Using Design Thinking to Enhance EFL Professional Diploma Students' Academic Writing Skills

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Abstract

The purpose of this study was to investigate the effect of using Design Thinking on enhancing EFL professional diploma students' academic writing skills. The study employed the one-group pretest-posttest quasi – experimental design. The participants were 9 professional diploma students in the department of curriculum and instruction, the Faculty of Education, Ain Shams University. The instruments of the study included an academic writing test and a scoring rubric. The academic writing test was pre administered to the study group. Then the study group was trained through the proposed design thinking model of academic writing (RipiR). The academic writing test was then post administered to the study group. Quantitative data were collected from the participants' scores on the pre/ post academic writing test, whereas qualitative data were gathered from the participants' reflections and samples of their writings. Findings of the study revealed that the proposed program had a very strong effect on developing participants' academic writing skills.

Key words: Design Thinking, Academic Writing Skills- EFL Professional Diploma Students

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المستخلص

هدفت هذه الدراسة إلى التعرف على أثر استخدام التفكير التصميمي في تحسين مهارات الكتابة الأكاديمية لدى طلاب الدبلوم المهني الدارسين للغة الإنجليزية كلغة اجنبية بكلية التربية، جامعة عين شمس. استخدم الباحث في هذه الدراسة تصميم المجموعة الواحدة ذات القياس القبلي والقياس البعدي. تكونت عينة الدراسة من 9 طلاب في الدبلوم المهني تخصص مناهج وطرق تدريس اللغة انجليزية، بكلية التربية جامعة عين شمس، واشتملت أدوات الدراسة على اختبار الكتابة الأكاديمية ومقياس تقدير متدرج للكتابة الأكاديمية. تم تطبيق الاختبار قبلياً على مجموعة الدراسة ثم تم تدريب مجموعة الدراسة من خلال نموذج التفكير التصميمي المقترح للكتابة الأكاديمية (RipiR). طبق الاختبار بعدياً على مجموعة الدراسة. تم جمع البيانات الكمية من نتائج المشاركين في اختبار الكتابة الأكاديمية، في حين تم جمع البيانات الكيفية من خلال تأملات المشاركين وعينات من كتاباتهم، وأظهرت النتائج فاعلية البرنامج في تنمية مهارات الكتابة الأكاديمية لدى طلاب الدبلوم المهني الدارسين للغة الإنجليزية كلغة اجنبية.

الكلمات المفتاحية: التفكير التصميمي، الكتابة الأكاديمية، متعلمي اللغة الإنجليزية كلغة أجنبية بالدبلوم المهني

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Introduction

In recent years, English has become the dominant medium language for higher education in both English speaking and non-speaking countries. English has been used for different purposes of which communication may come first. One of the language skills that can be used for this communicative purpose is writing. Writing is a means of communication. Through which people are able to communicate with one another and to deliver their messages properly.

Generally, writing includes various genres that may differ in content and purposes. These genres include reflective writing, creative writing, academic writing, and others (Harb et al., 2022). Despite the fact that academic writing is not the mother tongue of a specific group as stated by Huang (2013), it seems to be an essential requirement for graduate and post graduate students and scholars in EFL contexts. According to Kamhieh (2020), academic writing is always required when seeking to obtain a certification or degree in English as students in this regard are supposed to write essays that have proper academic writing features.

Academic writing is the ability of students to write in different domains including that of linguistic, cognitive and sociocultural nature (Abdusselam et al., 2018). When students master academic

writing, it enables them to show argumentations in a logical way as well as discuss and give opinions and feedback on others' writing objectively (Khazaal, 2019). Moreover, mastering academic writing has become essential for EFL post graduate students to successfully conduct and write research studies (Harb et al., 2022). However, it is observed that EFL post graduate students' writings lack such academic writing skills (Numan Khazaal, 2019). This problem may be better addressed through design thinking.

According to Rumahlatu et al. (2021), design thinking is a problem-solving method that engages students in a process of seeking non-traditional solutions to several issues, or problems they face in a collaborative and communicative way. On the other hand, design thinking is defined as an analytical as well as a creative process that provides students with opportunities to experience, design, prototype models, get feedback, and design (Razzouk & Shute, 2012).

Brown (2009) posits that those involved in the processes of design thinking, use different lateral thinking routes and paths in order to generate new ideas, thoughts and choices in an attempt to get solutions for specific problems and challenges. Building on this, Dym et al. (2005) noted that while design thinking is originally used in several fields such as engineering, and business, its applications has recently expanded to education.

Design thinking can be beneficial to students' learning. It requires students to apply knowledge and skills associated with the targeted lessons along with challenging students to apply other skills that may be beyond their lesson plans including social, technological, and metacognitive skills. Therefore, it can be said that design thinking can be helpful with supporting interdisciplinary learning (Koh et al., 2015).

Furthermore, Kwek (2011), added that design thinking allows students to practice the roles, problems and issues they may encounter in their real lives. It enhances skills of problem solving which are part of the main requirements of the 21st century skills. It

turns the learning environment into a non-threatening one where students do not have any fear to participate and initiate. Such a low-risk environment makes students willing to innovate and experiment. All these benefits may make design thinking a good teaching method to address students' academic writing skills' problems.

1.1. Context of the problem

Professional diploma students majoring in English language teaching are required to write essays, proposals, and mini research paper in English. This requires students to be able to write accurately and effectively. One of the researchers of the current study is teaching those students one of the courses that require writing academic assignments. The researcher observed that most of the students have serious issues about academic writing which were evident in the correction of their writing assignments.

To closely investigate the problem, the researchers implemented a pilot study on a random sample of 7 post graduate English language teaching majors in the professional diploma in the first semester of the 2022-2023 academic year. The pilot study was in the form of an academic writing assignment wherein students were required to write an essay about a topic they had already researched in their class.

Findings of the pilot study revealed that EFL professional diploma students had concerns regarding the following:

- Vocabulary and grammar knowledge: all the students lack a strong command of academic vocabulary and grammar in order to effectively express their ideas.
- Organization and structure: five of them are not able to organize their ideas and present them in a clear, logical, and well-structured manner.
- Critical thinking: six of them are not able to critically evaluate information and evidence in order to present a well-supported and convincing argument.

- Coherence and cohesion: four of them are not able to connect ideas and sentences in a logical and coherent manner, nor use cohesive devices such as linking words and phrases.
- Academic tone and style: all the students are in need to write in a more academic style that is formal, objective, and appropriate to the topic addressed.

To further substantiate the problem, the researchers conducted a structured interviews with 5 students posing general inquiries about their knowledge and practices of academic writing. The questions of the interview included the following:

- Can you describe the steps you follow when formulating a research question for an academic paper?
- Could you explain how you analyze and interpret data in your research?
- What is your understanding of citation and referencing in academic writing?
- "Can you describe how you format your academic papers and why it's important?
- "How do you ensure that you give proper credit to the sources you use in your academic writing?
- How do you paraphrase information from your sources when writing an academic paper?
- Can you describe the process you use to summarize external information in your writing?
- What strategies do you employ to avoid plagiarism when incorporating sources into your academic work?"

The interview revealed the following findings:

- Understanding the research process: four of the students do not have a clear understanding of the research process, including how to formulate a research question, how to design and conduct a study, and how to analyze and interpret data.

- Academic conventions: four of them are not familiar with academic conventions such as citation, referencing, and formatting in order to give credit to sources and make their writing acceptable according to the academic standards.
- Paraphrasing and summarizing: all students are not able to accurately paraphrase and summarize sources in order to avoid plagiarism and incorporate external information into their writing.

Furthermore, many studies reported that non-native English-speaking learners are faced by several challenges when required to involve in academic writing. One of these challenges has to do with linguistics difficulties including knowledge of grammar, academic vocabulary, and sentence construction (Chan, 2010; Qian & Krugly-Smolska, 2008; Zhou, 2009). Other studies highlighted students' difficulties with reporting verbs(Neff et al., 2003; Tang, 2012). Other studies highlighted difficulties with cohesive devices(Hinkel, 2001; Mu & Carrington, 2007; Tang, 2012); citation and the concept of plagiarism (Chandrasoma et al., 2004; Pecorari, 2006).

1.2. Statement of the problem

The problem of the current study is that EFL professional diploma students in Faculty of Education, Ain Shams University lack academic writing skills and conventions. This may be due to the complicated cognitive demands of academic writing; in addition to the ineffective instructional methods that address academic writing in a proper way. Henceforth, the current research attempted to answer the following main question:

"What is the effect of a proposed program based on design thinking on developing EFL professional diploma students' academic writing skills?"

In answering this main question, the following sub-questions were also answered:

- What are the academic writing skills that EFL professional diploma students should have?

- What are the academic writing skills that those students already have?
- How can a program based on design thinking be designed to enhance EFL professional diploma students' academic writing skills?
- What is the effect of the proposed program on enhancing EFL professional diploma students' academic writing?

1.3. Hypotheses of the study

The current study attempted to test the hypotheses below.

- There would be a statistically significant difference in the mean ranks of the research group students between the pre and post administrations of the overall academic writing skills test in favor of the post administration.
- There would be a statistically significant difference in the mean ranks of the research group students between the pre and post administrations of each of the academic writing skills in favor of the post administration.

1.4. Purpose of the study

The purpose of the current study was twofold: First, to investigate the effect of an instructional program based on design thinking on developing the EFL professional diploma students' academic writing skills. Second, to elicit how far the participants benefited from the program.

1.5. Significance of the study

- For Students in EFL Professional Diploma Programs: This is intended to equip them with a range of techniques and methods that they can employ to enhance their proficiency in academic writing and its conventions.
- For EFL Faculty Members: The objective is to offer them a diverse array of recommendations and advice, which can be effectively utilized in their teaching strategies to improve the academic writing skills of their EFL students.

- For Curriculum Developers and Designers: The goal is to encourage them to embrace design thinking in the process of creating and refining curricula and educational resources, with the aim of advancing the academic writing capabilities of learners.
- For EFL Researchers: This study aims to provide a robust theoretical and empirical groundwork, serving as a platform for EFL researchers to further their investigations in this field.

1.6 Delimitations of the study

The study was delimited to:

- A group of 9 students enrolled in the professional diploma, EFL curriculum & instruction, Faculty of Education, Ain Shams University.
- A set of academic writing skills and conventions identified in the rubric.
- The second semester of the academic year 2022-2023.

1.7 Definitions of Terms

According to Numan Khazaal (2019), academic writing is defined as all formally written materials generated within an academic environment, demanding a formal tone, precise punctuation, impeccable grammar, and accurate spelling. On the other hand, Creswell (2002) defined academic writing as a style of writing used in academic disciplines to convey scholarly thought and research. It is characterized by the use of evidence, critical analysis, and the appropriate use of technical language. In this study, the researchers define academic writing as the process of incorporating information and content about an academic topic from source material through paraphrasing, summarizing, analyzing, and quoting to produce a well-structured, focused, and evidenced essay following formal writing conventions.

Design thinking

Design thinking is a cognitive method primarily employed for tackling complex issues through reaching a solution for a problem or producing something that can resolve the issue. It is a creative process that engages learners in several mental processes including inspiration, ideation, and implementation (Cross, 2001; Noweski et al., 2012)

In this study, design thinking is defined as a collaborative, reflective thinking process in which students develop a thorough understanding of a given academic writing task and its context, generate ideas, create, and implement models and refine their work.

2. Review of Literature

2.1 Academic Writing

Academic writing is a style of writing used in academic disciplines to convey scholarly thought and research. It is characterized by the use of evidence, critical analysis, and the appropriate use of technical language (Creswell, 2002). Academic writing is typically formal and objective and is used to inform or persuade an academic or professional audience. According to Johnson (2016), its main purpose is to present information or convey ideas in efficient and economical ways as possible. Academic writing has several types. According to (Aydin & Baysan, 2018; Bailey, 2014) academic writing could take a wide range of forms including book reviews, proposals, case studies, journal articles, essays, translations, presentations, dissertations, and research papers. Johnson (2016) added that academic writing may have three types:

- Expository writing: this kind of writing is used mainly for the purpose of explaining, describing, providing information, or communicating knowledge in a specific way.
- Persuasive writing: this kind of writing is used mainly for the purpose of making a case for or against an issue through using accurate, objective, and sound language.

- Inquiry writing (research writing): this kind of writing is taking place where a writer is involved in a process of posing questions, data gathering, and analyzing the data to answer the questions.

According to Samigullina (2018) & Tso et al. (2016), academic writing has generic features including complexity, responsibility, objectivity, formality, accuracy, hedging and conciseness. First, **complexity** is the purposeful choice of vocabulary and grammatical structures including preferring longer words than shorter words, using more varied vocabulary, making use of more noun-based phrases, using complex sentence structures, and using passive structures. Second, **responsibility** is the acknowledgment of any sources used in the writing assignment and the justification of one's position through evidence. Third, **objectivity** means being fair and avoiding bias; academic writing requires placing more emphasis on the information, avoiding personal opinions as much as possible, and base one's position on evaluating the evidence. Fourth, **accuracy** is using grammar, vocabulary, and other language aspects correctly. Fifth, **explicitness** is the clarity of any pronouns used. Sixth, **consciousness** is the brevity of the writing. Seventh, **formality** is avoiding colloquial language, avoiding idioms and proverbs, slang, using one-word verbs rather than phrasal verbs, and avoiding contractions.

Furthermore, Aly El-ssayed Diyyab (2021) agreed that academic writing has several features in common such as formal language, organization, hedging language (language with no generalizations), logical sequence of ideas, appropriate word choice.

According to Johnson (2016), there are a number of fundamentals for academic writing:

- Provide just the facts (objectivity): in academic writing, a writer should be objective. They should only provide readers with just factual and trusted information.
- Include only necessary information(conciseness): too much information can be a barrier to understanding.

- Do not use useless adjectives: many adjectives in academic writing create subjectivity.
- Do not use contractions: writers should avoid using contractions in their academic and professional writing.
- Do not use personal pronouns: pronouns such as I, you, me, we, your.
- Do not use colloquialisms, popular expressions, or speech-isms.
- Avoid using nonwords; that is, words that do not need to be there.
- Keep your writing simple: an effective academic writer makes complex things seem simpler. In academic writing, one should be clear, simple, and succinct. The purpose of writing is not to show how much knowledge you know or how many big and complicated words you know; rather, it is to convey ideas and meaning in the most efficient and effective possible way.
- Reduce bias: being biased always reduces the writer's credibility.
- Avoid plagiarism: that is the use of someone else's words, sentences, or ideas and claiming them to be your own. Intellectual integrity is the building block of academic writing.

On the other hand, Johnson (2016) reported that there are six academic writing processes that writers should follow to produce good pieces of academic writings. These processes are as follows:

- Data Collection for Research: This involves seeking out relevant sources, extensive reading, and meticulous note-taking. Additionally, data can be collected through various other methods.
- Pre-Drafting Stage: Conducted prior to writing the initial draft, this stage includes planning, outlining, discussing with peers, brainstorming, and structuring the content.

- Creating the Initial Draft (Rough Draft): This step marks the initial effort to transfer ideas onto paper.
- Revision Process: During this stage, the author reviews, reorganizes, seeks feedback, and repeatedly revises the content.
- Editing Stage: This should be done after multiple revisions of the document. It involves scrutinizing and correcting spelling, punctuation, and grammar errors.
- Share or publish. This is the last step where the paper is sent to be published.

2.2 Design thinking

According to Fredrickson (2017), design thinking is basically grounded in several areas including engineering, architecture, marketing and advertising. It is a concept that can be used in different fields. These different fields and disciplines that use design thinking have something in common which is to design a solution for a challenging problem or issue. For example, it has been used in technology to improve productivity and to generate novel products and services for clients. Moreover, design thinking was used in hospitals to improve the patients' experience. On the other hand, it has also was used in education, universities and schools with the purpose of developing and improving students' learning (Beged-Dov, 2017)

In education, design thinking has its roots and backgrounds in constructivism theory (Scheer et al., 2012). It is strongly related to the ideas of John Dewey who was considered one of the pioneers of constructivism as he regarded learning as an intricate sequence of engagements between the learners and their environments. The first pioneer to write about design thinking was Herbert Simon who wrote about design centered theories including decision-making, problem solving, information processing and artificial intelligence. Simon design thinking process includes seven stages. These seven stages are define, research, ideate, prototype, choose, implement and learn (Fredrickson, 2017).

According to Kwek (2011), design thinking is a learning method that seeks to develop students' creativity, and other cognitive and meta cognitive skills. This is done through practical and hands-on projects and tasks that concentrate on empathy, developing biases regarding an action, urging for ideation, and enhancing problem solving skills. In this context, Caroll et. al, (2010) recommends that design thinking should be incorporated into subject content as it is considered a very powerful tool that can help improve the learning process and develop a big range of skills. In the same context, Kwek (2011) stated that design thinking can provide students with rich experiences that can support and encourage meaning making. In the same line of thought, Carroll et al. (2010) &Rauth et al. (2010) confirmed that it can provide students with many possibilities to develop various cognitive and metacognitive skills such as generating ideas, meaning construction, creativity, creative mindsets and creative confidence. Barseghian (2009) added that design thinking can also develop critical thinking and problem-solving skills.

According to the Kwek (2011), design thinking is not just problem solving, it includes a human centered approach. Design thinking provides students with a learning journey that focuses on problem thinking, reasoning and collaboration between students in a human way that makes students support one another. In the design thinking process, students do not just receive information, but they create knowledge out of the information they process.

According to Kwek (2011), design thinking allows students to practice the roles, problems and issues they may encounter in their real lives. It enhances skills of problem solving which are part of the necessary requirements of the 21st century skills. Design thinking turns the learning environment into a non-threatening one where students do not have any fear to participate and initiate. Such a low-risk environment makes students willing to innovate and experiment.

Design thinking can be beneficial to the learning process. It requires students to apply a wide range of knowledge and skills associated with the targeted lessons along with challenging students to apply other skills that may be beyond their lesson plans including social, technological, and metacognitive skills. Therefore, it can be said that design thinking can be helpful with supporting interdisciplinary learning (Koh et al., 2015).

Studies proved that Design Thinking can be an effective method to enhance both the learning and teaching process, participation in the learning process, and increase learners' sense of ownership and independence regarding their learning (Tu et al., 2018). Other studies have reported that may enhance critical thinking, cognitive skills, and communication skills (Zande, 2007). Despite the fact that design thinking is important, it is still not fully understood in terms of its process by many educators and scholars (Taheri & Meinel, 2015).

According to Koh et al. (2015), research has observed several features of design thinking in educational contexts. The first feature is that it engages students in a collaboration process as it mainly relies on social processes where ideas and thoughts are generated, shared, and developed. The second feature is that it involves creating knowledge as it engages learners in a reflection process where they are required to reflect on what they are doing. The third feature is that it engages learners in a social exchange process where ideas and thoughts are continuously discussed and shared until they are completely embraced by the learners in their different groups.

Other characteristics of design thinking include innovation. Educators and scholars should be persons who are able to thinking creatively and create practical and applicable solutions for the problems and issues they encounter (Fredrickson, 2017). Owen (1998), added that two characteristics of design thinking is that it turns students to be both finders and makers. By finders, it is meant that students try hard to seek information and discover. On the other hand, makers require students to take the information that finders have reached and start creating new ideas, thoughts, protypes and

experiments. In design thinking, both characteristics are essentially needed to create solutions for the addressed problems or issues.

Furthermore, Norman (2013) suggested two main processes for design thinking based on a revised version of what was called double-diamond design. This proposed design for design thinking includes two working spaces: a problem space and a solution space. The problem space provides students with opportunities to suggest different and several ideas and thoughts to define and figure out a problem. The solution space students develop several variations of possible solutions for the problem determined in the previous stage where they are then required to reach a solution and create a design prototype. In this model, design thinking is considered a process of identifying problems, using innovative techniques to produce ideas and thoughts, and finally reaching the solution.

On the other hand, Plattner (2010) presented a design thinking model that involves four main tasks. These four tasks are observation, synthesis, ideation, and prototype. Observation helps learners understand the behavior of people. Observation helps us identify issues and problems that require interference and solutions. Synthesis turns the visions and ideas reached in the observation task into specific plans in order to enhance the identification of the problem. On the other hand, ideation turns the design thinking process from an identification problem task to a creative stage task where students work creatively with different ideas. Finally, ideas are put into action taking the form of a prototype construction or a real-world application product.

Unlike the previous model of design thinking, the Stanford Design thinking process model is a five-step process. It is mainly used with the goal of solving problems. Its five-step process is empathize, define, ideate, prototype, and test (Camacho, 2016). In the empathize stage, students should develop a strong understanding of the issue, problem, or challenge. In the define stage, students should identify clearly the problem, issue or the challenge addressed in this situation. In the ideate stage, students collaborate to brainstorm and

generate possible solutions to the problem, issue, or challenge addressed. In the prototype stage, students design or create something as part of the solution for their problem, issue, or challenge. In the test stage, students get more engaged to improve their design or product. (Beged-Dov, 2017)

3. Method

This section covers the methods adopted in the current study, including the design, participants, and instruments of the study.

3.1.   Study Design

In this research, a one-group pre/posttest design was utilized, complemented by a mixed research approach that integrated both quantitative and qualitative methods. The quantitative data were obtained from the pre/post academic writing test results, whereas the qualitative data were derived from the examination of participants' reflections and excerpts from their writings throughout the course.

3.2.   Participants

The participants of the current research were nine (n=9) professional diploma students in the department of Curriculum and Instruction, the Faculty of Education, Ain Shams University, in the 2nd semester of the 2022-2023 academic year. All of them graduated from faculties of Education. Eight of them were working as teachers of English for different stages (Three as high school teachers, two as kindergarten teachers, two as primary school teachers and one as a preparatory stage teacher). They had different teaching experiences, spanning from 3 years to 20 years of teaching. The professional diploma courses include academic English subjects (i.e., English literature and linguistics) and TEEL subjects (Teaching Strategies, Teaching and Assessment, and Field Studies).

3.3.   Instruments

For the purpose of the study, an academic writing test and a scoring writing rubric were designed.

3.3.1. The Academic Writing Test

Purpose

The Academic Writing Test was a pre/post writing test that aimed at assessing the participants' academic writing skills before and after the proposed intervention.

Description

The test consisted of one essay writing question. The participants were asked to write 3-4 pages about using active learning techniques to increase EFL students' motivation for learning English. They were required to incorporate information and content about the topic from source material articles they were given. That was meant to demonstrate their abilities to paraphrase, summarize, analyze, along with other skills of academic writing. The participants were allowed to write outlines and initial drafts of their essays before they submitted the final version (See Appendix B).

Piloting the test

The test was conducted with a group of 15 postgraduate students (all enrolled in a Teacher Preparation Diploma program and at similar levels of proficiency and academic/professional training) who were not part of the main study. This was done before introducing the proposed program. The objectives of this pilot included:

- determining the optimal length for the test;
- assessing the test's reliability;
- confirming the test's validity; and
- evaluating the test's relevance for the students, focusing on the clarity of the questions and the suitability of their wording.

Duration of the test: The timing of the test was determined by calculating the time each student spent on it, followed by computing

the average duration for the entire group, resulting in a total of two hours.

Internal consistency validity: The validity of the different subsections of the test was determined by calculating the correlation between the scores of each subsection and the total score of the test. This involved computing the correlations between the overall test scores of the students and their individual scores in each academic writing skill area. These correlation figures are displayed in Table (1).

Table 1

The correlations between the scores of each specific skill and the overall test score.

Skill	Correlation
Structure and Development	0.75 **
Focus and Relevance	0.79**
Objectivity and Evidence	0.72**
Paraphrasing and citation	0.77**
Summarizing	0.74**
Formality	0.77 **

**significant at 0.01 level, where n = 15, and it is significant at 0.01 when the correlation coefficient ≥ 0.63.

The table above shows that the correlations between the overall test score and the sub-scores of each skill are notably high, indicating a strong test validity.

Reliability of the overall test

The reliability of the test was determined using the following methods:

- **Cronbach's Alpha:** The alpha coefficient obtained was 0.93, indicating high internal reliability. This suggests that the test items are consistently reliable.
- **Test-Retest Reliability:** The test was reassessed by a different examiner, and the correlation coefficient between the two sets of scores was calculated. This coefficient was found to be 0.98, denoting a very strong correlation. This

result validates the test's precision and reliability, affirming its effectiveness as a measurement tool.

Content Validity

The test was presented to a panel of experts in teaching English as a foreign language. Their task was to evaluate how well the test content was chosen and formulated for the assessment of students' academic writing abilities. The panel members were requested to share their insights and propose any changes or improvements to augment the test, particularly in terms of its content and phrasing.

Scoring the test

The students' essays were evaluated using the academic writing scoring rubric created by the researchers. The writings of the students were meticulously assessed based on the criteria outlined in the rubric, and then the scores were aggregated to determine a total score. The highest achievable score for all skills was 120 marks, while the lowest possible score was 30 marks. To ensure consistency, the test was scored by both researchers to assess inter-rater reliability. The reliability index was found to be 0.85, indicating a high level of reliability.

3.3.2. The Scoring Rubric

The researchers designed an analytical rubric to evaluate the participants' academic writing in the pre/post test. Six evaluation criteria representing the targeted academic writing skills were identified (i.e., Structure and Development, Focus and Relevance, Objectivity and Evidence, Paraphrasing and Citation, Summarizing and Formality). They were subsequently assessed both qualitatively and quantitatively to distinguish among four performance levels: Fair, Good, Very Good, and Excellent. The score for each essay was computed by multiplying the level number by the corresponding number within parentheses for each criterion. The maximum achievable score was 120 points (See Appendix C).

The Content validity of the rubric was affirmed by seeking input from a panel of TEFL jury members. They were tasked with

validating the content of the six categories that represented the academic writing skills intended to be assessed in the students' essays.

3.4. The proposed design thinking program (See Appendix D)

Aim

The primary goal of the program was to enhance the participants' abilities in academic writing. To achieve this, the program aimed to accomplish the following objectives:

- Encouraging the participants to engage in a reflection process through which they can empathize with their colleagues and understand the demands of the task as well as their own needs.
- Giving the participants the opportunity to learn and practice ideation techniques which help stimulate their thinking and generate ideas.
- Allowing the participants to work collaboratively while being responsible for their own learning.
- Enhancing the participants' cognitive, metacognitive, and problem-solving skills through engaging them in the design thinking process.

Instructional materials

At the beginning of the course, students were given soft copies of both the academic writing guide and the academic writing tasks booklets. In addition, they were given handouts of the printed worksheets, reflection logs or self-assessment checklists they would use while working on a particular task each session.

Implementation of the program

The participants were informed with the aim of the proposed course. They were aware that they had to work both independently and collaboratively. In the first two weeks, they were assigned to study the academic writing guide booklet independently. They sent their comments and questions to a What's App group for any clarifications.

The Academic Writing guide is a self-study booklet which aims to comprehensively inform the participants about academic writing

types, characteristics, genres, and structures. It also explains characteristics of academic writing and how to incorporate content from different sources through analyzing, summarizing, paraphrasing, and quoting. Formal writing conventions (e.g., hedging, and parallelism) are also explained.

During this time, the participants were introduced to the proposed design thinking model of academic writing (RipiR). They were briefly familiarized with the thinking processes they were supposed to engage in to accomplish the academic writing tasks.

After those two weeks, students started practice sessions. In each session, they were assigned an academic writing task that they had to finish following the design thinking model of academic writing. The content of these tasks was all about TEFL topics and research, as it is relevant to the participants' professional interests and to the courses they study in their diploma. The tasks were sequenced in a gradual order from easy to more challenging tasks. In the beginning they were asked, for example, to identify ill-written parts of an academic text, or to add specific parts to an academic text, such as an introduction or a conclusion. Then, they started writing a whole text making use of source material provided to them; and finally, they worked on a final project all by themselves. This progression of tasks helped them increase their self-confidence and build awareness of their cognitive abilities.

There was flexibility in the organization of the participants' work, since they had ownership of their learning to achieve the tasks. In this sense, they worked together in the weekly sessions and sometimes they continued to work together independently in small groups after the time of the session was out. They also had online Zoom meetings frequently to finish their tasks and to cater for their different timings and work schedules.

Informed by the review of literature on design thinking models and on academic writing processes, a design thinking model of acacdemic writing, **RipiR**, was proposed. The model is adapted from Stanford and Simon design thinking models (Beged-dov,

2017; Fredrickson, 2017) and is integrating academic writing processes (Johnson, 2016). It follows five recurrsive stages starting with reflection and ending with reflection as clarified below:

Figure (1): The RipiR proposed model
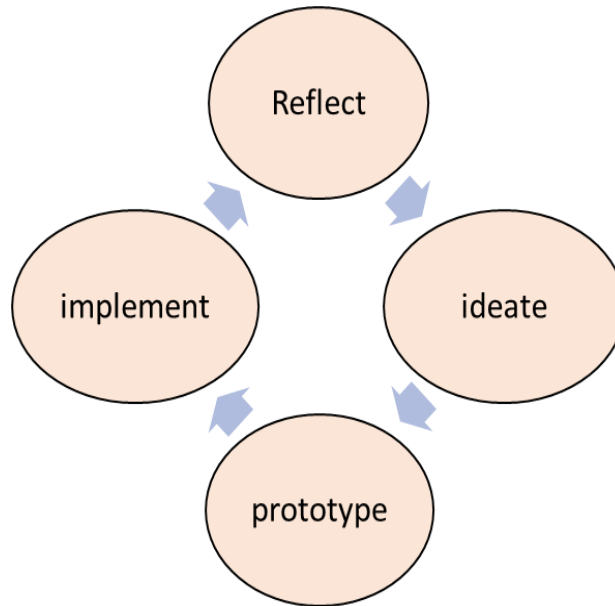
R: Reflect

The aim of this stage is to help students have a thorough understanding of the task and its conext. To do so, they practice reflection to raise their awareness of their own abilities and the requirements of the task. From one hand, they talk about their needs, concerns, and worries. They reflect on what they think they can/cannot do to gain insights into their feelings. On the other hand, they discuss the writing task itself, including its content, dimensions and demands.

This stage reflects the humaninstic nature of design thinking, as it allows participants to share their feelings, empathize with one another and better understand what they need. In this sense, they are able to analyze the context and define the challenges. They can write specific statements identifying problems or stating needs. The

researchers designed a variety of reflection logs that helped the participants stimulate their thinking.

i: ideate

The purpose of this stage is to encourage the participants to generate a multitude of ideas, suggestions and solutions as possible. These ideas offer a wide range of options and possibilities that they can choose from to fulfil their needs and face the challenges, and consequently to accomplish the task.

The ideation techniques introduced in the academic writing tasks included mind-mapping, group discussions, word associations, note taking, brainstorming, brainwriting, and SCAMPER technique.

p: prototype

The goal of this stage is to let students create a model or an example of how they will perform the task. This can be done in the form of an outline, a plan, a flowchart, or a graphic organizer. This created *design* is not meant to be final. It only provides a visual model to trigger thoughts and ideas.

i: implement

The purpose of this stage is the actual implementation of the model to test it and see how far it fulfillfs the demands of the task. This can be done through writing the first draft.

R: Reflect

The purpose of this stage is to allow the participants to refine their work and finalize it. To do this, they have to reflect on their achievement and learn from their experience. They can exchange feedback and discuss potential improvements through editing and proofreading.

Assessment techniques

Formative assessment techniques were designed and implemented from the very beginning of the program. Informal observations of the participants' practices during the sessions were essential to provide them with constructive feedback and offer them help when needed. However, most of the assessment was done by the participants themselves. All the tasks involved self and peer

assessment checklists, worksheets, and/or reflections logs that enabled them to evaluate their performance and progress. On the other hand, summative assessments were also used to measure the effectiveness of the proposed program before and after the intervention.

Duration of the program

The program lasted for (12) weeks in the 2nd semester of the 2022-2023 academic year. The participants had self-studied the Academic Writing Guide booklet for two weeks before they were given ten (10) sessions during which they worked on the academic writing tasks and activities.

4.   Data Collection and Procedures

The present study was carried out in accordance with the following methods:

• The pre academic writing test was administered to the participants in the duration of two hours.

• The proposed instructional program was applied.

• The post test was administered to the participants.

• Quantitative and qualitative data were analyzed.

5.   <u>Findings of the study</u>

The quantitative results of the study are presented by relating them to the study hypotheses.

5.1. Testing the first hypothesis

The first hypothesis stated that "There would be a statistically significant difference in the mean ranks of the research group students between the pre and post administrations of the overall academic writing skills test in favor of the post administration." In order to test this hypothesis, the mean ranks of the research group on the overall academic writing test were compared before and after the administration of the program. This was statistically done through using Wilcoxon Test to detect the significance of differences between the two administrations.

Table 2

*The means of ranking scores of the research group before and after
implementing the proposed program in the context of the overall
academic writing test.* (The sample size (n) is 9, and the degree of
freedom is 8).

SKIL	Ranks	Number (N)	Mean Rank	Sum of Ranks	mean		Std. Deviation		Z	Sig.	Effect size
					PRE	POST	PRE	POST			
Overall academic writing skills	Positive Ranks	9	5.00	45.00	8.44	20.78	1.33	1.19	2.714	0.007	1.00
	Negative Ranks	0	0.00	0.00							
	Ties	0	0.00	0.00							
	Total	9									

From table 2, it can be observed that the mean scores of the post-administration is higher than the mean scores of the pre-administration. This indicates that the overall academic writing of the participants in the research group has been improved after they were instructed by the proposed program. Additionally, the results of overall academic writing skills show positive ranks for all participants (9), zero ranks for neutrality, and zero negative ranks. This implies that the grades of all participants (9) increased in the post-administration compared to the pre-administration in the overall academic writing skills. There are no participants whose grades decreased or remained the same. Furthermore, the significance level (Sig.) in the overall academic writing skills equals (0.007), which is less than 0.01. This indicates that there are differences between the pre-administration and post-administration in the overall academic writing test at a significant level of 0.01. Thus, the first hypothesis is accepted.

To calculate the effect size of the proposed program on the research group, the researchers relied on the approach mentioned by Aziz Abdelhamid (2016: 279-280) who states that when using the Wilcoxon test to calculate the difference between the means of paired ranks of associated grades, and when the results indicate a statistically significant difference between the ranks of the paired grades or between the ranks of the pre-test and post-test, the strength of the relationship between the independent and dependent variables can be determined using the Matched-Pairs Rank Biserial Correlation coefficient. . It is calculated using the following equation:

$r = (4(T1)/ n(n+1)) -1$

Where: r = strength of the relationship (Matched-Pairs Rank Biserial Correlation coefficient). T1 = Sum of positive ranks. n = Number of paired grades.

The interpretation of (r) is as follows:

- If $(r) < 0.4$, it indicates a small effect size.
- If $0.4 \leq (r) < 0.7$, it indicates a medium effect size.
- If $0.7 \leq (r) < 0.9$, it indicates a large effect size.
- If $(r) \geq 0.9$, it indicates a very large effect size.

By calculating the effect size from the aforementioned relationship, it was found that the effect size in the development of academic writing skills equals (1). This indicates that the proposed program has a very strong effect on the development of the overall academic writing skills among English language learners in the professional diploma group (the research group).

5.2 Testing the second hypothesis.

The second hypothesis stated that "There would be a statistically significant difference in the mean ranks of the research group students between the pre and post administrations of each of the academic writing skills in favor of the post administration.

In order to test this hypothesis, the mean ranks of the research group on the academic writing test in each skill separately were compared before and after the administration of the program. This was statistically done through using Wilcoxon Test to detect the significance of differences between the two administrations.

Table 3

The significance of differences between the means of ranking scores of the research group before and after implementing the proposed program regarding each academic writing skill separately. (The sample size (n) is 9, and the degree of freedom is 8).

SKIL	Ranks	Number (N)	Mean Rank	Sum of Ranks	mean PRE	mean POST	Std. Deviation PRE	Std. Deviation POST	Z	Sig.	Effect size
Structure and Development	Positive Ranks	9	5.00	45.00	1.22	3.78	0.44	0.44	2.754	0.006	1.00
	Negative Ranks	0	0.00	0.00							
	Ties	0	0.00	0.00							Largeأ
	Total	9									
Focus and	Positive	9	5.00	45.00	1.44	3.56	0.53	0.53	2.701	0.007	

Relevance	Ranks										1.00
	Negative Ranks	0	0.00	0.00							Large
	Ties	0	0.00	0.00							
	Total	9									
Objectivity and Evidence	Positive Ranks	9	5.00	45.00	1.44	3.44	0.53	0.53	2.719	0.007	1.00
	Negative Ranks	0	0.00	0.00							Large
	Ties	0	0.00	0.00							
	Total	9									
Paraphrasing and citation	Positive Ranks	9	5.00	45.00	1.56	2.56	0.53	0.73	2.251	0.024	
	Negative Ranks	0	0.00	0.00							

		N	Mean Rank	Sum of Ranks					Z	Sig.	Effect Size
	Ties	0	0.00	0.00							1.00
	Total	9									Large
Summarizing	Positive Ranks	9	5.00	45.00							
	Negative Ranks	0	0.00	0.00	1.56	3.56	0.53	0.73	2.640	0.008	1.00
	Ties	0	0.00	0.00							Large
	Total	9									
Formality	Positive Ranks	9	5.00	45.00							
	Negative Ranks	0	0.00	0.00	1.22	3.89	0.44	0.33	2.762	0.006	1.00
	Ties	0	0.00	0.00							
	TOTAL	9									Large

From table 3, it can be observed that the mean scores of the post-administration in all the academic writing skills is higher than that of the mean score of the pre-administration. This indicates that both the overall academic writing and each individual skill of the participants in the research group have been improved after being instructed by the proposed program. Additionally, the results of each individual academic writing skill show positive ranks for all participants (9), zero ranks for neutrality, and zero negative ranks. This implies that the grades of all participants (9) increased in the post-administration compared to the pre-administration in each individual academic writing skill. There are no students whose grades decreased or remained the same. Furthermore, the significant level (Sig.) in each individual academic writing skill (objectivity and evidence, focus and relevance, structure and development, formality, and summarizing) is less than 0.01. This indicates that there are differences between the pre-administration and post-administration in each individual academic writing skill at a significance level of 0.01. Thus, the second hypothesis is accepted.

From table 3, it can also be observed that all the effect size values in the development of all sub-skills of academic writing equals (1). This indicates that the proposed program has a very strong effect on the development of all the skills of academic writing among English language learners in the professional diploma group (the research group).

5.3 Measuring the effectiveness of the proposed program in developing academic writing.

Although the effect size has a large effect as illustrated in table 3 which in turn indicates the effectiveness of the proposed program in developing academic writing skills, the researchers verified its effectiveness using the Corrected Gain Ratio (CEG) by Aziz (Aziz Abdelhamid, 2013, 28). It is calculated using the following equation:

CEG ratio = Corrected Gain Ratio

M1 = Mean of pre-test scores

M2 = Mean of post-test scores

P = Maximum possible score

The interpretation of the CEG ratio is as follows:

- If the CEG ratio is less than 1.5, the program is considered ineffective.
- If the CEG ratio ranges from 1.5 to 1.8, the program has moderate effectiveness.
- If the CEG ratio is greater than or equal to 1.8, the program is considered acceptable or effective. The following table illustrates the values of the Corrected Gain Ratio by Aziz.

Table 4

Mean scores of the research group in pre-test and post-test in academic writing, and the Corrected Gain Ratio by Aziz

Skill	Full Mark	Mean scores		Ezat correct Gain Ratio	*significance*
		Pre M_1	Post M_2		
academic writing	**24**	**8.44**	**20.78**	**1.90**	*effective*

From table 4, it is evident that the Corrected Gain Ratio by Aziz equals (1.90), which is greater than 1.8. This indicates that the proposed program, based is effective in developing academic writing skills among English language learners in the professional diploma group. Thus, the main research question has been answered.

6. Discussion

6.1. Discussion of the quantitative findings

Drawing on the statistical analysis of the research findings, which were presented in the previous section, it can be noticed that the research hypotheses were tested and accepted, and the proposed program proved effective in enhancing the participants' overall academic writing performance and in developing each skill. This

may be attributed to the key principles of design thinking on which the proposed program was built as follows:

First, the literature review on design thinking in TEFL contexts recommends integrating design thinking into academic content to support learners' meaning making. This point was considered while designing the program; and therefore, the content of the academic writing tasks was derived from the field of TEFL approaches and strategies, which are at the core of what the participants already study in their diploma and practice in their work. This may be one of the reasons why their academic writing was developed, since they handled content, which was relevant to their specialization and professional experiences, which helped them to gain deeper understanding of the content and terminology included in the tasks.

Second, design thinking processes allow learners to experience authentic problems and play authentic roles that they may encounter in their real lives, which encourages them to innovate and come up with creative solutions for the issues they work on. Since the activities and tasks in the proposed program matched this criterion, the participants dealt with authentic issues from their professional lives and could think of them critically as they were related to what they teach in their classrooms and what they do with their students. This contributed to the development of their design thinking processes, and consequently, to the enhancement of their academic writing. This assumption goes in agreement with Nazim & Mohammad (2022) hypothesis that the use of real-world subjects, as a characteristic of design thinking, accounts for an overall proficiency of students' writing.

Third, the proposed RipiR model of design thinking started and ended with reflection, a key feature of design thinking. Through reflection, the participants could define their challenges, generate ideas and prototype initial designs to approach the task at hand, which helped them to accomplish the tasks successfully. The reflection logs that guided the participants' work during the proposed program enabled them to plan, monitor and evaluate their writing process. This can account for the development of their

Structure & Development and *Focus & Relevance* skills. In this regard, Buphate & Esteban (2022) argued that the ideation phase of the design thinking model serves as an innovative tool to foster learners' critical thinking and reflection abilities through ideation discussion activities. The current research utilized a variety of ideation techniques including mind-mapping, group discussions, word associations, note taking, brainstorming, brainwriting, and SCAMPER technique.

Fourth, negotiating ideas in a process of social exchange is an essential characteristic of design thinking which is inherently collaborative. The researchers were attentive to this feature while designing the proposed program. Collaboration and negotiation of ideas developed empathy among the participants which urged them to help one another develop ideas and plan for their writings. This feature also allowed the participants to exchange constructive feedback and helpful suggestions which resulted in the improvement and refinement of their writings. This is consistent with Wu's (2015) argument that the collaborative and interactive aspects of design thinking can aid students' improvement of their writing abilities.

Fifth, the researchers scaffolded the participants' learning in various ways. On one hand, the participants were assigned self-study parts of the program, which fostered their ownership and interdependence. This is a main principle of design thinking which assumes that learners should be given the responsibility to manage and monitor their progress together. On the other hand, the activities and tasks developed progressively from simple and less-detailed tasks to more challenging and compound tasks. This gradual presentation of tasks helped the participants feel less pressurized and gain self-confidence step by step. This was meant to lessen the cognitive burden of meeting all the requirements of academic writing simultaneously.

Finally, the proposed program met the participants' dire need to develop their academic writing skills both as learners and as

teachers of English. As learners, they should be aware of how to follow a correct academic writing style in their assignments, presentations, and research articles. As teachers, on the other hand, they are supposed to teach their students how to follow academic writing conventions when working on their assignments and academic essays. The fact that the proposed program was in alignment with their needs motivated them to get actively engaged in the design thinking processes, which enhanced their academic writing consequently.

With regard to separate skills developments based on the participants' mean scores, it can be noticed that the skills developed in the following order: *Formality, Structure and Development, Summarizing, Focus and Relevance, Objectivity and Evidence*, and *Paraphrasing*. Formality developed most because it is, apparently, the most straightforward skill. The participants were given clear and simple guidelines for formal language, and they did not have to exert effort to follow these guidelines. All what they had to do was to check their writing in light of a list of formal writing criteria. The skill that developed next was structure and development. This may be because the participants were provided with templets and formats to help them recognize the structure of the academic genre they wrote about. Also, assigning students to write outlines in the Prototype stage of the proposed design thinking model helped them organize and structure their ideas and can account for this development.

Although Objectivity and Evidence may sound more difficult to develop than Paraphrasing, they developed more. This may be attributed to the fact that the participants cooperated throughout the processes of the RipiR proposed model to discuss and analyze the content and source material of the topics they had to write about. This group work generated ideas, suggestions and solutions of how to write objective and evidence-based texts and the participants were trained to use ideation and prototyping strategies that enabled them to develop such skills. Paraphrasing, on the other hand, requires a wider knowledge of language lexis and manipulation of

synonyms and sentence structures, which needs a longer time for practice and is built on extensive exposure to the language. Although the participants managed to enhance these paraphrasing skills while working together during the proposed program, their performance was not as effective when they were tested individually.

The findings of the current research are in agreement with findings from similar design thinking research. The study of Nazim & Mohammad (2022), for example, proved the effect of a five-step strategy based on design thinking implications on enhancing EFL preparatory stage students' paragraph writing. The researchers urged that writing can be seen as a design process and that design thinking can offer students a cutting-edge process to optimize their interest and engagement in writing. Alrehaili & Alhawsawi (2020), on the other hand, explored the effect of design thinking as a human-centered, innovative approach to handle EFL learners' writing challenges. The findings of the study showed that learners' writing skills improved and their active involvement and satisfaction increased. The researchers recommended integrating design thinking, as an explicit instruction, into EFL writing courses, not only to enhance learners' writing skills, but also to support their teamwork skills, confidence, creativity and active participation.

6.2. Analysis of the participants' writings

Qualitative discussions of the study findings are derived from two sources: analysis of the participants' reflections, which will be tackled in the following section and analysis of some of the participants' writing samples, which will be introduced below.

Observation of the participants' writing throughout the course was carried out as a formative assessment tool to help the researchers trace and monitor the participants' performance. These observations revealed the development in the participants' academic writing skills as follows:

First, at the beginning of the course, their writings did not take the format of an essay or an article, since they used to write in points using bullets or numbers. Another common format they used was to write questions and their answers to organize their writings. In one of the tasks, for example, they wrote, *"What are speaking skills?", "Why is speaking important?", "What is collaborative learning?", "How can it develop speaking?"*. They organized their articles as answers for these questions. Closer to the end of the course, however, they learnt how to structure their thoughts in an appropriate format, and the introduction-development-conclusion outline was used.

Second, before the participants were instructed in how to use the RipiR model, they used to write without comparing, contrasting, or analyzing information and ideas from sources. They did not even comment on what they paraphrased or quoted to clarify their points of view. It was just that they *narrated* or stated what they read about. When working together to write about blended learning, they wrote the following:

What is the definition of blended learning? Graham (2006) defined blended learning as follows: "Blended learning systems combine face-to-face instruction with computer-mediated instruction". Garrison and Kanuka (2004) defined blended learning as follows: "the thoughtful integration of classroom face-to-face learning experiences with online learning experiences". Allen and Seaman (2010) defined a blended learning course as follows: "Course that blends online and face-to-face delivery".

Eventually, during the last sessions of the course, they wrote about language learning strategies. The following extract from their article clearly demonstrates how they could discuss, compare, contrast, and relate different information from different sources, which indicates development of their academic writing skills. They wrote:

O'Malley et al (1985) defined learning strategies as "operations or steps used by a learner that will facilitate the acquisition, storage, retrieval or use of information". Oxford (1990) adopted the same definition of language learning strategies as "operations employed by the learner to aid the acquisition, storage, retrieval, and use of information". In their definition, O'Malley and Chamot (1990) defined learning strategies from the point of view of cognitive psychology as "special ways of processing information

that enhance comprehension, learning or retention of the information". This definition focuses on information processing and how it can be achieved by these strategies.

Third, they did not use citations accurately. For example, they wrote "*Brown defined speaking as……*", without mentioning the year. That resulted in confusion as they sometimes referred to two different authors sharing the same name. In one of the tasks, they even cited the article by its title: *"….motivation pushes them or encourages them to go through the learning process (Motivation in Learning English Language: a case study at Vietnam)"*. Their in-text citation skills developed at the end of the course as they were exposed to various research and wrote several articles.

Fourth, in their first writings, they used to resort to informal writing often. This can be attributed to the fact that informal writing is easier and more familiar to them. In one of their essays, for example, they wrote, "*There are two **things** that **you** should teach*". In one of the last sessions, they were asked to go back to their first essays and edit them. The changes they made to their initial writing were significant. They changed the previously mentioned sentence to, *"There are two strategies that teachers should use in their classrooms"*. The edited sentence shows evidence of accuracy in word choice and formal style in writing. That was promising for the researchers as it shed light on the effect of the proposed program.

Fifth, another evidence of the participants' progress was adherence to parallelism and consistency which were clear in their final writings. This development can be elicited by comparing the participants' writings in the beginning and at the end of the course. The following lines, for example, are extracted from one of their reflections in the beginning of the course:

1- The students interacted a lot and felt some freedom in speaking.

2- Preparing students before they speak.

3- But this method took a lot of time than what was planned.

4- The importance of applying various activities.

5- How to find the problems that students suffer from?

On the other hand, the following is an example of their reflections closer to the end of the course, in which parallel and consistent structures are used:

1- Some of the students used to say yes, so they did not talk much.

2- When asking the student about some things to talk about, they were unable to find the appropriate words or sufficient information.

3- Few of the students could speak.

4- It was not an appropriate method for the students to help them overcome the problem of speaking.

A closer look at the differences between the participants' writings before and after the course could reveal how far their academic writing skills were fostered in terms of organization, structure, accuracy and integrating sources, which may be attributed to the proposed design thinking model.

6.3.   Analysis of the participants' reflections on the course

Reflections before and after getting involved in the academic writing tasks were essential steps for the participants to enhance their metacognitive awareness of themselves and their thinking. They reflected on the tasks and on their practices both individually

and collaboratively. These reflections shed light on the effect of the proposed design thinking model on the participants' development as follows:

One of them wrote the following:

Today I had a discussion with my colleagues to reflect on the task. Some points were not a problem for me, but it was for my colleagues. I understand that they may have problems about the task that I don't have and I think with them to solve them.

This reflection shows that the proposed design thinking model of academic writing enabled the participants to empathize with their colleagues and experience the merit of understanding others' needs, which is a humanistic feature of design thinking. Understanding how others think and feel broadens one's view and helps him/her search for useful and creative solutions accepted by all the members of the group.

Another participant wrote the following:

I think being a teacher is a profession that needs a lot of development from time to time…… And through this research, I was able, as a teacher, to see and deduce the problems, not only focusing on the information but also looking at it from the perspective of the researcher.

As it can be elicited from the participant's reflection, she could perceive the benefit of design thinking as a tool of professional development. She could not only gain knowledge, but also investigate problems through following the proposed model as a model of thinking and problem-solving.

Collaboration and teamwork were a point of interest to all the participants. They all commented on how working with their colleagues benefited them in one way or another. The following are some reflections that they wrote on the final semester action research project (the last academic writing task they were assigned to finish):

- And the idea of working in a team added to my experience in terms of comments and also the exchange of ideas between us, and that made me more developed in discovering new ways to overcome the problem…. I have cooperated with my colleagues to come up with these solutions.

- Also, it's easier, more beneficial, and more constructive to work in a team. I got to be exposed to different opinions that added to my perspective. It helped me to work on being a good listener and to accept others' ideas. I benefited from my colleagues because we teach at different levels and in different environments.

- Moreover, working in a cooperative learning environment can be more enjoyable and rewarding for teachers. There is less pressure on individual teachers and more opportunity to work as part of a team. Teachers can share their knowledge, skills, and strategies, and develop their professional and learning practices in a supportive environment.

- During our teamwork, we frequently encountered challenges and opportunities. Initially, our group functioned seamlessly. However, as pressures mounted, team dynamics became strained. Nonetheless, we set clear roles and deadlines for each member's contributions, ensuring efficient compilation and review processes. After our initial meetings, we regained our focus and direction. We diligently conducted our research, adhering to the assignment's guidelines and providing relevant suggestions and citations. Throughout the project's duration, our mutual support was evident, culminating in the successful completion of our project. This is not my first time working in a group, but this one is different. At first, we were confused and did not know what to do….Finally, as soon as we knew our roles, the work was done.

It is obvious how the participants appreciated collaborative work, which is a key feature of design thinking. On one hand, it helped them share and accept others' ideas; and on the other hand, it

offered them a good chance to exchange ideas and strategies, solve problems and feel less pressurized.

The participants could also perceive a change in how they manipulated their thinking and approached tasks. That was evident in their reflections as they wrote the following:

I knew about more strategies, and I had the chance to think criticizingly of each strategy trying to identify advantages and disadvantages. This is the benefit of action research because the one tries to analyze the situation either to confirm the strategy or to change or modify it for improvement.

I had acquired more knowledge and strategies about how to organize my ideas and writing to become suitable to the research and how to collaborate with my colleagues to exchange our information.

The participants' awareness of their strategies to manage their thinking and their tasks are positive effects of design thinking that fosters cognitive and metacognitive skills and allows the participants to handle challenges and accomplish tasks.

It is worth mentioning that one of the participants talked about her increased self-confidence at the end of the course. She said,

"I didn't believe we can do it! When we were first told that we will work together to do research and write an action research report (referring to the final task at the end of the semester), I thought it was just a suggestion, but we wouldn't really start this research. I then realized it was serious and we had to do it! It was such a burden; I thought I couldn't do that with my colleagues. It was difficult in the beginning, but then we organized our thoughts and it became easier."

The participant's statement highlighted her worries in the beginning of the task, which was also a common concern of the other participants as elicited from their reflections. The point here is that

they gained self-confidence gradually. The more they followed the steps of the proposed model, the more they became autonomous and confident. The explicit guidelines, worksheets and reflection logs provided by the program helped them to feel less pressurized and work in an anxiety-reduced atmosphere. This finding is in line with the conclusion of Leverenz's (2014) study that recommended applying design thinking as a writing model to help learners overcome writing challenges confidently and foster experimentation through prototyping. It can be concluded that the overall experience was satisfactory to all the participants.

7. Conclusion

In an attempt to investigate the effect of design thinking on enhancing professional diploma students' academic writing, the researchers proposed the RipiR model as a design thinking model of the academic writing process. Drawing on the statistical and qualitative analyses of data, it can be argued that the proposed model was effective as it developed the participants' academic writing skills. The model engaged the participants in a collaborative process through which they generated, shared and developed ideas and solutions to tackle the academic writing tasks they were assigned to accomplish. Starting and ending with reflection, the model gave the participants the chance to build ownership and independence of their own learning, which contributed to their academic and professional development. They also benefited from working together and understanding one another's needs, which led to their success. They were satisfied with the experience as a whole and had positive feelings as they expressed in their reflections.

8. Recommendations

Based on the findings of the current research, the following recommendations can be suggested:

- Although students may have the knowledge and ideas to foster their skills, they are in need of a structured model of thinking to organize and guide their thoughts. Following specific and systematic steps to manage one's thinking helps to develop metacognitive awareness of one's challenges and

abilities and consequently to accomplish tasks successfully. Therefore, design thinking models should be implemented in TEFL contexts to increase learners' proficiency.

- Students should be given ownership of their learning to enhance their autonomy. They should be responsible, for example, for managing their work, distributing roles, and choosing from a variety of strategies what is appropriate for their needs.

- When students empathize with their colleagues, it builds humanistic and friendly attitudes among them, which affects their learning positively. Thus, instructional courses should care to foster such a humanistic feature through helping learners to understand one another's feelings and needs.

- It is a well-known saying that people do not learn from the experiences they pass through, but rather, they learn from reflecting on these experiences. Therefore, reflective learning practices, as featured in design thinking, should be adopted and implemented in instructional courses so that learners can achieve maximum benefits.

- Taking time to prepare for, plan for and think of how to approach a task is not less important than directly performing the task. That is why instructional models should take pre-task activities, such as reflection, ideation, and prototyping, into consideration.

- A variety of formative assessment techniques should be available to monitor learners' progress over time. Self-assessment and peer-assessment techniques, such as checklists and reflection logs should be introduced to learners, as they can effectively contribute to their progress.

9. Suggestions for further research

- Further research may investigate the effect of design thinking models on fostering language skills in other areas, such as reading and speaking.

- Researchers may also duplicate the study with learners of a younger age group to see whether the process of design thinking varies in effect between adult and young learners or not.

- Future research may also investigate how design thinking may be used by teachers as a tool of professional development and a tool of reflective teaching in professional learning communities.

- Researchers may be interested in designing design thinking-based programs to train teachers on how to incorporate design thinking into their teaching practices to enhance their students' achievement.

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