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## RESEARCH ARTICLE

### WRITING APPROACH GENERATION: ADAPTING DESIGN THINKING TO ENHANCE EFL STUDENTS' WRITING SKILLS

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#### ABSTRACT

This research paper explores a creative way of teaching writing by adapting design thinking - a human-centered approach- as an innovative solution in response to writing challenges in English as a Foreign Language (EFL). Design thinking which is proposed in this paper consists of seven phases i.e. empathize, define, ideate, prototype, revise, evaluate, publish. Thirteen EFL learners, age of 17 years, studied a proposed writing unit based on design thinking approach were investigated. Their results indicated statistically significant differences at ( $\leq 0.05$ ) level between the mean scores of the pre-test and post-test of writing skills in favor of the post-test. The findings show that teaching writing through design thinking process has improved learners writing skills in relation to organization, development, cohesion, structure, vocabulary, and mechanism, as well their active involvement and satisfaction.

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## INTRODUCTION

Writing, as a complex social process, is one of the most challenging skills for English as a Foreign Language (EFL) learners (Hamadouche, 2010; Calkins, 2007). EFL student-writers often struggle with the process and how to produce a good piece of writing in a given social and educational setting. It requires an ability to organize ideas in clear and coherent manners by using unambiguous language and practical word choice (Starkey, 2004). However, for many years teachers have taught writing skills in different countries along a continuum of product approach and process approach as another end (Salem, 2007). The product writing approach encourages students to analyze and mimic a model text that has been presented at an early stage of the writing class, while the process writing approach emphasizes teaching writing through explicit instruction in which students go through cycles of writing process that includes rehearsing, drafting, revising, editing and publishing (Calkins 2007, Boardman & Frydenberg 2008). Nevertheless, the product writing approach has been criticized for its inability to effectively develop learners writing skills and also for its rigidity in following set models that devalue creativity (Calkins 2007; Boardman & Frydenberg, 2008).

Thus, educators are calling for shifts toward the other end of the continuum, i.e., process writing approach. It is believed that using the process approach to writing helps in enabling learners to master writing skills effectively through mental activities at different sequenced stages to reach the final product (Mogahed 2007). Though the process writing approach still has its momentum in English language teaching, it has been criticized for being mechanical and statistic and less reflective of the nature of 21<sup>st</sup> century in which writing is needed for both academic and career settings (Leverenz, 2014; Alrehaili, 2019). Thus writing should be developed to a dynamic and transferable level in order not to be a hindrance for effective communication in academic settings and at workplaces (Alrehaili, 2019; Hosseini et al., 2013; Tahaine, 2010). Specifically, in her address, Yancey (2004) made a remarked call-to-action by stating that "never before has the proliferation of writing outside the academy so counterpointed the compositions inside" (p. 298). Years after, Cope and his colleges (2009) argue that teaching writing is not so much about teaching skills and competences, but it is more about empowering "a kind of person, an active designer of meaning, with a sensibility open to differences, change, and innovation." Leverenz (2014:2) emphasizes that "students need to learn about writing is not just how to work within existing conventions but how to make them anew." While the epistemological discussions on product versus process writing are situated only in boxes of the classrooms, there a need to

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transcend teaching writing beyond classroom boundaries. In this day o fage, there is a need to transform writing skills to help student-writers to be able to function successfully in the real-world of the 21st century. Therefore, this paper aims to contribute to the literature of writing approaches by exploring the use of design thinking in teaching writing in an EFL context. Conceptually, design thinking approach is defined as "a holistic concept to design cognition and design learning that enables students to work successfully in multi-disciplinary teams and enact positive change in the world" (Rauth et al., 2010, p.2). Even though, some educators argued that design thinking approach might be similar to the process writing approach, design thinking approach is not merely a process for writing but broadly "a tool of thinking" (Björk & Räisänen, 2003, P.8) that allows learners a space to express their point of views , and enable them to use the available resources innovatively to be able to create ideas, face writing challenges, and solve problems (Leverenz, 2014). The design thinking approach allows learners to develop their creative confidence through collaborative works that focus on empathy, encouraging ideation and fostering active problem-solving competencies (Carroll et al., 2010). Realizing the importance of design thinking approach, international organizations such as the European Commission emphasized the necessity of integrating design thinking into the academic content as it supports and applies a multi-disciplinary content (Lackeus, 2015). In addition, findings by the RED LAB team at Stanford University suggests that utilizing design thinking in lessons help the learners to acquire competencies and engage in learning (Kwek, 2011). A proposed writing unit based on design thinking approach was used in this paper to investigate how design thinking approach could help to improve EFL students writing skills in a girl secondary school in Saudi Arabia. This article starts by discussing the relevant literature, followed by the methodology of the study. The results and discussion are presented consequently in the following sections in order to conclude.

**Teaching Writing:** Writing is a sophisticated tool that could help develop critical thinking and learning, which is more than being a matter of producing graphic symbols. It is a complex non-natural activity for both native speakers and language learners, in which psychological, linguistic, and cognitive issues intertwine in complex activities (Byrne, 1991). Tribble (1996, p12) linked writing directly to "people's roles in society, as a good writer has the opportunity for a wide range of social roles, including those which most people in industrialized societies associate with power and prestige." Accordingly, learning writing does not only involve developing a set of mechanical orthographic skills, but it also is about learning a new set of cognitive and social relations (Tribble, 1996). In the traditional EFL teaching methods, educators often viewed teaching writing as a supportive procedure in order to teach grammar and vocabulary through texts; rather than view writing as a separate skill (Otte, & Mlynarczyk, 2013). Nonetheless, a recent development in EFL teaching has widely acknowledged the vital role of teaching writing (Harmer, 2004) and its integral role in the creation, sharing, and construction of knowledge (Starke et al. 2004). Developing the ability to write does not come naturally like listening and speaking, but it requires conscious learning efforts (Pecchi 2009, in Birner, 2009). In EFL context, in particular, developing writing skills requires an ability to organize ideas in clear and coherent manners through using accurate language and practical word choice in order to make one's writing

accessible and easy to be understood by the reader (Starkey, 2004; Crème & Lea, 2008).

Evidently, developing writing skills in English has been seen as a challenging task for many EFL learners (Mohamed & Hazarika, 2016; Khan, 2011; Gram, 2010) as spellings, grammar, structure, doubling of subjects, doubling of a preposition, tenses, articles, appropriate vocabulary, incorrect use of prefixes & suffixes, lack of cohesion, and mistakes of L1 interference are among the many challenges that have been reported (Mohamed & Hazarika 2016, Khan 2011). The research attributed the existence of such challenges to overreliance on traditional methods of EFL teaching that emphasize teachers or books as centres for knowledge, rote memorization of knowledge, and learning rigged patterns of the language rather than learning the language itself (Mohamad & Hazera 2016, Grami 2010). Albadi (2015) asserts that shifting learning writing in EFL classroom towards student-centred learning plays a significant part in raising students' motivation to participate in writing activities and learn the language as a communicative tool. Instead of overreliance on memorizing texts and fixed linguistic patterns, EFL writing classes should be a safe space where students are encouraged to engage in best innovative writing practices (Alrehaili 2019, Javid & Umer, 2014; Bersamina, 2009; Alhazmi, 2006).

**Teaching Writing Approaches:** teaching writing approaches have been classified into three categories i.e., the product approach, the genre approach, and the process approach (Raimes, 1996). The product approach is defined as "a traditional approach in which students are encouraged to mimic a model text, usually is presented and analyzed at an early stage" (Gabrielatos, 2002; in Kurt, & Sozudogru, 2014, p.5). In this approach, teachers expect students to develop their writing skills through four stages (Steele, 2004): studying the features of a genre, practicing highlighted features, organizing ideas, and producing a final controlled product. The Genre approach is regarded as a distinctive type of product writing approach "in terms of its organization, physical layout, also the communicative purpose and linguistics features used" (Dirgeyasa, 2016:50). Teachers use Genre approach to achieve specific purposes in various social situations such as in writing articles, receipts, or reports (Hyland, 2003). The last approach is the process approach which is described as a recursive process that focuses on pre-writing, writing and post-writing activities as teachers do not expect students to produce and submit complete responses to their writing assignments without going through the process of drafting and receiving feedback on their drafts, followed by revision (Elaswad, 2002). The focus of this approach is the development of students' language usages through varied classroom activities that include brainstorming, collaborative work, and rewriting.

Even though, all the preceding three approaches have their promises in teaching writing, aspects of the approaches received criticism. For example, it has been criticized for its lack of attention to reader who should be a main purpose of writing (Silva & Leki, 2004). Also, it has been criticized for its negligence of certain writing phases such as planning, outlining a text, collecting ideas, etc. The genre approach, on the other hand, has received negative comments from Kay & Dudley (1998) for its rigidity and lack of creativity which can be devaluing to the learners. For the process writing approach, Alrehaili (2019) claims that the focus that the process approach put on developing writing skills (planning, revising, and

drafting) at the expense of both the linguistic knowledge (spelling, grammar, punctuation, and vocabulary) and the social context of writing might be regarded as a drawback for this approach. Based on the above discussion about nature of teaching writing and the associated approaches, this paper investigates a shift in teaching writing by adopting design thinking as a human-centred approach to designing innovative solution in response to EFL writing problems building on the literature for writing with seven phases (i.e., empathize, define, ideate, prototype, revision, evaluation, publish).

**Design Thinking:** The term design thinking has been defined differently by different theorists and different disciplines (Razzouk & Shute 2012; Rauth et al., 2010; Brown & Katz, 2011; Jiang & Yen, 2013). Brown and Katz (2011) define design thinking as a creative process that has been researched, theorized, and codified into an approach to problem-solving that can be applied to everything. When highlighting the empathy aspect of design thinking, Kimbell (2011) and Brown and Katz's (2011) viewed it as a human-centered approach to problem-solving.

Carroll et al. (2010) add further explanation to the notion of design thinking by stating that design thinking is an approach to learning that emphasizes the development of learner's creative confidence through hands-on projects, promoting a bias toward action, encouraging ideation and fostering active problem-solving skills and competencies. Ruth et al. (2010, pp.1, 7) view design thinking as a meta-disciplinary concept and a learning model within a teaching context that "supports design creativity, utilizing a project and process-based learning process by emphasizing creative confidence and competence." This view suggests that design thinking is a several-stages learning approach that promotes creativity, collaboration, problem-solving, and engagement through hands-on projects. Through the practice of design thinking, learners and educators are able to understand that innovation takes different shapes and forms, such as service, product, or behavioral. In this paper, design thinking is conceptualized as a process to learning writing that includes numerous collaborative stages, i.e., empathize, define, ideate, prototype, revise, evaluation, and online publishing, which aims to help solve some the students' writing problems.

**The Philosophy of Design Thinking:** Design thinking is built on certain premises (Carroll et al., 2010, pp.40). These include putting humans at the center of the process of innovation. This means that people should be the source of inspiration and direction for solving problems. The second principle is the mindfulness of the process which suggests having metacognitive awareness about the process of learning. Empathy is another principle for design thinking, which students develop through a process of 'need-finding' in which one focuses on discovering peoples' explicit and implicit needs. Design thinking also encourages prototyping culture by creating and maintaining a focus on being highly experimental, building to think, and engaging people. A further principle of design thinking is the 'Show Don't Tell' approach, which includes sketching, prototyping, digital communication, and storytelling. Bias toward action is an additional principle in design thinking that encourages action-oriented behavior rather than discussion-based work. Collaboration is an essential principle in design thinking. It indicates that diverse multidisciplinary teams often lead to more significant innovations than teams that come from the same discipline.

**Design Thinking and Learning Theories:** The literature states several learning theories that are aligned with design thinking. This might have led some researcher to believe that there is not a particular theory that govern design thinking (Kimbell, 2011). Nevertheless, evidence has shown that design thinking is informed by various learning theories i.e., collaborative theory, social cognitive theory, and creativity theory. Wendell & Rogers (2013), Kangas et al. (2013), and Howland et al. (2012) explain that collaboration is an essential foundation of a design thinking environment. It develops students' understanding and skills through meaningful hands-on projects. Carroll et al. (2010:51) affirmed that "design thinking and collaboration are intricately linked. Learners impact collaborative process in the classroom through their willingness to listen to other's ideas, to take risks, and to share their ideas with others". On the other hand, the social processes through which ideas are being generated, clarified and improved in design thinking make it possible to show the link to the social cognitive theory of Vygotsky. Similar to social cognitive theory, design thinking approach emphasizes the importance of the opportunities to interact verbally with others in a social environment for cognitive development (Vygotsky, 1976). In addition, the process of design thinking in generating creative ideas in the *ideate phase* and combine these ideas to end with an innovative and creative writing product makes it possible to link design thinking with a theory of creativity in its aim of producing original ideas and new items through combining existing work, objects, and ideas in different ways for new purposes (Barry & Kanematsu, 2006).

**Advantages of Using Design Thinking for Educational Setting:** In the integration of design thinking into the academic setting, Wong (2011) highlights its potential to improve curriculum and pedagogy in a diverse range of interdisciplinary academic content. She argues that design thinking helps in improving student's creative confidence as they go through the process of developing skills and ideas with authentic tasks at hand. Carroll et al. (2010, p.51) assure that integration of design thinking into the curriculum allows for "strategic integration of education standards, design principles, and content information." Kangas et al. (2013), Wendell and Rogers (2013), and Howland et al. (2012) among others, comment on different benefits that design thinking could bring to the educational settings. These include the opportunity to engage students in designing solutions for real-world problems, challenge them to integrate disciplinary knowledge, and enable them analyze the problems critically. Carroll et al. (2010, p.51) and Soleas (2015, p.9) found design thinking to have the ability to raise student's awareness about where they are in the process and encourages metacognitive awareness through both the design cycle and in the assessment of academic content in order to determine how their work processes could be improved. Koh et al. (2015, pp.372-389) argued that design thinking plays an essential part in preparing students for the twenty-first-century workplace by challenging students to apply a whole range of content knowledge, as well as social, technological, and metacognitive skills. Governments in advanced economies are increasingly exploring the potential of design thinking in meeting national problems and challenges. Asia-Pacific region, China, South Korea, and India, as examples, have promoted design thinking in higher education through establishing specialized programs that cultivate design thinking (Kurokawa, 2013, pp.50). Likewise, in Singapore, design thinking is seen as a useful link between education and industry.

In addition, one of the key recommendations of the report of the Economic Strategies Committee (Report of the Economic Strategies Committee, 2010:31) was to install design thinking into the workforce by accelerating the introduction of design thinking programs and modules at local education institutions and to "increase efforts in the education system to inculcate a mindset of innovation amongst young Singaporeans." In Saudi Arabia, limited applications of design thinking have been observed such as in training workshops in King Abdullah University of Science and Technology and in some fabrication laboratories (fab labs) (FabLab K.S.A, 2017). Nevertheless, there is not any research or pieces of evidence to explore the influence of integrating design thinking into curriculum, activities, or learning strategy.

**Applying Design Thinking to Learning Writing:** The significance of using design thinking in developing writing skills, in general, has been discussed by different scholars. Razzouk and Shute (2012) recommended examining the effects of design thinking on various learning outcomes because of the ability of design thinking to support a diverse range of interdisciplinary academic content and promote students' creativity and 21<sup>st</sup> century skills. One of these 21<sup>st</sup> century skills is effective communication through writing as recommended by researchers such as Marback, (2009), Leverenz, (2014), Purdy (2014). Marback (2009, p.399) describes writing problems as wicked problems that contingent and ambiguous thus "never finally solvable." These include procedural problems of writing, issues of responsiveness, dilemmas of judgment that involve not just the writer but also the creation of the text, and the others who interact with that text. This propels Marback (2009) to propose design thinking as a new paradigm for L1 writing. Leverenz (2014, p.1,9) created wicked writing workshops to encourage writing in teams and taught writing as a design thinking process to develop innovative solutions in response to writing problems. He affirmed that by using design thinking, he was able to close the gap between writing inside and outside of school and prepare students to participate in a future of writing. Purdy (2014) examines the relevance of the design thinking approach for the field of writing studies and provides useful analysis and taxonomy of the various ways the term "design" has been used by writing scholars. Shute & Torres (2012, p.91) affirm that the goal of educators should not only focus on increasing students' proficiency in traditional subjects such as writing and reading, via didactic approaches, which leaves many students disengaged. Teachers must also support them in developing new approaches like design thinking to improve their 21st-century skills that enhance their problem-solving skills and prepare them to deal with difficult situations and to solve complex problems in school, in their careers, and life in general. Although these studies have reported influence on using designing thinking in improving writing in L1, none has explored its impact in EFL.

**Design Thinking Process:** The literature suggest different models for design thinking. One of the first models is done by Brown and Katz (2011). Brown and Katz model consists of a three-step simplified triangular process that emphasizes inspiration, ideation, and implementation. With slightly different details, Bell (2008), Carroll et al. (2010), and Plattner et al. 2009 suggest five modes for the process of design thinking, these modes are:

- **Emphasize mode:** students learn how to build empathy to understand and serve people they develop solutions by using tools e.g. interviewing and observation.
- **Define mode:** this mode aims to develop an actionable narrow problem statement by using tools such as . persona, vain diagram, and two-by-two matrix. It is crucial for the next phase, ideation.
- **Ideation mode:** aims to generate ideas by using tools e.g. brainstorming or mind mapping.
- **Prototyping mode:** promotes students to learn how to generate quick and different models.
- **Test mode:** students assessed their peers' models to select the best prototypes, as well they suggest further development for the text.

**Generating Writing Approach:** Informed by the previous discussion on writing approaches and design thinking, this paper proposed a seven-stage design thinking process for writing to make it compatible with the writing traditions and theories. Instead of make testing as the final stage in most industrial settings, we propose removing testing and replacing it with three additional stages. These are revision, evaluation, and publishing as shown in Figure 1. This modification makes design thinking for writing includes these following stages: empathize, define, ideate, prototype, revise, evaluation and online publishing and sharing. As illustrated in figure 1, empathize, define and ideate stages are done in the pre-writing phase. Then, in the first draft phase comes the prototype. After that, revising and evaluating the writing prototype come in the revision and editing phase of writing. Finally, publishing and sharing come in the publishing phase (final draft).

**In the empathize stage,** students learn to empathize with the issue they want to write about to create value and search for answers and solutions for the issues. This action could be done by encouraging students to fill an empathy card that discusses the following concepts concerning the issue: 'Say,' 'Feel,' 'Pain' and 'Gain.' 'Say' refers to the discussion about a person's attitude or behaviour towards the issue at hand. 'Pain' refers to a discussion about a person's fears, frustrations, and obstacles. 'Feel' refers to a person's significant preoccupations, worries, and aspirations. 'Gain' refers to the person's wants, needs, and measures of success (Osterwalder, 2010). **In the Define stage,** teachers expect students to write an actionable problem statement. Often in problems, people tend to focus on the negatives and disastrous sides, which may affect the way people handle the problem. However, students learn to write optimistic definitions of problems through looking at positive aspects of problems. A statement such as (person) needs to (person's need) because/to/for (surprising insight) is used. **In the ideal stage,** students start generating ideas by brainstorming and selecting promising ideas; then, they mind-map the selected ideas. After that comes **the prototype stage,** where the students start to write their essays guided by the mind-map. As this is the prototype of their works, teachers expect students to produce two prototypes with slightly different ideas, and in the later revision stage, the students select the most appropriate model. **The revision** comes after, which refers to an ongoing stage of rethinking the paper. In this stage, teachers expect students to revise and evaluate their essays by using the writing checklist, specific writing rubrics choose one of the prototypes models which they produced in the previous stage, and then proceeded with writing a final draft. **Evaluation** is a simultaneous stage that occurs with the

previous revise stage in which teachers expect students to evaluate their essays using a scored rubric that includes six domains i.e organization, development, cohesion, structure, vocabulary and mechanism. The final stage is **Online Publishing and Sharing**. In this stage, students are expected to publish their writing works on the school bulletin boards or in an online platform. Publishing and sharing allow students' opportunities to receive meaningful feedback on their writing from the real audience, develop confidence as authors, and promote real communication through a cooperative environment, which resulted in improving their writing (Glaser & Brunstein,

2007; Johnson, 2008). In our proposed design thinking approach for writing, the expectation is that teachers help get the students to think, collaborate, broaden their scope of understanding in order to expand their imagination and enhance their problem-solving skills (Zenor, 2017). Importantly, teachers are not expected to plan or provide prepacked knowledge in this approach as it is in many traditional teaching approaches (Harrison & Killion, 2007)

**Study design Method:** This paper uses a quasi-experimental method to explore the effect of teaching a writing unit based on design thinking approach on improving the English writing skills among EFL learners in a Saudi government school. The following research hypothesis drove this inquiry: There are no statistical differences at the significance level ( $\alpha \leq 0.05$ ) in the mean scores of the experimental group in the pre-test & post-test of writing skills i.e., mechanism, vocabulary, grammar, cohesion, development, and organization, as well for the writing skills as a whole.

**Sampling:** The sample of this study was selected from a girl secondary school in Saudi, in which one of the researchers was teaching. The girls in the sample were aged between 17-18 years old and come from similar socioeconomic backgrounds. The sample included one class of 30 students. These students have studied EFL for seven years in their schooling; three years in elementary, three years in intermediate, and two in secondary schools. The English language taught in the third grade of Saudi secondary school equal to B1/B2 in the Common European Frame of Reference (CEFR). The sample for this study (the experimental) was taught a writing unit based on design thinking approach for one month (see appendix I for a detailed description of the designed unit). The moderately of distribution of the research sample was checked by using (Kolmogorov-Smirnov) test. As shown in table (1) the distribution of the results of the pre-test is moderate in the writing test as Z value for all the writing skills is (1.033) on the significant level (0.236) which means the parametric statistic methods can be used for the research data. The homogeneity of the research sample in the pre-test was checked by using the Leven test which showed no significant differences.

**Research Materials and Tools:** In order to answer the research question of this study, the paper utilized a proposed writing unit that was developed based on design thinking approach as material (see appendix I) and an achievement test of writing skills as a tool (see appendix II).

**The Proposed Writing Unit:** The proposed writing unit states clearly the learning outcomes, the expected teaching methods, the technology expected to be integrated, assessment styles and tools to evaluate the progress, instructional aids, and teaching

tips for teachers (see appendix I). The content of the unit was developed in such a way that it took into account the clarity of the information provided, the diversity of the tasks, and its suitability to the individual differences. Furthermore, its appropriateness for the level of the third-grade secondary students in Saudi schools and its ability to improve writing skills was taken into consideration. The proposed writing unit is constructed based on design thinking approach to writing. The unit is built on the assumption that developing reading skills helps in developing writing skills. Thus, the unit included various essays for students to read and study as writers. The topics of these reading essays were about entrepreneurial content. The components of the unit comprises five Bends/ "sections". each Bend has specific learning outcomes linked to improving students' writing skills. Each bend was given a name that reflects its primary goal; Bend1 "Reading for a Wide View", Bend2 "Adapting Design Thinking as a Writing Strategy", Bend 3 "Refresh the Writer Mindset", Bend4 "Reading with a Writer's Eye", Bend5 "Taking Writing to the Workbench". The face validity of the unit was checked by a number of referees who are specialists in the language teaching and learning field. They were asked to review the unit and provide suggestions. Necessary amendments and modifications were made based on the referees' recommendations.

**The Achievement Writing Test:** The achievement test of writing skills was designed to measure the writing skills that the students had (pre-test) and also examine the effectiveness of the proposed writing unit on the improvement of writing skills in English (post-test). The content validity of the test was verified through calculating the Pearson correlation coefficient between the score of every skill in the test and the total score of the test, as shown in table (2). The reliability of the test was conducted to a sample of 20 students by calculating the Pearson correlation, and it was found that the coefficient of test reliability is (0.91) value, which is acceptable.

Also, table (2) shows a correlation between the score of each skill in the test, and the total score of the test is statistically significant (0.892–0.947) at the significance level  $< 0.01$ . These findings indicate the consistency of the skills included in the test. It indicates that the test was suitable to apply to the research sample.

**The Writing rubric:** The tests were marked using an adapted version of Paulus's rubric (Paulus, 1999). The validity of the rubric was established by inviting referees who are specialists in EFL teaching and learning to review and identify the clarity and the linguistic accuracy of each item and their appropriateness for students' age and their English level, as well the relation of items to learning writing. The referees were also requested to edit (delete or add other skills, descriptions, or scores) where they felt it necessary. Only rubric items that have more 85% agreement among the referees were kept in the rubric used in this study. Thus, the final version of the rubric was developed to consist of six skills, i.e., development, cohesion, structure, vocabulary, and mechanism. Each of these skills has five levels with detailed descriptions that include the specific level of achievement, i.e., inadequate, minimal, limited, adequate, and effective (see the rubric on appendix III).

**Research Statistical Methods:** In order to achieve the objectives of the research and analyze the collected data, an Excel spreadsheet program was used to write and review the

data. Then the data were coded and analyzed using the Statistical Package for Social Sciences, (SPSS) where the following statistical methods were applied:

- Descriptive statistics as means and standard deviations.
- Alpha- Cronbach Test was used for measuring the reliability of the items of the achievement test and writing skills (Ritter, 2010).
- Person correlation coefficients test (Hinkle et al., 2004):

$$r = \frac{n(\sum xy) - (\sum x)(\sum y)}{\sqrt{[n(\sum x^2) - (\sum x)^2][n(\sum y^2) - (\sum y)^2]}}$$

- The paired sample t-test for testing the significant difference between pre-test and post-test for the experimental group (Navidi & Monk, 2016).
- Independent Samples T-Test were used for testing the significant difference.
- Modified Black's Gain Ratio =  $(Y-X)/(D-X) + (Y-X)/D$   
Where: Y = grade of post-test

X = grade of pre-test

D = test maximum grade

## RESULTS

**The Research Hypothesis:** The hypothesis suggests that there are no statistically significant differences at the significance level ( $\alpha \leq 0.05$ ) in the mean scores of the experimental group in the pre-test and post-test of writing skills i.e., mechanism, vocabulary, grammar, cohesion, development, and organization and for the writing skills as a whole. This hypothesis was examined by using the mean and standard deviation of the experimental group's results, which were obtained from pre-test and post-test that were computed, and also by using the paired T-test that was used to assign the significance of differences. The results are shown in table (2) below:

Table (2) shows that 'in all skills' the absolute values of calculated T-test are greater than the critical value (T-critical = 2.05) at the degree of freedom "29" and at 0.05 level of significance and (P-value = 0.000 < 0.05). As a result, the null hypothesis is rejected. The differences are in favour of the post-test. These results mean there are statistically significant differences at the significance level ( $\alpha \leq 0.05$ ) between the mean scores of the experimental group in the pre-test and the post-test of writing skills. The difference is in favour of the post-test. The Black's Gain Ratio was used to measure the students gain in the writing skills test after they have had studied the writing unit.

The formula is that Gain = post-test grade – pre-test grade. The Modified Black's Gain Ratio =  $(Y-X)/(D-X) + (Y-X)/D$ , where:

Y = grade of post-test X = grade of pre-test

D = test maximum grade

This ratio interval is [0, 2], and the proposed writing unit is considered acceptable if the computed ratio is not less than 1.2. Table (3) shows that the modified Black's Gain Ratio for the mechanism, vocabulary, grammar, cohesion, development, organization skills, and the overall skills is respectively 1.449, 1.442, 1.392, 1.450, 1.500, 1.574, 1.467 and 1.467. These ratios are greater than 1.2. These results indicate that the proposed writing unit based on design thinking approach was effective in improving mechanism, vocabulary, grammar, cohesion, development, organization skills, and overall skills.

## DISCUSSION

The previously discussed hypothesis shows the significant effect that the writing unit based on design thinking approach has on the improvement of students' writing skills. The mean scores of the experimental group are higher in the post-test of writing skills. The results of the current paper seem to suggest that an important explanatory factor for the positive results of the hypothesis is that the use of design thinking stages of the writing process have supported the students' writing skills. In details, the *empathize* stage helped the students to clarify their ideas about the selected topic and the persons who the topic might be related to. In doing that, the students were able to explore not only their feeling, thoughts, fears and hopes but also engaged with perspectives of the people that topic might be related to. The *define* stage enabled the students to use positive, optimistic vocabulary and composed them in an optimistic structure. It also helped improving the students' organization skill through the pre-writing techniques (brainstorming) that preceded the act of writing in which paragraphs were logically ordered (Creame & Lea, 2008).

The *prototype* stage helped students to prototype two models of ideas, paragraphs, vocabulary or grammatical structures to select, in the next stage, the appropriate one by referring to their dictionaries or discussions with their teachers. The *revision* stage enabled the students to improve their mechanism skills through collaborative activities. In the *evaluation* stage, the writings of the students were evaluated by teachers based on a six-dimension rubric. Then a feedback that allowed the students to be aware of their mistakes and how to correct them was provided. The final stage was the *publish* stage in which the students became aware that their writing was going to be published, and the wider school community would give the feedback. Therefore, students were encouraged to polish their writing and do their best before their writing get published. Notably, Glaser and Brunstein (2007) argue that publishing students' writing on a classroom bulletin board can give students a sense of authorship since the audiences can meaningfully respond to their writing and develop confidence as writers. Johnson (2008) suggests publishing students' writing promotes real communication which resulted in improving their writing skills.

Evidently, using design thinking approach to teach writing in an explicit instruction through processes while learners rehear, draft, revise, edit, and publish (Calkins, 2007) is another factor that explains the positive results. Another explanatory factor for the positive result was the use of the five Bends, which helped to guide both the teacher and the students through the writing process in an interesting and logical way. In addition, assigning specific learning outcomes for each Bend allowed for attention to be paid to the specific details of the student's writing development which is, in turn, resulted in improving their writing skills. The results of the study, in general, indicated an improvement in the students' writing skills. Mostly, the students improved in the domain of cohesion skill (using transition words precisely to connect between paragraphs and ideas) because it was the most straightforward skill to acquire. The subsequent skill that less improved than the cohesion was the mechanism skill. Although all the students were required to follow specific rules of capitalization, spelling, and punctuation and use dictionaries to improve their writing, few of them were not able to do that successfully.

For the development skill, learning started to be more complicated than the previous two skills as a progression of ideas in writing was changeable. Mastering this skill requires using pieces of evidence and relevant details for the topic of writing, and that necessitates drawing on an extensive knowledge obtained by reading and long-life learning. Developing such a skill can also be a challenge for even L1 writers. The least developed writing skills were vocabulary, grammar, and organization. As for vocabulary and grammar skills, we believed that the students might require a longer duration than the one that we allocated for the intervention to develop them better. For organization skill, the students have had somehow difficulty to improve. This could be because organization skill is often influenced by prewriting group activities such as concept mapping, searching for specific information, and creating an outline. The students used to do most of these prewriting activities with their peers during learning the writing unit. Therefore, when testing their writing skills individually, the students' organization skill was negatively affected because they had to write individually and not in groups.

Despite the variations in improvement that the students exhibited in relation to the above writing skills, it was noticed that the students' creative confidence in writing on the post-test had improved greatly. They started using idioms, applying a sense of humour, and their handwriting has improved greatly and become neater (see appendix IV). The results of this study support what the previous studies have concluded. Marks' study (2017) revealed that design thinking helps students to improve task performance. Other studies by Carroll et al. (2010), Bouchard (2013), Kwek (2011), and Anderson et al. (2014) indicated that design thinking improves learning through different subjects and lessons. Also, the findings agree with Rauth et al. (2010) study which assured that design thinking improves cognitive skills. Additionally, the findings of this study are in line with those of Leverenz's (2014) study that suggested that applying design thinking to writing classes has positive effects in improving writing skills, facing the writing challenges, and fostering benefited experimentation through prototyping.

## Conclusion

In conclusion, using the proposed writing unit based on design thinking approach improves students' English writing skills; mechanism, vocabulary, grammar, cohesion, development, and organization. The results of the current paper suggest that an important explanatory factor for the positive results of the hypothesis of this study is the use of design thinking phases as a writing process. Even though the dependent variable in this research paper was the writing skills, improvement of other skills such as teamwork, creative confidence, resilience, creativity, active involvement, and satisfaction in students' responses while using the proposed writing unit was noticed. In addition, the findings encourage language teachers to teach writing with explicit instruction through processes in which learners rehearse, draft, revise, edit and publish rather than teach it in separate lessons. The current study echoes the recommendation of the European Commission to apply design thinking in the education process as such an application encourages the integration of multidisciplinary knowledge and traditions. We believe that the integration of design thinking in EFL teaching writing provides clear instructions for teaching writing and also create a space for creativity in EFL teaching.

Although this research yielded promising results, we acknowledge that this research was limited to a small sample of female students in Saudi Arabia. Thus, it would be beneficial to see the notion of using design thinking in writing being explored with a more significant sample of EFL students with lesser control on the instructions given to teachers. Such exploration will help enrich the discussion about using design thinking in EFL writing.

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**Appendix I: Detailed description of the designed unit**



**Bend 1**

**Reading for a Wide View of the Entrepreneurial Competencies?**

**Students Learning Outcomes of Bend 1:**

1. SWBAT identify the entrepreneurial competencies.
2. SWBAT read a story of successful entrepreneur.
3. SWBAT analyze the text to point out the entrepreneurial competencies.
4. SWBAT understand the relation between writing skills and entrepreneur mindset
5. SWBAT tell how to create value for society.



**Time:** one session for 45 min.

## Introduction

Welcome to the Writing Unit based on design thinking process to improve writing skills and entrepreneurial competencies. The first pages of this unit provide an overview which describes the instructional pathways the unit follows and how this journey is subdivided into bends, or parts. This overview describes how each bend builds on the learning in the previous bend and sets the stage for the learning in the next bend. Likewise, it describes how each bend is representing the difficulty which the students will overcome to reach the success at the end of the pathway.

The table of contents delineate the steps of the journey and map, in details, the learning students will see and experience. This in-depth look allows you to see how learning is progressively built in each unit and how students become immersed in the writing process. In addition, each session includes coaching commentary, the coach is at your side explaining proven strategies, offering professional insight, and coaching you through the practical details of teaching.

Also, the instructional resources included are to support this core unit that shows you the learning progressions, checklists, rubrics, and the correlations to the Saudi English Language framework (SELF), that will help will help you establish a structured learning environment that fosters independence and self-direction

The resource for teaching writing CD-ROM [show](#) you the wealth of teaching tools that support each unit, such as Checklists that support self-assessment, presentation, illustrated pictures, and goal setting, as well as, writing editing charts.

As you review this unit, it is important to remember that the goal of this unit is to improve writing skills and entrepreneurial competencies through the Writing Unit which based on design thinking process.

“How you teach students to write an essay based on design thinking, has great ramifications for the students, because it will be focusing on developing students' creative confidence through collaborative works. Besides, achieving students' engagement through teaching the entrepreneurial contents that is related to the learners' life to help them visualize their future career.

The competencies they develop in the next few weeks can help build a foundation for the academic disciplines and career field.”

T. A



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## Bend 2

### Adopting Design Thinking as a Writing Strategy

#### Objectives of Bend 2:

1. SWBT empathize with different situations.
2. SWBT define a problem in an optimistic POV.
3. SWBT apply the brainstorming in an effective way.
4. SWBT Prototype the essay.
5. SWBT revise an essay in an effective way.
6. SWBT recognize the writing rubric.
7. SWBT publish their work on the school online platform.



**Time:** 2 sessions each one take 60-80 mins

### CONTENTS

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## Bend 2

### Adopting Design Thinking as a Writing Strategy

**Objectives of Bend 2:**

1. SWBT empathize with different situations.
2. SWBT define a problem in an optimistic POV.
3. SWBT apply the brainstorming in an effective way.
4. SWBT Prototype the essay.
5. SWBT revise an essay in an effective way.
6. SWBT recognize the writing rubric.
7. SWBT publish their work on the school online platform.

**Time:** 2 sessions each one take 60-80 mins

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## Bend 4

### Read with the Writer's Eye

**Students Learning Outcomes:**

1. SWBT analyze the mentor text based on design thinking & entrepreneurial competencies.
2. SWBT answer text-dependent questions and use evidence from the text to support their responses.
3. SWBT identify the text's vocabulary, structures and expressions.

**Time:** one session for 45 min.

**1-Empathize** "prewriting"

empathize with the customers who have a problem and you want to create a value for them through the venture which you will start up.

<p><b>say</b> </p> <p>What are some quotes and words the person said?</p>	<p><b>feel</b> </p> <p>What emotions might the person be feeling?</p>
<p><b>pain</b> </p> <p>What fears is she facing?</p>	<p><b>gain</b> </p> <p>What is she hoping to get?</p>





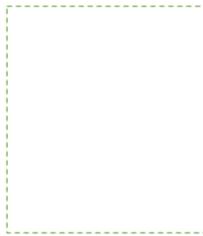
**7- Online Publish & Share.** 

"keep calm & celebrate your success".

**CLASS WEBSITE**

share your writing with your parents, school members, and friends by publishing writing on a class website or blog.

*Cut and paste there comments here ....*



**Appendix II: Achievement test of writing skills as a tool**

# Writing Test



Pre-post **writing skills test** for the third secondary stage

Student Name :.....

Class: .....

Group:     C     E

## WRITING INSTRUCTIONS

1. Make sure you have filled in your name, your class, and your group in the previous page.
2. write your essay in the space provided (write about 180 words)
3. You will have 45 minutes to write on one of the topic.
4. Your essay will be evaluated on rubric. (attached with the test)
5. You may make notes or outlines on the back side of the paper.

Inspire me great writers,

Your teacher

## Appendix II: Achievement test of writing skills as a tool

# Writing Test

Pre-post writing skills test for the third secondary stage

Student Name : \_\_\_\_\_

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*Inspire the great writers,  
Your teacher*

## Appendix III: The rubric

**The test**

### Teens and The Social Media

The social media becomes an important part of young people's everyday life but that does not mean that it has only advantages. Whether at home or away from home, younger generations spend a great deal of time on the social media applications. No doubt, if it is not used wisely, it can do more harm than good.

**Write an essay (ca. 180 words) about three of the following:**

- Do you prefer using the social media e.g. Snapchat, Instagram, Telegram etc. or the traditional ways to learn and communicate.
- The advantages and disadvantages of using the social media.
- Sharing updates and pictures on the internet network (agree or disagree and why).
- Your suggestions about the right use for the social media.

**follow the Outline below**

**1-Introduction:**

- Introduce the subject of the essay.

**2-Body: 2 or 3 paragraphs each one should:**

- talk about an idea related to the main essay's topic.
- start with the topic sentence then followed by examples and evidences.

**3-Conclusion:**

- Summarize your points
- State your overall opinion of the is

