

Testing Effectiveness of Critical Thinking Interventions in Teaching English at Secondary Level

Amna Afzal
National University of Modern
Languages

Malik Ghulam Behlol
Fatima Jinnah Women
University

Fizza Sabir
The University of Adelaide, Australia

This research aimed at studying the effectiveness of Critical Thinking (CT) Skills intervention at a secondary level. The focus was on the pedagogical aspect and developed a framework to teach CT skills through English language. The study aims to evaluate the effectiveness of a CT skills intervention for 9th grade English students in Pakistan, compare the performance of low and high achievers before and after the intervention, and assess the influence of gender on CT skills performance. The study used a single-group pretest and posttest design to test the effectiveness of the intervention. The population of the study targeted both genders enrolled at a low-income private school in Kallar Syedan, Rawalpindi District, Pakistan. A total of 32 male and female students from 9th grade were chosen as participants of the study. An achievement test was derived from the Watson-Galser test for data gathering. The results revealed that the interventions were a success and the development of students' CT skills differ in boys and girls. It is recommended that educators may use an infusion approach to develop students' CT skills.

Keywords. Low-income schools, critical thinking, intervention, English subject

Critical thinking is the ability to engage in purposeful, reflective, and self-regulatory judgment to enhance understanding of a situation,

Amna Afzal, Department of Educational Sciences, National University of Modern Languages, Islamabad, Pakistan.

Malik Ghulam Behlol, Department of Education, Fatima Jinnah Women University, Rawalpindi, Pakistan.

Fizza Sabir, The University of Adelaide, Australia.

Correspondence concerning this article should be addressed Amna Afzal, Department of Educational Sciences, National University of Modern Languages, Islamabad, Pakistan. Email: Amnaafzalprofessional@gmail.com

event, or problem. It is a debatable concept, and the definitions vary from discipline to discipline, e.g., psychology, sociology, education and anthropology (Dwyer, 2023). Dewey referred to CT as reflective, active, persistent, and careful consideration of any belief or supposed form of knowledge (Joynes et al., 2019) and referred to it as life skills and higher-order thinking; and the Delphi committee narrowed it to 6 skills which include analysis, interpretation, evaluation, inference, explanation, and self-regulation. The Australian Council for Educational Research framework (2019) defined CT skills as the ability to think critically, analyze and evaluate information, reason in situations with the help of appropriate standards such as truth and logic, and construct sound and insightful new knowledge, and test hypotheses and beliefs. It encompasses the subjects' ability to process and synthesize information in such a way that it enables them to apply it judiciously to tasks for informed decision-making and effective problem-solving (Heard et al., 2020). In Urdu language, CT skills are known as *ghor-o-fikr*, *tanqeedi soch*, *tanqeedi jayza* referring to critical review, productive positive thinking in terms of decision making or *faislasazi* (Cassum et al., 2013). The definitions mentioned above are a combination of skills and dispositions; however, this research will only focus on CT skills including deduction, inference, evaluation of arguments, and recognition of assumptions used by an individual or a group of individuals. Educators have argued that the foremost aim of education should be to train students in CT skills. CT is the most vital component in the conception and organization of educational activities (Abrami et al., 2008). Students are required to learn CT skills as early as possible (Sarican et al., 2021) because these play a key role in their academic careers and adult life. Individuals who use CT skills from an early age can view situations and things from multiple perspectives and develop accurate opinions based on information instead of biased knowledge. This is extremely relevant in today's world, due to the abundance of information. The ability to differentiate between valid and invalid information allows an individual to stray away from the information chaos.

The significance of higher order thinking skills and training of students has been reiterated by the Government of Pakistan in Education policy (2009) and draft Education policy (2017). In the corporate and academic sectors, higher order thinking skills are highly sought after phenomenon. Organizations are actively seeking individuals who can think creatively, critically, communicate and collaborate effectively. In the 21st century, the individual is meant to be a master of core subjects such as Math's, languages and general knowledge, social and cross-cultural skills and an understanding of the

economic and political forces that affect societies from critical perspective (Joynes et al., 2019). According to them, practitioners, educators and industrialists have acknowledged that the nature of work has changed since the 1960's and workers have to perform abstract tasks more than before. Owing to changing work trends and demands, education institutions are required to shift towards a student-centric approach in pedagogy which enables the nurturance of CT skills in students. The authors want to highlight the significance of CT skills among school students through an intervention to enhance their CT skills. Historically, in Pakistan, the education system has been inherited from the British Raj. It needs to be updated and follows a teacher-centric approach because of huge gaps in policy and implementation. The first education policy addressed this concern and marked the importance of updating it to meet the national requirements. Since then, progress has been made in the education system, however, skills such as CT and English comprehension and speaking have not been attended to. It is imperative to address this gap instantly by replacing redundantly teaching English with a new pedagogy that would nourish students' CT and English language skills simultaneously.

The English Language holds a special place in the Pakistani context. According to De Talancé (2020) the English language has an important place in the societal dynamics of Pakistan. It is believed that to prosper globally, one should have a command of the English language. Therefore, parents with resources, should ensure that their children are enrolled in private schools instead of government schools, as it is a common perception of parents that private schools have a better standard of education and are more effective in teaching English and imparting CT skills to students, Students with a private schooling background performed better in English and CT skills at higher education. When compared to the students with Government school background (Aziz et al., 2018). However, on account of the high demand for English and lack of checks and balances, several low-cost private English medium schools in rural areas have been opened that have blurred the required target. The analysis of teaching and learning at the said schools have revealed that the majority of the low-cost private school students are not proficient in English, and they mostly rely on rote memorization of sentences and Urdu translation of the text for passing Matric and FA/FSC examinations (Manan, 2019). According to Khan (2023), this is problematic because parents send their children to low-income private schools instead of Government schools to learn English; to their dismay, the schools are focused on final matriculation results instead of language development; hence

rote memorization is reinforced instead of language development pedagogies. This obstacle impedes students' growth in language and critical thinking skills.

To teach CT skills effectively, it is important to have evidence to support pedagogical practices in various cultural settings. Contrary to this, Pakistan's schooling systems are heterogeneous to curriculum implementation, assessment, infrastructure facilities and financial cost per student at different levels. There is a lack of homogeneity between multiple school systems operating in Pakistan (Jamil et al., 2023). This creates a variation in students' acquisition of English language and CT skills proficiency. According to the parents' beliefs and observations, the students who belong to a private school system have a different set of values and acumen as compared to the students from government schools (Aziz et al., 2018). To successfully nourish students' CT skills regardless of their school system backgrounds, it is important to gather evidence on effective CT interventions while considering the heterogeneity in different education systems of Pakistan. Thus, the researcher developed a framework for teaching CT skills in the English language in the context of a low-income private school system. The study aimed to assess and evaluate whether the framework would be effective in improving student CT skills.

Literature establishes the importance of CT skills teaching for gaining success in life. However, the teaching of CT skills has been neglected in both public and private schools on account a lack of teachers' competence, classroom environment, pedagogical practices and assessment-related factors (Aziz et al., 2018). In response to this void, this study focused on the pedagogical aspect of unproductive phenomena and developed a framework to teach CT skills through the English language. Another aspect of the study was to assess whether an intervention would be effective in improving students' CT skills. To achieve these two aims, a deductive study based on the paradigm of positivism was conducted with the pretest and posttest single-group experimental research design. The objectives of this study are: To assess the effectiveness of CT skills English instructional intervention in teaching English at the secondary level in Pakistan, to measure the performance between low achievers and high achiever participants in the CT skills English instructional intervention at 9th grade, secondary level in Pakistan and to compare the performance between female and male students participating in the CT skills English instructional intervention in 9th grade at the secondary level in Pakistan.

Hypotheses

1. Critical thinking skills of boys and girls will improve after the intervention in the post- test in comparison to pre-test for 9th grade English Subject.
2. High achievers' critical thinking skills will show more improvement among girls in comparison to boys after the intervention in the post-test in comparison to the pre-test for 9th grade English subjects.
3. Low achievers' critical thinking skills will show more improvement among girls in comparison to boys after the intervention in the post-test in comparison to the pre-test for 9th grade English Subjects.

Method

Research Design

This study employed quasi-experimental research design. The research followed a positivist paradigm that included quantitative methodology utilized experimental research methods and employed pretest and posttests design. This is an effective design to assess changes after an intervention (Taylor & Medina, 2011). The researcher applied a pretest-posttest single group design. This design was useful as the enrolment in the school was low and it allowed for the researcher to assess whether a critical thinking skills intervention can be effective. The group consisted of 32 students: 16 girls and 16 boys. The single group received the CT skills intervention treatment and was given a pretest before the study started and a posttest to measure, assess and evaluate the effectiveness of CT interventions at the end of the intervention. The intervention was instructional, and it measured, assessed, and evaluated the acquisition of CT skills by students. To avoid maturation, the study was kept two weeks long.

Population and Sampling

The population for this study consisted of 9th-grade students studying in a low-income private school in rural Punjab, Pakistan. The school was in Kallar Syedan, Rawalpindi District, Punjab. The findings of this study can be generalized to low-income private schools in the rural region of Punjab. It is limited to Private schools which cater to low-income households and target 9th-grade students specifically. The researcher applied convenience and criterion

sampling for the selection of the 9th-grade students studying in private schools. The criteria for school selection were that it must be in a rural area; and its fee structure may accommodate students from low-income households' private schools. After carefully examining multiple schools, the researcher selected a school that had two sections of matric appearing at the end of term, consisting of a total of 32 students. The gender ratio was 1:1 and the average age of students was 15 with a Standard deviation of 1.

Intervention

It was a two-week instructional Intervention. For it, a two-week curriculum was designed in which critical skills were imbedded. It was pilot-tested in a controlled setting and adjustments were made. Before the intervention began an achievement test was administered which assessed students' critical thinking. After the intervention, a second achievement test was administered. The data between the two tests was analyzed.

Instrument

The instrument was modelled on the Watson-Glaser test (Watson & Glaser, 2020), the most popular measure of critical thinking ability. To validate the instrument, the content and construct validity of the instrument were tested. It was submitted to 5 critical thinking skills experts and 5 English language experts who commented on language, deduction, inference, and ability to identify patterns. To ensure external validity, the population of the group was carefully defined before the study was conducted. The researcher developed a total of 40 Question tests with an answer key following the Watson-Glaser Appraisal II format (Watson & Glaser, 2020). The 40 questions were then shared with the respective people for validity. The questions were then reduced to 40 questions consisting of questions from all the chapters with equal representation. This test was then used as the pre-test and then the same test was applied for post-test as well. This allowed the researcher to use the instrument for comparisons of student performance. The same test for pre and post-test also helped to make an informed and evidence-backed judgement regarding the effectiveness of the critical thinking skills intervention and promotion of critical thinking of students.

The testing instrument was objective. The questions were formulated in such a way that the number of correct answers would indicate the critical thinking capability of the participants. The

researcher also developed an answer key for the questions to ensure the objectivity of the checking process. It did not matter who checked the questions, the thinking process bias would not affect the score of the participants due to the availability of the answer key. Each unit was given equal representation in each section and equal weightage. The test developed by the researcher consisted of 40 points. There were 4 sections and there were 10 questions per section. The questions of the tests followed the format established by the Watson-Gaser Critical Thinking Appraisal II (Watson & Glaser, 2020). The questions were created as a representative of the chapters chosen from the book. There was at least one question per chapter and a maximum of three questions per chapter. Section 1 measured the student's ability to infer, and Section 2 measured Education, Section 3 measured evaluating arguments and Section 4 measured the student's ability to evaluate assumptions.

Intervention Framework

The intervention was a combination of the Acer framework (Joynes et al., 2019) and the Community of Inquiry framework. The blended framework is explained below:

Situation Presentation and Gaps Identification. Presentation of the scenario with the support of media clip/story/question answer (techniques/strategies). To discern what information is already known. Identify gaps/problems/confusions/conflicts (Socratic questioning techniques).

Discriminates Amongst Information. Determine a criterion for filtering the collected information; that is discerning between useful and useless information.

Identifies Patterns and Makes Connections. Reflect and organize information such as data, evidence, statements, questions, concepts, opinions, and other forms of representation, to create sense and meaning from it. This often leads to the formulation via induction of tentative 'rules or theories to best explain these patterns, based on generalizations derived from them.

Evaluating and Reflection. The thinking required to discern the validity of arguments, scientific theories, statements, proofs, and other formulations of ideas. It involves analyzing and evaluating verbally constructed arguments, sets of propositions and other non-verbal representations of information and relationships to identify the premises that underpin a conclusion or truth claim, judging the logic

of how conclusions are reached, and ensuring one's arguments or formulations are sound.

The intervention aimed to influence student thinking processes to mimic the CT skills components. While delivering the lessons, the emphasis was on student participation and a student-centered approach instead of a teacher-centered approach. In the identification of patterns and making connections, the participants were required to pick up repetitive forms and key phrases to explain them logically. The students are required to authenticate and question language information instead of absorbing it readily for acceptance as true or false. In situation representation, the participants are required to describe the information available to them and explore the missing information for answering analytical problem-solving questions. Lastly, in evaluation and reflection, the participants needed to judge information and reach a conclusion by analyzing overall comprehension of the given text. For this purpose, three chapters were selected that are representative of the overall chapters of the textbook. Learning outcomes were established based on both the linguistic and critical thinking skills perspective and a relevant medium was chosen for teaching each chapter, for example, pictures for description, multimedia, films, etc.

Pretest-Posttest

A content-based pretest on the Watson-Glaser Appraisal II test model was constructed and also used as a posttest to measure, assess and evaluate the effectiveness of a CT skill intervention. The test was aimed at the selected three chapters of the 9th-grade English textbook. It had four sections: inference, deduction, evaluation, and assumption. The test was assigned to two class teachers for linguistic validity and two critical thinking skills experts for measuring the critical thinking skill validation. The inference section aimed to assess and evaluate whether students can identify patterns and make appropriate connections. Six text contents from the taught lessons followed by two questions for each text were constructed. In this way, the number of questions in this section was 12. After reading the text, students had to infer the critically correct answer. Scoring of the answers we based on the carefully designed rubric with three levels and four criteria. In the second section, the deduction skills of students were assessed. They were provided with a table in which they were supposed to assess the meaning and usage of words. There were 10 items in this section. All 10 items carried equal marks. The third section was referred to as the evaluation of arguments, which aimed to assess

students' ability to evaluate and reflect. Five statements were given, and each of the statements carries two arguments. The students had to assess the weaknesses and strengths of arguments. All five statements carried equal scoring weightage. In the fourth and final section, 10 multiple choice questions were used to assess students' ability to recognize assumptions or factual statements. All 10 questions carried equal weightage.

Formulation of Groups

As the research design was a single-group experimental research design, no control group was created. However, sub-sets in the single group were created based on gender and academic achievement. Before the research began, students' achievement scores in English at previous grades were collected. To determine the low achievers and high achievers, the meaning of the whole data was calculated. The students above the mean were categorized as high achievers and students below the mean were categorized as low achievers. The mean in the pre-test and post-test girls was 15.6 and 21.3 respectively and the mean in the pre-test and post-test boys was 13.3 and 16.1, respectively.

Ethical Considerations

Before starting the research, the researcher gained permission from the principal and class teacher to proceed. The researcher explained the contents of the research to the students and ensured that their participation would remain anonymous. This was done in the presence of the class teacher. The students were explicitly informed that the data collected would be used only for the research and that no third party would have access to the data.

Results

Multiple independent sample *t*-tests, which analyzed performance between genders as well as among low and high achievers.

Results revealed that the mean score of the posttest is greater than the mean score of the pretest. The analysis between high achievers shows the mean score of the posttest is greater than the mean score of the pretest. Hence, the result points out that there is a significant difference between the performance of the high achievers on the pretest and posttest. The analysis between the low achiever in the pretest and posttest scores in the CT skills intervention shows the

mean score of the posttest is greater than the mean score of the pretest; thereby indicating significant difference between the performance of the students in the pre-test and post-test.

Table 1: *Pre-Test and Post-Test Scores Comparison for 9th Grade English Subject with CT Skills Intervention*

| Group | <i>N</i> | <i>M</i> | <i>SD</i> | <i>df</i> | <i>t</i> | <i>p</i> |
|-------------------------|----------|----------|-----------|-----------|----------|----------|
| Total Pre-test | 32 | 14.44 | 3.43 | 31 | 4.96 | .000 |
| Total Post-test | 32 | 18.66 | 5.35 | | | |
| High Achiever Pretest | 18 | 16.83 | 1.54 | 17 | 9.05 | .000 |
| High Achiever Post-test | 18 | 22.22 | 2.21 | | | |
| Low Achiever Pretest | 14 | 11.31 | 2.72 | 12 | 2.11 | .00 |
| Low Achiever Post-test | 14 | 13.69 | 4.62 | | | |

Nine tests (4 independent *t*-tests and 5 paired *t*-tests) were applied to compare the effectiveness of the CT skills intervention on male and female students. In Tables 2 and 3, an analysis of independent *t*-tests is presented, and the aim was to investigate the difference between male and female students on pretests and the difference between male and females on posttests.

Table 2: *Comparison Between Pre-Test and Post-Test Scores of Boys and Girls Taught Through CT Skills Intervention at 9th Grade English Subject*

| Groups | <i>N</i> | <i>M</i> | <i>SD</i> | <i>df</i> | <i>t</i> | <i>p</i> |
|-----------------|----------|----------|-----------|-----------|----------|----------|
| Pre-test Boys | 16 | 13.31 | 3.93 | 15 | 1.39 | .06 |
| Pre-test Girls | 16 | 15.56 | 2.50 | | | |
| Post-test Boys | 16 | 16.06 | 5.98 | 30 | 3.09 | .00 |
| Post-test Girls | 16 | 21.25 | 3.02 | | | |

Note. *N* = The total number of participants (32) with an equal number of boys and girls.

The results revealed the mean score of female students was greater than the mean score of male students on the pretest; thereby providing support for the hypothesis that there was no significant difference between the means of female and male students on the pretest was accepted. In the posttest comparison, the female students performed significantly better than the male students. The data showed the mean score of the female students was greater than the mean score of male students on the posttest. The results established that the female students performed better than the male students on the posttest.

Table 3 present the analysis of four paired *t*-tests aiming to assess whether the intervention was effective on male students between pretest and posttest; and likewise, female students on pretest and posttest scores. Independent *t*-tests were applied to the post-test scores of HA male and HA female students after the intervention (Table 3). The analysis revealed that the mean score of the posttest of males is greater than the mean score of the females on the posttest. The result shows no significant difference between the performance of the HA female students compared to HA male students.

Table 3: HA and LA Scores of Boys and Girls Scores Taught Through CT Skills Intervention in 9th Grade English Subject

| Groups | <i>N</i> | <i>M</i> | <i>SD</i> | <i>df</i> | <i>t</i> | <i>p</i> |
|--------------------|----------|----------|-----------|-----------|----------|----------|
| Pre-test Boys | 16 | 13.31 | 3.93 | 15 | 1.93 | .72 |
| Post-test Boys | 16 | 16.06 | 5.98 | | | |
| Pre-test Girls | 16 | 15.56 | 2.50 | 15 | 6.85 | .00 |
| Post-test Girls | 16 | 21.25 | 3.02 | | | |
| HA Post-test Boys | 8 | 20.75 | 2.43 | 12 | -2.90 | .00 |
| HA Post-test Girls | 6 | 24.33 | 2.06 | | | |
| LA Post-test Boys | 8 | 11.37 | 4.53 | 13 | 4.76 | .00 |
| LA Post-test Girls | 10 | 19.00 | 1.73 | | | |

Note. *N* = The subset groups; *HA* = High Achiever; *LA* = Low Achiever.

The analysis established (Table 3) that the mean score of male students on the posttest is greater than the mean score of the pretest. The result points out that there is no significant difference between the performance of the male students in the pretest and posttest scores. For the female students, a paired sample *t*-test was used to check the significant difference between the pretest and posttest after receiving CT skill intervention. The analysis (Table 3) showed that the mean score of the posttest is greater than the mean score of the pretest. The result showed a significant difference between the performance of female students on the pretest and posttest. The comparison between LA female and male students revealed (Table 3) that the mean score of the posttest was greater than the mean score of the pretest. Hence, the result points out that there is a significant difference between the performances of the LA female students when compared to LA male students. The results also showed that in the LA group, the girls performed better in the mean than the male students.

Discussion

The findings of the study indicate that critical thinking skills intervention in a 9th grade language classroom at the secondary level in Pakistan is effective. Students actively deduce, infer, identify assumptions, and evaluate arguments. They gain a deeper understanding to improve their performance on the assigned tasks on the posttest. As researchers have established students possess the innate ability to discover, assess and judge information on account of their inquisitive nature and through appropriate cognitive operations. The failure to reach incorrect conclusions/answers is not because of their lack of ability but due to their faulty cognitive operation pathways. In the current study, the intervention framework enabled the teacher to facilitate students in processing information with the appropriate cognitive process for deducing, inferring and evaluating information which enabled them to perform significantly better on the post-test. The findings did not match with a recent study conducted by Mahmood (2017) and Wang (2017) who suggested that an intervention has a higher chance of being effective with a duration of 12 weeks. However, Al-Ghadouni's (2021) argument suggested that defining a specific period as the threshold for the success of an intervention is not reasonable and does not determine the success or failure of the intervention itself.

The study also established that high achiever performed better on the posttest when compared to the pretest, and likewise the low achievers performed better on the posttest when compared to the pretest in separate groups. It shows that the intervention is equally useful for the multi-ability groups sitting in the classroom belonging to various socio-economic, linguistic and intellectual backgrounds. In Pakistani low-cost public schools, most students belong to lower-middle-class and middle-class families. Parents intend to improve their child's social status by ensuring they learn English and obtaining quality education to compete with the higher strata of society. It is inferred from the findings that by building the capacities of teachers with the tested intervention framework, we may provide meaningful learning opportunities for the students belonging to middle-class families and respond to their parents' dreams positively.

Active engagement in learning language is supportive in addressing the theoretical and practical challenges relating to the acquisition of basic language skills. The educationists from Greek times recognize the role of active engagement even today in successful learning. Thus, the intervention framework ensures active engagement which is crucial in learning and practicing language

skills. The assigned classroom and out-of-classroom tasks have engaged them in thinking and practicing skills. Hence, students were continuously challenged to think critically which allowed them ample practice for developing their ideas. During the sessions, students started forming critical arguments and became more open to questioning the latest information. These findings corroborated the studies conducted by (Dehghani et al., 2011; Gadzelta et al., 1997; Mahanal et al., 2019; Taghva et al., 2014).

The interventions may enable students not only to excel in English language competence but also to improve their logical and rational approach to dealing with day-to-day challenges and issues. It may support addressing stereotypical and blocked mindsets approaches among the bulging youth population of Pakistan. It may enable them to find out the logical causes of the challenges that they are facing in social, academic, religious and economic aspects of life. It may provide awareness against the religious, political and vested exploiter forces working to mislead them and become victims in their hands to work against national and global interests with the support of logical analysis.

The study investigated the effect of gender on the development of CT skills. Girls and boys have different anatomy and are often believed to have different cognitive abilities due to nurturance or nature. For example, the belief that boys are better logical and rational thinkers as compared to girls has been refuted in the findings of this study. The analysis revealed significant differences between male and female students on the posttest. Therefore, gender does play a role in the development of CT skills in students to an extent. These results also contradicted the study findings of various studies (Bagheri, 2016; Temel, 2022; Yousefi et al., 2016) that revealed gender does not play a role in developing CT skills. It has been observed that the quantitative analysis did not show any significant role of gender in the attainment of CT skills, however, girls used multiple approaches for solving certain problems. Thus, qualitatively, the CT skills of girl's students were at a higher level than boys. It may be inferred that the slightly higher achievement of girls on the posttest is due to greater innate flexibility, adaptability, and sensitivity on their part. In this connection, several past studies have established that women are more responsible, careful, and committed to their academic and job responsibilities as compared to men in different disciplines and departments of life (Cook & Glass, 2018). As society is granting equal opportunities and safety in the work environment, women are excelling in every department of life. In this context, the results of intermediate boards at secondary and higher secondary levels are solid

examples of their better performance as compared to boys in Pakistan. The study conducted by Shubina (2019) found that girls performed better than boys in terms of CT skills. We also compared high achiever girls and boys on the post-test and likewise low achiever girls and boys on the post-test. Non-significant difference between high achiever girls and boys was found; however, a significant difference between low achiever girls and boys was found. These results were in line with the study by Zetriusliata (2016). The rationale for higher achievements of low achiever girls as compared to boys could not be determined due to the limitation of the study.

Limitations and Suggestions

Owing to the impending school closure and Covid-19, the researcher was unable to increase the duration of the interventions from two weeks to four weeks, and enough students were not available for the control group. Therefore, the findings are required to be tested further by increasing the duration and participants of the study at different grades and disciplines. Personality traits and socioeconomic variables of the subjects were also not controlled either. In addition to this, the study was quantitative in nature and explored only the deductive side of the intervention at a low-income private school. Future researchers can explore the qualitative factors behind the effectiveness of a CT skills intervention in English language classrooms.

Conclusion and Recommendations

The practice of CT skills is significant for success in academic, job and social life activities. It plays a pivotal role in the general and academic life of individuals; therefore, education systems should integrate CT skills into their curriculum design, delivery and assessment. In this study, the researcher assessed the effectiveness of an instructional CT skill intervention, at the secondary level, in Pakistan, and it is concluded that CT skills interventions are significant in improving English language competence related to language skills, critical thinking skills such as deduction, inference, assumption and evaluation abilities addressed in the intervention experiment. The intervention was equally successful for both genders including boys and girls. Low achiever girl's better performance on the posttest is one of the major contradictory conclusions of the study that has been required to be tested for the future researcher as well as

the testing on different disciplines and levels of students. Based on the quantitative results, discussion, and conclusions the following recommendations have been made; such as it is suggested that institutions should create awareness about critical thinking skills in their institutions at a very early level of education. It is also suggested that CT skills should be incorporated into English language curriculum, teaching, and assessment. Moreover, it is recommended that administration and teacher training programs should train student teachers in CT skills pedagogy.

References

- Abrami, P. C., Bernard, R. M., Borokhovski, E., Wade, A., Surkes, M. A., Tamim, R., & Zhang, D. (2008). Instructional interventions affecting critical thinking skills and dispositions: A stage 1 meta-analysis. *Review of Educational Research, 78*(4), 1102-1134.
- Al-Ghadouni, A. M. (2021). Instructional approaches to critical thinking: An overview of reviews. *Argentine Journal of Psychological Clinic, 30*(1), 240-246.
- Aziz, M., Al-Hasani, A. M. A., & Buriro, G. A. (2018). A correlation analysis of ESL learner's textual comprehension performance higher order thinking skills and type of background schooling. *Research Journal of Social Sciences, 16*(1), 83-95.
- Bagheri, F., & Ghanizadeh, A. (2016). Critical thinking and gender differences in academic self-regulation in higher education. *Journal of Applied Linguistics and Language Research, 3*(3), 133-145.
- Cassum, S. H., McGrath, J. P., Gul, R. B., Dilshad, A., & Syeda, K. (2013). Multidimensionality of critical thinking: A holistic perspective from multidisciplinary educators in Karachi, Pakistan. *Journal of Nursing Education and Practice, 3*(7), 9-14.
- Cook, A., & Glass, C. (2018). Women on corporate boards: Do they advance corporate social responsibility? *Human Relations, 71*(7), 897-924. <https://doi.org/10.1177/0018726717729207>
- Dehghani, M., Pakmehr, H., & Malekzadeh, A. (2011). Relationship between students' critical thinking and self-efficacy beliefs in Ferdowsi University of Mashhad, Iran. *Procedia-Social and Behavioral Sciences, 15*, 2952-2955.
- De Talancé, M. (2020). Private and public education: Do parents care about school quality? *Annals of Economics and Statistics, 137*(1), 117-144.
- Dwyer, Christopher, P. (2023). An evaluative review of barriers to critical thinking in educational and real-world settings. *Journal of Intelligence, 11*(6), 1-17. <https://doi.org/10.3390/jintelligence11060105>

- Gadzelta, B. M., Ginther, D. W., & Bryant, G. W. (1997). Prediction of performance in an academic course by scores on measures of learning style and critical thinking. *Psychological Reports, 81*(2), 595-602.
- Heard, J., Scoular, C., Duckworth, D., Ramalingam, D., & Teo, I. (2020). *Critical thinking: Skill development framework*. The Australian Council for Educational Research.
- Jamil, B. R., de la Jara, F. J. H., & Roy, I. (2023). *Ensuring foundational learning: Insights from the global south*. Center for Research and Higher Studies in Social Anthropology.
- Joynes, C., Rossignoli, S., & Amonoo-Kuofi, E. F. (2019). *Emerging issues report, 21st century skills: Evidence of issues in definition, demand and delivery for development contexts*. Education Development Trust.
- Manan, S. A. (2019). Myth of English teaching and learning: A study of practices in the low-cost schools in Pakistan. *Asian Englishers, 21*(2), 172-189.
- Mahanal, S., Zubaidah, S., Sumiati, I. D., Sari, T. M., & Ismirawati, N. (2019). RICOSRE: A learning model to develop critical thinking skills for students with different academic abilities. *International Journal of Instruction, 12*(2), 417-434.
- Mahmood, S. (2017). Testing the effectiveness of a critical thinking skills intervention for initial teacher education students in Pakistan (Doctoral dissertation), Faculty of Social, Human and Mathematical Sciences, Southampton Education School, UK.
- Sarıcan, E., & Güneş, E. B. (2021). Developing critical thinking skills in elementary school students through foreign language education: Action research. *Education Quarterly Reviews, 4*(2), 51-68.
- Shubina, I., & Kulakli, A. (2019). Critical thinking, creativity and gender differences for knowledge generation in education. *Literacy Information and Computer Education Journal, 10*(1), 3086-3093.
- Taghva, F., Rezaei, N., Ghaderi, J., & Taghva, R. (2014). Studying the relationship between critical thinking skills and students' educational achievement. *International Letters of Social and Humanistic Sciences, 25*(1), 18-25.
- Taylor, P. C., & Medina, M. (2011). Educational research paradigms: From positivism to pluralism. *College Research Journal, 1*(1), 1-16.
- Temel, H. (2022). The effect of critical thinking course carry out with distance education on critical thinking skills and dispositions. *International Journal of Psychology and Educational Studies, 9*(3).792-808.
- Wang, S. (2017). An exploration into research on critical thinking and its cultivation: An overview. *Theory & Practice in Language Studies, 7*(12), 1266-1280. <https://doi.org/10.17507/tpls.0712.14>
- Watson, G., & Glaser, E. (2020). *Watson-Glaser Critical Thinking Appraisal*. London, UK: Pearson Assessment.

- Yousefi, S., & Mohammadi, M. (2016). Critical thinking and reading comprehension among postgraduate e students: The case of gender and language proficiency level. *Journal of Language Teaching and Research*, 7(4), 802-810.
- Zetriuslita, H. J., Ariawan, R., & Nufus, H. (2016). Students' critical thinking ability: Description based on academic level and gender. *Journal of Education and Practice*, 7(12), 154-164.

Received 16 August 2023
Revision received 30 June 2024