laboratory report is a highly structured document created through a systemized process (Goldbort, 2001). The laboratory report can develop the writing skills of students that are appreciated in higher education or practical life i.e., in the job market. The teacher or instructor has to cross the pedagogical barriers to realizing the significance of laboratory report writing to students. Clear, comprehensive, and systematic laboratory reports can be produced through the reflective exposition of events occurring in the laboratory (Deiner, L. J., Newsome, D., & Samaroo, D. 2012).

### **The Situation of Laboratory Report Writing in Pakistan**

Pakistan is a developing country. Pakistan is struggling hard to keep pace with other countries in education. According to Rahman (2007), the teaching methodology used in Pakistan does not fulfill the demand for standards of education. Teachers are not guiding the pupils appropriately for developing writing skills. Siddique (2007) told that in Pakistan's school's teacher is an active participant in the classrooms. Most of the time, students remain silent in the classrooms. They observe the activities of teachers in the classrooms and copy the written text from whiteboard/blackboard. The classrooms in the school lack a communicative environment to polish the writing skills of students. Fatima (2012) described that there is a need to make the education system of Pakistan up to date. Our system of education is promoting to teach technical skills like report writing through cramming. The traditional teaching has no fruitful effects on the report writing skills of students. Due to the drawback of our

education system, students do the cramming of lab reports to pass in the practical exam. This routine practice induces hindrances for teachers to use new approaches for the teaching of laboratory report writing. Consequently, students are not aware of the importance of laboratory report writing.

### **Statement of the problem**

Writing is generally instructed isolated from science. The act of rote-memorization is depicted in writing laboratory reports. When a laboratory report is read or written it resembles the recipe in a cookbook and fails to convey its purpose to the reader. The reason behind this is that they have not been trained in writing the reports of their laboratory work. They generally copy senior students' work from their practical notebooks or buy practical manuals to gain good grades or a high percentage of marks but do not develop their writing skills of reporting laboratory work. They neglect self-effort and rely on making a copy of others' work. This problem can be solved by creating the habit of self-writing in students in the early stages of life through the induction of different approaches of teaching in the science classroom. Keeping in mind this situation, researchers intended to research the effect of the communicative approach on the writing laboratory report.

### **Delimitations**

This study is delimited to two girls' high schools of District Islamabad. This study is delimited to the report writing skill for laboratory work in the subject of Chemistry to the students of 10<sup>th</sup> class.

### **The Objective of the Research**

To study the overall effect of the communicative language teaching approach on the laboratory report writing skills (subskills include sequence/form, grammar, mechanics, and form) among the students at high school (Grade 10).

### **Research Questions**

- i. Is the communicative approach helpful for improving laboratory report writing skills of students at the secondary level in the above-mentioned sub-skills?

### **Literature Review**

According to Alejandro G. Martinez (2002), the productive consequences of report writing can be achieved through the use of authentic materials. Different activities can serve as a good source to get benefit from the authentic material during practical implementation. Activities can give maximum opportunities to the students to develop report writing skills. Fatima (2012) presented that the exposure of students to real situations can induce effectiveness in report writing skills. The communicative approach raises the interest level of students in the skills to be taught or instructed and students exhibit more creativity in their writings. Cope and Kalantzis (2000) and Unsworth (2001) told that laboratory report writing is not thought of as a prime concern in science teaching. The science instructors belong to non-native English background even at college or secondary level. They have no idea how to provide a setting for the learning of laboratory report writing skills and application of the coherent system to evaluate the writing of students in laboratory reports. Jensen and Fischer (2008) have stated that problems related to teaching report writing to science students are not new but in the curriculum, no circumstances are organized for the teaching of laboratory report writing to science students. Brewster and Clump (2004) elaborated that the students in any field can become good writers through working with a particular structure and configuration of the field. The science teacher can strengthen the writing skills of their students through their exposure to the writing of laboratory reports. The goal of teaching should be to synchronize the teaching strategies with writing activities for teaching report writing to science students. The students are taught in small groups through explicit instruction to arrange their conceptions before report writing. Keys (2000) proclaimed that the laboratory report generally comprises of four parts. i.e. Introduction, procedure, result, and conclusion. It is a systematic way of presenting the laboratory work that has developed with time with the advancements in knowledge. It is considered that discussion before the laboratory activity is

important for constructing good writing in the laboratory report. Sageev, P., & Romanowski, C. J. (2001) said that laboratory reports prepare the students to communicate in the real world. The teaching of new communication technologies is required to make writing effective. Feedback and discussions bring positive consequences in laboratory report writing. Hyland (2007) said that report writing skills can be taught ideally by incorporating the learner to real-life activities. Merino & Hammond (2002) described that the laboratory report writing deals with the means of customizing science by supporting scientific discourse. The use of the communicative approach to teaching laboratory report writing expresses the understanding of students and pursues the activities based on the passion of students. Discourse competence is illustrated during writing the details of the experiment. Strategic competence is depicted when the teacher collaborates with the learner through dialogues and responses help in the writing of effective laboratory reports. Laboratory report writing follows certain rules of writing comprising of grammatical competence, sociolinguistic competence, discourse competence, and strategic competence. Harmer (2001) expressed that activities in the communicative approach are the cause of participation of learners in realistic communication.

### **Laboratory Report Writing**

According to Field & Hole (2002), in laboratory report writing, the prime importance is given to the viewers for which the report is composed. The laboratory report should justify your insistence and affirmations. A laboratory report is an explanation of the experiment performed by you in the laboratory.

Ahn (2012) applied a genre approach to improving the writing skills of students in primary school. Genre approach is based on three staged Teaching and Learning Cycle (TLC) developed on Vygotsky's notion of scaffolding. Students showed a positive attitude towards report writing when taught through the use of the genre approach. Carter, Ferzli, and Wiebe (2004) stated that first language adults can learn report writing through explicit teaching in the situation of the convincing use of genre. They researched the use of Lab writes online instructional material for the teaching of lab reports to the first language university students in Biology Lab. The conclusion was that not only report writing skills were improved but there was a remarkable improvement in learning the concepts of Lab and the application of scientific reasoning. Willmott, Clark, and Harrison (2003) described that discussion followed by laboratory report writing practices and one-to-one feedback on reports by tutor exceeds the lab report writing skills of students at the undergraduate level.

According to Alejandro G. Martinez (2002), the productive consequences of report writing can be achieved by using authentic materials for teaching. Different activities can serve as a good source to get benefit from the authentic material during practical implementation. Activities can give maximum opportunities to the students to develop report writing skills. Fatima (2012) presented that the exposure of students to real situations can induce effectiveness in report writing skills. The communicative approach raises the interest level of students in the skills to be taught or instructed and students exhibit more creativity in their writings. The communicative approach extends the capacity of the writing of reports and other relevant documents such as a memorandum, letter, brochure, office notes, and email. Dave, Kim, and Olson (2015) used surveys and focus groups and found that assessment scores of mechanical engineering students in lab report writing were increased to a higher level through the implementation of a rhetorical approach in lab writing instructions. Dunne and Ryan (2012) reported that peer involvement improves the performance of students in lab report writing. Discussion and feedback session improves the lab report writing. Feedback on lab reports can be given in two ways: one-to-one discussion and group discussion. The majority of the students have a view that one-to-one discussion is beneficial. Feedback gives students motivation and moves in the right direction. Likaj (2015) described that the incorporation of a student's practice of writing in the communicative tasks involving real-life situations rather than indulging in an artificial environment brings constructive improvement. The practice of writing involving communicative tasks prepares the students for academic and professional life. The integration of feedback in writing by the instructor helps to improve the written communication skills of students as writing is a vehicle to interact with others. The social- constructionist approach is suitable for communicative writing. The originality and autonomy in writing are a means to communicate freely to the readers. WRise Project consisting of online learning modules designed to improve the report writing skills of students at the undergraduate level by Drury and Jones (2010). Students became competent in report writing on interaction with this online learning environment. Students'

apprehension and assimilation of putting the accurate content in writing the report of their discipline has been raised through interaction with WRiSE.

Cope and Kalantzis (2000) and Unsworth (2001) told that laboratory report writing is not thought of as a prime concern in science teaching. The science instructors belong to non-native English background even at college or university level. They have no idea how to provide the setting for practices of laboratory report writing skills and application of coherent systems to evaluate the writing of students in laboratory reports. Jensen and Fischer (2008) have stated that problems related to teaching report writing to science students are not new but in the curriculum, no circumstances are organized for the teaching of laboratory report writing to science students. Peer evaluation helps in improving the report writing skills of students. Peer evaluation is an effective method of improving the report writing skills of students as compared to time-consuming traditional methods. Brewster and Clump (2004) elaborated that the students in any field can become good writers through working with particular structures' and configurations of the field. The science teacher can strengthen the writing skills of their students through their exposure to the writing of laboratory reports. The goal of teaching should be to synchronize the teaching strategies with writing activities for teaching report writing to science students. The students are taught in small groups through explicit instruction to arrange their conceptions before report writing. Neumann & Hood (2009) revealed that Wiki assisted the students in report writing by increasing their interest and commitment as they devote more time for learning report time and become regular in their classes. Students become intensely involved in analyzing, drafting, and enumerating the written reports. Wiki promotes collaboration in students but there is no difference in the scores of students who learn report writing through wiki or individual report writing. Teacher interaction has more effect on upgrading the achievement level of students in their report writing skills. Keys (2000) proclaimed that the laboratory report generally comprises four parts i.e., Introduction, procedure, result, and conclusion. It is a systematic way of presenting the laboratory work that has developed over time with the advancements in knowledge. It is considered that discussion before the laboratory activity is important for constructing good writing in the laboratory report. Gragson and Hagen (2009) expounded that the development of IWG (Integrated Writing Guide), providing checklist including criteria for grading of laboratory reports to students, feedback of peers on laboratory reports and induction of scoring rubrics to evaluate laboratory reports of students boost the laboratory report writing skills of students. Walker and Sampson (2013) related that use of the Argument-Driven Inquiry (ADI) instructional model involving peer review on laboratory reports of students and revising the written report after peer review helped to improve the laboratory report writing skills of students. It enables better communication to the reader through writing that is the convention of science.

Whelan and Zare (2003) pointed out that laboratory reports are written assignments of the laboratory work. Comments of instructor and one-on-one talk on the laboratory reports written by the pupils have been proved significant for effective consequences. The plentiful writing habitude and review bring rectification in the laboratory report writing. Students' performance of laboratory work in groups exaggerates their performance in written reports. Working in groups helps the students to meet the provocations of writing. The use of rubrics to analyze the writing in laboratory reports is useful. The scoring rubrics analyze the points communicated in the writing such as clarity, grammar, and style. Discussion in the laboratory raises the standard of performance of students in writing the laboratory reports. Friginal (2013) explicated that the corpus approach found to be effective in teaching laboratory report writing skills than traditional approaches. Corpus approach provides assistance in pedagogical writing for the favorable expansion of technical skills of learners e.g. laboratory report writing. Corpus' approach increases the reliance of learners in his writing. The rubrics used for analyzing the laboratory reports had given 40% weightage of score to sentence structure, grammar, and word choice and 60% weightage of score to the accuracy of content or interpretation, mechanics and organization of the report. Corpus approach uses genuine and factual world examples to evolve the laboratory report writing skills of learners. It also develops the interest of learners in learning report writing skills. Bacha (2000) asserted that it is required to involve more writing tasks in research on report writing. Downs and Wardle (2007) suggested that practice is required for writing. The reality of the effectiveness of writing an essay on biology in English can help the students' in writing of laboratory report in biology is not known.

When students are taught with a particular instructional approach in the laboratory, it will result in the

improvement of laboratory competency which also includes writing skills of students in terms of laboratory reports. Writing skills stimulates the growth of analytical skills. Writing tasks help the students to clarify their ideas. Lerner (2007) explained that teaching a piece of writing is perfectly laboratory work. The student engaged in writing a particular task is needed concentration in a similar way as teaching the content of Chemistry. Laboratory methods cannot only help to teach content knowledge of science subjects but can also be used to develop the habit of writing in science students. The understanding of writing as a laboratory subject focuses on the need of developing the writing skills of students. The individual evaluation of laboratory reports written by students is considered as an integral part of laboratory instruction. The experiments in the laboratory can serve as a means to stimulate the students to communicate their piece of work in the form of writing to make them competent for writing in practical life. The laboratory work is an authentic activity to practice writing for students in the form of laboratory reports. In laboratory methods, students can learn by doing, collaborating, speaking, drawing, and writing. In laboratory settings, students are required to write about the experimental procedure, observations or results, and conclusions. English teacher cannot avail the moment of teaching writing to his students in the form of laboratory report but science teacher has a precious chance to use laboratory work as a mean of exercise of writing. The instructor can comment on the laboratory report and ask the students to revise the written reports for improvement. Commonly, teachers rely on the cookbook approach of teaching science experimentation to students, and the use of prefabricated material for writing laboratory work has proved unsuccessful for improving laboratory report writing skills. Science educators embodied that cookbook methods make the laboratory work vacuous and student writing in such an environment is rote, mechanistic, and dull.

Chapelle, Grabe, & Berns (1997) observed that learners can expound and reveal their meaning through written text. The diffusion of learners in different tasks improves writing. For example. In science laboratories, learners can be pledged in tasks to improve laboratory report writing skills. The discourse used in the laboratory can serve the purpose to motivate the students for writing. The discourse used in the laboratory does not involve long, thought-provoking questions. Most of the discourse centered around the equipment used in the laboratory such as

Student: Why the ray of light bends towards the normal?

Teacher: That's because of the difference in the refractive index.

Student: Ok.

Rivard and Straw (2000) said that discussion during the laboratory work persuades the learner to ask questions, contemplate, clarify, and contrive patterns for writing. When student discussion and distinctive writing are integrated, students show effective performance in the desired goal. Burke, Greenbowe, & Hand (2006) stated that collaborative work and writing help the student to conclude precisely about their laboratory experiment. Students are more attracted towards the learning of desired skill in task-based activities than during the lecture or traditional laboratory practices. They must be replaced by new strategies. Hyland (2007) said that report writing skills can be taught ideally by incorporating the learner to real-life activities. Hefferman (2006) indicated that listening and speaking skills are firmly correspondent to the capacity of learners to write a text related to a specific domain. Deiner, Newsome, and Samaroo (2012) said that the assimilation of scaffolding and individualized feedback on laboratory reports improved the writing skills of students.

Merino & Hammond (2002) described that laboratory report writing deals with the means of customizing science by supporting scientific discourse. The use of the communicative approach to teaching laboratory report writing expresses the understanding of students and pursues the activities based on the passion of students. Discourse competence is illustrated during writing the details of the experiment. Strategic competence is depicted when the teacher collaborates with the learner through dialogues and responses help in the writing of effective laboratory reports. Laboratory report writing follows certain rules of writing comprising of grammatical competence, sociolinguistic competence, discourse competence, and strategic competence. Tilstra (2001) concluded that the students of Chemistry should be capable to transmit their work performed in the laboratory into written format. The Chemistry laboratory reports can serve as a source to develop the writing skills of learners. The writing of laboratory reports can help to relate the apprehension of learners with the investigation in the laboratory. An acid-base titration in the Chemistry laboratory is a congenial experiment for teaching laboratory report writing. The marking criteria should be assigned for grading of laboratory reports.

Consequently, coherence and competency will be depicted in the writing of laboratory reports. Ranawake, & Wilson (2016) explored that the laboratory work involving activities and questioning other than a recipe-based cookbook approach can guide the students' in the report writing of the laboratory work. A laboratory report generally consists of an introduction, methodology, results, and discussion.

Ellis, Taylor, & Drury (2006) said that the laboratory report is a way to judge the understandings of students about experimental procedures. Oliver & Vanderford (2012) told that to achieve expertise in laboratory report writing is necessary for success in higher education and professional life. Hoffa (2006) observed that the students write laboratory reports after experimenting in the laboratory to reveal, recapitulate, and estimate the laboratory work. Laboratory report writing in science discipline gives opportunities to students to write regularly and refine their writing skills.

## Method and Procedure

The method and procedure is mentioned as

## Design

This is a quasi-experimental study. The design of the study is a pre-test-post-test, non-equivalent control group design.

## Sample

The sample was selected by convenience sampling technique. Two schools were selected for this study. There were 30 students each in the experimental and control group.

## Instrument

The reliability of the test was measured as .81 and validity of the test was determined by the expert's opinion. The scoring rubrics were used to analyze the laboratory report writing skills. Data were analyzed in terms of Grammar, Sequence (steps of laboratory report writing), Mechanics, Fluency, and Form having a weightage of 5 marks for each.

## Data Analysis

The data were analyzed through a t-test. SPSS software was used for the analysis of data. The data were analyzed in the following ways:

- Overall comparison of experimental and control groups in lab report writing skills.

### Overall Comparison

| Group                  | Overall Performance       | Pre-Test Mean | SD (Pre-Test) | Post-Test Mean | SD (Post-Test) | Gain  | Df | t-value | Sig (2-tailed) |
|------------------------|---------------------------|---------------|---------------|----------------|----------------|-------|----|---------|----------------|
| Control<br>(N=30)      | Lab Report Writing Skills | 15.00         | 3.05          | 20.25          | 5.38           | 5.25  | 58 | 3.44    | 0.00**         |
| Experimental<br>(N=30) | Lab Report Writing Skills | 16.00         | 3.80          | 50.37          | 10.33          | 30.37 |    |         |                |

Data analysis indicated that in laboratory report writing, the experimental group was better than the control group. The t-value for the comparison of the control group and experimental group is 3.44 at df (58),  $\rho > 2.00$  is significant. Therefore, it can be concluded that experimental group students performed better than controls in terms of overall lab report writing skills.

### **Answers to the research questions**

- i. The communicative approach of teaching laboratory writing has a significant effect on improvement in lab report writing skills among high school students.

### **Recommendations**

- Effect of communicative approach on enhancing theoretical/conceptual knowledge in a particular science subject.i.e. Chemistry, Physics, and Biology can be studied at various levels.

## References

- Agbatogun, A. O. (2014). Developing Learners' Second Language Communicative Competence through Active Learning: Clickers or Communicative Approach *Educational Technology & Society*, 17 (2), 257–269.
- Ahmad, S., & Rao, C. (2013). Applying Communicative Approach in Teaching English as a Foreign Language: a Case Study of Pakistaner. *Porta Linguarum: revistainternacional de didáctica de las lenguasextranjeras*(20), 187-203.
- Ahn, H. (2012). Teaching writing skills based on a genre approach to L2 primary school students: An action research. *English Language Teaching*, 5(2), 2.
- Applebee, A. N., Langer, J. A., Nystrand, M., & Gamoran, A. (2003). Discussion-based approaches to developing understanding: Classroom instruction and student performance in middle and high school English. *American Educational Research Journal*, 40(3), 685-730.
- Bacha, N. N. (2002). Developing learners' academic writing skills in higher education: A study for educational reform. *Language and Education*, 16(3), 161-177.
- Bahumaid (2012). The Communicative Approach in EFL Contexts Revisited: *International Journal of Social Science and Humanity*, Vol. 2, No. 6, November 2012.
- Baker, W. P., Barstack, R., Clark, D., Hull, E., Goodman, B., Kook, J., et al. (2008). Writing-to-learn in the inquiry-science classroom: Effective strategies from middle school science and writing teachers. *The Clearing House*, 81(3), 105 – 108.
- Baleghizadeh, S. (2010). FOCUS ON FORM IN AN EFL COMMUNICATIVE CLASSROOM. *Novitas-Royal*, 4(1).
- Ballman, T.L., Liskin- Gasparro, J.B., & Mandell, T. B. (2001). *The communicative classroom*. Boston. AATSP/Heinle.
- Bangert-Drowns, R. L., Hurley, M. M., & Wilkinson, B. (2004). The effects of school-based writing-to-learn interventions on academic achievement: A meta-analysis. *Review of educational research*, 74(1), 29-58.
- Ben-Zvi, D. (2007). Using wiki to promote collaborative learning in statistics education. *Technology Innovations in Statistics Education*, 1, 1-18.
- Brown, H.D. (2001) *Teaching by Principles: An Interactive Approach to Language Pedagogy*. New York: Longman
- Burke, K. A., Greenbowe, T. J., & Hand, B. M. (2006). Implementing the science writing heuristic in the chemistry laboratory. *Journal of Chemical Education*, 83(7), 1032.
- Cacciatore, K. L., & Sevian, H. (2006). Teaching lab report writing through inquiry: a green chemistry stoichiometry experiment for general chemistry. *J. Chem. Educ*, 83(7), 1039.
- Carter, M., Ferzli, M., & Wiebe, E. (2004). Teaching genre to English first-language adults: A study of the laboratory report. *Research in the Teaching of English*, 395-419.
- Chang (2011). EFL Teachers' Attitudes toward Communicative Language Teaching in Taiwanese College: *Asian EFL Journal of Professional Teaching*. Vol.5(3),34-42.
- Chapelle, C., Grabe, W., & Berns, M. S. (1997). *Communicative language proficiency: Definition and implications for TOEFL 2000*. Princeton, NJ: Educational Testing Service.
- Cope, B. (2000). *Multiliteracies: The beginnings of an idea*. I Cope, Bill & Kalantzis, Mary (Red), *Multiliteracies. Literacy Learning and the Design of Social Futures*. London & New York: Routledge.
- Corden, R. (2000). *Literacy & learning through talk: Strategies for the primary classroom*. McGraw-Hill Education (UK).
- Cremin, T. (2006). Creativity, uncertainty and discomfort: Teachers as writers. *Cambridge Journal of Education*, 36(3), 415–433. doi:10.1080/03057640600866023
- Deiner, L. J., Newsome, D., & Samaroo, D. (2012). Directed self-inquiry: A scaffold for teaching laboratory report writing. *Journal of chemical education*, 89(12), 1511-1514.
- Demirezen, M. (2011). The foundations of the communicative approach and three of its applications. *Journal of Language and Linguistic Studies*, 7(1), 57.
- Dörnyei, Z. (2009). The 2010s Communicative language teaching in the 21st century: The 'principled

- communicative approach'. *Perspectives*, 36(2), 33-43.
- Doughty and Long (2003). *Principles of Communicative Language Teaching and Task Based Instruction*. Retrieved November 9th, 2013, from <http://www.pearsonhighered.com/samplechapter/0131579061.pdf>.
- Dunne, J., & Ryan, B. (2012). Learning in the Science Lab: a New Approach. *Irish Journal of Academic Practice*, 1(1), 2.
- Ellis, R., Taylor, C., & Drury, H. (2006). University student conceptions of learning science through writing. *Australian Journal of education*, 50, 6-28.
- Eslami-Rasekh, Z., & Valizadeh, K. (2004). Classroom Activities Viewed from Different Perspectives: Learners' Voice and Teachers' Voice. *TESL-EJ*, 8(3), n3.
- Fageeh, A. I. (2011). EFL learners' use of blogging for developing writing skills and enhancing attitudes towards English learning: An exploratory study. *Journal of Language and Literature*, 2(1), 31-48.
- Fatima, S. (2012). Teaching Report Writing Skills through Communicative Activities. *American International Journal of Contemporary Research*, 2(2), 104-109.
- Fazilatfar, M.A., Ilun, M., Chenari, Z. (2017). Impact of Skilled-Based Communicative Approach on Writing Skill of EFL Learner, 9
- Field, A., & Hole, G. (2002). *How to design and report experiments*. Sage.
- Fitzgerald and Shanahan (2000). *Reading and writing relations and their development*: Taylor & Francis.
- Original, E. (2013). Developing research report writing skills using corpora. *English for Specific Purposes*, 32(4), 208-220.
- Fulwiler, B. (2008). *Writing in science: How to scaffold instruction to support learning*. Portsmouth, NH: Heinemann.
- Gilmore, A. (2011). "I prefer not text": Developing Japanese learners' communicative competence with authentic materials. *Language Learning*, 61(3), 786-819.
- Goldbort, R. C. (2001). Scientific writing as an art and as a science. *Journal of environmental health*, 63(7), 22.
- Graham, S., & Hebert, M. (2010). Writing to read: Evidence for how writing can improve reading: A report from Carnegie Corporation of New York.
- Graham, S., & Perin, D. (2007). *Writing Next-Effective strategies to improve writing of adolescents in middle and high schools*.
- Griffith, N. (2006). *100 ideas for teaching language*, New York: Continuum
- Gunel, M., Hand, B., & McDermott, M. (2009). Writing for different audiences: Effects on high-school students' conceptual understanding of biology. *Learning and Instruction*, 19, 354 – 367.
- Hammond, M. (2000). Communication within on-line forums: the opportunities, the constraints and the value of a communicative approach. *Computers & Education*, 35(4), 251-262.
- Han, Z. H. (2002). Rethinking the role of corrective feedback in communicative language teaching. *RELC Journal*, 33(1), 1-34.
- Hardman, F., Smith, F., & Wall, K. (2003). 'Interactive Whole Class Teaching' in the National Literacy Strategy. *Cambridge Journal of Education*, 33(2), 197-215.
- Harmer, Jeremy (2001). *The Practice of English Language Teaching*(3rd ed.). London: [www.longman.com](http://www.longman.com).
- Harmer, J. (2006). *How to teach writing*. Pearson Education India.
- Hefferman, N. (2006). An integrated approach to teaching academic writing. *Asian EFL Journal*, 8 I 3, art. 12.
- Hiep, P. H. (2007). Communicative language teaching: Unity within diversity. *ELT Journal*, 61(3), 193-201
- Hirano, J. (2010). The importance of learning and teaching communicative writing: To end the primacy battle between writing and speaking.
- Hoffa, D. W. (2006). Synopsis laboratory reports: Effects on student learning and curricular benefits.
- Hu, G. (2002). Potential cultural resistance to pedagogical imports: The case of communicative language teaching in China. *Language Culture and Curriculum*, 15(2), 93-105.
- Huyen, N. T. T., & Nga, K. T. T. (2003). Learning vocabulary through games. *Asian EFL Journal*, 5(4), 90-105.
- Hyland, K. (2003b). *Second language writing*. Cambridge: Cambridge university press.
- Hyland, Ken; *The Handbook of English for Specific Purposes*, First Edition, edited by Brian Paltridge & Sue

- Starfield, John Wiley & Sons, Inc. 2013.
- Hyland, K. (2007). Genre pedagogy: Language, literacy and L2 writing instruction. *Journal of second language writing*, 16(3), 148-164.
- Indrisano, R., &Paratore, J. (Eds.). (2005). *Learning to write and writing to learn: Theory and research in practice*. Newark, DE: International Reading Association.
- Jeffery, J. V. (2009). Constructs of writing proficiency in US state and national writing assessments: Exploring variability. *Assessing Writing*, 14(1), 3-24.
- Jensen, W., & Fischer, B. (2005). Teaching technical writing through student peer-evaluation. *Journal of technical writing and communication*, 35(1), 95-100.
- Jin, G. (2009). Application of communicative approach in college English teaching. *Asian Social Science*, 4(4), 81.
- Johnstone, K. M., Ashbaugh, H., & Warfield, T. D. (2002). Effects of repeated practice and contextual-writing experiences on college students' writing skills. *Journal of educational psychology*, 94(2), 305.
- Kalanzadeh, G. A., &Bakhtiarvand, M. (2011). Perceived problems in using communicative language teaching (CLT) by EFL Iranian teachers. Unpublished doctoral dissertation, Payame Noor University of Andimeshk, Andimeshk, Iran.
- Kaplan, A. (2008). Clarifying metacognition, self-regulation, and self-regulated learning: What's the purpose? *Educational Psychology Review*, 20(4), 477-484.
- Kelly, G., Regev, J., & Prothero, W. (2008). Analysis of lines of reasoning in written argumentation. In S. Erduran& M. Jimenez-Aleixandre (Eds.), *Argumentation in science education: Perspectives from classroom-based research* (pp. 137 – 157). Dordrecht, The Netherlands: Springer.
- Keys, C. W. (2000). Investigating the thinking processes of eighth grade writers during the composition of a scientific laboratory report. *Journal of research in science teaching*, 37(7), 676-690.
- Khan, R., Ali, S., Dilruba, R., & Fatima, N. (2015). Comparative Studies of the Effectiveness of Communicative and Structural Approach for Teaching English Language. *Journal of Policy Research (JPR)*, 1(2), 67-71.
- Kiuhara, S., Graham, S., &Hweken, L. (2009). Teaching writing to high school students: A national survey. *Journal of Educational Psychology*, 101(1), 136 – 160.
- Larsen-Freeman, D. (2000) *Techniques and principles in language teaching*, 2nd edition, Oxford University Press, Oxford.
- Lerner, N. (2007). Laboratory lessons for writing and science. *Written communication*, 24(3), 191-222.
- Liao, X. Q. (2000). *Communicative Language Teaching Innovation in China: Difficulties and Solutions*.
- Likaj, M. (2015). Teaching Writing through Communicative Approach in Military English. *Journal of Education and Practice*, 6(20), 102-107
- Littlewood, W. (2007). *Developing a Context-Sensitive Pedagogy for Communication -Oriented Language Teaching*. Retrieved October 6th, 2013, from <http://Koreatesol.org/sites/default/files/pdf/Littlewood%20Teaching%20English%20PDF.pdf>.
- Martinez, Alejandro. (Karen's Linguistic Issues, February 2002) *Authentic Materials: An Overview*.
- Merino, B. J., & Hammond, L. (2002). Writing to learn: Science in the upper-elementary bilingual classroom. *Developing advanced literacy in first and second languages: Meaning with power*, 227-243.
- Messenheimer, T., & Packwood, A. (2002). Writing: the state of the state vs. the state of the art in English and American schools. *Literacy*, 36(1), 11-15.
- Mortimer, E., & Scott, P. (2003). *Meaning Making In Secondary Science Classrooms*. McGraw-Hill Education (UK).
- Moskovitz, C., & Kellogg, D. (2011). Inquiry-based writing in the laboratory course. *Science*, 332(6032), 919-920.
- Muhammad, Z. (2016). Pakistani Government Secondary Schools Students' Attitudes towards Communicative Language Teaching and Grammar Translation in Quetta, Balochistan. *English Language Teaching*, 9(3), 258.
- Musthafa, B. (2015). Communicative language teaching in Indonesia: Issues of theoretical assumptions and

- challenges in the classroom practice. *TEFLIN Journal*, 12(2), 184-193.
- National Writing Project & Nagin, C. (2003). *Because writing matters: Improving student writing in our schools*. San Francisco, CA: Jossey-Bass.
- Neeley, T. (2012). Global business speaks English. *Harvard Business Review*, 90(5), 116-124.
- Newton, J. (2009). A place for “intercultural” communicative language teaching (iCLT) in New Zealand ESOL classrooms. *The TESOLANZ Journal*, 17, 1-12.
- NorouziLarsari, V. (2011). Learners' communicative competence in English as a foreign language (EFL). *Journal of English and literature*, 2(7), 161-165.
- Nunan, D. (2006). *Task-based language teaching: Ernst KlettSprachen*.
- Oliver, R., & vanderford, S. (2012). Evidence of English language proficiency and academic achievement of non-English-speaking background students. *Higher education research and development*, 31, 541-555.
- Prain, V. (2006). Learning from writing in secondary science: Some theoretical and practical implications. *International Journal of Science Education*, 28, 179 – 201.
- Prasad, B. B. N. (2013). *Communicative Language Teaching in 21st Century ESL Classroom*. *English for Specific Purposes World*, 14(40), 1-8.
- Prior, P. (2006). A sociocultural theory of writing. *Handbook of writing research*, 54-66.
- Rahman, T. (2007). *Denizens of alien worlds a study of education, inequality, and polarization in Pakistan*, Oxford: Oxford University Press.
- Ranawake, G. S., & Wilson, K. (2016). Learning to do science: lessons from a discourse analysis of students' laboratory reports. *International Journal of Innovation in Science and Mathematics Education (formerly CAL-laborate International)*, 24(2).
- Richards, J. C. (2005). *Communicative language teaching today*. SEAMEO Regional Language Centre.
- Richards, J.C. & Rodgers, T.S.(2001) *Approaches and Methods in Language Teaching* (2nd ed.) Cambridge: Cambridge University Press Samimy,
- Riordan, D. G., & Pauley, S. E. (2003). *Technical Report Writing Today*-[Book Review]. *IEEE Transactions on Professional Communication*, 46(1), 75-76.
- Rivard, L. P.; Straw, S. B. *Sci. Educ.* 2000, 84, 566–593.
- Roberts, J. T. (2009). The communicative approach to language teaching: The king is dead! Long live the king!. *International Journal of English Studies*, 4(1), 1-37.
- Sageev, P., & Romanowski, C. J. (2001). A message from recent engineering graduates in the workplace: Results of a survey on technical communication skills. *Journal of Engineering Education*, 90(4), 685-693.
- Salem, M. S. A.-S. (2007). *The effect of journal writing on written performance, writing apprehension, and attitudes of Egyptian English majors*. The Pennsylvania State University.
- Samiullah, M. (2015). *Development of Creative writing Through Communicative Approach At Secondary Level*. University of Punjab: Unpublished Thesis.
- Sampson, V., Enderle, P., Grooms, J., & Witte, S. (2013). Writing to learn by learning to write during the school science laboratory: Helping middle and high school students develop argumentative writing skills as they learn core ideas. *Science Education*, 97(5), 643-670.
- Sarfraz, S., Mansoor, Z., & Tariq, R. (2015). Teachers' and students' perceptions of the communicative language teaching methodology in the CALL environment: A case study. *Procedia-Social and Behavioral Sciences*, 199, 730-736.
- Saul, E. W. (Ed.). (2004). *Crossing borders in literacy and science instruction: Perspectives on theory and practice*. Arlington, VA: NSTA Press.
- Savignon, S. J. (2006). *Communicative Language Teaching*. In K. Brown (Ed.), *Language and Linguistics* (2nd ed.), (pp. 673-679). London: Elsevier.
- Shanahan, T. (2004). Overcoming the dominance of communication: Writing to think and to learn. In T.L. Jetton & J.A. Dole (Eds.), *Adolescent literacy research and practice* (pp. 59–74). New York, NY: Guilford Press.
- Siddiqui, S. (2007). *Rethinking education in Pakistan: Perceptions, practices, and possibilities*. Paramount Publishing Enterprise.

- Sidek, H. M. (2012). EFL Reading Instruction: Communicative Task-Based Approach. *Online Submission*, 5(2), 109-128.
- Silva, T., & Matsuda, P.K., (2002). An introduction to applied linguistics, NorbertSchmitt(ed.), 251-266. London: Arnold.
- Tilstra, L. (2001). Using journal articles to teach writing skills for laboratory reports in general chemistry. *Journal of Chemical Education*, 78(6), 762.
- Troia, G. A., & Graham, S. (2002). The effectiveness of a highly explicit, teacher-directed strategy instruction routine: Changing the writing performance of students with learning disabilities. *Journal of Learning Disabilities*, 35(4), 290-305.
- Unsworth, L. (2001). Teaching multiliteracies across the curriculum: Changing contexts of text and image in classroom practice. Buckingham, England: Open University Press.
- Van Bramer, S. E., & Bastin, L. D. (2013). Using a progressive paper to develop students' writing skills. *Journal of Chemical Education*, 90(6), 745-750.
- Walker, J. P., & Sampson, V. (2013). Argument-driven inquiry: Using the laboratory to improve undergraduates' science writing skills through meaningful science writing, peer-review, and revision. *Journal of Chemical Education*, 90(10), 1269-1274.
- Wallace, C. S., Hand, B. B., & Prain, V. (2004). *Writing and learning in the science classroom* (Vol. 23). Springer Science & Business Media.
- Weiss, I. R., Banilower, E. R., McMahon, K. C., & Smith, P. S. (2001). *The 2000 national survey of science and mathematics education*. Chapel Hill, NC: Horizon Research.
- Whelan, R. J., & Zare, R. N. (2003). Teaching effective communication in a writing-intensive analytical chemistry course. *Journal of Chemical Education*, 80(8), 904.