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Improving EFL Students' Critical Thinking Skills through Organization Development Intervention Strategies at Zhejiang Yuexiu University in China

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Abstract

Critical thinking (CT) has become a key teaching goal in higher education, many language instructors consider it very significant to integrate CT into instruction of English as a Foreign Language (EFL) courses. A quasi-experimental design was utilized in this study to determine the effectiveness of Organization Development Intervention(ODI) in developing second-year EFL students' CT skills in a private university in China. 71 participants were divided into an experimental group and control group. The experimental group (n=36) received collaborative learning plus team-building interventions, while the control group (n=35) received regular English instruction with exercises that did not build CT. After the semester-long interventions, mixed results demonstrated that the experimental group got significantly higher CT performance and collaboration among team members than the control group. The findings indicate that collaborative learning is beneficial to developing students' CT skills, but instructors should use some techniques to foster team members' collaboration skills. This study recommends that instructors bring ODI strategies such as team building and conflict management to support collaborative learning in the education realm. Lastly, EFL instructors must add CT elements to teaching curriculum activities that encourage student teams to practice critical thinking.

Keywords: critical thinking, collaborative learning, team building, organization development intervention

Introduction

Due to the complexities of global economic and technological changes in the post-covid-19 age, individuals must solve problems and make decisions in complicated situations and deal with interpersonal relationships simultaneously. In such cases, one's higher-order thinking, such as critical thinking (CT), is becoming increasingly important in this rapidly changing world (Butler et al., 2017). Therefore, developing the critical thinking skills of students has become a vital education objective in higher education.

In China, the Ministry of Education (2018) explicitly emphasized that CT should be one key competence that English majors should possess and develop in the newest national English curriculum. Also, in the context of “New Liberal Arts” proposed by the Chinese government, universities should improve EFL learners’ language proficiency and critical thinking (Xiang, 2020). However, integrating CT in the instruction in EFL classrooms is faced with some challenges. One such challenge is EFL learners have been used to the rote-learning and memorization learning strategy for a long time, thus they lack CT skills (Huang, 1998; Wen & Zhou, 2006). Another challenge is that EFL students lack effective CT practice in the class (Chen, 2021), because some instructors lack sufficient theoretical knowledge and concrete training on CT instruction (Zhang et al., 2020)

In this regard, the researcher decided to explore an innovative ODI program to bring about changes in the teaching and learning of English as a foreign language in a Chinese private university and improve EFL students’ CT skills. The following research objectives guide this study:

1. To design and implement an appropriate Organization Development Intervention (ODI) program to improve EFL students’ critical thinking skills.
2. To examine the effectiveness of the tailored ODI program in improving students’ critical thinking skills.
3. To examine participants’ critical thinking performance in different situations and their perceptions towards team activities.

Research Questions

RQ1: What are the appropriate Organization Development Interventions(ODIs) to improve EFL students’ critical thinking skills?

RQ2: How effective is the tailored ODI program in improving students’ critical thinking skills?

RQ3: What are participants’ critical thinking performance in different situations and what are their perceptions towards team activities?

Literature Review

The literature review includes theoretical foundations and empirical studies on critical thinking, collaborative learning, and team building. This section provides justification and explanation for implementing a tailored ODI program consisting of collaborative learning and team-building interventions to enhance students’ CT skills.

Conceptualization of Critical Thinking

Contemporary research in critical thinking can be traced to the 1940s when Glaser (1941) described his interpretations on critical thinking as the disposition to make inquiries; the knowledge to make inferences on abstract information to determine the reliability of the evidence; the cognitive skill to make analysis, evaluations, and synthesis.

Since then, more scholars have studied critical thinking, offering their interpretations on this higher order thinking competence. For instance, Lipman (1988) proposed that critical thinking be used to make judgments based on skillful and reflective thinking. In contrast, Sigel (1990) argued that critical thinking should not be ambiguous; he defined critical thinking as a series of specific mental skills that can be applied to different occasions, including reasoning, making induction and deduction, and sorting out information from various sources. Considering the complexity of critical thinking, the American Philosophical Association (APA) organized a Delphi panel of 46 experts to offer a highly profiled and well-established definition of critical thinking. This framework of CT interprets two dimensions. The first dimension is the individual's self-regulated ability to use cognitive skills such as interpretation, analysis, evaluation, inference, and explanation. The other is the individual's disposition, such as having an inquisitive attitude, open-minded attitude when dealing with things or discussing with others (Facione, 1990).

Although different scholars have offered their understandings towards critical thinking, given this study's research objectives and research context, a definition of critical thinking is modeled according to the APA panel's interpretations on the skill aspect but not focusing on the disposition aspect since it is a long-term quality that needs to be nurtured both in and out of class. Thus, it is not the research objective of this specific study. Therefore, critical thinking in this study refers to EFL students' ability to use cognitive skills such as interpretation, analysis, evaluation, inference, and explanation. This definition will guide this study's definition of critical thinking and serve as the dependent variable.

Collaborative Learning Approach for CT Development

Collaborative learning refers to two or more persons' joint work towards their shared goals (Barkley et al., 2014). It is also an education approach that includes students' peer collaboration in learning and student-teacher collaboration (Smith & MacGregor, 1992). From the lens of social constructivism theory, collaborative learning contributes to individuals' cognitive development, as individuals could acquire new knowledge and construct meanings through interacting with others (Vygotsky, 1978). In addition, Vygotskian proponents claim that when learners experience a learning group with diversified characteristics, they may learn from different perspectives and experience frequent cognitive conflicts, thus promoting intellectual growth (Loes, 2019).

Except for the theoretical foundation, empirical evidence also supports the impact of collaborative learning on improving students' CT skills in higher education. For example, Gokhale (1995) conducted a nonequivalent control group design comparing collaborative learning and individual learning approaches on affecting students' CT competence. Results showed that students receiving collaborative learning treatment outperformed significantly than those who studied individually. In terms of the EFL contexts, Chen (2017) conducted qualitative research and found that collaborative learning improved students' problem-solving skills and logical thinking compared to individual learning.

Based on these findings, it could be deduced that collaborative learning has positive influence on learners' critical thinking development.

Challenges of Collaborative Learning Activities

The above descriptions justified theoretically and empirically the positive relationships between collaborative learning activities and individual's cognitive development. However, there are many challenges to implementing such activities in class successfully especially in EFL classes.

First, collaborative learning is not simply putting individuals into groups to do assigned tasks. There are many factors that may reduce the effectiveness of this pedagogical approach. For example, obstacles such as students' lack of collaborative skills, free-riding, uneven distribution of competence ability and too intimate relationships, are thought to impede the success of collaborative learning (Le et al., 2017). Therefore, instructors should play a significant role in the planning process on how to organize student interaction from the design phase, monitoring, supporting, and consolidating students' interaction during the actual collaboration process (Kaendler et al., 2014). However, previous studies (e.g., Ding et al., 2007; van Leeuwen & Janssen, 2019) only concluded the vital role of instructors' guidance on students while engaged in collaborative learning activities. They did not propose practical pathways that promote students' collaboration and authentic commitment in actual activities.

As a result, there is a necessity to design one supporting mechanism to assist collaborative learning activities to go smoothly. The next section explains the rationale of team-building interventions to support collaborative learning activities in this CT-enhanced program.

Supporting Mechanism: Team Building Intervention

According to Cummings and Worley (2014), team building is a series of planned activities to help groups efficiently work towards their shared tasks, assist team members in strengthening their social skills and problem-solving skills, and contribute to better team performance. Team building, with its four essential components, goal setting, interpersonal-

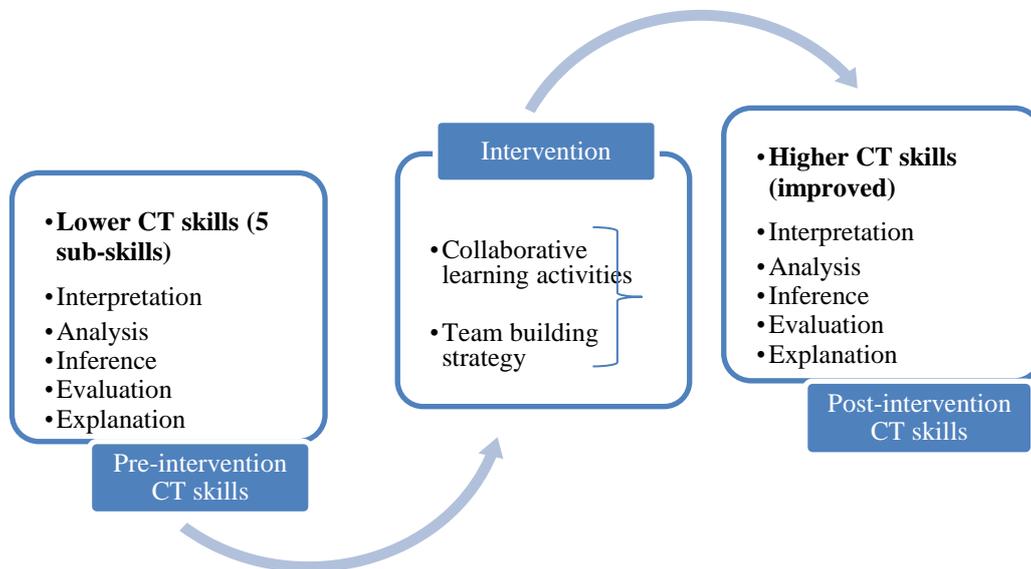
relationship management, role clarification, and problem-solving (Klein et al., 2009; Salas et al., 1999), could produce positive impacts on different team outcomes, including cognitive, affective, process, and team performance (Kastrup, 2019; Klein et al., 2009; Lacerenza et al., 2018). Therefore, one effective intervention technique that could enhance collaborative learning is team building which is popular among change leaders, managers, and OD practitioners (Fernando, 2014).

Besides the application of team building in the OD area, empirical studies also confirmed the effectiveness of team building in the educational realm. For example, one intervention study conducted on 144 MBA students showed that team-building groups got significantly higher performance than their control counterparts in the group-process measures such as mutual trust, openness, social support (Bottom & Baloff, 1994). Another study, through conducting a series of team building activities on 195 third-year nursing students in a Korean college, also found a significant difference between the experimental and control group in their teamwork skills and team effectiveness (Yi, 2015).

Based on robust evidence, team building could serve as one supportive mechanism to collaborative learning activities due to its positive influence on promoting team collaboration, team cohesion, and higher teamwork satisfaction (McEwan et al., 2017; Shuffler et al., 2011).

Conceptual Framework

Aiming to improve EFL learners' CT skills, the researcher added team-building interventions to support collaborative learning approaches in this proposed CT-enhanced program. Thus, the independent variable for this study is an intervention program consisting of CT-enhanced collaborative learning approaches and team-building interventions. The dependent variable is students' critical thinking skills, which include five dimensions: interpretation, analysis, evaluation, inference, and explanation. Figure 1 presents the conceptual framework for this study.

Figure 1*Conceptual Framework*

Methodology

This section presents the research participants, the sampling method, the whole intervention process, research instruments, data collection, and analysis.

Research Participants and Sample

The research participants and sample were 71 second-year EFL students from Zhejiang Yuexiu University (ZYU), located in a southern city of China. In ZYU, all non-English majors take a 4-credit compulsory English foundation course during their first two years' college study. Students enrolled in this course meet the instructor twice a week, 90 minutes for one session, a total of 3 hours in a week. All participants were recruited from 4 different classes. The researcher randomly assigned two classes as one experimental group (n=36) and two classes as the control group (n=35). The demographic profile of participants is presented in Table 1.

Table 1*Demographic Profile of the Experimental group and Control group*

Groups	Experimental group	Control group
Class size	36	35
Male to female ratio	1:5	1:4
Age	19-20	19-20
English learning experience	Over 10 years	Over 10 years
First-year final exam of this course (mean score)	73.1	72.7

Methods and Research Instruments

The researcher used a mixed quantitative and qualitative method in this study. First, all participants completed a critical thinking survey and an essay writing twice, serving as pre and post-tests to assess students' CT skills. Then, a follow-up interview was conducted to elicit students' opinions after the interventions.

Critical Thinking Survey

A Critical Thinking Survey (CTS) designed by Tseng (2019) which served as a pre and post-test was administered to the participants. There are two parts to this survey. The first part required students to fill in their personal background information, including age, gender, years of learning English. The second part consisted of 21 items measuring students' CT skills in 5 dimensions: interpretation, analysis, evaluation, inference, and explanation. Each item is measured using the Likert scale, requiring candidates to circle their choices: *5 = Strongly agree; 4 = agree; 3 = hard to say; 2 = not quite agree; 1 = strongly disagree.*

Reliability and Validity of the Instrument

Before the CT survey was administered, the researcher sent the survey in electronic version to 30 second-year EFL undergraduates from 4 departments of ZYU university to test for its reliability. Results indicated that it has good reliability with its sub-constructs showing Cronbach's alpha of 0.853 for interpretation, 0.782 for analysis, 0.875 for evaluation, 0.884 for inference, and 0.902 for explanation. The researcher also invited three experts specialized in educational psychology to test the content validity of the constructs. According to their feedback, the items in the survey got a content validity index of 0.67, which showed that the items contained in the survey were consistent with the research objective and corresponding definitions of terms.

Essay Rubric

In order to determine whether students have improved their CT skills after the intervention, the researcher asked students to write an essay twice (one before the intervention and one after the intervention) on a controversial topic. The researcher used the Holistic Critical Thinking Scoring Rubric (HCTSR; P. A. Facione & Facione, 1994) to compare students' CT skills improvement in their pre- to post-test essay writing.

This rubric measured participants' CT competence in the six dimensions: analysis, interpretation, evaluation, inference, explanation, and meta-cognitive self-regulation. The rubric had four bands: *1—weak*, *2—unacceptable*, *3—acceptable*, and *4—strong*, and each band contained a detailed description. The higher the score achieved by a participant, the higher the CT skills. To establish the reliability and validity of this scoring rubric, the researcher trained two independent raters several times before they rated students' essays.

Follow-up Interview

After implementing the semester-long intervention, the researcher conducted a follow-up interview on the experimental and control groups. This follow-up interview provided supplementary data to triangulate the assessments of the quantitative results. In addition, the researcher aimed to obtain a detailed understanding of the participants' CT performance and their perceptions towards the effectiveness of group activities during the semester. There were 71 participants in this study. The researcher selected 16 students randomly from 71 participants to be interviewed: 8 from the experimental group and 8 from the control group.

Procedure

The researcher used Action Research Model for this study, focusing on the impact of a tailored ODI program on improving EFL students' CT skills. The process included three stages: Pre-ODI, ODI, and Post-ODI.

Pre-ODI Stage

The Pre-ODI phase was to obtain the initial data about students' CT skills. After randomly assigning the participants to experimental and control group, the researcher met both groups separately in their self-study classrooms. The pre-ODI data of students in both groups were obtained from the survey and essay writing.

ODI Stage

During this stage, the researcher planned and implemented different interventions on both the experimental and control group. The entire intervention process for both groups lasted for a semester of 16 weeks.

Intervention on Experimental Group. In the implementation of the tailored ODI program, the researcher used team techniques to promote students' collaboration within teams. Besides, the researcher designed three diverse collaborative learning activities throughout the semester to improve students' CT skills. The specific procedures of all intervention activities are as follows.

The First Major Intervention - Team building. To assist students to gain some team knowledge and gain team experiences, team building was implemented when students were engaged in the following designed collaborative learning activities. According to Tuckman (1965), team building consists of 4 stages: forming, storming, norming, and performing.

Stage 1: Team formation (Week 2-3)

At the beginning of week 2, the researcher formed nine groups and used a random number table to assign the 36 students into the nine groups. Next, the researcher instructed students on some team knowledge such as recognizing different roles in teams to promote accountability, asked them to create a team name to enhance team cohesion.

Stage 2: Storming (Week 4-6)

Storming is the second stage when team members begin to work towards the tasks and team rules. Disagreements or conflicts may appear during this process. The researcher designed several team-building activities including SWOT analysis and goal setting to help students get through this stage and solve their problems.

Stage 3: Norming (Week 7-13)

In the norming stage, the researcher helped teams move forward by regular monitoring and observation, providing necessary help to facilitate team collaboration.

Stage 4: Performing (Week 14)

During this performing period, all groups presented their group project and presented their findings. At the end of their presentations, all groups reflected on their learning experiences during the whole team-building process.

The Second Major Intervention - Collaborative Learning Activities. The above team-building interventions were designed to promote collaboration among team members. In order to practice students' higher-order thinking, the researcher also tailored three thought-provoking collaborative learning activities during the 16 weeks as follows:

Think-team-share: The researcher prepared some thought-provoking questions in advance, requiring students to think about these questions individually, then exchange their ideas within teams and finally share their opinions in the class.

Concept mapping: The researcher asked student teams to analyze two reading texts that match the target teaching units, then create a typical diagram to summarize the whole text based on their comprehension and group discussion.

Group investigation: Student teams had to complete a real-life project within six weeks. They spent most of their time seeing through diverse perspectives and possibilities, selecting and evaluating many resources. Finally, they delivered their products in innovative formats such as role-play and video recording.

In summary, team-building and collaborative learning interventions were conducted jointly to develop students' CT skills in the experimental group in a semester.

Intervention on Control Group. The English lesson durations for the control group were the same as for the experimental group: a semester of 16 weeks with two sessions each week, 3 hours in total for each week. They were also randomly assigned into different groups using a random number table to form teams. However, the control group were given regular language-oriented learning tasks that did not build students' CT skills. In addition, they did not receive any extra team-building interventions during the process of doing small-group work.

Post-ODI

The post-ODI phase occurred at the end of this semester before the students' final examination. First, students were administered the same Critical thinking survey and essay writing again for the researcher to compare changes in their CT performance from pre to post-ODI. Next, the researcher conducted interviews on both groups to collect qualitative data, to obtain a detailed understanding of students' critical thinking performance in different situations and their perceptions towards team activities during this semester,

Data Collection and Analysis

First, the researcher collected quantitative data both from the survey and essay writing before and after ODI intervention. To compare students' CT skills before ODI intervention between the two groups, the researcher conducted independent t-tests. Then, the researcher conducted a mixed ANOVA for the 2 groups to determine the effect of the different interventions on students' CT skills.

The qualitative data the researcher collected from the interview were transcribed online and then sent back to students to check for accuracy. To avoid bias, the researcher invited one independent researcher to do the coding work. He read through the transcripts and assigned labels to data sections using words or short phrases with the interviewees' own words and descriptions (Creswell & Creswell, 2018) which he later categorized (Saldaña, 2015), allowing themes and sub-themes to emerge for further interpretation. Finally, he triangulated all the qualitative data.

Results

Presentation of results start with quantitative analysis of data from the essay writing and the survey, followed by the qualitative analysis of the post-intervention interview.

Quantitative Result from the Essay

Before utilizing ANOVA to assess the impact of different interventions on students’ CT gains, the researcher first conducted an independent t-test to examine whether there were significant differences in students’ pre-test CT performance between the experimental and control groups.

According to data presented in Table 2, there were no statistically significant differences in students’ CT scores before the intervention between the two groups ($t [69] = .212$, sig [2-tailed] = .833). Therefore, this result allowed the researcher to conduct ANOVA to compare between-subject differences in students’ CT skills after implementing different interventions.

Table 2

Comparison in Pretest CT Scores (Essay) Between Experimental and Control Group

Group	M	SD	Levene’s test for equality of variance		t-test for equality of means						
			F	Sig.	t	df	Sig. (2-tailed)	Mean difference	95% confidence interval of the difference		
										lower	upper
pre-test experimental group	1.81	.668	.160	.690	.212	69	.833	.034		.287	.356
control group	1.77	.690									

As demonstrated in Table 3, the main effect of intervention ($F [1, 65] = 25.273$, $p = .000$, Partial Eta Squared = .280) was significant on students’ CT post-test scores. The pre-test also produced significant influence on students’ post-test scores ($F [2, 65] = 21.617$, $p = .000$, Partial Eta Squared = .399). However, the interaction effect failed to achieve significance ($F [2, 65] = 2.372$, $p = .101$, Partial Eta Squared = .068).

In summary, different intervention methods produced significant differences in students’ acquisition of CT skills; those receiving OD intervention ($M = 2.58$, $SD = .692$) outperformed

significantly compared to those receiving regular teaching intervention ($M=1.92$, $SD=.612$). In addition, students' pre-test CT performance also produced significant differences in their post-test CT performance.

Table 3

Tests of Between-Subject Effects (Essay)

Dependent variable: CTS						
Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	20.397 ^a	5	4.079	15.562	.000	.545
Intercept	311.233	1	311.233	1187.272	.000	.948
intervention	6.625	1	6.625	25.273	.000	.280
pretest	11.333	2	5.667	21.617	.000	.399
intervention * pretest	1.244	2	.622	2.372	.101	.068
Error	17.039	65	.262			
Total	398.000	71				
Corrected Total	37.437	70				

Quantitative Result from the Survey

Similarly, the researcher first conducted an independent t-test to compare any significant difference in students' pre-test CT scores collected from the essay between the two groups. As shown in Table 4, there were no statistically significant differences in terms of students' CT scores before the intervention between the two groups ($t [69] = -.111$, $p [2-tailed] = .912$). Next, the researcher further conducted another 2*2 AVOVA on data generated from the survey of both groups.

Table 4

Comparison in Pretest CT Scores (Survey) Between Experimental and Control Group

Group	M	SD	Levene's test for equality of variances		t-test for equality of means						
			F	Sig.	t	df	Sig. (2-tailed)	Mean difference	95% confidence interval of the difference		
										lower	upper
Pre-test experimental group	65.28	10.033	.079	.779	-.111	69	.912	-.265		-5.021	4.490
control group	65.54	10.051									

According to Table 5, results showed that the main effect of the intervention ($F [1, 61] = 1.689, p=.199, \text{Partial Eta Squared}=.027$) was not significant on students' CT post-test scores, while the pre-test produced a significant influence on students' post-scores ($F [4, 61] = 21.617, p=.000, \text{Partial Eta Squared}=.528$). In addition, the interaction effect achieved significance ($F [4, 61] = 4.798, p=.002, \text{Partial Eta Squared}=.239$). Controlling the factor of pre-test, the researcher further compared post-test CT scores between the experimental and control group using ANCOVA and results show that there was no significant difference ($F [1,68] = 2.053, p=.157, \text{Partial Eta Squared}=.029$).

In summary, there was no significant difference in students' acquisition of CT skills between the two groups. However, different levels of students' pre-test CT performance produced significant differences in their post-test CT performance.

Table 5

Tests of Between-Subject Effects (Survey)

Dependent variable: CTS						
Source	Type III Sum of Squares	df	Mean square	F	Sig.	Partial Eta Squared
Corrected Model	5409.504	9	601.056	8.996	.000	.570
Intercept	153584.958	1	153584.958	2298.791	.000	.974
intervention	112.829	1	112.829	1.689	.199	.027
pretest	4558.765	4	1139.691	17.058	.000	.528

intervention *	1282.255	4	320.564	4.798	.002	.239
pretest						
Error	4075.482	61	66.811			
Total	357525.000	71				
Corrected	9484.986	70				
Total						

Qualitative Result

Sixteen interviewees (8 from the experimental group and eight from the control group) were randomly selected from 71 students to participate in the post-intervention interview. Both groups were asked the same questions. The analysis generated three significant themes but different sub-themes with different responses from both groups.

Theme 1: Students' Higher-order Thinking

Theme 1 emerged from the first four interview questions which explored students' thinking abilities in dealing with various issues both in their academic study and daily life.

Sub-themes from Control Group. For the control group, four sub-themes resulted from interviewees' responses: *analysis and inference, transfer of language skills, lack of scientific thinking and reasoning, lack of CT disposition.*

First, students seemed to acquire some analysis and inference skills when discussing strategies to win a debate. For example, they recognized to analyze what points or evidence should be robust in defending their positions (n=3) and prepared some counterarguments to rebuttals by inferring what their opponent would present (n=2).

Second, in applying what they learned in the English class to other courses, 5 out of 8 interviewees talked about using language skills such as listening and reading strategies to learn another language. Students mainly focused on transferring language skills to other courses or situations instead of other skills such as high-level thinking, team collaboration skills, or other comprehensive competencies.

Third, they lacked scientific thinking and reasoning skills, as shown by the interviewees' lack of primary evidence (n=3) and scientific reasoning method to support their ideas (n=2).

Last, they lacked open-mindedness in exploring diversified perspectives and curiosity to seek truths when meeting difficulties, which exhibited their lack of critical thinking disposition.

Sub-themes from Experimental Group. In contrast, different sub-themes for the experimental group emerged from interviewees' responses: *analysis and inference, evaluation, self-regulation, and good high-level thinking disposition.*

First, when talking about strategies to win a debate, 6 out of 8 interviewees frequently stated that they would sort out a lot of information and robust evidence to support their positions, then prepare some counterarguments to rebuttals through inferring their opponent's arguments.

Evaluation is the second emerging sub-theme analyzed from interviewees' descriptions (n=4). They stated that they would carefully pay attention to their opponents' words and judge the logical strength of their arguments which could reveal logical fallacies that could be used to raise questions. Just as S4 said: "some people will build their arguments or come to conclusions based on false or flawed evidence. Then I will question their arguments."

The third sub-theme is self-regulation, which emerged from 3 interviewees' statements on how they regulated their behaviors or minds to focus on their study instead of playing games and how they made the changes after recognizing their failure to fulfill the previously set goals. These descriptions fell into the category of one's ability in self-regulation.

The last sub-theme is good thinking disposition, which came from those interviewees' descriptions such as "I favor active learning for it is important to absorb important and diversified opinions" (S5); "I like to ask others' suggestions and look for many resources, and then make reasonable conclusions based on careful consideration" (S7).

Theme 2: Team Experiences

Theme 2 emerged from interviewees' responses when they talked about how they worked towards group activities and dealt with conflicts that might arise from their group work.

Sub-themes from Control Group. For the control group, four sub-themes emerged from interviewees' responses: lower-level *teamwork*, *social loafing of team members*, *the dominant role of team leader*, and *off-task behaviors*.

First, the most apparent sub-theme is lower-level teamwork, which emerged from most interviewees' responses (n=6). For example, S8, a male participant, expressed that their group just distributed the assigned task to each team member, then put each one's work together. Therefore, it suggested that they lacked practical discussion and collaboration when doing group activities.

The second sub-theme is social loafing (Karau & Williams, 1993). As a team leader, S2 complained a lot about this: "In doing group tasks, it is me that did most of the work, and it took much of my time." Another student, S6, also expressed the same frustration. She said that some team members were unwilling to invest time or energy in the group activities. They only wanted to do the most minor and most manageable job.

Third, 2 out of 8 interviewees talked about the dominant role of team leaders in doing group tasks. For example, students would instead "go to the team leader to make the decision" (S1). In such a situation, the team leader seems to have the power to make group decisions, and other team members would listen to him/her without further discussion or negotiation.

The last sub-theme is students' off-task behaviors in doing group activities. 2 interviewees talked about this. Taking group discussion as an example, students did not engage in this in-class activity seriously but discussed something else. S3 said: "Sometimes we talk freely and happily on topics that have nothing to do with the assigned group tasks."

Sub-themes from Experimental Group. For the experimental group, four different sub-themes resulted from interviewees' responses: *active participation, team cohesion, teamwork satisfaction, and improved problem-solving skills.*

First, the most apparent sub-theme is active participation that emerged from interviewees' responses (n=7). For example, S5 said: "We actively participate in the group work, share resources, and keep weekly meetings." Another student, S6, also expressed that all of her team members actively completed a group assignment.

The second sub-theme is team cohesion. In terms of this concept, 4 out of 8 interviewees elaborated on how their team members communicated openly, tried to deal with troubles positively, thus forming a cohesive team. For example, S2 said: "Our team members will not stand still when seeing others in trouble. I could always trust my team members, and we do not want to lag behind other teams."

The third sub-theme is teamwork satisfaction that emerged from interviewees' responses (n=6) when they talked about their team experiences this semester. For example, S3 perceived high-level teamwork and positive interaction in her team, saying that: "I could sense that our team worked much more efficiently than before; we collaborated quite well and learned a lot through doing group tasks."

The last theme is improved problem-solving skills. Three out of 8 students mentioned this when talking about the differences from past team experiences. They described that they developed team skills and improved their abilities in solving various kinds of problems.

Theme 3: Students' Attitudes towards Team Activities

Theme 3 emerged from interviewees' responses when they talked about their semester-long team experiences and suggestions for future learning activities.

Sub-themes from Control Group. 6 out of 8 control group interviewees talked about their attitudes or perceptions towards team activities. Three participants showed negative perceptions towards team activities, while the other 3 showed neutral attitudes.

First, unpleasant team experiences and low-level teamwork contributed to students' negative perceptions. For example, S2, as the team leader in her group, showed her dissatisfaction and complaints towards group activities. She said: "To be honest, I do not like group activities. It consumed a lot of my time and energy, and it is unfair for someone who contributed the most in groups, while others could easily earn good marks because of the team."

Second, some students expressed their neutral attitudes (n=3). For example, S5 expressed her mixed feelings and suggestions on group activities, stating that: “Students should be given chances to work together. However, if one person (e.g., a team leader) is highly competent, he or she will dominate the team and do most of the most work in the group, making it not an effective means of developing others’ abilities.”

Sub-themes from Experimental Group. Six out of 8 interviewees in the experimental group expressed positive attitudes towards team activities, while the other two students showed neutral attitudes.

Most respondents expressed positive feelings towards those semester-long team activities, including gaining valuable team experiences, giving and receiving help in completing the assigned tasks and skillfully dealing with conflicts. For example, S3 expressed her strong favor for team activities: “I learned a lot through working with others this semester. Now I love working with others much more than before. Even individuals with different personalities could cooperate quite well.”

Two students showed neutral attitudes towards team activities. Summarizing their statements, time constraint is one major factor that inhibited their liking towards team activities. In addition, as all participants were second-year non-English major undergraduates, they had to pass two critical tests related to their professions. For example, S1 explained that too many group tasks took much of his extra-curricular time, and he was overwhelmed with too many activities.

Summary of Quantitative and Qualitative Results

To sum up, the above results could answer the above three research questions proposed in this study. First, this study designed and implemented an appropriate ODI program for non-English majors for one semester. Those interventions, including mixed collaborative learning activities and a series of team-building interventions, effectively improved students’ CT skills. Second, mixed results demonstrated that students who received the designed ODI program significantly improved their CT skills than those who did not participate in the ODI intervention training. Therefore, it could be assumed that the tailored ODI program indeed made a difference in students’ CT skills. Third, the experimental group showed more positive attitudes towards team activities in comparison to the control group, which confirmed the benefits of team building intervention during this semester.

Discussion

This section discusses significant findings based on the results of both quantitative and qualitative analysis of data collected. Relevant justifications are presented subsequently.

Collaborative Learning Facilitates Critical Thinking Development

In this study, quantitative results generated from the essay showed that the experimental group students had significant improvements in their CT skills as shown in their post-test scores compared to their pre-test scores. In addition, they outperformed their control group peers significantly in their acquisition of CT skills. One possible explanation is that exposure to collaborative learning activities contributes to individuals' CT performance, as experimental group students experienced three specific collaborative learning activities during the semester, whereas the control group did not. This finding is consistent with the results of previous empirical studies which suggested that the collaborative learning approach contributed to developing students' CT competence (Gokhale, 1995; Mandusic & Blaskovic, 2015). Furthermore, when individuals are in a collaborative learning environment, they may experience cognitive dissonance when seeing through diversified perspectives and construct new knowledge by constantly interacting with others (Johnson & Johnson, 2002), thus stimulating their CT skills.

Language Proficiency Correlates with Critical Thinking Performance

In contrast with results generated from the essay, results from the survey found no significant difference in students' post-test CT skills between the experimental and control groups. However, during the semester, both the experimental group and the control group showed improvements in terms of their CT skills. One possible explanation for this result is that learning a foreign language itself might improve students' higher order thinking because individuals' cognitive development is correlated with their language acquisition (Wen & Sun, 2015). This idea echoed with previous studies supporting the close relationship between EFL students' CT skills and English language proficiency (Keihaniyan, 2013; Luk & Lin, 2014). Furthermore, as the researcher could not completely detach language instruction from students' CT development, control group students might also improve their CT competence when engaged in some English learning activities during the semester.

Team Building Supports Collaborative Learning and Contributes to CT Acquisition

As reported in the post-intervention interview, the experimental group demonstrated higher teamwork satisfaction, positive attitudes towards their team experiences, and higher CT competence compared to their control group peers.

In terms of the positive team outcomes, the experimental group experienced various team-building interventions, which might help teams manage individual responsibility (role assignment), promote their task-related monitoring (goal setting), stimulate team members' cognitive development by reflection and negotiation (writing weekly meeting reflection logs), which then reaped fruitful team collaboration. This opinion echoed with previous reviews

confirming the positive impacts of team building on different team outcomes, including cognitive, affective, process, and team performance (Kastrup, 2019; Klein et al., 2009; Salas et al., 1999).

Regarding the higher CT competence demonstrated by the experimental group, team building interventions might keep teams functioning well, promote knowledge co-construction and task-related monitoring (Vuopala et al., 2019), and engage students in both cognitive and collaboration processes. As a result, these elements jointly led to the desired outcome, such as students' acquisition of higher order thinking skills.

Limitation and Recommendations for Future Research

Due to practical reasons, this research bears some limitations as follows:

First, the researcher employed a quasi-experimental design using convenience sampling to select participants in the study, and the sample size was relatively small, with only 71 participants in total. Therefore, it is hard to generalize the findings to other populations from other universities. Future studies are recommended to recruit a much larger participants and apply to other course disciplines aside from EFL context.

The second limitation is that most participants in this study are females. As the researcher's institution is a language-oriented university, female students constitute a large proportion of students enrolled in ZYU. Gender could possibly play a role in improved CT skills after the ODI intervention. For example, Howard et al. (2014) conducted a study among 659 participants and found that female students improved their CT skills significantly after the case-based intervention program whereas male students did not. Therefore, it is recommended that more research be done to determine whether gender plays an important role in the acquisition of CT skills.

Lastly, in this study, both the experimental group and control group were exposed to group activities and new interventions, thus, the result might be affected due to many external variables. This limitation might explain the mixed quantitative results generated from the essay and survey. Therefore, further studies could employ at least three groups: 1 group using a whole-class teaching approach with no group activities, 1 group using a collaborative learning approach (experimental group 1), and 1 group using a collaborative learning approach combined with team-building interventions (experimental group 2).

Conclusion

The researcher designed one tailored ODI program for an EFL course in this study, combining collaborative learning and team-building interventions. The findings confirmed the

effectiveness of those designed interventions on developing EFL students' CT skills. In addition, the experimental group receiving ODI demonstrated higher CT competence, collaboration skills, and teamwork satisfaction than the control group.

To summarize, this study could be an example that links OD knowledge to pedagogical approaches in the educational realm to cultivate EFL students' CT skills. Though this study was confined to EFL context, the intervention techniques could be applied to other subjects. However, instructors must design appropriate CT-enhanced activities according to the characteristics of the discipline and its objectives. In addition, the study provides new insights that collaborative learning is beneficial to developing students' CT skills, but instructors have to promote positive social interaction among team members and collaboration through team knowledge and collaboration skills.

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