

VISUAL THINKING STRATEGY USE IN PRE-WRITING STAGE:
EFFECTS ON L2 WRITING AND THINKING SKILLS

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VISUAL THINKING STRATEGY USE IN PRE-WRITING STAGE:
EFFECTS ON L2 WRITING PERFORMANCE

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DECLARATION OF ORIGINALITY

I, Fatma Banu Özbek, certify that

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ABSTRACT

Visual Thinking Strategy in Pre-Writing Stage: Effects on L2 Writing and Thinking Skills

The study examines the impact of Visual Thinking Strategy (VTS) on EFL learners' writing and thinking skills when applied in a pre-writing classroom discussion. The study was conducted with 9th grade students with intermediate level of English. The participants ($n = 50$) completed a test and a questionnaire before and after the intervention. During the intervention, the non-digital VTS group had face-to-face pre-writing discussions, while digital VTS group had the discussions. The writings were evaluated by two raters using two rubrics; ESL composition profile for writing performance and six continua for thinking. The results of the study showed that VTS enhances L2 writing performance in vocabulary, organization, and mechanics relative to whether or not the discussion occurs online. Regarding thinking skills, both VTS groups outperformed the non-VTS group, yet no statistically significant difference was found among the groups. The questionnaire results revealed that the attitude of the VTS groups' participants changed positively towards writing instruction after the intervention. Additionally, the findings showed that there was a strong relationship between learners' writing and thinking skills, whereas attitude did not have any relationship either with writing or thinking skills. In conclusion, VTS seems to be an effective tool in a language classroom in that it fosters higher-order thinking skills and improves learners' writing performance.

ÖZET

Yazım Öncesi Aşamasında Kullanılan Görsel Düşünme Stratejisinin Yabancı Dil Olarak İngilizce Öğrenenlerin Düşünme ve Yazma Becerilerine Etkisi

Bu çalışma, Görsel Düşünme Stratejisi'nin (VTS), öğrencilerin yazma ve düşünme becerileri üzerindeki etkisini incelemektedir. Araştırma, orta seviyede İngilizce bilen 9. sınıf öğrencileri ile yürütülmüştür. 50 kişilik katılımcı grubu deneyden önce bir ön test ve ön anket, deneyden sonra bir son test ve son anket tamamlamıştır. Deney sürecinde, dijital VTS grubunda tartışmalar çevrim içi, yüz yüze VTS grubunda tartışmalar sınıf ortamında yapılmıştır. Yazılar, iki değerlendirici tarafından yazma ve düşünme için iki farklı dereceli puanlama anahtarı kullanılarak değerlendirilmiştir. Çalışmanın sonuçları; VTSnin kelime dağarcığı, organizasyon ve mekanik alanlarında yazma performansını, uygulanan tartışma formatına göre (yüz yüze ya da çevrim içi) değişiklik göstererek geliştirdiğini göstermiştir. Düşünme becerileri ile ilgili olarak her iki VTS grubu da VTS olmayan gruptan daha iyi performans göstermiştir, fakat sonuçlar istatistiksel olarak önemli çıkmamıştır. Anket sonuçları, deneyden sonra iki VTS grubunun katılımcılarının yazma öğretimine yönelik tutumlarının olumlu yönde değiştiğini ortaya koymuştur. Ek olarak, bulgular öğrencilerin yazma ve düşünme becerileri arasında güçlü bir ilişki olduğunu, tutumun ise yazma veya düşünme becerileri ile herhangi bir ilişkisinin olmadığını göstermiştir. Sonuç olarak VTS, üst düzey düşünme becerilerini ve öğrenenlerin yazma performansını geliştirmesi açısından bir dil sınıfında etkili bir araç gibi görünmektedir.

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Dedicated to my beloved sister, Ebru.

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CHAPTER 1

INTRODUCTION

Writing is a complicated and intricate process that entails the knowledge of lexicon, grammar, cohesion, coherence, mechanics, and idea organization (Listyani, 2018) regardless of whether it is the first, second or a foreign language. Writing has been studied extensively in language research as it is a crucial tool of transmitting information for academic purposes, a method of proving language proficiency, and an essential component of occupational life (Kadmiry, 2021). Jones (1994) categorizes the research context where writing has been studied into three different generations. The first generation of research regarded writing to be linear, composed of the three steps of pre-writing, writing, and re-writing, focusing on the final product. The second generation discarded the linear process claiming that there is no successive order but actually a recursive one in writing since planning happens all through the processes of writing with an emphasis on writing strategies. Finally, in the last generation of research, the context of writing is emphasized in a way that how to teach writing is studied in relation to the various settings because writing is considered to be a social act (Jones, 1994).

Rowland, Smith, and Lowrey (2020) constructively criticize the current pedagogical implementations in the classroom by stating that the assistance required for learners to accomplish their writing task is being neglected by teachers focusing on only a specific part of a writing task because of the curricula looking out for the outcomes and time constraints. The significant place of writing instruction in the classroom needs to be highlighted because learners who try to learn how to write do not only improve their writing skills or language skills but also advance their

argumentation, judgment, reasoning, and appreciation of language use (Gregory, 1994).

L2 writing, being an indispensable part of language learning, can present certain difficulties as it involves an extra cognitive burden on L2 writers for using a foreign language that is still under development, in addition to the challenges presented by the target language discourse with respect to the genre and purposes of writing (Polio and Williams, 2009). Additionally, Hapsari and Sukavatee (2018) mention the complex thinking skills and differences of L2 writing from L1 as probable reasons for writing being assumed to be a challenging process. Yi, Kao, and Kang (2018) attribute the challenges or the reluctance of teachers in writing instruction to the lack of learner motivation in studying writing and also to teacher education programs' failing to provide adequate education.

When it comes to what teachers do and what they need to be doing, Hapsari and Sukavatee (2018) criticize some teachers for not focusing sufficiently on writing skills and strategies, not sparing enough time for writing practice, and solely carrying out teacher-led sessions where teachers are more active than the learners. According to Yi et al. (2018), the challenges in EFL writing experienced by both the learners and teachers can be overcome. The provided pedagogical implications by Yi et al. (2018) for effective writing instruction can be summarized as follows:

- i. Comprehending adolescent writers, their needs, language development, and the writing context.
- ii. Providing learners with a wide spectrum of resources and choices enabling engagement with various text forms and genres.
- iii. Providing explicit instruction on language use and the linguistic properties of a language.

- iv. Applying strategy instruction in cognitively demanding writing tasks.
- v. Making use of the L1 skills in writing.
- vi. Comparing and contrasting speech and written text to recognize the differences in terms of language and discourse.
- vii. Analyzing writing from the broader perspective of communication inside and outside the classroom.
- viii. Embedding multimode of input including linguistic and non-linguistic in both digital and non-digital formats.

In the present study, informed by the items 4 and 8, a technique called Visual Thinking Strategies (VTS) is implemented in EFL writing instruction to make the instruction more effective by applying a strategy that utilizes visuals (multimodality). Reflecting on learner needs in EFL contexts and their language development (item 1), the writing instruction in the study has a pre-writing component of discussions leading to triggering of previous knowledge and completing the gap in background information in case of an unfamiliar topic, which helps learners to generate ideas. In the light of item 7, discussions embrace the idea of communication from a broader social aspect with its role in pre-writing stage. Moreover, Hapsari and Sukavatee (2018) suggest that teachers need to give more practice time and provide learners with assistance during writing inside and outside the classroom for more effective L2 writing instruction.

CHAPTER 2

LITERATURE REVIEW

2.1 L2 writing instruction

Being a proficient writer is of critical importance for a language learner especially when L2 is the medium of instruction in the school. Even though writing proficiency is generally deemed at the utmost value in language classes, the role of the writing differs in accordance with the learning context. Manchón (2013) identifies the different settings to be academic/professional settings (e.g. ESP), content-based settings (e.g. immersion), second language settings, and foreign language settings. Similarly, Yi et al. (2018) draw attention to the difference in the role of writing instruction in ESL and EFL contexts because of the role of social context in teaching and learning. The present study is carried out in an English-medium private high school with Turkish speakers of English in Istanbul, therefore, the previous literature reviewed focus on EFL contexts. The research on L2 writing is limited when compared to other language skills and it gets even narrower when zoomed into adolescent language learners and their writing experiences (Yi et al., 2018). Naghdipour (2016) also draws attention to the lack of studies pointing out the connection between context and L2 writing in his analysis of English writing instruction. The present study contributes to the body of research for examining Turkish context and focusing on high school students while drawing pedagogical implications as well.

The writing instruction is mainly shaped by two factors: the purposes of teaching and the learning context. When it comes to the purposes, *learning-to-write*

and *writing-to-learn* are the two main categories shaping the instruction in language classes. Writing-to-learn mainly refers to learning a subject content by using writing as a tool, yet in language classes it is used for language learning purposes, not for learning a content. In contrast, in the learning-to-write conditions, writing is the main goal not the tool so that the learners can become a part of an environment (education, occupation, target language society, etc.) (Manchón, 2013). The same way the context shapes the education, the purposes of the education shape the approach towards writing instruction. The present study is carried out in an EFL context, which aims for learning how to write in a foreign language, so the focus of the studies covered is limited to learning-to-write condition.

2.2 Approaches of writing instruction

Approaches to writing instruction are analyzed in threefold: product-oriented, process-oriented, and post-process. According to product-oriented approach, written text is a product whose accuracy is valued the most in terms of vocabulary, grammar, and cohesive devices. Based on a behaviorist perspective, this approach expects learners to imitate the model teachers provide accurately in the following steps of instruction: familiarization with the text form and moving from controlled writing guided by the teacher to free writing completed individually by the student (Jiang, Yu, Zhou, and Xu, 2021). Product-oriented approaches highlight text forms that ELLs need in various contexts such as workplace and university by considering texts as objects. The instruction includes the study of texts with comparison, analysis of sample models of texts, and a focus on organization of ideas.

In the other approach, post-process, the roles attributed to texts and to writers have changed because texts are evaluated as a discourse where writers become

agents of certain ideologies to be represented (e.g. genre-based instruction), which considers all layers of writing such as social, textual, linguistic, and cognitive (Manchón, 2013). Some researchers (Badger and White, 2000; Wette, 2014; Jiang et al., 2021) name this form of pedagogical inclination as process-genre which combines multiple techniques and principles that are derived from process, genre, and even product pedagogies in an eclectic manner to fulfill the learner needs resourcefully. In the present study, the approach followed towards writing instruction is process-oriented considering the writing instruction carried out in the institution. Also, the choice and application of VTS (Visual Thinking Strategies) within the instruction is mostly compatible with the process approach, yet still applicable in other forms of instruction with necessary adjustments. In the following part, the process approach is explained in further detail.

2.2.1 Process-oriented approach in writing instruction

Product-oriented approach has been heavily criticized for ignoring certain aspects of writing because of the fact that in this type of instruction, what is mainly focused on is formal aspects of writing (e.g. grammar and rhetorical organization) (Kadmiry, 2021). According to Hyland (2003a), even though the demonstration of grammar and vocabulary knowledge is a must in writing, knowledge does not necessarily turn individuals into qualified writers. In addition, Kadmiry (2021) emphasizes that in a product-oriented instruction the path which leads to the final product and the challenges learners face on this path are overlooked by solely evaluating the final work with none or less opportunities left to learn from the process itself. The criticisms gave rise to the process-approach propounded by Flower and Hayes (1981) as a cognitive model as shown in Figure 1.

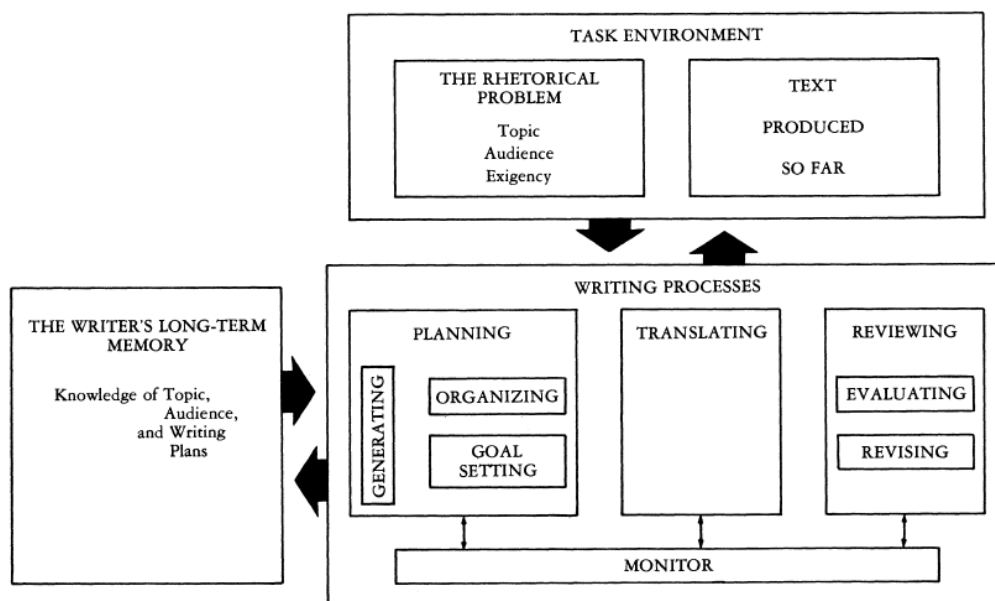


Figure 1. Flower and Hayes' cognitive model of writing
 Source: [Flower and Hayes, 1981]

As it is presented in the model, the main components of the process are the task environment composed of rhetorical concerns and written text, the writing process itself referring to planning of the text, translating the ideas planned into the written form, and learners' long-term memory which has an impact on the decisions made and ideas generated based on previous knowledge of writers. What is highlighted in the model is the fact that writing is not a linear process, but it is a recursive process consisting of interdependent elements (Flower and Hayes, 1981). Even though the proposed model encompasses more than the formal aspects of writing contrary to product-oriented approach, Hayes (2012) improvised a new model demonstrated in Figure 2.

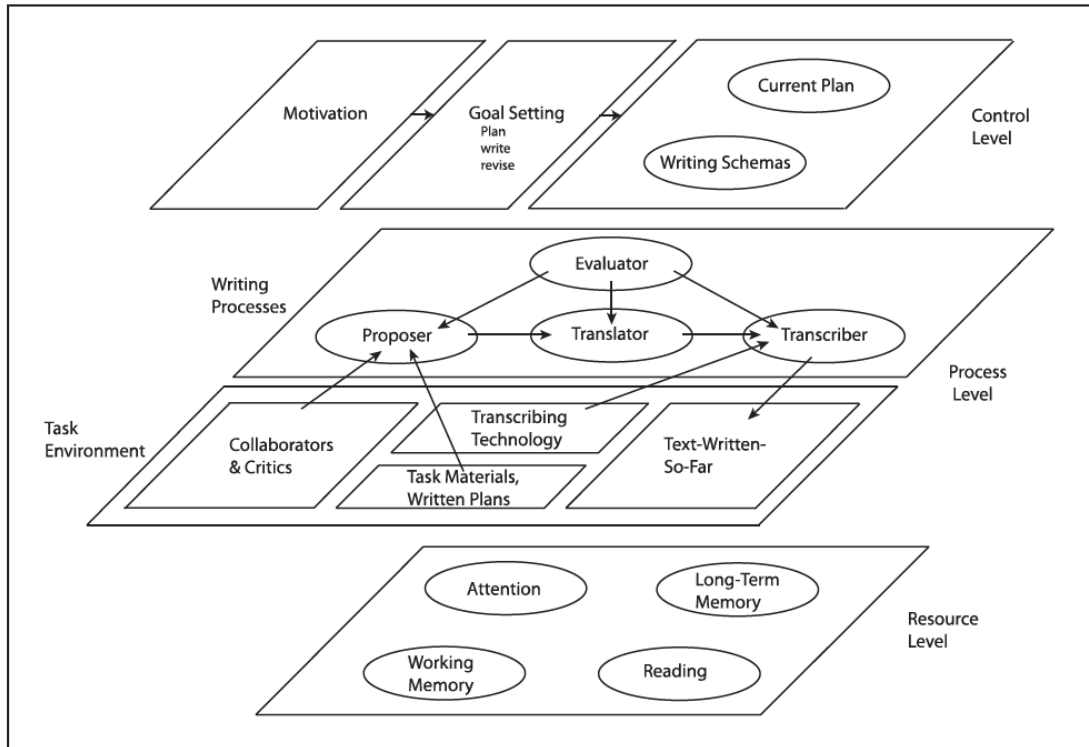


Figure 2. Hayes' writing model
Source: [Hayes, 2012]

As demonstrated on the figure, the model is made of control level which refers to the decision-making processes involved in writing, process level which refers to cognitive aspects regarding the writer and also external task conditions, and finally resource level which refers to individual cognitive resources related to memory and reading. What makes the new model different is that it gives prominence to various facets of writing such as cognitive, affective, social, and individual along with its emphasis on learner motivation triggered by the meaningfulness and effectiveness of writing the task (Kadmiry, 2021). The addition of writing schemas at the control level provides some room for the explicit instruction of various genres for academic purposes, which was something lacking in the previous model. Kadmiry (2021) calls attention to the social improvisations on the model including the elements of collaborators and critiques, which demonstrates the role of peers and teachers in the

writing development in terms of feedback and knowledge. Even though the previous model proposed by Flower and Hayes (1981) has been widely cited and applied, Hayes' (2012) new model offers a more comprehensive understanding of the writing process by including aforementioned items in addition to the task environment and individual components.

The following items mentioned by Kadmiry (2021) are also the reasons why a process-based approach has been followed in the present study. The writing model proposed by Hayes (2012)

- i. puts emphasis on the final product not just on the process so it is appropriate for academic and exam purposes,
- ii. involves explicit instruction on various genres of texts, thus it looks for all types of learners which may include some who do not know the basics,
- iii. teaches strategies for different steps of writing such as planning and editing therefore learners gain problem solving skills in addition to gaining reflective skills,
- iv. facilitates learners' creativity as opposed to product-oriented approaches that restrict learners to certain models, thus learners do not imitate a model but experience all writing steps such as planning and revising in a recursive manner,
- v. gives a chance to edit and enhance learners' writing because feedback is given constantly throughout the process by various channels contrary to product-oriented instruction,
- vi. motivates learners to write in that the activities done after the writing completed (e.g. making the written text public on social platforms) makes the

writing more valuable and meaningful in the eyes of the learners by changing their attitude and giving them a motive to write,

- vii. motivates learners because it considers writing has collaborative nature, which is reflected in group activities and peer feedback in an interactive and positive learning environment.

Additionally, in process-oriented approaches to writing instruction, learners are given a chance to think about and reflect on what to write and rewrite, which is an idea that regards writing as a thinking process in the meantime (Listyani, 2018). Similarly, Flower and Hayes (1981) categorize process writing among the other approaches to be a tool kit that enables both thinking and writing simultaneously. In view of this fact, in the present study the thinking process of the participants is observed in addition to the writing development. Also, the strategy embedded in the discussions is a thinking strategy, VTS, which makes process-based approach more suitable for the writing instruction.

Graham and Perin (2007) carried out a meta-analysis on adolescent writing instruction examining their effectiveness on writing performance, learning-to-write interventions distinctively. The instructional treatments that were found to have a high effect size were process writing approach and explicit teaching of skills or knowledge such as strategy instruction, summarization, and text structure. The methods of scaffolding learners' writing that had a high effect size were pre-writing, inquiry, peer assistance, study of modals, procedural facilitation, and feedback. In the present study, the intervention applied follows the ideology of process-oriented approach and strategy-embedded (VTS) pre-writing form of scaffolding in classroom discussions.

2.2.2 Pre-writing strategies

The conceptualization phase occurring before actual writing named as pre-writing is perceived to be the stage of discovery by Rohman (1965), mainly because this is the stage where writers think, plan, conceptualize, combine, and decide what to write and how to write based on their already existing experiences. Mahnam and Nejadansari (2012) define pre-writing as “writing that helps you get started and measure what you know, identify new ideas, and indicate areas requiring further research” (p.154) in a way to emphasize the role of previous knowledge, generation of ideas, and missing information in the writing journey. Rohman (1965) emphasizes that thinking paves the way for good writing and that teaching of writing may not be successful when the distinction between thinking and process is not clearly defined and emphasized. As suggested by Rohman (1965), thinking is a separate construct on its own, which is a crucial part of writing process, that is why learners can become successful writers only when they understand the structure of thinking. One of the most common techniques of teaching learners the thinking process is through the pre-writing strategies. According to Lincoln and Idris (2015), writing is composed of two parts: thinking, where active learners engage in some higher-order thinking to generate ideas as in a pre-writing stage, and process, where actual writing takes place. In a similar line of argument, Listyani (2018) discusses that planning before writing is crucial for the quality of a written text and 70% of writing time actually should belong to planning for a qualified academic text. However, the data reported by National Center for Educational Statistics in 2007 revealed that students on average spend 3 minutes for planning phase, which in return seem to affect the quality of the writing directly. Listyani (2018) concludes that less time for planning or pre-writing does not allow learners to process what to write and how to write. The

present study by providing discussions in the pre-writing stage aims to offer this thinking time to the learners in case they may not spare enough time for their planning, by structure they have the thinking time during the discussions, which is expected to compensate for the limited time given to planning by learners. Polio and Williams (2009) express that there is limited research on L2 writing studies focusing on pre-writing techniques even though it is an essential part of process-oriented writing and highly aimed at teaching materials.

There are multiple ways of conducting a pre-writing stage that have drawn some attention in the field. Hung and Van (2018) carried out a study with 20 EFL students on outlining and depicting to observe the differences in their impact over the writing performance. In the study examining the number, organization, and content of ideas, it is stated that depicting produced more ideas due to the use of visuals, yet no significant difference was found between the two treatment groups regarding the organization and content of ideas. Other pre-writing strategies that have been studied are concept mapping, negotiation, and reading related to the writing content. Mahnam and Nejadansari (2012) implemented an experiment comparing two groups; one with strategies and one without the strategies before the writing to observe the impact of explicit pre-writing strategy instruction over the writing performance. Half of the 23 Iranian participants were taught concept mapping, doing related reading activities, and negotiation in small groups in sequence over a six-week period. The results supported the expectations and the experimental group significantly outperformed the control group with respect to their writing improvement.

Another common practice of pre-writing strategies is the incorporation of visual arts. Press and Epstein (2007) propose multiple ways of incorporating arts into instruction, more specifically into writing instruction. The visual aids used before the

actual writing takes place do the work of a rehearsal improving the fluency in writing, providing a chance for generation and organization of ideas, decision of the language to be used, and background knowledge. A further advantage of using art is that it caters for individual differences in learning and intelligence in that some learners may not have a solid linguistic competence or intelligence but may have artistic abilities that may compensate for the lacks in the language (Press and Epstein, 2007). Thus, the more variance the teachers have in their instruction, the more needs, strengths, weaknesses, and differences of learners are reckoned and catered for and equal chances of learning are provided.

2.2.3 Discussions as pre-writing strategies

Pre-writing activities can be carried out in various manners depending on the teacher plan and the learner dynamics. It can take the shape of a collaborative activity, a pair work, or even an individual task. When the number of individuals involved in the pre-writing changes, the impact of the pre-writing activity on the original writing task dependently changes as well and it is observed that other factors come into play that need to be analyzed. In the present study, group (classroom) discussion is implemented and the rationale for the choice can be summarized as follows: it provides opportunities for negotiation of meaning, learning from feedback, dynamic group features rooting from rich variety of individual differences, socialization, inspiration, knowledge building, and increased learner motivation and engagement (Beiki, Gharagozloo, and Raissi 2020), reflection on the ideas which increases the quality of ideas (Neumann and McDonough, 2015). For instance, McDonough, Vleeschauwer, and Crawford (2018) studied the collaborative task design by limiting it to writing, more specifically to the pre-writing stage and compared two conditions

as the collaborative and individual activity design and their impact on the writing process. In the study they conducted with 57 Thailand university students, they compared a group in which learners collaborate in the pre-writing stage with their discussions to the control group in which there is no collaboration, but only individual pre-writing stage. At the end of the pre-writing stage, both groups were left alone for the individual writing phase and their final work was analyzed in terms of accuracy, complexity, and other analytic features which are content, organization, and language. As expected, the results showed that higher accuracy and scores were attained in the collaborative pre-writing group whereas there was less subordination and no difference in terms of analytic ratings.

Naghdipour (2016) highlights the need for effective instructional approaches by giving example of using reading-to-write activities to help learners know what to write as they learn how to write. In a similar line of argument, what to write part can be facilitated with the discussions as it is widely accepted that today's language classes include learners with varying social, educational, linguistic, and cultural backgrounds resulting in numerous individual identities and schemata that may or may not be enough or related to the one specific writing task at hand (Hyland, 2007). Not assuming that all the learners share a common background or previous knowledge or appreciating the fact that individuals have their own unique experience and perspective, leading discussions to retrieve all the available information and make it accessible to everyone to facilitate the writing process is one of the underlying reasons of choosing discussions as pre-writing strategy in the present study.

When discussions are carried out by the teachers or the students, it seems to make a difference over the results of the treatment. For instance, Shi (1998) designed

a study comparing three different groups (teacher-led discussion, student-led discussion, and no discussion) with 47 university students. It was revealed that the participants in the no discussion group produced the longest drafts while the ones in teacher-led discussion created shorter drafts and that in the writings of student-led discussion group, the variety of the verbs used was discovered to be higher in comparison to the other conditions while there was no significant change in the quality of the individual writings after the treatment. Student-led discussions seem to be of use for the social considerations as well. Neumann and McDonough (2015) highlight the fact that scaffolding does not solely occur in the hands of the teacher, with the change in the teacher role and in the perception of learning, yet it can also occur among non-expert learners. That is why, in the present study, a strategy (VTS) that emphasizes the knowledge-building with the help of interaction among the learners and that requires the active involvement of learners has been chosen and applied in a classroom discussion format to enable the transfer of knowledge effectively. However, scaffolding or peer interaction do not necessarily or directly improve the quality of the individual writings. Neumann and McDonough (2015) in the study which they carried out to examine the interaction during collaborative pre-writing discussions found out that learners do not directly or immediately apply their peers' suggestions into their writings contrary to the expectations. Neumann and McDonough (2015) attribute this attitude to the idea that learners wait for the teacher approval as an authority figure and the validation of the information provided by a learner like themselves, which necessitates the existence and mediation of the teacher during the discussions. Teachers inspect the quality and aim of the student contributions so that the learner uptake is at the maximum level and the discussions serve for their goals (Wagner, Parra, and Proctor, 2017).

Discussions especially when they are student-led and teacher-moderated, they intensify the role of scaffolding, interaction, and collaboration in learning as proposed in Sociocultural Learning Theories (SLT). Accordingly, Hyland (2007) states that scaffolding and interaction enable learning by the following two notions: shared consciousness- “the idea that learners working together learn more effectively than individuals working separately” and borrowed consciousness- “the idea that learners working with knowledgeable others develop greater understanding of tasks and ideas” (p.158). Group discussions led within the present study intend for the facilitation of learning and language development by activating shared and borrowed consciousness thanks to the social nature of discussions. Based on the results of their meta-analysis on effective adolescent writing instruction, Graham and Perin (2007) imply the usefulness and success of collaborative discussions for pre-writing purposes by advising to make learners collaborate in different phases of writing, to use class activities fostering inquiry skills, and to create opportunities for gathering information before starting to write. By the same token, Wagner, Parra, and Proctor (2017) reported a study examining the chemistry between student-led discussions and argumentative writing skills for both elementary school and university students in US, which revealed that thanks to the discussions, learners’ writing got lengthier and more elaborated in terms of ideas generated. Nevertheless, the benefits of the student driven discussions were not limited to writing features. The discussions were reported to be advantageous in that it increased learner engagement, motivation and use of cognitive resources as learners have the interpretive authority and control over turn taking and content of the discussions (Wagner, Parra, and Proctor, 2017). Moreover, from a Vygotskian approach, the choice of discussions is based on the

assertion that thinking and language go hand in hand, so discussions facilitate the learners' chances of expressing their ideas and verbalizing their opinions.

In the present study, pre-writing activity chosen is in the form of a classroom discussion in which learners are given the chance to have a discussion before individual writing takes place. The rationale for choosing discussion as the pre-writing activity from a sociocultural perspective is that learners co-construct the knowledge that they need to be able to write as a body (Lantolf, 2012) so that when they are left alone, they have the body of information, activation of ideas, and goals required for the act of writing. As Neumann and McDonough (2015) and McDonough et al. (2018) state, most of the research regarding the pre-writing phase centers upon individual pre-writing and individual planning to an extent disregarding the role of collaboration, that is why, this research will contribute to the body of research from that perspective as well.

Considering the abundance of discussions taking place in language classrooms with or without the writing task, pre-writing discussions have drawn some attention in the field, yet there is not a clear consensus about how these discussions shape learners' individual writing or affect their writing quality at different levels (Mahnam and Nejadansari, 2012). It is known that discussions enable learners to generate and evaluate their ideas in a setting where they can actualize this by presenting their arguments and defending them against the criticisms or comments given by their interlocutors (Kuhn, 2015) and that learners are prone to reflect their oral argumentation skills in their writings with respect to quantity and quality (Wagner, Parra, and Proctor, 2017).

2.3 The use of visuals

The exposure to visuals in our daily life is quite often and abundant, yet the frequency of this exposure does not have any direct relationship with the rate of our awareness, understanding, or knowledge of these visual texts. Gorman and Eastman (2010) claim that teachers have the responsibility to raise, increase or maintain learners' awareness of these visual stimuli around them in the visually-bombarded world they live in. It is one of the roles of the teachers to help learners observe, examine, criticize, analyze, judge, interpret, and even use the visual around them by making visuals part of their lesson plans to adjust the thinking patterns from linear and concrete to more dynamic, creative, and subjective ones (Gorman and Eastman, 2010).

When a person takes a look at a visual, what goes in their mind at a cognitive level is named as aesthetic thought by Housen (1983). People's awareness or depth of thinking regarding a visual stimulus change from person to person and it is natural to observe people with various levels of aesthetic thought. It is a separate skill and competence to be able to comprehend and decode a visual stimulus and to be able to use visuals to learn something and to communicate ideas. Debes (1968) coined the term as visual literacy. According to Hailey, Miller and Yenawine (2015), visual literacy has a developmental nature requiring time and effort through instruction and practice and it involves awareness, observation, thoughts, language, and inquiry skills. Even though, the concept of visual literacy has no specific skills to be defined, the aesthetic thought theory of Housen (1983) can be a practical guide through the learning and teaching of visual literacy showing the sequential paths to follow and the capabilities to gain on the way to go to the next level. Considering the fact that VTS is based on the aesthetic thought theory, it is safe to say that VTS aims and

serves for the development and improvement of visual literacy, a crucial skill for every individual in various aspects of life. As Walsh-Moorman (2018) states that visual literacy is a learned skill not something that we can pick up randomly or intuitively. That is why, visual literacy becomes an area that interest educators and VTS seems to be one of the main strategies to be used in the instruction and practice of visual literacy, especially in an educational setting be it language teaching or any other subject areas. Nonetheless, the studies in the area of visuals and learning outcomes have controversial results, on one hand it is reported that visuals optimize learning by enhancing comprehension, processing, recalling etc., on the other hand it is reported that sometimes visuals block comprehension by creating an extra cognitive load on learners especially with young and less skilled learners (Guo, McTigue, Matthews, and Zimmer, 2020).

Visuals are extensively used in classes for several reasons. Wright and Hallem (1991) account for the use of visuals in classes arguing that visuals contribute to the meanings we create with words by helping the constitution of context and that it broadens the ways that learners can respond (non-verbally) in addition to the verbal mode. In a similar line of argument, McLoughlin and Krakowski (2001) put forward the claim that visualization, as a different mode of learning and teaching, has been commonly used in classrooms along with the numeric, verbal, and symbolic forms of learning to build knowledge and comprehension. They find the use of visual as a mode of learning and teaching beneficial in that visual thinking plays a significant role in reasoning, problem solving, and communication, especially because visual representation enables a qualified learning environment by providing various views in a dynamic, active, non-linear, and non-arbitrary forms of thinking when compared to verbal representation. To depict the connection between the visuals and thinking

process in relation to learning, McLoughlin and Krakowski (2001) created a continuum for visual thinking shown in Figure 3.

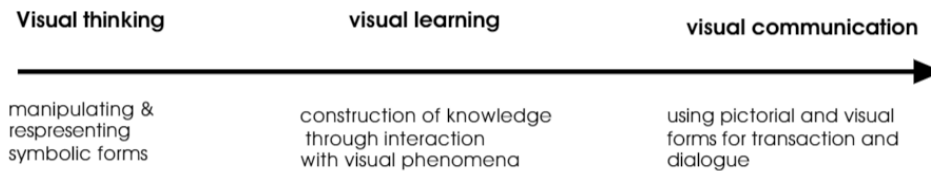


Figure 3. Continuum for visual thinking
Source: [McLoughlin and Krakowski, 2001]

At the first phase of the continuum, visual thinking is triggered when a piece of information or message is given with a visual stimulus in addition to the verbal stimulus. At this phase, thinking is fostered with a different mode of information, which involves reasoning as well. After visual thinking is activated, the next step on the continuum is visual learning, which aims for the use of visuals in building knowledge in the minds of the learners, thus rather than simply being exposed to the visual, at this phase, the learners are actively engaged in the meaning-making process and knowledge construction, not as a passive observer but as a creator. At the cognitive level, the learner does not only comprehend the message the visual is conveying, but actively constructs meaning and knowledge thanks to the dynamic nature of visual learning. At the final phase, the learner is no longer solely exposed to a visual, but is also involved in the creation of a new visual or the creation of new meaning with the use of already-existing visuals. At this level, there is not one way of interaction or message coming from the visual to the learner as in the previous two phases, but there is also a message coming from the learner with the use of the visual, so the learner starts using visuals to communicate certain ideas going beyond

of solely being exposed to the visual indicating a high level of thinking and learning. According to McLoughlin and Krakowski (2001), in order for the visuals to reach their ultimate productivity in learning and teaching, visual communication point should be achieved. In the current study, the visual stimulus of artwork aims for the visual thinking and learning, however visual communication is not triggered due to the study design. With the use of artwork in the discussions, the learning and thinking phases of the continuum are activated, to maximize the outcomes of the use of visuals, in further studies, the learners can be asked to communicate their ideas or opinions with the use of visuals along with the verbal format in their essays. That way, they will not only be exposed to visuals at the comprehension level but they will also be using them to create their own meanings and messages, which aims for higher order thinking, synthesis, and creativity.

When it comes to the use of visuals in language classes, most of the studies mainly conclude that visuals compensate for the language limitations and it seems to be the main use of visual stimulus in a language classroom (Cappello and Walker, 2016). However, what makes VTS different in the use of visuals is the fact that VTS as a methodology brings the visuals into focus not as a compensation tool for the deficiencies in language competence rather as a utility to develop language skills. In addition to the use of visuals in language learning, they can be used for developing cultural awareness and intercultural communicative skills (Kiss and Weninger, 2017). For this purpose, the use of visuals in learning practices and communities are beneficial as they provide multi and diverse layers of meaning that is open to interpretation and offers exposure to differences of opinion. Although visual texts are commonly used in language classes and language materials, the process or the phases viewers go through or how they make meaning when they come across with a visual

is not clear. To dismiss this elusiveness, Kiss and Weninger (2017) studied with 147 students aged 14-21, from Hungary and Singapore, and participants were asked to write down whatever comes to their minds when shown a picture. The data was analyzed as to semantic meanings to reveal how learners' cultural identities or backgrounds affected their meaning-making processes and interpretations of the visual stimulus. According to the findings of the study, there are three types of meaning that affect one's interpretations; universal, cultural and subcultural, and individual, mainly shaped by one's experiences and membership of a cultural group. Since the learners are meaning-makers and bring their own cultural knowledge and identities into the classroom, this can bring a great opportunity to enable more eagerness for both language learning and cultural awareness because when learners embed their own knowledge, technically they take control of their own learning and also feel more motivated to participate actively in the learning process (Kiss and Weninger, 2017).

The effectiveness of visuals in learning environments is crystal-clear and even though the reason why it is effective can change from condition to condition in which the visual is being used depending on how and why, Cronin and Myers (1997) generalize this effectiveness to their role in increasing the chances of the comprehensibility, attention, and enjoyment achieved by the learners. However, the rate of this effectiveness or the learning outcomes of the visual-embedded task vary on the following criteria: the way the visual is presented, the pace it is being exposed, the viewers' previous knowledge and skills, and the features of the task at hand (Cronin and Myers, 1997) because the mental effort put into the visual or the task itself is determined by these factors. Additionally, Gutiérrez, Puella and Galvis (2015) add that visual aids in a language classroom help learners to improve their

communicative skills by enabling them a common core or a starting point for their speaking and writing especially when they do not have certain ideas to compose a verbal or written text. Another and perhaps the most crucial aspect of visual stimuli in a classroom environment is the phenomenon of contextualization. As visuals have the capacity to bring the outside world into the classroom effortlessly and easily, it facilitates the creation of a context where the language make sense and become useful (Gutiérrez et al., 2015). Furthermore, visual aids are found practical in teaching for their feasibility, adaptability, and customizable nature (Aschawir, 2014) since it does not cost much of time, effort or money to have access, they can be adjusted for any type of task in receptive and productive skills, and teachers can shape them however they like in accordance with the learning outcomes.

Guo, McTigue, Matthews, and Zimmer (2020) administered a systematic review of literature, regarding the use of visuals in K-12 for content learning, under the themes of learner engagement, support, and type of knowledge. One main suggestion given after the review is that for content learning to occur at the optimum level, support must be provided to learners as in the forms of scaffolding, instruction or modelling and this way, strategy teaching can become beneficial especially when faced with a complex visual display. On a similar account, the current study incorporates a strategy, VTS, to help learners extract the meaning or interpretation of an artwork thoroughly and also support is provided through peer learning within the discussions. That is why, the learning outcomes of the discussions and the impact of discussions over learners' individual writing are aimed to be enhanced with scaffolding and the use of a thinking strategy along with a visual stimulus. One limitation reported by Guo et al. (2020) in the literature of visual displays is the lack of implications for teachers, especially on how to use visuals or how to design visual

display tasks. One of the main contributions of the current study to the field is that it provides a way of embedding visuals into lesson plans and proposes one way of designing an integrated lesson wrapped around a visual, which can be applied across disciplines.

The main purposes or the functions a visual stimulus can serve in a language classroom are dependent on the modality of language it is being used for whether it is speaking, listening, reading, or writing. Within the scope of this review, the use of visuals is limited to writing instruction considering the research goal of examining the impact of visual stimulus on L2 writing performance and it also covers the use of visuals in speaking tasks, particularly discussions, in view of the VTS discussions where an artwork is in the center.

2.3.1 The use of visuals in writing instruction

Among all the pathways teachers can take for writing instruction, one of them is “old but gold” (Soviyah & Purwaningtias, 2018, p.38) use of pictures. Interestingly, the appearance of visuals in writing instruction has a conventional side but it does not seem to lose its appeal over time considering the up-to-date papers addressing this topic. Studies have focused on the effectiveness of visual stimuli in various formats (picture cues, video clips, slides, comic strips, photographs etc.) over learners’ various skills language-wise (speaking, listening, writing, and reading) or non-language-wise (critical thinking, higher order thinking etc.). In the current study, the visual stimulus, artwork, is used for classroom discussions and its effectiveness on learners’ writing performance and thinking skills is examined.

Soviyah and Purwaningtias (2018) found a significant difference between a group of 28 high school students who was expected to write using picture cues and a

group of 28 high school students who was expected to write without any picture cues. The first group outperformed the second one in their post-test scores. Soviyah and Purwaningias (2018) deemed the use of visuals effective in improving L2 writing skills for the following reasons: interesting pictures motivate learners while they are learning, they ease learner comprehension, and they create opportunities for more and qualified thoughts and ideas in the process of composing a text. Similarly, Gutiérrez et al. (2015) did action research with twenty 9th grade students to figure out a solution for their lacks in EFL writing lessons. In the study, there was a control group and experimental group and both of the groups had a process-based writing instruction approach but only difference in the experimental group was the use of picture series for the narrative writing task. The intervention continued for 16 weeks and the writing samples were analyzed based on the following five criteria: flow of ideas, presentation of ideas, grammar, vocabulary, and spelling. The findings of the study revealed that all the participants showed an improvement in their overall writing skills thanks to process-based approach. Yet, this growth was more in the experimental group using the picture cues, peculiarly in the areas of flow and presentation of ideas meanwhile building up learners' motivation and engagement with the writing tasks (in line with a comparable study by Aschawir, 2014).

Lee (1994) led an experiment comparing the effects of picture-guided writing task versus topic-selected writing task with no pictures with 53 university students that are beginner L2 Spanish speakers. The aim of Lee (1994) was to observe whether the use of pictures facilitate the writing process and development in terms of clarity, accuracy, content, and coherence and whether learners' attitude and motivation towards L2 writing and self-perception of their writing skills after the intervention would change. The results of the study showed that picture-guided

instruction was favored more by the learners even though there is a minority of students who preferred topic-selected because they are more advanced than the others indicating that learners' level of proficiency is a criterion for the design of the writing task. Additionally, participants reported that pictures helped them to generate more ideas, to have more fun and less stress while composing, to express their ideas in a more organized manner, and to develop their writing skills.

Ali and Hasanah (2014) suggest teachers to use pictures in writing instruction because it enables learners to transmit their ideas more effectively than traditional ways, pay attention more easily, develop an understanding, and engage in authentic discussion topics. Another study that focused on the visuals in writing instruction was carried out by Listyani (2019) with 19 university students in Indonesia. The aim of the research was to figure out whether comic strips and mystery pictures could enhance participants' imagination, creativity, thinking processes, ability, and interest in narrative writing. Listyani (2019) argues that for writing process to be rewarding, learners' creativity and imagination need to be triggered by the instructors so that learners are able to come up with ideas and produce the required language effectively and creatively. One way to activate this creativity language-wise and content-wise is through the use of visual aids (Listyani, 2019). During the intervention, the participants were presented five mystery pictures and two comic strips to complete five pieces of writing assignments collaboratively in groups. It was concluded that learners were able to use their creativity, imagination in their writing samples and to improve their writing skills overall. Qualitative results of the questionnaires revealed that participants enjoyed the visuals in the instruction and found it beneficial in terms of their vocabulary and writing skills along with their capacity to generate ideas, think critically and logically.

As mentioned before, the results of the studies on the effectiveness of visual use in classes contradict with one another even though the majority is gathered around the positive effects side. One study done by Jordan and Sanchez (1994) tested the effects of video clips on 117 university learners' retention level of certain political concepts in comparison to a traditionally-instructed group of students in the short term and the long term. The results revealed that video clips made a minor difference in learners' retaining certain information but this was immediate effect, there was no significant difference for the sustained effect of using video clips. The researchers come up with some rationales for the insignificant results (e.g., the quality of the video clips and small group size) and warn the stakeholders about investing in technology use in classrooms. This conclusion can be interpreted as a small reminder about the implementation of any strategy or technique in classroom environments. Even if it is about the use of pictures, which has a long history of being used in classes, the implementation needs to be meaningful, purposeful, and the teachers must be aware of how they are designing the lesson and making their choices of any type of visual stimulus in that the choices are in line with learning outcomes and learner needs.

2.3.2 The use of visuals in discussions

Despite discussions' popularity in language classes, there are many issues or concerns that require teachers' attention. As addressed by Weih (2015), this prevalent routine can be criticized for its common implementation in lessons, which is repeatedly carried out with teachers' directive questions addressed to the whole class. According to Weih (2015), the downsides of such an implementation are the lack of all students' participation and engagement and the lack of addressing learner

needs and differences with respect to language proficiency, learning pace, language abilities, attitude towards speaking, cognitive aspects such as attention and thinking, and motivation. What can be done to compensate for these aforementioned lacks is the embedment of discussion strategies. Some example strategies mentioned by Weih (2015) are K-W-L (what we know, what we want to know, what we learned), think-pair-share (individual thinking followed by a paired discussion), and quick writes (individual note taking followed by a small group discussion). By the same token, the current study makes use of a strategy not solely for discussion but also for the thinking process that leads to the discussion. What is aimed with the integration of VTS in learner discussions is to cater for different learner needs starting from cognitive ones (e.g., attention, observation, thinking, argumentation, details, evidence, etc.) to social and psychological ones (e.g., motivation, engagement, participation, confidence, eagerness, feeling safe and comfortable, etc.), in the meantime ideally compensating for the lacks that may occur in frequently applied classroom discussions.

2.4 Visual Thinking Strategies

Yenawine (1998) argues that a discussion must be of a liberatory nature. How a discussion can be liberating is through by making it student-centered owing to the fact that when the discussions are led by learners themselves, it creates an environment, in which learners are motivated, the chances for individual growth are in the making, the exchange of varying opinions and ideas are welcomed, and creative and critical thinking are enhanced (Yenawine, 1998). This is an idealistic description of a classroom discussion language teachers would describe to make their learners feel safe and comfortable enough to participate in and contribute to the

output created within the group. According to Yenawine (1998), it is quite probable to create such a setting with the addition of a visual, particularly artwork, into the curriculum and he proposes a new strategy to achieve such a goal: VTS.

2.4.1 The origins of VTS

VTS stands upon the studies of aesthetic development by Abigail Housen, a cognitive psychologist, studying the different developmental stages of looking at art and thinking. In her study, Housen (1983) identified 5 stages of aesthetic thought which is exposed to change through time and the amount of input enabling viewers to go to the next stage of aesthetic thought sequentially. The stages represent the viewers' level of appreciation with art, that has nothing to do with the age of viewers, but just their engagement with the artwork (McGuire, 2016). In Table 1, there is a summary of these stages and what they represent.

Table 1. Housen's Stages of Aesthetic Development

	Developmental Stage	What it represents
1	Accountive	The beginning level of aesthetic thought in which the viewers do storytelling based on their previous experience with art. There are concrete observations about artwork filled with emotions.
2	Constructive	The viewers construct a framework for their observations based on their values and perceptions moving from pure emotions.
3	Classifying	The viewers categorize the artwork so that they can decipher the message behind. By being analytical, they categorize the artwork for their explanation.
4	Interpretive	The viewers create and seek personal associations with the artwork while revealing the underlying message. They are aware of the fact that art is open to interpretation and difference of opinion.
5	Recreative	The last and the most elaborate level of aesthetic thought. The viewers have experience and time over art observation. They analyze the same artwork with a new attitude every time they look at it. They are aware of the universal value of the work by combining it with their own interpretation, recreating a new understanding of the work each time.

Note: Adapted from "Vocabulary Learning through Cooperatively Structured Art-based Tasks" by S.P. McGuire, 2016, Doctoral Dissertation, ProQuest Dissertations and Theses Database.

By bringing these 5 stages of aesthetic thought into the center in art education, Philip Yenawine wanted to enhance the output of the learning experience of museum visitors so that they would learn more from their experiences in a museum and remember the information or the experience in the long run by gaining a new way of observation and analysis in a systematical way. In order to achieve this goal, Yenawine came up with Visual Thinking Strategy by using discussion as a tool for thinking (Yenawine, 2013). Even though the idea was created for museum context, it has spread over school environment as well aiming for the development and improvement of critical thinking and problem-solving skills. A curriculum for elementary schools embedded with VTS has been created, however the use of VTS has not been limited to this level thanks to its flexibility in adaptation and openness towards change in task difficulty, which has enabled its use in different levels of education and subject areas. The relationship between VTS and the aesthetic development is shown in Table 2 below.

Table 2. The Relationship between Aesthetic Development Stages and VTS

Stage	Feature of the Stage	Relation to VTS
1	Storytelling	By looking at an artwork, the viewers create their own stories based on their memories and immediate observations. It is more than mere looking at the artwork, but looking at it through their own eyes. The first question of “What is going on in the picture?” addresses this stage by emphasizing the action or event rather than a sole description.
2	Framework	By using their previous knowledge, experience with art, personal and cultural values, the viewers try to construct meaning about what is going on in the picture or the message given.
3	Classification	By criticizing or doing a detailed analysis of the work, the viewers are expected to decipher the meaning, especially by providing evidence from the artwork answering the second question of VTS “What makes you say that?”.
4	Interpretation	By appreciating the subjectivity of art and being able to think critically, the viewers listen to other people’s opinions and accept differences of opinion. Any idea or interpretation is welcomed in a VTS environment.
5	Recreation	With time and more experience with VTS, the viewers are able to take a different point of view towards an artwork or come up with new interpretations the more they look at the details. The third question of VTS “What else can we find?” encourages for more observation and interpretation highlighting the active learning process.

Another aspect of how VTS embeds the features of aesthetic development is the autonomy of the learning process. Zelvis (2008) suggests that towards the end of the aesthetic development stages (stage 4 and 5), the viewers need no education or intervention coming from a professional or a facilitator and after some time and exposure with art, the process is guided by the viewers themselves. In a similar line of argument, VTS also aims to have learners who are at the center of discussions and are expected to use the same strategy or the skills gained from VTS to reflect in other aspects of life in addition to the new works of art.

2.4.2 Features of VTS

According to Yenawine (1999), the main features of VTS are its perception of understanding, student-centeredness, effective learning, self-sufficiency, verbalizing, and interaction. From VTS' perspective, understanding is never passive, but anyone who is at the stage of comprehension needs to be actively involved in the process of meaning construction by doing the necessary discovery and evaluation. From a pedagogical perspective, learners are actively engaged during the lessons and they are the ones who actively constructs knowledge and builds up on it with critical analysis, which takes down the role of the teacher as the knowledge-holding authority. Correspondingly, the center of the lesson shifts to the learners in a way that teachers shape the lessons according to what is available to learners in terms of knowledge, skills, and strategies and challenge them step-by-step in relation to their current levels and needs, thus VTS automatically adapts a student-centered approach. Though it may take some time, what VTS tries to achieve is to make learners become self-sufficient individuals who has the skills of effective learning even when the teacher is not around. In this sense, effective learning refers to the notion that

learners are able to make use of their current skills and strategies in the face of a new knowledge or circumstance to develop and learn more even without guidance. The last two touchstones of VTS are verbalizing and interaction, both of whose approach is Vygotskian. The logic behind verbalizing and learning is based on the connection between language and development of ideas in that thought takes its root in language. When learners talk or verbalize about what they see, they talk themselves into knowledge and understanding. In VTS, learners verbalize what they see and try to go beyond what is visually available by looking for evidence and inferencing, which makes them an active knowledge builder doing exploration and thinking. When individual learners are verbalizing, at the same time peers also verbalize, which bring the role of interaction into play. When verbalizing together, learners have the chance to learn from their more capable peers and gain from their insight. Overall, the idea of VTS originates from the verbalizing and interaction components leading to art discussions in peer groups aiming for the exchange of information, ideas, insights, and even skills.

Distinctly, Landorf (2006) adds more components to these features of VTS to describe the process in more detail:

- i. “Uses art to teach thinking, communication skills, and visual literacy,
- ii. Uses facilitated discussion to practice respectful, democratic collaborative problem solving among students that transfers to other classroom interactions, and beyond,
- iii. Uses eager, thoughtful participation to nurture verbal language skills, and writing assignments to assist transfer from oral to written ability” (p.28).

Yenawine (1999) states that what makes VTS an active process is its focus on questioning. Even though, there are three basic questions leading the discussion, the

varied questions starting from open-ended to more probing ones also occur. The three basic questions of VTS and their justification are as follows:

- i. *What is going on in this picture?* (This question is grounded on the basic instinct of human mind faced with an artistic visual – narration or looking for a story behind (Yenawine, 1999). Instead of asking the question “What do you see in the picture?”, which is basically a description question that does not have much room for interpretation and production, the new question allows for the story telling which is triggered with the question root – is going on- and according to Landorf (2006) this question asks for an active response. The main reason of starting off with such a question is to give learners a basic question to be answered in a group, where learners have their own individualistic background information, in that the basicness and expectations of the question relinquish the differences among individuals at the beginning of the discussion providing a sense of comfort and openness.)
- ii. *What do you see that makes you say that?* (This question goes beyond the story created by the viewers and demands for additional evidence to support their stories. Thanks to this question, learners are expected to develop thinking and reasoning deductively (Yenawine, 1999) and finding evidence to strengthen their points, especially a skill practical for writing (Landorf, 2006)).
- iii. *What more can we find?* (Learners may be prone to stop examining the details of an image after realizing a few main points. The point of asking this question is to make learners carry out a little more detailed examination of the image to catch the details that may be invisible to the common eye, which directs the attention to the detail and keeps the focus on the image

(Yenawine,1999). These types of questions ask for more effort from the learners and notify them about more details to be noticed if they look closely and think deeper, which somehow presents them a challenge of some sort to find what is hidden.)

The role of the teacher needs to be clearly understood for VTS to serve for its goal. The main aspect of it is that the teacher becomes the facilitator leaving the traditional authority figure behind. What is meant by facilitation is that the discussions are carried out by the learners and directed by their interests and ideas, while according to Yenawine (1999) the teacher does the moderation, encourages participation, paraphrases the learner contribution, asks probing questions, validates and appreciates every comment, makes observation, links students' contributions to one another's, and examines the process. Landorf (2006) adds two important items to the teacher role, one is to stay neutral during the discussions and the other is to spare at least 15 minutes for each work of art to deepen the discussions. Additionally, the teacher chooses the appropriate images according to learners' level of readiness and makes sure that they always stay on task by making extended analysis and discussion of the images chosen (Yenawine and Miller, 2014).

VTS has been used in various fields such as nursery, pre-service trainings, mechanics, IT, and service industries (Landorf, 2006). Yet, regardless of the field it has been applied in, VTS is regarded to be beneficial, because it

- i. creates opportunities to practice thinking skills at different levels,
- ii. enables collaboration and interaction among individuals,
- iii. engages learners in a problem-solving process,
- iv. motivates learners and increases their willingness to participate,
- v. reinforces respect among individuals and learning from others,

- vi. offers an authentic and safe learning experience,
- vii. underscores the skills related to concepts and procedures, (Williams, Burns, and Daisey, 2016)
- viii. promotes critical thinking,
- ix. fosters creativity, freedom, and analytical thinking skills,
- x. enhances language skills such as reading, writing, and listening,
- xi. assists with communication skills fostering communicative literacy,
- xii. supplements observational skills and evidence-based reasoning,
- xiii. encourages to be able to take more than one different point of views and interpretations,
- xiv. enables learners to process incoming knowledge and synthesize, (Landorf, 2006)
- xv. reassures learners' active involvement and engagement in the classroom (Yenawine and Miller, 2014)

Moeller, Cutler, Fiedler, and Weier (2013) impute the effectiveness of VTS in powerful learning to the fact that there is creativity and critical thinking in the core of the strategy. When creativity and critical thinking come together, the harmony between the two creates an ideal environment for the learning process especially when it is supported with a visual stimulus in the process of meaning making. Within the spectrum of VTS, the visual, more specifically, the artwork, paves the way for the pattern recognition by doing close observation, while the critical thinking is fostered thanks to the artwork in that the viewers take a look at the clues and try to find out the probable interpretations through analytical thinking and evaluation (Moeller et al., 2013). In a similar line of argument, the discussion phase of VTS brings out the opportunities of triggering higher order thinking skills along with the

creativity and critical thinking since the open-ended nature of an artwork initiates all levels of application, evaluation, and synthesis.

Yenawine and Miller (2014) attribute the strategy's effectiveness to its form: "it activates and builds on exiting skills and interests, is developmentally based, engages peer interaction, and gradually escalates challenges." (p.2). Yet, for the strategy to work effectively, the aim of VTS must be clearly understood. What VTS aims for is not to teach learners what to think but to give learners multiple chances of thinking and discovering independently so that they can transfer these skills into other parts of their lives as well (Yenawine and Miller, 2014). In other words, if a teacher were to apply VTS and expect it to enrich learners' opinions and ideas, it would be a vain expectation since VTS does not teach learners what to think rather teaches them how to think, which is more comprehensive and vital than what to think because it is not subject-specific and useful in every setting which learners may be in. As VTS does not expect one accurate answer to the discussions, especially with art discussions, it also teaches learners the fragility of the truth and makes them question the nature of truth by accepting each point of view and interpretation, which signifies the questions of whether there is one truth or whether it is discoverable or accessible (Yenawine and Miller, 2014). The following figure 4 is a summary of key features of VTS.

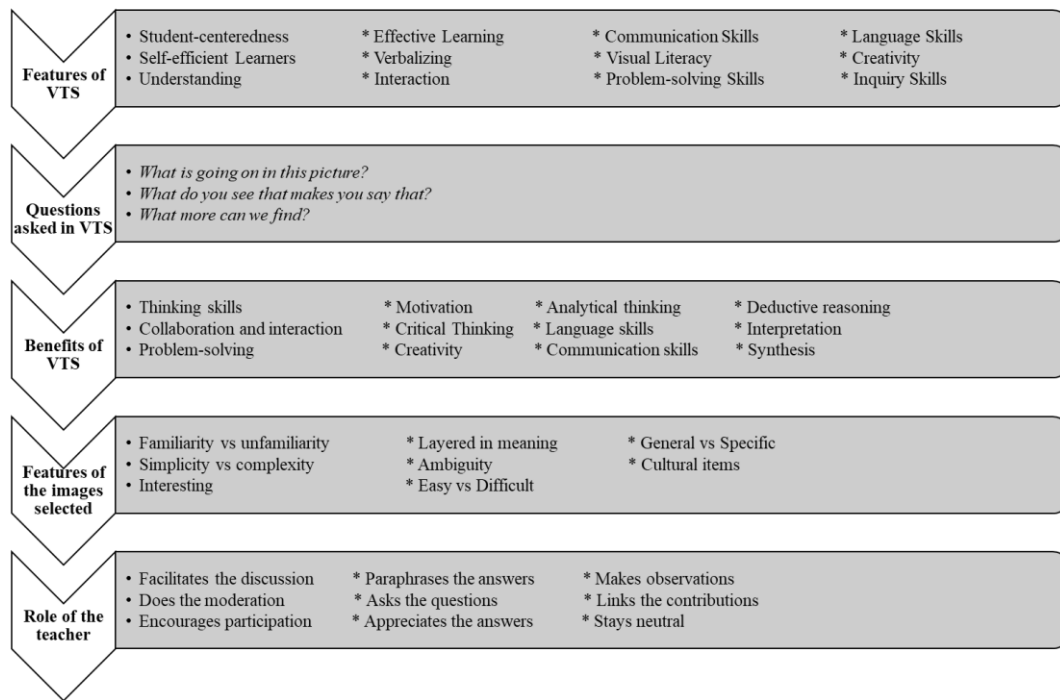


Figure 4. Key features of VTS

2.4.3 Visual stimulus in VTS

In applying Visual Thinking Strategies (VTS), works of art are commonly selected as a visual stimulus, yet it may be useful to keep in mind that other types of visuals can be selected to apply VTS as long as the selected images invite to discussion (Yenawine and Miller, 2014). The choice of the selected images is critical since it is used as the stimulus to initiate the discussions. Yenawine (1999) suggests the use of images containing familiar items regarding people and objects so that the viewers can start with their own contributions but still reach at something common to all viewers as well. McGuire (2016) names this criterion as “the approachability of the artwork” (p.24), which signifies the fact that the artwork chosen should not require any specialized knowledge and any background information to be interpreted. However, the goal of the discussions is not to reach to the same point, the idea in the choice of the familiar images is to create the comfortable atmosphere where learners

feel secure enough to talk and have required level of knowledge and ideas to participate in. Yenawine (1999) names this phenomenon of starting with individual viewpoint and reaching at a common viewpoint collected and created by the members of the groups at the end of the art discussions as a switch from initial subjectivity to reaching at objective reality of an image since all works of art has a unique and intentional message of their own to deliver. Another criterion for image selection of VTS process is to order the images from easy to difficult, simple to complex, familiar to unfamiliar, obvious to ambiguous, general to specific or narrower, and culturally-local to culturally- global (Yenawine, 1999). This is a criterion that is acceptable from a pedagogical perspective as in a classroom where material selection and development are naturally based on learners' level and needs. To determine the level and the needs in a classroom, the reasonable path to follow is the one that goes from simple to complex, familiar to unfamiliar, etc. not vice versa. Additionally, if the images selected are based on familiarity, it also looks for the learners' current knowledge and tries to build on the previous knowledge in a way to actualize effective learning. Yenawine and Miller (2014) add two criteria for image selection, one is that the images chosen need to be interesting so that learners are engaged in the discussions and the other one is that images selected need to have a deep and layered meaning in a way that they make the students intrigued about the image and examine it more. The key features to be taken into account while choosing a visual stimulus for VTS are also summarized in Figure 4 above.

Walsh-Moorman (2018) rightfully asserts that today's learners may most of the time take the face value of a visual that they come across with despite the fact that they are frequently exposed to these visuals in various platforms. Thus, she suggests that teachers need to introduce new opportunities for learners to become

critical viewers of the visuals. One uncontroversial area that is well-supplied with visuals and favored by various disciplines is art. That art has played a significant role in culture throughout time is a crystal-clear fact. As Yenawine (1999) claims, it is what makes people human completely and what enables the member of the society to share their fundamental knowledge and opinions so that they can be part of the bigger community. According to Yenawine (1999), what makes art powerful is its power to make the viewer think, feel, engage, reflect, and go beyond what is already visible to the eye. Landorf (2006) suggests the use of works of art for VTS mainly because they are open to interpretation and reflection while increasing learner engagement. An extra advantage of using works of art as a stimulus for learner discussions is that art builds up creativity, attention to detail, understanding, multicultural learning and awareness, and social awareness (Williams et al., 2016). Moreover, when learners are presented with an unfamiliar piece of work, they have to use their perception, thought, feelings, ideas, questioning, and collaboration if in a group, this way their critical thinking and inquiry skills are trained in a way that is available and applicable to new areas of knowledge and experiences (Yenawine and Miller, 2014).

2.5 VTS in discussions and L2 writing

As Williams et al. (2016) states, “art has the power to stop us” (p. 3), for this reason, in a language classroom where teachers want their learners to speak or produce output as much as possible, they do not want their learners to stop and just admire the artistry. In order for this admiration not to direct our learners into silent deep thinking and inner talk, carrying out a discussion over the work of art seems to be a smart choice for a language teacher.

Hyland (2007) proposes key principles of L2 writing for teachers to use while preparing their course objectives and goals that shape their writing instruction along these lines: “Writing is a social activity.”, “Learning-to-write is needs-oriented.”, “Learning-to-write requires explicit outcomes and expectations”, “Learning-to-write is a social activity.”, and “Learning-to-write involves learning to use language.” (p.152-153). Following aforementioned principles, the writing instruction of the present study has been designed. Learning to write and writing being a social activity are meant by adding a classroom discussion period before actual writing happens, explicit outcomes are aimed for the end of the intervention to observe the changes in writing skills over a period of time, needs of the learners are attended by providing a whole class discussion not assuming that all the students have the necessary prior knowledge, and lastly while writing the students are given a chance to realize how language works for their communicative purposes.

2.6 Studies with VTS

Cappello and Walker (2016) have examined the way middle and elementary school teachers apply VTS in their use of visual texts to analyze how VTS affects the comprehension of complex visual texts in various subject areas. In the observations and interviews done, the teachers found VTS as a practical tool for language skills development, more specifically in close reading in that it broadens teachers’ perception of text by evolving it from bare verbal input to multi modes of input including non-verbal ones, that it provides an optimum framework for learning by being flexible for adaptations in different subject areas, and that it encourages learners to talk and take more risks to explore the novelty.

One study focused on the use of VTS in literature discussions in comparison to the traditional IRE model, where teacher initiates the interaction and evaluates the response coming from the students. Donato and Brooks (2008) claim that IRE model is particularly limiting in that the floor is mostly the teachers', since the interaction is initiated, guided, and maintained by the teacher with superficial questions that require the elaboration from the teacher by putting boundaries to learner contribution and creativity. Therefore, Donato and Brooks (2008) use VTS as a strategy to change the dynamics of learning interactions in the classroom replacing the traditional and restricted modes of interaction between student-teacher with a new form of interaction that puts the learners into the center. It is also reported that VTS by design provides scope for more student responses and more chances for language production by the learner (Donato and Brooks, 2008). A main study that has studied the impact of VTS over L2 learners' language skills is done by Bomgaars and Bachelor (2000). The studies that have used VTS for L2 learners are quite rare, and as far as the research goes, the study by Bomgaars and Bachelor (2000) is the first one to implement VTS in an L2 setting. The leading factor in implementing the use of VTS in L2 classroom is the role of artwork in triggering wondering and imagination, which can be put to use to increase learner engagement and motivation with the target language (Bomgaars and Bachelor, 2000). Since the research on VTS and foreign language learning is extremely limited, the current study contributes to the literature from this aspect. In the study by Bomgaars and Bachelor (2000), the participants were 35 high school students with intermediate level Spanish as L2, in the USA. The intervention continued for eight weeks to examine the VTS discussions' effect on the quantity and quality of participants spoken and written language outputs. To detect the influence VTS has over the participation in the

whole-class discussions, the data was analyzed as to the number, frequency, average length, and percentage of participant utterances. The written samples were analyzed as to fluency, syntactic and lexical competence, and lastly accuracy. The findings of the analysis of written data showed a growth in fluency and syntactic complexity, the progress was more in the experimental group. However, neither the control or the experimental group showed progress in lexical complexity and accuracy. Bomgaars and Bachelor (2000) attribute this to three reasons; one is that participants repeated certain lexical items through the speaking and writing, the other is that as they felt more confident, they started taking more risks with language production, and the last one is that they tried to use more complex structures, which overall led to less accuracy and less complexity with words. The data regarding the spoken output was reported to have one single item of significant difference value, words per utterance, which was two times more in the experimental group. Additionally, the qualitative data collected was also in line with the results of the quantitative data for the reason that participants' perception of their language skills, awareness of cultural dimensions, critical thinking, and respect to differences of opinion have increased.

Similar to the current study, there have been other studies examining the effects of discussions over learners' individual writing. However, there needs to be a distinction when the word discussion is used. Some studies center their focus on the content of the talks, the structure of the groups, the task-related talk, the number of talks, the group dynamics, etc. In 2021, Li and Zhang conducted a study similar to the current one in terms of study design, however what they have focused on their study was not the content of the discussions as it is the case with the current study, rather they focused on the student talk about the task and how it affected learners individual writing. That is why, they mostly use the term *talk* rather than *discussion*

but sometimes they use them interchangeably as well. Li and Zhang (2021) support that when learners talk to one another before they start a writing task, this gives them a chance to be inspired with some ideas, to be supported with some help when they need it, and to receive feedback and approval within their talk, which puts the student talk as a tool for writing skills development. Considering that writing in a foreign language is a challenging task for language learners, any kind of support that they receive is expected to guide them through the process, thus in the current study the group discussion and VTS are expected to provide the support they may need, which aims for the use of talk as a mean and a source for the actual writing process. Li and Zhang (2021) aimed to enhance the effect of talk by making it a structured talk designed by the teacher to be able to control the outcomes of the student talk and minimize the other factors or talks that may occur among participants. The talks were structured in a way that the learners were directed to communicate with respect to language, organization, content, and task management. In order to observe the impact of structured-student talks over Chinese university students, with intermediate level of English, Li and Zhang (2021) experimented with 48 participants by using pre-test, post-test, and delayed post-test design with five weeks of intervention. In the intervention group, the participants did a student talk structured by the teacher for 20 minutes and then switched to individual argumentative essay writing for 20 minutes, while in the control group, the participants completed both planning and writing phases individually. The holistic analysis of the writing samples proved that structured student talk enabled the intervention group to receive higher scores in all the tests checking their overall writing skills. The analytic results in relation to content, organization, vocabulary, language, and mechanics showed that the student talk was effective in improving writing performance in terms of content,

organization, language, and vocabulary but no significant difference was found in mechanics. The only aspect that was found statistically significant both in the control and intervention group was language use. However, the delayed test results revealed that the progress regarding the content, vocabulary, and organization were maintained whereas the progress in language use was not. Li and Zhang (2021) attribute this discrepancy in the retaining of language use to the limited amount of talk over language in student talk.

Another aspect where VTS has been studied as a methodology is from teachers' aspect; how VTS impacts teachers. Smolkowski, Strycker, Anderson, Marconi, and Abia-Smith (2020) examined the impact of VTS embedded writing instruction on teachers through a professional development model. In the study, in which teachers were instructed and trained to have evidence-based argument writing, VTS was embedded in writing instruction for learners' writing skills improvement and teachers' attitude toward their own writing instruction. According to the findings of the study, VTS was found effective for both teachers and students in that students' overall argument writing skills improved and teachers' perceptions of their own skills to teach writing had differences in comparison to the control group teachers. The teachers who were in the interventional group reported that they enhanced their knowledge and felt more confident in the areas of teaching critical thinking, writing instruction regarding argumentation, and using artwork in their lessons for meaning-making processes for different purposes resulting in the enhancement of visual literacy both for the teachers and the students.

2.7 L2 writing assessment

Hyland (2004) raises a few aspects of writing assessment to be considered before designing a writing task or assessing a writing task. These are the purposes of assessment, validity and reliability, task design, and scoring approaches. The purpose of the assessment is the skeleton of the whole evaluation processes since it affects all aspects starting from task design to learner motivation or anxiety. Hyland (2004) presents five purposes of assessment as placement, diagnostic, achievement, performance, and proficiency. The assessment in the current study aims to evaluate learners' writing performance before and after the intervention on a specific academic writing task. When it comes to the reliability of performance, it is strengthened by restricting the genre of the writing task (in all the writing prompts presented in the study same prompt or genre is used), by giving clear instructions (the researcher being a teacher at the same time also enabled to clarify any issues to come up during the task), and by making participants familiar with the assessment format (participants are already used to the idea of writing being evaluated based on an analytic rubric thanks to the regular lesson plans). Also, the repetitive design of the intervention every week making the participants familiar with the conditions and the pilot test carried out before the intervention process increase the reliability of the study design and the assessment process. Another aspect of reliability comes out since two raters evaluated writings, to eliminate the negative impact of subjective judgments, the researcher carried out a rubric training with the second rater, who is also familiar with similar rubrics due to working in the same institution. After the training, some sample papers from each group were evaluated by both raters to see if the evaluation perspectives would balance one another out or not till they agreed on the same rate of the writing performance. The validity of the writing task is justified

because it is adapted from an already existing study design. When it comes to the approaches to scoring, Polio and Williams (2009) identify the measures of assessment in L2 writing studies as holistic measures focusing on quality overall, analytic measures focusing on sub-components of writing, and objective measures that are token ratios (e.g., words per T-unit). The fitting type of measurement for classroom use is analytic scales since holistic ones do not provide adequate feedback about learners' strengths or weakness to be improved, which is the point of providing feedback (Polio and Williams, 2009). That is why, in the current study there is an analytic rubric to test learners' writing performance and another one to evaluate different aspects of thinking in the written products.

2.8 Thinking skills

The concept of critical thinking is being addressed and embedded in every aspect of life, including the educational settings by accepting its' being an indispensable skill for everyone across all different situations and settings. How people define critical thinking varies, but according to Piergiovanni (2014), among all those definitions, there are key elements which are knowledge, reasoning, analyzing, questioning, concluding, and reflecting. It can be suggested that Bloom's Taxonomy aiming for the higher order thinking skills also embraces critical thinking since the key elements of critical thinking mentioned above are naturally in the center of the taxonomy as it can be deduced from the levels; knowledge, comprehension, application, analysis, synthesis, and evaluation. Considering that the current study is utilizing the taxonomy in the study design by using taxonomy verbs to create discussion questions, with such a design, what is aimed is the activation of critical thinking and higher order skills as a habitual and transferrable form of thinking while the

questions directed go from knowledge to evaluation level. Another aspect of the study that promotes critical thinking is the presentation of art work with different and multiple layers of meaning construction, a foundation for the questioning, criticizing, evaluating, and interpreting. As claimed by Piergiovanni (2014), critical thinking not being a natural or developmental skill, it needs to be prudently fostered and practiced till it becomes a part of thinking process. There are various ways of cultivating critical thinking in a language classroom, among the most prevalent ones are discussion, concept mapping, and analytical questioning (Wang and Seepho, 2017). In the current study, classroom discussion is the medium of cultivating critical thinking in learners. The part of the intervention in the study that aims to foster critical thinking in the learners is the VTS discussion, in which the group discussion by nature allows for critical thinking and also the embedment of prompting questions using Bloom's Taxonomy verbs triggering higher order thinking creates an appropriate discussion environment for critical thinking. Wang and Seepho (2017) justify that group discussions facilitate critical thinking in that the participants of a discussion come across with different perspectives and counter arguments making them question and examine what they already know or think while evaluating and analyzing their ideas and then look for rationales and evidence to support their own arguments to an extent to convince the other members. Another evidence to support that the intervention design of the current study is suitable for critical thinking and higher order skills enhancement is provided by Singh, Gopal, Tek, Masa Singh, Mostafa, and Ambar Singh (2020). They claim that the cultivation of critical thinking goes through the activation of higher order thinking skills at the level of analysis, synthesis, and evaluation. In order to do this, they suggest teachers to use some strategies to foster higher order thinking and naturally critical thinking is enhanced in

the meantime. Mentioned strategies are problem solving, comparing and contrasting, reasoning, inferring, and questioning. The fact that the current intervention fosters both critical thinking and higher order thinking (HoT) can be depicted as in Table 3:

Table 3. Relation of HoT to VTS

HoT Strategy	Relation to VTS Discussions
Problem solving	The ambiguity and unknown meaning of the artwork to be deciphered.
Comparing and contrasting	Comparing the previous knowledge to the novel one gathered in the discussions. Various interpretations and perspectives are contrasted.
Reasoning	Providing evidence for the argument made about the artwork. Justifying the point of view with the elaboration of ideas and examples.
Inferring	Presenting evidence and facts related to the artwork. Providing details and real-life examples to generate a conclusion.
Questioning	3 VTS questions used in a repetitive manner during the discussions. Questioning the underlying meaning or message analytically.

A classification seems to be a must for clarification as thinking is a general term. As Ghanizadeh, Al-Hoorie, and Jahedizadeh (2020) state that mostly thinking is categorized based on the type of learning with respect to the involvement and depth of different cognitive processes, in this paper, the same perspective is adapted and the most common taxonomy (Bloom's Taxonomy) is followed to conceptualize higher order thinking skills to be addressed. There are six categories of cognitive processes moving from the simplest to the most complex one, which is useful in deciding what actions to be done to activate those cognitive processes in the form of verbs. So, in the current study, the prompting questions directed in the VTS discussions are making use of verbs representing Bloom's Taxonomy's categories, from knowledge to evaluation in order to activate higher order thinking rather than the basic description of what participants see in an artwork. In 2001, Anderson and Krathwohl revised the taxonomy by changing the names of the domains and the

order of synthesis and evaluation, which basically kept the domains of knowledge or cognitive processes the same. That is why, in this paper the original domain names are used as shown in Figure 5.

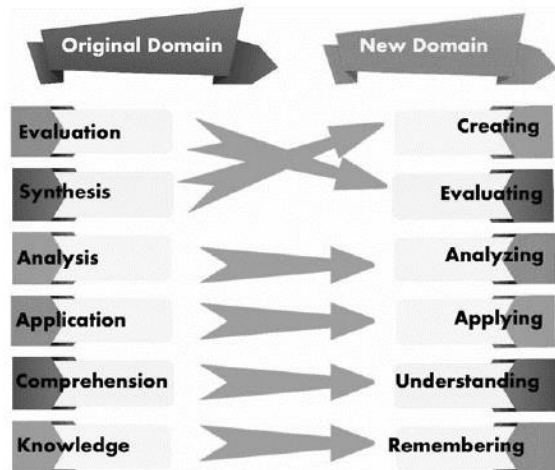


Figure 5. Bloom's revised taxonomy
Source: [Ghanizadeh, Al-Hoorie, and Jahedizadeh, 2020]

2.9 Theoretical framework

The present study's intervention follows Sociocultural theory (SCT) framework, which is based on the studies of Vygotsky claiming "that the most important forms of human cognitive activity develop through interaction within these social and material environments" (Lantolf and Thorne, 2006, p.197), during which language is a medium for the construction of shared knowledge and problem solving. The cognitive activity that is aimed at working is L2 writing with a specific focus on language and thinking skills and aspects. According to the principles of SCT, learning becomes meaningful as long as it occurs in an interactive and collaborative social environment. The interaction occurs naturally in the discussions led by students and at the end of these discussions, the arguments and thoughts created collaboratively are expected to be reflected in individual learners' written product.

The social component of learning is embedded in the group discussions in the pre-writing stage which is most of the time carried out individually. This co-creation process is what makes VTS a social learning process that falls under the SCT. Following the SCT principles, the learners are expected to internalize the obtained external information, ideas, thoughts, or even language input from the discussions and to reflect them in their individual products (Lantolf and Thorne, 2006).

Weissberg (2006) discusses that this process of internalization starts in Zone of Proximal Development (ZPD) and enabled with scaffolding, which are in line with the procedures and ideas of process-oriented approach to writing instruction. ZPD occurs as a product of interaction and it is related to the distance between what is already available, what is missing, and what may be available under optimum learning conditions. Warschauer (1997) lays collaboration down as a condition for meaningful learning opportunities in a way to accompany learners through their ZPDs. Any help within the ZPD, coming from an authority or a non-authority individual, carries learners practically from what they already know to what they can/need to know. Thus, pre-writing discussions led by learners in groups in the present study are expected to close any gap in individual learners' background knowledge or any lack in idea generation and language thanks to the assistance offered by the scaffolding done by peers within their ZPDs. Donato (1994) coined the term "collective scaffolding" to emphasize the significant role of group collaboration in knowledge co-construction regardless of the individual weaknesses or lacks by stating that learners are "at the same time individually novices and collectively experts" (p. 46). It can be interpreted from these previously suggested notions and theories that in a language classroom, especially where each individual learner coming to the classroom with innumerable varieties regarding their language

and knowledge-wise experiences, collaboration among the individuals to compensate these differences in a harmonious way becomes a must, predominantly for such a challenging task as writing. The embedment of discussion in the current study before individual writing utilizes the social role of peer interactions as claimed by Li and Zhang (2021), these interactions capacitate collaborative scaffolding, the articulation of ideas, shared construction of knowledge, and even the shared use of linguistic properties if need be. Given the fact that discussion is the most practical and prevalent form of verbal interaction in a classroom environment, it has been chosen as a tool to scaffold learners writing. Moreover, Donato and Brooks (2008) assert that different language modes, spoken and written, feed one another to an extent that written and spoken output compensate for the deficiencies or strengths reciprocally. That is why, in the current study, discussion as a spoken mode has been chosen to expectedly enhance essay writing as written language mode by providing diversified language practice.

The use of visuals or integrating a strategy making use of visuals (VTS) is based on Dual Coding Theory (DCT). Cognition is a concept formed by verbal and non-verbal systems that have a role in language learning experience along with information processing. The dual coding phenomena is not only restricted to learning or language but also relevant to emotions and motor skills, but within the scope of the current study, the theory is used to account for the use of visuals in language learning. In the following figure 6, the basics of DCT are depicted.

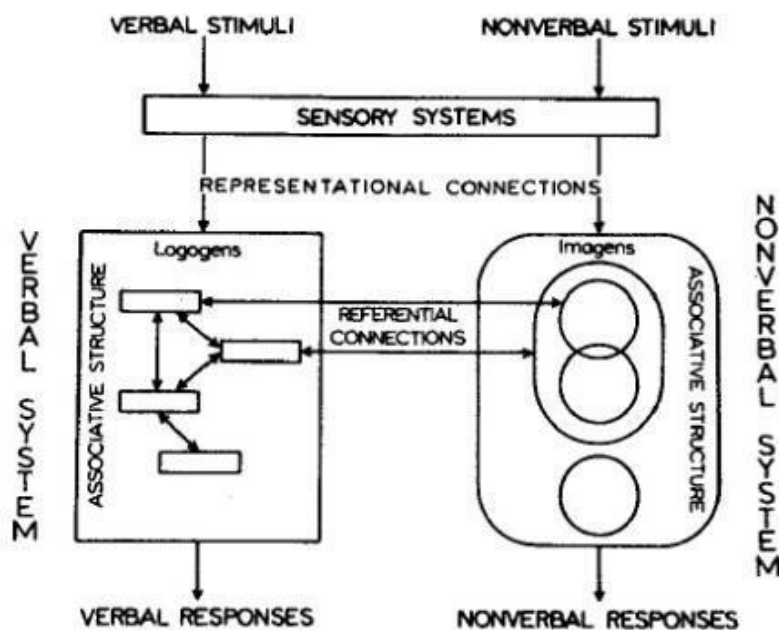


Figure 6. Verbal and non-verbal systems of DCT
 Source: [Clark and Paivio, 1991]

In DCT, there are mental structures and processes as depicted above. While structures are the mental networks and connections between the verbal and non-verbal representations, processes are responsible for the creation, development, and activation of those structures. The verbal subsystem beholds verbal codes that are arbitrary and are processed sequentially, whereas the other non-verbal subsystem beholds non-verbal codes that are not arbitrary and can be processed simultaneously such as shapes, sounds, actions, and even emotions (Clark and Paivio, 1991). Imaginary cues in this system have a dynamic nature and can go into spatial transformations, which is something unique to non-verbal representations. As it can be interpreted from the figure above, the connections between the two separate systems are called referential link that enables correspondence and a bridge between the systems, while the representations within the systems are connected via associative link that incorporates relations within the same modalities. Clark and

Paivio (1991) give the following examples; referential links enable imaging to words or naming to pictures and associative links enable words being connected to other words in a schema.

When it comes to the activation and development of mental representations, DCT predicts that they are not active all the time, thus previous knowledge and experience accumulated come into play. These mental representations being shaped by the external stimuli and processed within the individual mental filter, personal experiences in life can lead to diversity in the representations even though there are common mental structures shared by people due to the shared experiences. This perception of mental representations fall into the same line of the educational assumptions teachers can make both from a societal perspective and from an educational perspective. When a teacher comes into a classroom, she is aware of the fact that there will be individual differences in many aspects such as motivation, knowledge, interest, skills, etc. to be addressed accordingly and also that there will be a common ground where all the students stand on such as age group, previously studied subjects, cultural information (assuming a homogenous background), etc. All of these representing mental structures individuals create in their minds are based on their experiences in life as proposed by DCT. This means that providing that a teacher can access to these mental representations and can find a way to trigger them, it is possible to open a window for more effective learning and teaching experience. Clark and Paivio (1991) exemplify this by presenting pictures to the students or expecting students to produce images, which activates mental images along with the verbal structures. From an educational point of view, activating both systems at the same time have certain advantages owing to the fact that imagery system can integrate different objects or mental representations into one thanks to its

transformable and dynamic nature, concreteness and value of the images strengthen the connections and links created between mental structures, it caters for individual differences, and finally it enhances the memory capacity for the storage of knowledge and retaining of information. Clark and Paivio (1991) propose based on the aforementioned advantages that the activation of non-verbal system during the use of verbal system supplements the comprehension of texts further. The privilege on readability and memory brought by non-verbal systems has a lot to offer in educational contexts for comprehension and retention either in the short or long run. Moreover, non-verbal representations are claimed to stimulate emotions more than word-like codes affecting learners' motivation, anxiety, and interest levels correspondingly.

DCT's compatibility with higher order cognitive processes capacitates and eases its involvement in teaching strategies (e.g., the use of visuals in VTS discussions). In the current study, by adding artwork into the classroom discussions and writing tasks, in the light of DCT, what is aimed is the activation of verbal and non-verbal representations assuming that this will make the learning process more effective, ease the comprehension, enrichen the content, provide alternatives for individual learner needs, activate associated mental representations, make learning more interesting, make knowledge more accessible and retrievable, increase motivation, and add to the effectiveness of instruction.

In view of the literature review, the study aims to answer the following research questions:

1. Do classroom discussions incorporating VTS in a high school EFL classroom result with higher L2 writing performance and thinking skills?

2. Is there a difference between the effects of face-to-face VTS discussions and online VTS discussions on the students' L2 writing performance, thinking skills and attitudes towards writing?
3. How does incorporating VTS in the pre-writing stage affect students' attitudes towards L2 writing?
4. Is there a relationship among L2 writing performance, thinking skills, and attitude towards writing instruction?

CHAPTER 3

METHODOLOGY

3.1 Introduction

The chapter introduces the research design, setting, participants, instruments, data collection, and data analysis for the present study. The design of the current study is of a quasi-experimental nature. The instruments used are writing tasks, two scoring rubrics one for writing skills and the other for thinking skills, and questionnaires. The data collection and analysis procedures will be introduced in the ensuing sections in detail. The methodology that shapes the research aims to answer the following research questions:

1. Do classroom discussions incorporating VTS in a high school EFL classroom result with higher L2 writing performance and thinking skills?
2. Is there a difference between the effects of face-to-face VTS discussions and online VTS discussions on the students' L2 writing performance, thinking skills and attitudes towards writing?
3. How does incorporating VTS in the pre-writing stage affect students' attitudes towards L2 writing?
4. Is there a relationship among L2 writing performance, thinking skills, and attitude towards writing instruction?

3.2 Research design

The nature of the present study is of quasi-experimental that follows a mixed methods design. The quantitative data collected has been accompanied with qualitative data coming from the questionnaire results.

The researcher of the present study is also the teacher at the institution from which the data was gathered. The teacher-researcher position facilitated the research process in many ways. Firstly, the researcher was informed about the writing lessons (lesson planning, materials used, yearly plans, etc.), which eased the way of adjusting the lessons for the experimental purposes thanks to the familiarity. Secondly, the researcher was able to access a rater, who was also well-informed about the goals of the writing lessons, the materials, and the instruments (rubrics) used in the lessons, which in return eased the scoring process. Finally, being within the same institution with the participants, the researcher was able to observe them closely and reach them if need be.

A convenient sampling process was used for this study, three groups of participants were required and the teacher-researcher had access to three intact classes of ninth grades. Intact classes, however, were assigned as control and experimental groups randomly.

3.3 Setting

The institution where the study took place is a private high school in Istanbul. The state schools and private schools in Turkey have a different approach towards teaching English. For example, the writing lessons are not a priority in state schools. Yet, the private institution chosen for this study is an English medium school that prepares learners for education in Turkey and abroad. The goal is for EFL students to

graduate at C1 level of English (CEFR criteria) so that they can express themselves accurately and fluently in speaking and writing in academic and non-academic contexts. Since the school is an English medium one, there is a preparatory year for those who do not have sufficient proficiency to keep up with the academic agenda and English instruction in all the subject areas. To test learners' language proficiency, there is an institutional exam being done both in the form of written exam and oral exam. In the written part of the exam, the students are examined on their listening, reading, and writing skills; and in the oral exam, the students are tested for their speaking skills. The results of the examination follow CEFR criteria and the students are expected to be B2 level to pass the exam (equivalent to 80-90 in TOEFL IBT, 58 in PTE (Pearson Test of English), and 5- 6 in IELTS). Those who achieve B2 level skip to ninth grade and start their academic year. The participants of the study are those students who took this exam and were found to be at B2 level.

English lessons at the ninth grade level are categorized as Language and Skills, four lessons of Language course and two lessons of Skills course. In total, the students have six lessons of English on a weekly basis and each lesson is 40 minutes. Within the scope of the Language course, all four skills (listening, speaking, reading, writing) are practiced and there is a specific focus on the role of vocabulary and grammar for the development of these four skills. In the Skills course, there are two authentic English novels studied throughout the year and there is an emphasis on literature rather than language learning. The researcher teaches the Language course and the study is embedded in the writing instruction within the course.

The writing instruction in the institution has a process-oriented approach in that the writing process has a recursive pattern. The learners are presented with certain genres and their features, they receive feedback in the process, they are taught

about planning and editing, the opportunities for them to learn along the way are created e.g., problem-solving, and there is a chance for peer learning through collaborative tasks. The writing materials are prepared by the teachers at the institution by carrying out weekly level meetings. Starting from letter writing to essay, different genres are introduced with a focus on the differences between genres in conceptual understandings that are context, audience, meaning, variety, and purpose. The coursebook used in the lesson is Macmillan Education, Gateway 2nd edition B2 level, by David Spencer. The writing tasks assigned within the book are studied within the curriculum along with the booklets and packs teachers prepare based on learner needs and lesson goals. All the classrooms in the institution have a smartboard and learners have access to the internet and are allowed to use their technological devices under the supervision of the course teacher. In case the teacher wants to do a lesson on desktops, there is a computer laboratory as well. In the digital VTS group, the lessons were carried out in the computer lab to make sure that every participant had access to the internet and a computer. The platform choice for the discussions is more user-friendly on a desktop rather than a mobile device. There is a program that enables teachers to keep track of student activities in the computer lab, which ensured that the participants were on task during the lesson.

The data collection was completed at a time when the whole world was experiencing something unexpected, Covid-19 pandemic. The data was collected during Fall term of 2021-2022 academic year. At the beginning of the study, all the groups had an equivalent number of participants ($n = 24$). However, at the end of the study, the attendance of the participants was disrupted due to the health issues and this influenced the numbers in groups. We were at a time, the lessons were prepared for all possible conditions, sometimes they were carried out face-to-face, sometimes

online through video conferencing, and sometimes hybrid; partly face-to-face and partly through video conferencing, and at times some students could not join in any of them because they were diagnosed with Covid-19. The continuous attendance throughout the experiment was crucial because the study followed a pre-test and post-test design. After the participants took part in the pre and post-tests, to see the impact of the manipulation they were expected to be present in each of the lessons for the four weeks of experimentation and also take part in the pre and post questionnaires. After the attendance was taken into account, some data were eliminated and the final numbers for the groups were as follows: Control ($n = 18$), Non-digital VTS ($n = 20$), and Digital VTS ($n = 12$). These were the participants who took part in the whole process with full attendance, in the pre-test, post-test, pre-questionnaire, post-questionnaire, and all four lessons during intervention.

3.4 Participants

For this research, three intact classes were selected through convenient sampling from the institution the researcher was working at. The researcher had three classes of ninth graders and the students were randomly assigned to their classes by the school administration. All classes in the institution have 24 student quota and these three classes also had 24 students. One control and two experimental classes as digital VTS and non-digital VTS were assigned randomly. As previously mentioned, the numbers of the groups decreased after the intervention due to the Covid-19 affected situations. The final numbers for the groups were as follows: Control ($n = 18$), non-digital VTS ($n = 20$), and digital VTS ($n = 12$). Overall, 50 students participated in the study. All the participants were Turkish, speaking Turkish as their native language. They had been learning English as a foreign language and had an

intermediate level proficiency in English at the time of the data collection. Even though the amount of exposure to English may differ from person to person, all of them had been exposed to it in a classroom setting since second grade in line with the Ministry of Education curriculum.

In order to receive further information about the participants, their experiences with English learning, and the contexts and habits in which they had come across with English, a background questionnaire was administered before the pre-questionnaire (see Appendix A). The results of the inventory are summarized in Appendix B. The background questionnaire provides information about age, gender, exposure to L2, L2 writing practice habits outside the school, participants' perception of their writing skills, and how often they make use of L2 writing in their lives.

3.5 Instruments

This section describes the instruments used to collect data and the artwork used in the discussions during the intervention process. The data was collected through a questionnaire, writing tasks, and scoring rubrics. In this section, the rationale for the instrumentation will be provided in addition to the scoring procedure.

3.5.1 Writing tasks

In order to test learners' writing skills, a text type which learners are already familiar with has been chosen; essay. It is also one of the most common text types that are commonly used in academic settings. What specific type of an essay to choose has been decided based on the lesson curriculum and the agreement between the discussion task and the writing task; opinion essay. Also, the discussions are wrapped around an artwork, that is why in the writing task, the participants are asked

to give their opinion based on a discussion question by supporting it with arguments and providing justifications and evidence. This way, the line of thinking is also preserved and ideas are transferred from discussions to writings. Another reason why an argument task; opinion essay, has been applied as a writing task is the concern for observing the thinking process involved in the writing. It is believed that opinion essays as its structure and requirements facilitate the required flexibility for idea organization and presentation.

3.5.1.1 Pre-test and post-test

The specific writing task used in the pre-test and post-test were adapted from a previous study (see Appendix C). Li and Zhang (2021) carried out a study to observe the impact of pre-writing discussions on Chinese EFL learners' writings. For the writing test, they chose an argumentative task for the following reasons; firstly, it is a common task in national and international language tests (as it is in Turkey) and secondly, it is widely applied and accepted in language studies. In order to ensure that the reliability of the writing task is high, what was done in the current study can be explained in two-fold: a task done on a previous study was applied and a pilot test was carried out to detect any possible hinders to the study design at any aspect including the writing task choice. The pilot test showed that the student group chosen from the same institution did not experience any difficulty understanding the task and fulfilling the requirements of the task, and that the students were motivated to answer the questions and were engaged with the task during the whole process.

In the pre-test and the post-test, the same writing task with the same prompt was used in order to analyze the differences in writing and thinking skills on the same topic by keeping the topic choice constant. There were four weeks between the

two tests, which is accepted as adequate time to be spent to prevent any carryover effect because of the time interval.

The writing tasks have the following design:

- i. Writing topic
- ii. Question
- iii. Guiding instructions

The guiding instructions have been adapted from Neumann and McDonough (2015) by Li and Zhang (2021) to assist the learners in the process of organizing their ideas and presenting them in an arranged manner. The participants were given 40 minutes to complete the task and were not allowed to use dictionary because one of the criteria assessed on the rubric was vocabulary.

3.5.1.2 Intervention tasks

During the four weeks of intervention, the participants had one period of discussion and one period of writing. While the discussions were wrapped around an artwork, the writing tasks were not directly linked to the artwork. After each discussion on the artwork, the participants were given a writing task with an opinion essay question that was somehow linked to the artwork in that all the discussions and writings shared the same theme. Since the writing tasks were prepared based on the same theme, the artwork was not provided during the writing task. However, it was observed that the participants were able to create a connection between the artwork and the writing task naturally because they were chosen and designed around the same theme. The genre of the task was an argument task again as it was in pre and post-tests and the task design followed the same structure (see Appendix D for the intervention writing tasks). The participants were given 40 minutes to complete the

writing tasks and not allowed to use dictionary because one of the criteria assessed was vocabulary.

3.5.2 Scoring rubric

The assessment in L2 writing studies is implemented with holistic measures focusing on quality overall, analytic measures focusing on sub-components of writing, and objective measures that are token ratios (e.g., words per T-unit) (Polio and Williams, 2009). In the current study, the aspects evaluated were writing skills and thinking skills. For the aspects, two separate rubrics were selected and applied.

3.5.2.1 Writing rubric

Holistic scores enable an overall score for learner performance while analytic scores enable detailed information about the strengths and weaknesses in the performance. Both of the scores bring about a different perspective for analysis, that is why in the current study, a rubric that provides both holistic and analytic data was chosen (see Appendix E). Another reason why this rubric was chosen is that it has been widely used in ESL studies (Weigle, 2002). The rubric was originally developed by Jacobs, Zinkgraf, Wormuth, Hartfiel, and Hughey (1981) and revised by Hedgcock and Lefkowitz (1992) as an ESL Composition profile to be used for different essay types. The written texts were analyzed holistically and analytically according to their content, organization, vocabulary, language use, and mechanics. Each aspect was weighted at different rates. Content aspect of the rubric concentrates on the relevance to topic, the development of ideas, the information provided on the topic, and the background knowledge on the topic. Organization aspect focuses on fluency, the presentation of ideas, the flow of ideas and transitions, cohesion, and coherence.

Vocabulary aspect is centered around a range of vocabulary items, appropriate word choices, style, meaningful usage, and accuracy. Language use aspect centralizes sentence structure, grammar rules, meaningfulness, and accuracy. Finally, mechanics aspect focuses on conventions, punctuation, and spelling.

3.5.2.2 Thinking rubric

One of the main focuses of the current study is to check if VTS can escalate thinking and trigger higher order thinking skills. The thinking process in the study is accompanied with the questions directed during the discussions, the use of artwork, and the usage of VTS. To test the thinking skills or aspects involved in the writing, and to examine the differences before and after the intervention regarding the thinking, a separate rubric was used; six continua for thinking (see Appendix F). This is a rubric created for Harvard Zero Project with Artful Thinking Approach to diagnose the depth and quality of thinking. By using the power of artwork, the project aims to create connections with the topic taught and the artwork chosen conducive to the development of thinking aspects (Jaros, 2012). The rubric has six aspects that can be named as depth, clarity, elaboration, dimensional thinking, restrictiveness, and insightfulness. Each aspect is evaluated on a continuum from one to four. Depth criterion questions whether the given explanation goes beyond the given data or it involves superficial explanation with general statements; clarity criterion checks whether the ideas presented are focused, organized, structured, purposeful, and easy to follow or not; elaboration criterion assesses whether any details, imagination, and description is provided to go further than too simple or general ideas; dimensional thinking criterion evaluates the level of complexity, meaning, layers and different perspectives involved; restrictiveness criterion checks

if the thoughts are limited or rich in curiosity, inquiry, and generating new ideas; and finally insightfulness criterion tests whether the significant issues are addressed and the gist is comprehended or not. The underlying reasons behind the choice of the rubric are that it is generated to test artful thinking to be used in an artwork-applied context, which is quite in line with the study design (e.g., Jaros, 2012), that it provides an analytic and holistic measure for thinking, and that the criteria determined in the rubric are aligned with VTS in that it involves elements related to depth, details, evidence, and dimensions, which are the main aspects VTS aims to intensify in thinking.

3.5.3 Scoring procedure

The writing tasks were collected as hardcopies and the names of the participants were replaced with numbers to enable the confidentiality of the participants and to eliminate the researcher bias by recognizing the participants since the researcher was also the teacher at the institution. Including the pre-test and post-test, there were 100 papers to be evaluated.

The researcher and another teacher working in the same institution marked the papers. Before the scoring procedure started, both the researcher and the teacher held a rubric training together. In this training session, the rubrics were introduced and the details were discussed and interpreted. Then, some sample opinion essays, not from the study, were evaluated using the two rubrics and the results were discussed. Once the scores of the raters balanced out, the scoring procedure started. A blind assessment was carried out in that the raters did not know whose paper they were marking and which paper they were marking (whether pre or post; whether

experimental or control). Each paper was marked by the two raters and marks were put into an Excel document and at the end they were compared.

3.5.4 Questionnaires

One of the research questions guiding the study was the attitude of learners towards L2 writing instruction and if the intervention caused any changes on their attitudes. In order to determine the attitude and the changes, a pre and a post questionnaire were administered.

3.5.4.1 Background questionnaire

The pre-questionnaire applied before the intervention had a part to collect demographic information and also learn more about the background of the participants. The reason for adding this section was to make sure that the participant groups were homogenous for example, in terms of exposure to the target language and sampling process was reliable enough to carry out a study. The questionnaire aimed to collect participants' data regarding age, the amount of time the participant had been exposed to English, being abroad, English practice habits, the perception of writing and speaking skills in English, the frequency of using English to write, and the difficulties faced when writing in English.

3.5.4.2 Pre-questionnaire and post-questionnaire

Pre and post questionnaires were adapted from Al Kamli (2018). The pre-questionnaire had constructs on enjoyment (six items), ease (five items), ability (seven items), and strategy use (five items), overall, 23 items (see Appendix G). The items were rated from one (strongly disagree) to five (strongly agree) on a Likert

Scale. Al Kamli (2018) checked the correlation among the questionnaire items and found that all the items except the two had significant correlation with the total score at 0.01 level and as a result discarded the two items. When it comes to the reliability, Cronbach's Alpha results showed that reliability coefficient was high in all the constructs of the questionnaire ranging between 0.714 to 0.824. The same pre-questionnaire was conducted in the three groups before the treatment.

When it comes to the post-tests, the control group had the same questionnaire with the pre-test since it is the control group and there was no change in the way lessons were done. Experimental groups had a separate questionnaire because of the changes in the discussions embedded with VTS. Even though the items on the questionnaire regarding enjoyment, ease, ability, and strategy use were kept the same, there were additional open-ended questions to get a deeper understanding of the experimental groups attitude and perception towards the intervention. That way, the qualitative data was gathered to support the quantitative and to gather further information about the attitudes of learners considering that there might have been aspects that were not predicted by the questionnaire. All the open-ended items between the groups were the same, only the wording was changed depending on the setting; face-to-face or online. So, the open-ended items were centered around rating the following components; L2 writing competence, usefulness of the visuals for the discussions, the capacity of discussions with visuals to assist L2 writing, affective aspect of the discussions, and additional comments to make.

3.5.5 Artwork

VTS is centered around the use of a visual input in the present study. However, any type of input can be analyzed with VTS, even a reading text can be used as a

stimulus or when it comes to the visuals, any type can be used, yet the most common stimulus to be used with VTS is artwork. For the present study, artwork was chosen for the following reasons: (1) it makes the observer go beyond what is given (Yenawine, 1999), (2) it facilitates interpretation and reflection (Landorf, 2006), (3) it highlights creativity, attention to detail, and cultural awareness (Williams et al., 2016), and (4) it triggers questioning and critical thinking thanks to its multi-layered structure (Yenawine and Miller, 2014).

The pilot test showed that a real life visual did not facilitate sufficient learner engagement with the visual especially when learners were not interested in the topic, whereas in the artwork, the engagement was more because of the art value, multi-layered structure and openness to difference of opinion depending on the perspective and background knowledge. After this observation, detailed research on the artwork to be used as the stimulus was done. Famous paintings, artwork used in other studies, and suggestions from other teachers including the art teachers were gathered and evaluated. The final decision was made among the last 16 visuals and four of them were chosen (see Appendix H). The four was chosen in collaboration with an art teacher as the art teacher had more ideas about learners' perception, ability, and knowledge regarding art. The chosen artwork was meticulously evaluated by the two teachers concerning its openness to interpretation and discussion, appropriateness, accessibility, creativity in analysis, familiarity, complexity, layers in meaning, ambiguity, and difficulty.

3.6 Discussions

The study design dictates a discussion session before a writing task is given. In all the groups involved in the study, there was a discussion, yet there were differences in

the nature of the discussions. All the discussions included the artwork but the approach to the artwork changed from group to group.

In the control group discussions, the artwork was presented on the smartboard and the discussion was initiated by the question of “What do you see in the picture?”, which is a typical description question commonly addressed to a visual input. Afterwards, the participant comments guided the discussions in which the participants commented both on the visual and one another’s comments. The researcher did not guide the discussion, only moderated it by leading the turn-taking, paraphrasing, if need be, and keeping the topic relevant to the visual. The participants were expected to actively take role in the discussion while closely listening to the comments.

In the experimental groups, either online or face-to-face condition, the discussions were embedded with VTS contrary to the control group. The participants were presented with the artwork and asked the question of “What is going on in this picture?”. Every comment that answered this question was followed by the questions of “What do you see that makes you say that?” to justify every comment or argument, and “What else can you find?” to make them observe more and think deeper on the details. The epitome of applying VTS is the reinforcement of the repetition of these questions so that the learners adapt to this way of thinking and analyzing a visual (Yenawine, 1999). In the core of all the discussions, these three questions were repeated and reinforced in a way that the participants started answering to those questions without being addressed with them. It was clear that the participants already adapted to this thinking and questioning pattern.

The intervention applied in the study focuses on the thinking skills along with the writing skills. In order to foster the development of ideas and argument, the depth

in thinking, analysis, the number of contributions to the discussion, and peculiar skills relevant to thinking, VTS questions were backed up with additional questions. To adapt the VTS questions, a commonly accepted taxonomy was utilized; Bloom's Taxonomy. Even though the strategy itself focuses on higher order thinking skills, there is no direct connection to the taxonomy. However, McGuire (2016) created a connection between VTS and Bloom's Taxonomy and formed questions following the categorization of Bloom's taxonomy and in the light of VTS questions (see Appendix I). In the present study, the researcher formed questions parallel to the ones in the table for each artwork to support the discussions with guiding questions. As justified before, the aim is to engage learners with higher order thinking skills along with the VTS. The questions formed for each discussion and artwork can be found in Appendix J.

What McGuire (2016) implemented to facilitate vocabulary learning is to design VTS activities in line with the taxonomy. For each level of the taxonomy (e.g., comprehension), measurable verbs (e.g., discuss) define what the participants are expected to achieve regarding the target vocabulary, in a way to shape the objectives at that level to be reached (e.g., discussing ideas). In line with the level, a VTS activity is designed (e.g., explaining observations). The questions raised in the discussions can be enhanced in a similar manner to categorize the development in thinking starting from lower to higher order thinking skills by creating a structured development to be easily and flexibly followed and formed by the discussion moderator. For the present study, the questions to be directed in the VTS discussions were prepared in a similar line of argument. Both experimental groups followed the exact same design for the discussions, the only difference between the two was the setting. In non-digital VTS group, the setting was classroom and discussions were

carried out face-to-face, whereas in digital VTS group, the setting was a digital discussion platform (Parlay.com). See Appendix K to see the screenshot for how the discussions were designed or carried out on the online platform. The platform chosen enables both synchronous and asynchronous discussions, for the study only the synchronous option was utilized. The participants were able to post their own comments, read one another's comments, and comment on each other's posts. The researcher was able to moderate the discussions and whether the participants were on task because the participants were taken to a computer lab for 40 minutes to carry out the online discussions. Moreover, the participants were trained on the platform before the treatment and they used the platform for a pilot discussion to prevent any possible effect of unfamiliarity of the tool on the online discussions.

3.7 Data collection

Since the participants of the study are under the age of 18 and the institution is under the jurisdiction of Ministry of Education, there was an additional process to be followed by the Ministry of Education in addition to the ethical committee of the university. After every document was presented to the Ministry of Education, there were a few meetings about the nature of the study and its possible impacts on the learners. All the instruments and data collection process were presented at length and finally the study was found appropriate to be carried out and there were no ethical issues to reject the study.

After the approval of Ministry of Education, ethics committee of the university also approved the study (see Appendix L) and then the research process officially started. First of all, the students were informed about the research generally (not giving any details about the research questions or the manipulation) and their

consents were taken. Since they are under the age of 18, parents also signed a consent form. After all the official procedures were completed, three classes were randomly assigned to be control or experimental groups. Before the treatment, a pilot test, with a different group of students at the same institution, was executed for all groups to detect any handicap for the study and the changes made based on the pilot test are to be reported in the related sections. After the pilot test, at the first phase, a pre-test and a pre-questionnaire were applied to detect where participants stood with respect to L2 writing skills, thinking skills, and attitude towards L2 writing instruction. After four weeks of experimentation, a post-test and a post-questionnaire were applied to analyze any possible differences in aforementioned aspects. Only the digital VTS group went through an additional training on the online platform to be used with a pilot discussion to make them familiar with the tool.

During the four weeks of intervention, two of the English lessons (four lessons of English weekly), which last 40 minutes each, were separated for the study. One lesson for the discussions and one lesson for the writing. Control group and non-digital VTS group stayed in the regular classroom the whole study, while the digital VTS group used the computer lab for the discussion session. The first two groups carried out the discussion orally in the classroom setting whereas the third group continued their discussions synchronously on an online platform in a written format. All the discussion sessions started with the presentation of the artwork and silence period being given for the participants to think and observe. After the silent observation, the discussions were carried out as explained in part 3.6. The researcher chose two consecutive lessons to implement the study so that discussions were immediately followed by the writing task. The second lesson of the day, the participants were given the writing task on an A4 paper with the instructions. The

participants had 40 minutes to complete the task, they were allowed to ask questions to the researcher (not to disturb the regular way of lessons being done) but were not allowed to use a dictionary. The researcher did not answer any questions that would interfere with the assessment criteria for writing and thinking. All the writing prompts, discussion questions, and visuals are presented in Appendix M. After the 40 minutes, the samples were collected and secured in an envelope after the names were replaced with participant numbers. The same procedure was applied for all of the four tasks. The summary of the data collection procedures is presented in the following table.

Table 4. Data Collection Process

	Control Group	Experimental Group 1	Experimental Group 2
PILOT TEST	A pilot test was carried out with different two groups of ninth graders in the same institution for VTS discussions		
Week 1	<ul style="list-style-type: none"> • Completion of consent forms • Background questionnaire • Pre-questionnaire • Pre-test 	<ul style="list-style-type: none"> • Completion of consent forms • Background questionnaire • Pre-questionnaire • Pre-test 	<ul style="list-style-type: none"> • Completion of consent forms • Background questionnaire • Pre-questionnaire • Pre-test • Training on the online platform
Week 2	<ul style="list-style-type: none"> • Session 1: Discussion without VTS • Session 2: Writing Task 	<ul style="list-style-type: none"> • Session 1: Discussion with VTS (face-to-face) • Session 2: Writing Task 	<ul style="list-style-type: none"> • Session 1: Discussion with VTS (online) • Session 2: Writing Task
Week 3	<ul style="list-style-type: none"> • Session 1: Discussion without VTS • Session 2: Writing Task 	<ul style="list-style-type: none"> • Session 1: Discussion with VTS (face-to-face) • Session 2: Writing Task 	<ul style="list-style-type: none"> • Session 1: Discussion with VTS (online) • Session 2: Writing Task
Week 4	<ul style="list-style-type: none"> • Session 1: Discussion without VTS • Session 2: Writing Task 	<ul style="list-style-type: none"> • Session 1: Discussion with VTS (face-to-face) • Session 2: Writing Task 	<ul style="list-style-type: none"> • Session 1: Discussion with VTS (online) • Session 2: Writing Task
Week 5	<ul style="list-style-type: none"> • Session 1: Discussion without VTS • Session 2: Writing Task 	<ul style="list-style-type: none"> • Session 1: Discussion with VTS (face-to-face) • Session 2: Writing Task 	<ul style="list-style-type: none"> • Session 1: Discussion with VTS (online) • Session 2: Writing Task
Week 6	<ul style="list-style-type: none"> • Post-test • Post Questionnaire 1 	<ul style="list-style-type: none"> • Post-test • Post Questionnaire 2 	<ul style="list-style-type: none"> • Post-test • Post Questionnaire 3

3.8 Data analysis

The conformity of the numerical variables to the normal distribution was checked with the Shapiro-Wilk Test. The summary statistics of numerical variables were given as mean \pm standard deviation ($\bar{X} \pm SD$) for normally distributed data, and median (min-max) values for non-normally distributed data. The paired sample t-test was used in the comparison of two dependent groups that were normally-distributed, and the Wilcoxon Signed Ranks Test was used in the comparison of two dependent groups that did not follow normal distribution. The One-Way ANOVA Test was used in the comparison of more than two independent groups with normal distribution, and the Kruskal-Wallis H Test was used in the comparison of more than two independent groups without normal distribution. The relationships between the scales regarding writing performance, thinking skills, and attitude towards writing instruction were examined by the Pearson Product Moment Correlation Coefficient. In the interpretation of the correlation coefficient, the values accepted were as follows: very weak correlation: < 0.2 , weak correlation $0.2 - 0.4$, moderate correlation $0.4 - 0.6$, high correlation $0.6 - 0.8$ and very high correlation > 0.8 (Choi, Peters, and Mueller, 2010). In all calculations and interpretations of the study, the statistical significance level was considered as $p < 0.05$, $p < 0.01$, $p < 0.001$ and the hypotheses were established as bidirectional. Statistical analysis of the data was done with SPSS v26 (IBM Inc., Chicago, IL, USA) statistical package program.

CHAPTER 4

RESULTS

4.1 Introduction

In this chapter, the findings of the data analysis procedure are presented. The groups of results to be presented are categorized as L2 writing performance, thinking skills, and attitude towards writing instruction. The results regarding the relationship among writing performance, thinking skills, and attitude are also reported.

4.2 Findings on L2 writing performance

L2 writing performance of the participants was evaluated using a rubric that offers both holistic and analytic scores. The constructs evaluated for the overall writing performance were content, organization, vocabulary, use of language, and mechanics. In order to address the impact of the intervention on the participants' writing performance, pre-test and post-test results were compared and the results are given in Table 5. The tests applied to the data were both parametric and non-parametric tests. Since the participant numbers are quite limited, all of the data did not follow normal distribution. That is why, parametric tests were applied to the data that had normal distribution whereas non-parametric tests were applied to the data that did not have normal distribution. All the data was examined for the outliers as well but there were no outliers.

Table 5. L2 Writing Performance Pre-Test and Post-Test Results

	Non-Digital VTS Group		Digital VTS Group		Control Group	
	$\bar{X} \pm SD$	Median (min-max)	$\bar{X} \pm SD$	Median (min-max)	$\bar{X} \pm SD$	Median (min-max)
Content – Pre-Test	19.15±4.57	18.75 (13-26)	19.58±4.88	18.25 (14-27)	16.81±4.98	14.5 (11.5-27.5)
Content – Post-Test	20.32±4.64	21 (13-27.5)	20.17±4.06	20.25 (14.5-28)	19.19±4.49	19.75 (13-27.5)
t-W		-0.860		-0.870		-2.092
p		0.400		0.384		0.036*
Organization – Pre-Test	12.73±3.24	13.25 (7-18)	13.25±2.66	13.5 (8.5-17)	10.25±3.79	9.25 (7-18)
Organization – Post-Test	14.72±3.50	16 (7-18)	14.25±2.39	14.5 (8.5-17)	13.28±3.48	13.5 (7-18)
t-W		-1.941		-3.250		-2.772
p		0.052		0.008**		0.006**
Vocabulary – Pre-Test	11.45±3.12	11.5 (7-17.5)	12.71±2.62	12.75 (7.5-18)	11.08±3.96	9.75 (7-19)
Vocabulary – Post-Test	13.85±3.36	14 (7-18.5)	13.00±3.60	13.75 (7-17.5)	13.42±3.93	13 (7-20)
t-W		-2.922		-0.423		-2.776
p		0.009**		0.680		0.006**
Use of Language – Pre-Test	15.13±4.96	16.5 (5-22.5)	17.13±3.47	17.75 (10.5-21.5)	12.86±5.43	10.75 (6-22.5)
Use of Language – Post-Test	16.95±5.10	17.5 (5-25)	17.96±3.54	18 (8-21.5)	14.69±5.57	13.25 (5-24)
t-W		-1.685		-0.970		-1.809
p		0.108		0.332		0.070
Mechanics – Pre-Test	3.15±0.92	3 (2-5)	4.04±0.58	4 (3-5)	3.19±0.93	3 (2-5)
Mechanics – Post-Test	3.63±0.99	3.75 (2-5)	3.67±0.054	4 (3-4.5)	3.33±0.64	3.25 (2-4)
t-W		-1.957		-1.983		-0.806
p		0.050		0.047*		0.420
L2 Writing Performance Total – Pre-Test	61.60±14.55	63.5 (34-82)	66.71±12.84	64.75 (44.5-86.5)	54.19±17.74	50 (37-89.5)
L2 Writing Performance Total – Post-Test	69.48±14.70	74.75 (34-85)	69.04±13.00	72.75 (41-88)	63.92±16.39	62 (33.5-93.5)
t-W		-2.054		-1.349		-2.853
p		0.040*		0.205		0.004**

t: Paired Sample T Test; W: Wilcoxon Signed Rank Test

*p < 0.05; **p < 0.01

In order to determine whether the L2 writing performance pre-test and post-test scores of the non-digital VTS group changed, the paired sample t test and Wilcoxon signed rank test were conducted. It was found that there was a statistically significant difference in vocabulary construct ($t = -2.922$; $p < 0.01$) and L2 writing performance total scores ($W = -2.054$; $p < 0.05$). There was no statistically significant difference in the other constructs.

To identify whether the L2 writing performance pre-test and post-test scores of the digital VTS group changed, the paired sample t test and Wilcoxon signed rank test were conducted and the results are given in Table 5. It was found that there was a statistically significant difference in organization ($t = -3.250$; $p < 0.01$) and mechanics ($W = -1.983$; $p < 0.05$) constructs, there was no statistically significant difference in the other constructs.

In order to detect whether the L2 writing performance pre-test and post-test scores of the control group changed, the paired sample t test and Wilcoxon signed rank test were conducted and the results are given in Table 5. It was found that there was a statistically significant difference in content ($W = -2.092$; $p < 0.05$), organization ($W = -2.772$; $p < 0.01$), vocabulary ($W = -2.776$; $p < 0.01$) and L2 writing performance total score ($W = -2.853$; $p < 0.01$), there was no statistically significant difference in the other constructs.

In order to determine whether the L2 writing performance difference scores of the non-digital VTS, digital VTS group, and control group changed, One-Way ANOVA test was conducted and the results are given in Table 6.

Table 6. Comparison of L2 Writing Performance Results

	Group	$\bar{X} \pm SD$	Median (min-max)	F	p
Content – Difference Score (Δ)	Non-Digital VTS Group	1.17±6.11	0.50 (-10.5-14)	0.533	0.591
	Digital VTS Group	0.58±3.09	0.50 (-4-8)		
	Control Group	2.39±4.54	2.75 (-7-9.5)		
Organization – Difference Score (Δ)	Non-Digital VTS Group	2.00±4.46	2.50 (-8-8)	1.184	0.315
	Digital VTS Group	1.00±1.07	1.00 (-0.5-2.5)		
	Control Group	3.03±3.50	3.50 (-5.5-7.5)		
Vocabulary – Difference Score (Δ)	Non-Digital VTS Group	2.40±3.67	1.75 (-3.5-9.5)	1.892	0.162
	Digital VTS Group	0.29±2.39	0.25 (-4-4)		
	Control Group	2.33±3.16	1.50 (-4.5-9.5)		
Use of Language – Difference Score (Δ)	Non-Digital VTS Group	1.83±4.84	1.25 (-8.5-11)	0.283	0.755
	Digital VTS Group	0.83±2.57	0.75 (-3-5)		
	Control Group	1.83±3.70	1.75 (-4-9.5)		
Mechanics – Difference Score (Δ)	Non-Digital VTS Group	0.48±0.97 ^b	0.50 (-1-2)	4.219	0.021*
	Digital VTS Group	-0.38±0.57 ^a	-0.25 (-1.5-0.5)		
	Control Group	0.14±0.72 ^{ab}	0.00 (-1-1.5)		
L2 Writing Performance Total – Difference Score (Δ)	Non-Digital VTS Group	7.88±15.95	10.75 (-25.5-35)	1.269	0.291
	Digital VTS Group	2.33±5.99	1.75 (-6.5-16.5)		
	Control Group	9.72±11.69	8.50 (-8.5-33)		

F: One-Way ANOVA Test

* $p < 0.05$

a, b: The difference between the means without a common letter is significant ($p < 0,05$)

It was found that there was a statistically significant difference in mechanics ($F = 4.219$; $p < 0.05$), but there was no statistically significant difference found in the other constructs.

4.3 Findings on thinking skills

The participants' performance in thinking skills was evaluated using a rubric in the format of a continuum, 6 continua for thinking. The rubric provided holistic and analytic scores. The constructs of thinking skill were as follows: depth, clarity, elaboration, dimensional thinking, restrictiveness, and insightfulness. The analytic scores gained for the six constructs combined to form a holistic score for overall thinking skills. The pre-test and post-test scores of the three groups were compared with paired samples t-test and the results are given in Table 7.

Table 7. Thinking Skills Pre-Test and Post-Test Results

	Non-Digital VTS Group		Digital VTS Group		Control Group	
	$\bar{X} \pm SD$	Median (min-max)	$\bar{X} \pm SD$	Median (min-max)	$\bar{X} \pm SD$	Median (min-max)
Depth – Pre-Test	1.85±0.73	2 (1-3)	1.79±0.81	2 (1-3,5)	1,83±0,87	1,75 (1-3,5)
Depth – Post-Test	1.87±0.70	2 (1-3.5)	2.00±0.48	2 (1-2,5)	1,69±1,67	2 (1-3)
W		-0.141		-1.063		-0.997
p		0.888		0.288		0.319
Clarity – Pre-Test	1.83±0.71	2 (1-3)	1.83±0.65	2 (1-3)	1,78±0,99	1,5 (1-4)
Clarity – Post-Test	1.85±0.71	2 (1-3.5)	1.92±0.60	2 (1-2,5)	1,78±0,65	2 (1-3)
W		-0.249		-0.702		-0.325
p		0.803		0.483		0.745
Elaboration – Pre-Test	1.72±0.70	2 (1-3)	1.67±0.78	1,5 (1-3,5)	1,67±0,79	1,5 (1-3,5)
Elaboration – Post-Test	1.83±0.86	1.5 (1-4)	1.71±0.72	1,75 (1-3)	1,44±0,68	1 (1-3)
W		-0.265		-0.170		-1.218
p		0.791		0.865		0.223
Dimensional Thinking – Pre-Test	1.35±0.46	1 (1-2)	1.50±0.64	1,25 (1-3)	1,50±0,86	1 (1-3,5)
Dimensional Thinking – Post-Test	1.70±0.64	1.75 (1-3)	1.54±0.50	1,75 (1-2)	1,31±0,42	1 (1-2)
W		-1.952		-0.272		-0.900
p		0.051		0.785		0.368
Restrictiveness – Pre-Test	1.53±0.57	1.5 (1-3)	1.71±0.72	1,75 (1-3)	1,92±0,86	2 (1-4)
Restrictiveness – Post-Test	1.88±0.92	1.5 (1-4)	1.75±0.69	2 (1-2,5)	1,47±0,70	1 (1-3)
W		-1.121		-0.289		-2.157
p		0.262		0.773		0.031*
Insightfulness – Pre-Test	1.58±0.67	1.25 (1-3)	1.75±0.54	2 (1-2,5)	1,67±0,87	1,25 (1-4)
Insightfulness – Post-Test	1.95±0.83	2 (1-3.5)	1.79±0.66	2 (1-2,5)	1,67±0,69	1,75 (1-3)
W		-1.301		-0.378		-0.155
p		0.193		0.705		0.877
Thinking Skills Total – Pre-Test	9.85±3.19	9.75 (6-17)	10.25±3.76	9 (6-18,5)	10,36±4,71	9 (6-21,5)
Thinking Skills Total – Post-Test	11.08±4.33	10.5 (6-21.5)	10.71±3.29	12,25 (6,5-14,5)	9,36±3,42	8,25 (6-17)
t-W		-0.993		-0.624		-1.258
p		0.333		0.532		0.208

t: Paired Sample T Test; W: Wilcoxon Signed Rank Test, *p < 0.05

In order to determine whether the thinking skills pre-test and post-test scores of the non-digital VTS group reveals the impact of the intervention, paired sample t-test and Wilcoxon signed rank test were conducted and the results are given in Table 7. There was no statistically significant difference found among depth, clarity, elaboration, dimensional thinking, restrictiveness, insightfulness, and thinking skills total scores.

When it comes to the results of Digital VTS group, the paired sample t-test and Wilcoxon signed rank test were conducted and the results are given in Table 7. The results revealed no statistically significant difference among depth, clarity, elaboration, dimensional thinking, restrictiveness, insightfulness, and thinking skills total scores.

When it comes to the results of control group, the paired sample t-test and Wilcoxon signed rank test were conducted and the results are given in Table 7. It was found that there was a statistically significant difference for restrictiveness construct ($W = -2.157$; $p < 0.05$), yet there was no statistically significant difference between depth, clarity, elaboration, dimensional thinking, insightfulness and thinking skills total scores.

The difference scores of non-digital VTS group, digital VTS group, and control group regarding thinking skills were compared to detect the level of impact of the intervention on different groups and the results are given in Table 8. One-way ANOVA test and Kruskal-Wallis H test were conducted and the results found no statistically significant difference in any of the constructs of thinking and the overall thinking skills score.

Table 8. Comparison of Thinking Skills Results

	Group	$\bar{X} \pm SD$	Median (min-max)	F-H	p
Depth – Difference Score (Δ)	Non-digital VTS Group	0.03±0.94	0 (-1.5-2)	2.183	0.336
	Digital VTS Group	0.21±0.72	0 (-1.5-1.5)		
	Control Group	-0.14±0.59	0 (-1.5-1)		
Clarity – Difference Score (Δ)	Non-digital VTS Group	0.03±0.83	0 (-2-1.5)	0.389	0.823
	Digital VTS Group	0.08±0.63	0 (-1.5-1)		
	Control Group	0.00±0.69	0 (-2-1)		
Elaboration – Difference Score (Δ)	Non-digital VTS Group	0.10±1.10	0 (-2-2)	0.280	0.869
	Digital VTS Group	0.04±1.08	0 (-2-2)		
	Control Group	-0.22±0.73	0 (-2.5-0.5)		
Dimensional Thinking – Difference Score (Δ)	Non-digital VTS Group	0.35±0.75	0.25 (-1-2)	3.250	0.197
	Digital VTS Group	0.04±0.66	0 (-1.5-1)		
	Control Group	-0.19±0.86	0 (-2.5-1)		
Restrictiveness – Difference Score (Δ)	Non-digital VTS Group	0.35±1.23	0.25 (-2-3)	3.200	0.050
	Digital VTS Group	0.04±0.72	0 (-1-1)		
	Control Group	-0.44±0.76	-0.5 (-2-1)		
Insightfulness – Difference Score (Δ)	Non-digital VTS Group	0.38±1.20	0.5 (-2-2.5)	1.943	0.378
	Digital VTS Group	0.04±0.40	0 (-1-0.5)		
	Control Group	0.00±0.84	0 (-2-1.5)		
Thinking Skills Total – Difference Score (Δ)	Non-digital VTS Group	1.22±5.52	0 (-10.5-12.5)	2.014	0.365
	Digital VTS Group	0.46±3.55	0.5 (-7-6)		
	Control Group	-1.00±3.52	-0.5 (-12.5-5)		

F: One-Way ANOVA Test; H: Kruskal-Wallis H Test

4.4 Findings on attitude towards L2 writing instruction

One of the research questions focused on the impact the intervention might have on learners' attitude towards L2 writing instruction. The aim was to identify the nature of VTS as a pre-writing strategy and its effect on learners' perception regarding enjoyment, ease, ability, strategy use, and writing instruction. The scale used provided a holistic score for learners' overall attitude in addition to aforementioned the sub-categories of attitude. The results of pre-test and post-test scores for the three groups are presented in Table 9.

Table 9. Attitude Towards L2 Writing Instruction Pre-Test and Post-Test Results

	Non-digital VTS Group		Digital VTS Group		Control Group	
	$\bar{X} \pm SD$	Median (min-max)	$\bar{X} \pm SD$	Median (min-max)	$\bar{X} \pm SD$	Median (min-max)
Enjoyment – Pre-Test	18.10±3.11	18 (13-26)	18.25±2.49	17.5 (13-22)	18,83±2,26	19 (14-23)
Enjoyment – Post-Test	19.80±2.95	20 (14-25)	20.00±2.26	19.5 (17-24)	18,56±2,48	18,5 (14-22)
t		-1.994		-2.093		0.531
p		0.061		0.060		0.602
Ease – Pre-Test	19.05±3.05	19.5 (13-25)	17.92±2.02	18 (15-21)	17,50±2,20	17 (14-21)
Ease – Post-Test	19.60±3.07	20 (12-25)	19.50±2.97	19.5 (16-25)	18,44±1,69	18 (16-21)
t		-0.952		-2.501		-2.970
p		0.353		0.029*		0.009**
Ability – Pre-Test	23.80±4.46	23 (13-31)	24.25±2.30	23.5 (21-28)	25,39±4,38	24 (20-34)
Ability – Post-Test	27.25±3.43	27.5 (20-32)	26.58±2.43	16.5 (21-30)	26,17±3,52	25 (20-32)
t		-3.851		-2.815		-1.188
p		0.001**		0.017*		0.251
Strategy Use – Pre-Test	16.70±3.47	16.5 (10-25)	16.33±3.03	16 (10-22)	17,28±2,02	18 (14-20)
Strategy Use – Post-Test	16.85±4.30	17 (7-25)	13.33±3.45	14 (8-19)	17,39±2,66	17,5 (13-22)
t		-0.177		1.964		-0.166
p		0.861		0.075		0.870
Attitude Towards L2 Writing Instruction – Pre-Test	77.65±9.96	75 (63-107)	76.75±5.82	76 (67-91)	79,00±9,12	76 (68-97)
Attitude Towards L2 Writing Instruction – Post-Test	83.45±9.51	81.5 (72-105)	79.42±5.05	79 (71-90)	80,56±8,89	79 (66-95)
t		-2.702		-1.287		-1.103
p		0.014*		0.225		0.285

t: Paired Sample T Test

*p < 0.05; **p < 0.01

In order to determine whether the attitude towards L2 writing instruction changed after the intervention in non-digital VTS group, paired sample t-test was conducted and the results are given in Table 9. It was found that there was a statistically significant difference in ability ($t = -3.851$; $p < 0.01$) and attitude towards L2 writing instruction total scores ($t = -2.702$; $p < 0.05$), yet there was no statistically significant difference with respect to enjoyment, ease and strategy use.

When the results of digital VTS group are examined, the results showed that there was a statistically significant difference in ease ($t = -2.501$; $p < 0.05$) and ability ($t = -2.815$; $p < 0.05$), but there was no statistically significant difference found in the aspects of enjoyment, strategy use and overall attitude score.

The results of the control group revealed that there was a statistically significant difference in the aspect of ease ($t = -2.970$; $p < 0.01$), however there was no statistically significant difference in the aspects of enjoyment, ability, strategy use and overall attitude score.

Additionally, one way ANOVA test was conducted to determine to what extent there was a difference among the three groups regarding the level of impact the intervention had. According to the results presented in Table 10, there was no statistically significant difference found in enjoyment, ease, ability, strategy use, and overall attitude score among the three groups.

Table 10. Comparison of Attitude Towards L2 Writing Instruction Results

	Group	$\bar{X} \pm SD$	Median (min-max)	F	p
Enjoyment – Difference Score (Δ)	Non-digital VTS Group	1.70±3.81	2 (-6-6)	2.388	0.103
	Digital VTS Group	1.75±2.90	1.5 (-2-6)		
	Control Group	-0.28±2.22	0 (-5-4)		
Ease – Difference Score (Δ)	Non-digital VTS Group	0.55±2.58	0.5 (-5-5)	0.893	0.416
	Digital VTS Group	1.58±2.19	2 (-2-5)		
	Control Group	0.94±1.35	1 (-1-4)		
Ability – Difference Score (Δ)	Non-digital VTS Group	3.45±4.01	3 (-5-11)	3.027	0.058
	Digital VTS Group	2.33±2.87	2 (-2-7)		
	Control Group	0.78±2.78	1 (-4-5)		
Strategy Use – Difference Score (Δ)	Non-digital VTS Group	0.15±3.79	0 (-8-7)	2.926	0.063
	Digital VTS Group	-3.00±5.29	-4 (-14-5)		
	Control Group	0.11±2.85	0 (-5-6)		
Attitude Towards L2 Writing Instruction – Difference Score (Δ)	Non-digital VTS Group	5.80±9.60	7.5 (-24-20)	1.463	0.242
	Digital VTS Group	2.67±7.18	3.5 (-12-12)		
	Control Group	1.56±5.98	2.5 (-14-14)		

F: One-Way ANOVA Test

4.5 Relationship between L2 writing performance, thinking skills, and attitude towards L2 writing instruction

The last research question addresses whether there is any relationship among the three focuses of the study: writing performance, thinking skills, and attitude towards writing instruction. In order to inspect any probable connection that could exist e.g. between learners' attitude and their writing performance, Pearson Product Moments

Correlation Coefficient was calculated for the three groups and all the results are presented in between Tables 11 and 19.

4.5.1 Non-digital VTS group

The relationship among L2 writing performance, thinking skills, and attitude towards L2 writing instruction for the non-digital VTS group was examined and the results are presented in Table 11,12, and 13. The correlation results between writing performance and thinking skills showed that there was a relationship of the content, organization, and vocabulary constructs of L2 writing performance with all constructs of thinking skills as shown in Table 11. Correspondingly, the overall L2 writing performance score had a relationship with the constructs and the overall thinking skills score.

Table 11. Relationship between L2 Writing Performance and Thinking Skills Results of Non-Digital VTS Group

		Depth	Clarity	Elaboration	Dimensional Thinking	Restrictiveness	Insightfulness	Thinking Skills
Content	r	0.917	0.931	0.801	0.717	0.749	0.715	0.875
	p	<0.001***	<0.001***	<0.001***	<0.001***	<0.001***	<0.001***	<0.001***
Organization	r	0.579	0.523	0.531	0.483	0.561	0.612	0.606
	p	0.008**	0.018*	0.016*	0.031*	0.010*	0.004**	0.005**
Vocabulary	r	0.543	0.533	0.506	0.446	0.642	0.686	0.626
	p	0.013*	0.016*	0.023*	0.049*	0.002**	0.001**	0.003**
Use of Language	r	0.334	0.359	0.338	0.302	0.383	0.444	0.401
	p	0.150	0.120	0.145	0.195	0.095	0.050	0.080
Mechanics	r	0.175	0.180	0.164	0.269	0.408	0.416	0.307
	p	0.461	0.447	0.489	0.252	0.074	0.068	0.188
L2 Writing Performance	r	0.750	0.745	0.684	0.620	0.732	0.762	0.789
	p	<0.001***	0.001***	0.001**	0.004**	<0.001***	<0.001***	<0.001***

r: Pearson Product Moments Correlation Coefficient

*p < 0.05; **p < 0.01; ***p < 0.001

Regarding the construct of content in L2 writing performance, there was a highly significant positive relationship with the following constructs of thinking: depth ($r = 0.917$; $p < 0.001$), clarity ($r = 0.931$; $p < 0.001$), elaboration ($r = 0.801$; $p < 0.001$), dimensional thinking ($r = 0.717$; $p < 0.001$), restrictiveness ($r = 0.749$; $p < 0.001$), insightfulness ($r = 0.715$; $p < 0.001$) and thinking skills total score ($r = 0.875$; $p < 0.001$). Regarding the organization score and its relation to constructs of thinking are as follows: depth ($r = 0.579$; $p < 0.01$), clarity ($r = 0.523$; $p < 0.05$), elaboration ($r = 0.531$; $p < 0.05$), dimensional thinking ($r = 0.483$; $p < 0.05$), restrictiveness ($r = 0.561$; $p < 0.05$), insightfulness ($r = 0.612$; $p < 0.01$) and thinking skills total score ($r = 0.606$; $p < 0.01$). The correlation results for the construct of vocabulary with the elements of thinking skills are as follows: depth ($r = 0.543$; $p < 0.05$), clarity ($r = 0.533$; $p < 0.05$), elaboration ($r = 0.506$; $p < 0.05$), dimensional thinking ($r = 0.446$; $p < 0.05$), restrictiveness ($r = 0.642$; $p < 0.01$), insightfulness ($r = 0.686$; $p < 0.01$) and thinking skills total score ($r = 0.626$; $p < 0.01$).

When the correlation between the total writing performance score and the aspects of thinking skills are examined, the correlation results are as follows: depth ($r = 0.750$; $p < 0.001$), clarity ($r = 0.745$; $p < 0.001$), elaboration ($r = 0.684$; $p < 0.01$), dimensional thinking ($r = 0.620$; $p < 0.01$), restrictiveness ($r = 0.732$; $p < 0.001$), insightfulness ($r = 0.762$; $p < 0.001$) and thinking skills total score ($r = 0.789$; $p < 0.001$). It was found that there was no statistically significant correlation between the L2 writing performance scores and the attitude towards L2 writing instruction scores as shown in Table 12. Also, when the relationship between thinking skills and attitude towards L2 instruction was analyzed, there was no statistically significant result found as shown in Table 13.

Table 12. Relationship between L2 Writing Performance and Attitude Towards L2 Writing Instruction Results of the Non-Digital VTS Group

		Enjoyment	Ease	Ability	Strategy Use	Attitude Towards L2 Writing Instruction Total
Content	r	0.294	0.029	0.130	-0.055	0.154
	p	0.209	0.905	0.585	0.819	0.517
Organization	r	0.008	-0.096	0.068	-0.290	-0.114
	p	0.974	0.687	0.776	0.215	0.631
Vocabulary	r	0.144	-0.132	0.035	-0.162	-0.038
	p	0.544	0.578	0.882	0.496	0.874
Use of Language	r	-0.023	-0.034	0.129	-0.340	-0.100
	p	0.924	0.887	0.588	0.143	0.674
Mechanics	r	0.234	0.164	0.350	-0.013	0.277
	p	0.322	0.490	0.131	0.956	0.236
L2 Writing Performance Total	r	0.155	-0.047	0.137	-0.243	0.005
	p	0.514	0.845	0.564	0.302	0.985

r: Pearson Product Moments Correlation Coefficient

Table 13. Relationship between Thinking Skills and Attitude Towards L2 Writing Instruction of Non-digital VTS Group

		Enjoyment	Ease	Ability	Strategy Use	Attitude Towards L2 Writing Instruction Total
Depth	r	0.061	-0.017	0.074	-0.208	-0.037
	p	0.798	0.944	0.757	0.378	0.876
Clarity	r	0.242	0.054	0.083	-0.109	0.099
	p	0.303	0.820	0.728	0.646	0.677
Elaboration	r	0.052	-0.076	0.019	-0.105	-0.038
	p	0.829	0.749	0.936	0.659	0.874
Dimensional Thinking	r	0.345	-0.174	0.086	0.055	0.146
	p	0.137	0.464	0.720	0.818	0.538
Restrictiveness	r	0.136	-0.172	0.073	-0.182	-0.041
	p	0.567	0.469	0.758	0.443	0.865
Insightfulness	r	0.215	-0.290	0.165	-0.094	0.032
	p	0.362	0.215	0.486	0.694	0.894
Thinking Skills Total	r	0.181	-0.135	0.093	-0.126	0.019
	p	0.445	0.571	0.697	0.595	0.937

r: Pearson Product Moments Correlation Coefficient

4.5.2 Digital VTS group

The relationship between the L2 writing performance, thinking skills, and attitude towards L2 writing instruction for the digital VTS group was examined and the results are presented in Table 14, 15, and 16. The correlation results between writing performance and thinking skills showed that there was a relationship found between some aspects of the thinking skills and writing performance. The results were found to be different than the non-digital VTS group.

Table 14. Relationship between L2 Writing Performance and Thinking Skills of Digital VTS Group

		Depth	Clarity	Elaboration	Dimensional Thinking	Restrictiveness	Insightfulness	Thinking Skills Total
Content	r	0.512	0.832	0.512	0.615	0.294	0.220	0.605
	p	0.089	0.001**	0.089	0.033*	0.354	0.493	0.037*
Organization	r	0.177	0.269	0.020	0.163	-0.089	-0.161	0.084
	p	0.582	0.398	0.951	0.614	0.784	0.616	0.795
Vocabulary	r	0.291	-0.003	0.411	0.311	0.652	0.610	0.441
	p	0.358	0.994	0.185	0.325	0.022*	0.035*	0.151
Use of Language	r	0.498	0.414	0.356	0.530	0.225	-0.015	0.425
	p	0.099	0.181	0.256	0.076	0.483	0.963	0.168
Mechanics	r	0.595	0.473	0.325	0.472	0.152	0.076	0.430
	p	0.041*	0.121	0.303	0.121	0.637	0.815	0.163
L2 Writing Performance Total	r	0.681	0.698	0.615	0.742	0.506	0.328	0.726
	p	0.015*	0.012*	0.033*	0.006**	0.093	0.297	0.008**

r: Pearson Product Moments Correlation Coefficient

*p < 0.05; **p < 0.01

The content aspect of L2 writing performance had a significant and high positive correlation with clarity aspect of thinking ($r = 0.832$; $p < 0.01$), dimensional thinking aspect ($r = 0.615$; $p < 0.05$) and thinking skills total score ($r = 0.605$; $p < 0.05$).

Vocabulary aspect was found to be correlated with the following aspects of thinking: restrictiveness ($r = 0.652$; $p < 0.05$) and insightfulness ($r = 0.610$; $p < 0.05$). It was found that there was a statistically significant positive moderate correlation between mechanics and depth ($r = 0.595$; $p < 0.05$). Additionally, the total L2 writing performance was correlated with the aspects of depth ($r = 0.681$; $p < 0.05$), clarity ($r = 0.698$; $p < 0.05$), elaboration ($r = 0.615$; $p < 0.05$), dimensional thinking ($r = 0.742$; $p < 0.01$) and thinking skills total score ($r = 0.726$; $p < 0.01$) as shown in Table 14.

When the probable connection between attitude and writing performance was examined, unexpectedly, it was found that there was a statistically significant and a positive correlation ($r = 0.624$; $p < 0.05$) between organization and attitude towards L2 writing instruction total score as shown in Table 15. However, it was found that there was no statistically significant correlation between thinking skills and attitude towards L2 writing instruction scores as shown in Table 16.

Table 15. Relationship between L2 Writing Performance and Attitude Towards L2 Writing Instruction of the Digital VTS Group

		Enjoyment	Ease	Ability	Strategy Use	Attitude Towards L2 Writing Instruction Total
Content	r	0.114	0.522	0.222	-0.161	0.176
	p	0.723	0.082	0.488	0.616	0.585
Organization	r	0.486	0.292	0.193	0.355	0.624
	p	0.109	0.358	0.548	0.258	0.030*
Vocabulary	r	0.202	0.086	0.389	-0.295	0.046
	p	0.529	0.790	0.211	0.352	0.887
Use of Language	r	-0.098	0.075	0.045	0.157	0.117
	p	0.763	0.816	0.889	0.626	0.716
Mechanics	r	-0.117	0.009	-0.334	0.015	-0.167
	p	0.717	0.978	0.289	0.963	0.604
L2 Writing Performance Total	r	0.173	0.388	0.291	-0.069	0.254
	p	0.591	0.212	0.358	0.832	0.425

r: Pearson Product Moments Correlation Coefficient

*p < 0.05

Table 16. Relationship between Thinking Skills and Attitude Towards L2 Writing Instruction of Digital VTS Group

		Enjoyment	Ease	Ability	Strategy Use	Attitude Towards L2 Writing Instruction Total
Depth	r	-0.256	-0.084	0.205	0.309	0.181
	p	0.423	0.796	0.523	0.328	0.573
Clarity	r	-0.260	0.322	0.108	-0.054	-0.003
	p	0.414	0.308	0.738	0.867	0.992
Elaboration	r	-0.361	0.008	0.407	-0.016	0.008
	p	0.249	0.980	0.189	0.961	0.981
Dimensional Thinking	r	-0.329	0.045	0.354	0.026	0.042
	p	0.296	0.890	0.259	0.936	0.897
Restrictiveness	r	-0.212	-0.103	0.519	0.036	0.117
	p	0.508	0.750	0.084	0.912	0.717
Insightfulness	r	0.089	0.074	0.266	-0.195	0.021
	p	0.783	0.819	0.403	0.544	0.948
Thinking Skills Total	r	-0.302	0.038	0.385	0.039	0.073
	p	0.341	0.906	0.217	0.905	0.823

r: Pearson Product Moments Correlation Coefficient

4.5.3 Control group

The relationship between the L2 writing performance, thinking skills, and attitude towards L2 writing instruction was examined for the control group as well and the results are given in Table 17, 18, and 19. The results of the control group differ from the VTS groups. There are correlations found in content, organization, use of language, and mechanics with some aspects of thinking skills. Correspondingly, the total score of writing performance is correlated with the overall thinking skills score and some aspects of thinking skills as shown in Table 17.

Table 17. Relationship between L2 Writing Performance and Thinking Skills of Control Group

		Depth	Clarity	Elaboration	Dimensional Thinking	Restrictiveness	Insightfulness	Thinking Skills Total
Content	r	0.500	0.269	0.519	0.450	0.494	0.544	0.591
	p	0.035*	0.280	0.027*	0.061	0.037*	0.020*	0.010*
Organization	r	0.301	0.373	0.501	0.373	0.142	0.275	0.415
	p	0.225	0.127	0.034*	0.128	0.574	0.270	0.087
Vocabulary	r	0.247	0.285	0.110	0.004	0.345	0.166	0.235
	p	0.323	0.252	0.664	0.989	0.161	0.510	0.347
Use of Language	r	0.380	0.475	0.382	0.451	0.383	0.274	0.494
	p	0.120	0.046*	0.118	0.060	0.117	0.271	0.037*
Mechanics	r	0.531	0.592	0.395	0.471	0.649	0.411	0.641
	p	0.023*	0.010*	0.105	0.048*	0.004**	0.090	0.004**
L2 Writing Performance Total	r	0.504	0.480	0.527	0.459	0.489	0.451	0.614
	p	0.033*	0.044*	0.025*	0.055	0.040*	0.061	0.007**

r: Pearson Product Moments Correlation Coefficient

*p < 0.05; **p < 0.01

When the writing performance correlations are examined, the content aspect of writing is correlated with depth ($r = 0.500$; $p < 0.05$), elaboration ($r = 0.519$; $p < 0.05$), restrictiveness ($r = 0.494$; $p < 0.05$), insightfulness ($r = 0.544$; $p < 0.05$) and thinking skills total score ($r = 0.591$; $p < 0.05$). The organization aspect is only correlated with elaboration ($r = 0.501$; $p < 0.05$). The use of language is revealed to be correlated with clarity ($r = 0.475$; $p < 0.05$) and thinking skills total score ($r = 0.494$; $p < 0.05$). Moreover, mechanics aspect is correlated with depth ($r = 0.531$; $p < 0.05$), clarity ($r = 0.592$; $p < 0.05$), dimensional thinking ($r = 0.471$; $p < 0.05$), restrictiveness ($r = 0.649$; $p < 0.01$) and thinking skills total score ($r = 0.641$; $p < 0.01$). When the overall writing performance was examined, it is correlated with the following aspects of thinking: depth ($r = 0.504$; $p < 0.05$), clarity ($r = 0.480$; $p < 0.05$), elaboration ($r = 0.527$; $p < 0.05$), restrictiveness ($r = 0.489$; $p < 0.05$) and thinking skills total score ($r = 0.614$; $p < 0.01$).

The correlation analysis between L2 writing performance and attitude towards L2 writing instruction revealed no statistically significant correlation for the control group as presented in Table 18. Similarly, there was no statistically significant correlation between thinking skills and attitude towards L2 writing instruction as shown in Table 19.

Table 18. Relationship between L2 Writing Performance and Attitude Towards L2 Writing Instruction of Control Group

		Enjoyment	Ease	Ability	Strategy Use	Attitude Towards L2 Writing Instruction Total
Content	r	-0.129	0.033	0.000	-0.295	-0.181
	p	0.610	0.898	0.999	0.235	0.473
Organization	r	-0.135	0.063	0.161	-0.148	-0.032
	p	0.593	0.805	0.524	0.559	0.901
Vocabulary	r	0.148	-0.292	-0.249	-0.086	-0.167
	p	0.557	0.240	0.319	0.734	0.507
Use of Language	r	-0.131	-0.120	-0.258	-0.146	-0.265
	p	0.603	0.636	0.300	0.563	0.288
Mechanics	r	0.044	0.099	-0.115	-0.293	-0.155
	p	0.863	0.697	0.648	0.237	0.540
L2 Writing Performance Total	r	-0.089	-0.079	-0.108	-0.246	-0.218
	p	0.724	0.754	0.670	0.324	0.384

r: Pearson Product Moments Correlation Coefficient

Table 19. Relationship between Thinking Skills and Attitude Towards L2 Writing Instruction of Control Group

		Enjoyment	Ease	Ability	Strategy Use	Attitude Towards L2 Writing Instruction Total
Depth	r	0.194	0.212	-0.056	-0.376	-0.085
	p	0.441	0.399	0.826	0.124	0.737
Clarity	r	0.116	0.254	0.108	-0.316	0.000
	p	0.647	0.309	0.669	0.201	1.000
Elaboration	r	-0.149	0.106	-0.011	-0.439	-0.245
	p	0.555	0.676	0.965	0.068	0.326
Dimensional Thinking	r	0.232	0.218	0.227	-0.159	0.165
	p	0.354	0.384	0.365	0.529	0.512
Restrictiveness	r	0.148	0.032	-0.049	-0.273	-0.091
	p	0.557	0.901	0.846	0.273	0.720
Insightfulness	r	0.142	0.052	0.126	-0.221	0.018
	p	0.574	0.838	0.618	0.377	0.945
Thinking Skills Total	r	0.147	0.180	0.084	-0.367	-0.041
	p	0.561	0.476	0.740	0.134	0.873

r: Pearson Product Moments Correlation Coefficient

CHAPTER 5

DISCUSSION AND CONCLUSION

5.1 Introduction

In this chapter, after a brief summary of the study is given, the following parts are presented: the results of the quantitative and qualitative data, the pedagogical implications of the study, the limitations for the study, the recommendations for the future studies, and conclusion.

5.2 Summary of the study

The purpose of the study was to examine the impact of group discussions carried out with a strategy centering on the use of a visual as a pre-writing activity on learners' L2 writing performance in two-folds: language skills and thinking skills. Also, the format of the discussions varied in each group in order for the researcher to examine the impact the format might have on the students' writing performance. The change in learners' attitude towards writing lesson under different conditions was also analyzed.

The following research questions guided the study:

1. Do classroom discussions incorporating VTS in a high school EFL classroom result with higher L2 writing performance and thinking skills?
2. Is there a difference between the effects of face-to-face VTS discussions and online VTS discussions on the students' L2 writing performance, thinking skills and attitudes towards writing?

3. How does incorporating VTS in the pre-writing stage affect students' attitudes towards L2 writing?
4. Is there a relationship among L2 writing performance, thinking skills, and attitude towards writing instruction?

The data collection process started after the required permissions were received from the parents and the participants as consent forms, from the Ministry of Education, from the institution, and the ethical committee of the university. A pilot test was carried out to detect any possible problems or lacks in the study design and necessary changes were made accordingly.

The participants of the study were chosen following convenient sampling method but the groups were randomly assigned to be control or experimental. The participants were 50 intermediate level EFL students at a private high school in Istanbul; 18 in control, 20 in non-digital VTS group, and 12 in digital VTS group. A background questionnaire and a pre-questionnaire were administered and the participants took a pre-test before the intervention started. In the control group, no VTS discussion took place while in the experimental groups VTS discussion took place in two different formats; one face-to-face and one on a digital platform. After the 4 weeks of intervention, the participants took a post-questionnaire and a post-test. The pre-test and post-test were in the form of an essay and they were marked using ESL Composition Profile and 6 Continua for Thinking rubrics by two raters. Appendix N presents some samples of writing from experimental groups with VTS discussion.

The data collected was analyzed by using the two methods of data analysis. Due to the low number of participants and the inequality in numbers among the groups, some parts of the data followed a normal distribution while some was not normally distributed.

That is why, for the normally distributed data, parametric tests were used, whereas for the data that was not normally distributed, non-parametric tests were used for the analysis.

5.3 Findings

This section delineates the findings for the research questions in four subheadings. Basically, the impact of VTS discussions as a pre-writing strategy on EFL learners' writing and thinking skills, the effects of the changes in the format of discussions on the results, the attitude of learners towards different L2 writing instructions, and the relationship among writing performance, thinking skills, and attitude are further explained based on the results and the previous studies.

5.3.1 The effect of VTS discussions on EFL learners' writing skills

The essays collected in the study were evaluated and marked using the ESL Composition Profile (Hedgcock and Lefkowitz, 1992), which provided holistic and analytic scores. L2 writing performance was presented as a holistic score, while content, organization, vocabulary, language use, and mechanics were presented as an analytic score. According to the post-test results, all the groups improved during the intervention in terms of overall L2 writing performance, which is in line with the previous research (Cappello and Walker, 2016; Donato and Brooks, 2008; Bomgaars and Bachelor, 2000). These results show that regardless of the intervention employed in this study (VTS strategy) the process-based writing instruction might have improved L2 writing performance of the participants. The main reason for the higher scores in writing performance for the three groups (especially for the control group) regardless of the embedment of a strategy

might be due to the process-based approach adapted in the writing instruction by the institution, as previously studied, among the instructional treatments process-based approach has a high effect size especially on adolescent learners' writing performance (Gutiérrez et al., 2015; Graham and Perin, 2007). In addition to employing a process-based approach in writing instruction, the current study embedded a strategy in the pre-writing phase, which affected the results positively and the experimental groups outperformed the control group in their post-test results. Similarly, Graham and Perin (2007) reported in their meta-analysis on adolescent writing instruction that process-based approach and strategy instruction have high effect size among the other instructional treatments. Moreover, Mahnam and Nejadansari (2012) also stated that a group with a pre-writing strategy training outperforms the group with no strategy training with respect to their writing performance.

For the control group and the non-digital VTS group, the difference regarding the overall L2 writing performance was found to be statistically significant whereas in the digital VTS group, the difference was not statistically significant. This means that the increase in the post-test results for the digital VTS group cannot be attributed to the intervention but can be attributed to chance. Nevertheless, in the non-digital VTS group, it can be concluded that the intervention had an effect on the learners' writing performance. Thus, it is concluded that VTS might have an effect on L2 writing performance when it is applied face-to-face. However, it must be kept in mind that the limited number of participants can account for the insignificant results for the digital VTS group. Thus, further research that has an equivalent and higher number of participants may reveal clearer results for the medium in which VTS is applied (face-to-face or digital).

When the analytic scores for the writing performance were reviewed, different aspects of writing were found to improve within the groups; vocabulary in the non-digital VTS group, organization and mechanics in the digital VTS group, and finally organization, vocabulary and content in the control group. It is found that non-digital VTS group participants were able to use wide range of vocabulary and their choice and usage of words were suitable for the conventions of the writing task while digital VTS group and control participants were able to express themselves fluently, clearly, sufficiently, and appropriately. However, the comparison among the three groups revealed a statistically significant result only for the mechanics aspect, which was unexpected since no part of the intervention focuses on the mechanics of writing such as spelling, punctuation, capitalization or paragraphing.

The different results for the groups regarding L2 writing constructs might be justified with two main reasons; one is that 4 weeks is too short to observe the impact of the intervention on the linguistic aspects of the writing performance (Zhang, 2018) and the other one is that the participants might have focused more on transmitting and explaining their ideas rather than focusing on the language that they use since the strategy that is applied is a thinking strategy than a writing strategy. This result is in line with a previous and a well-known study by Skehan and Foster (1997). The research focused on the impact of pre-task planning and also the task conditions on learners' oral production with respect to complexity, accuracy, and fluency. In order to test this, information exchange, narrative, and decision-making tasks were conducted with 40 pre-intermediate level college students. The tasks were ordered based on their cognitive demands, so first personal information exchange (lowest) and at last decision-making task (highest) were carried out while a group was given a planning time and the other

was not given any planning time. The results showed that planning improved fluency yet had no clear effect on accuracy or complexity. It was concluded that when planning was done before the task, the participants had time to think and organize their ideas which led to less pauses and more fluency. Also, it was revealed that more tendency towards complexity was observed in the planning group thanks to the additional time given, yet no direct influence on accuracy. Skehan and Foster (1997) attributed this to the lack of attentional resources since participants majorly focused on fluency and complexity, they were not able to watch out for accuracy. Similarly, in the current study, the results showed that among the three groups, there was no statistically significant difference regarding the effectiveness of the intervention on the constructs of language performance. It can be concluded that limited capacity of the learners could have been directed to thinking phase and what to write, rather than how to write. The results of the current study are in line with Bomgaars and Bachelor (2000) in that they found growth in fluency and complexity rather than accuracy. The results were attributed to the fact that participants who felt confident repeated certain words and started to take more risks leading to less accuracy at the end.

The question to be answered in further studies could be whether VTS would outperform another pre-writing strategy (e.g., mind-mapping). It is important to consider that VTS is not embedded for writing strategy training but embedded for triggering higher order thinking skills and how this could be reflected in learners' written productions. VTS was not applied in the form of a strategy training. What VTS focuses on is particularly the thinking process and patterns, there is no special focus or discussion on writing skills or any aspect of L2 writing performance. Thus, it is different

from other pre-writing strategies such as mind-mapping and it is a thinking strategy embedded in the pre-writing phase to trigger higher order thinking skills.

5.3.2 The effect of VTS discussions on EFL learners' thinking skills

Along with the writing rubric, the essays were marked using six continua for thinking on the aspects of depth, clarity, elaboration, dimensional thinking, restrictiveness, and insightfulness. The rubric offers a holistic score for the overall thinking skills and analytic scores for the sub-categories. The post-test results reveal that the groups that used VTS as a thinking strategy had higher scores in their post-tests in their overall thinking and the six constructs of thinking. However, the control group participants did not receive higher scores and their total thinking scores' mean at the post-test was lower than the pre-test. This may point that embedding a strategy that aims for higher order thinking skills in the discussions may facilitate learners' thinking skills being reflected in their writing. This shows that thinking and writing is intertwined with one another and makes writing and thinking a crucial part for one another reciprocally. Similarly, Lincoln and Idris (2015) state that writing is mainly composed of two parts; one is the actual writing process and the other one is the pre-writing phase where writers engage with higher order thinking skills to be able to generate ideas about what to write.

Even though there is an increase from pre-tests to post-tests regarding the thinking constructs, the t-tests did not reveal any statistically significant improvements in the digital and non-digital VTS groups. A high score on the restrictiveness aspect of thinking indicates that the learners are able to inquire, ask related questions, are curious, have a broad sense of understanding, expand their thinking processes in various directions, and are open to thinking. In the control group, there is a decrease across all

aspects of thinking scores; but only the decrease in restrictiveness construct was found to be statistically significant. This statistically significant decrease in the restrictiveness aspect of writing for the control group suggests that when learners are not taught strategies or methods for thinking, their performance in higher order thinking skills is not expected to increase. It is natural to anticipate a decrease in time especially when learners are left alone in their writing processes. Additionally, finding out thinking skill scores having a tendency towards decreasing in time could point to the idea that skills such as critical thinking and higher order thinking such as evaluation and synthesis have a practical nature that needs to be taught, trained, and repeated. In a similar line of argument, Piergiovanni (2014) claim that critical thinking is not developmental skill rather it needs to be practiced until it is part of regular thinking processes. It becomes the role of the teacher or the instructor to ensure that learners' thinking process is supported with different strategies, methods, and techniques so that they do not end up being restricted or limited in their idea generation.

The comparison of the thinking skills difference scores with ANOVA test did not reveal any significant differences among the three groups regarding the effect of the intervention. The results of the current study contradict with the previous studies. For example, Wagner, Parra, and Proctor (2017) found out that discussions carried out by the learners before the writing phase increase the length of writings and enable idea elaboration. Also, Listyani (2019) examined the effectiveness of the use of visuals (comic strips and mystery pictures) on the learners' thinking processes and skills reflected in their writings. It was found that visuals increased idea generation, critical and logical thinking, and creativity while writing. There may be several reasons for the statistically insignificant results for the current study. Firstly, the number of the

participants are quite limited, which affects the distribution or the statistical analysis process negatively. Secondly, the rubric used for thinking is a Likert scale, but it is out of four, which again may have caused that the raters were restricted about the scores that they can give, thus, the scores being closer to one another (as seen in Table 7) between pre-test and post-test might have failed the analysis to detect the differences as significant. Thirdly, the intervention time (4 weeks) might have been too short to observe the impact of the manipulation on the thinking processes (Zhang, 2018). Supposing that the intervention period is expanded, the continuum is scaled out of minimum five, and the number of participants is increased, then the results could be parallel with the previous studies.

5.3.3 Learners' attitude towards L2 writing instruction

The attitude of learners towards the writing instruction during the intervention was tested with a questionnaire. The quantitative part of the questionnaire had questions on enjoyment, ease, ability, and strategy use. All the four aspects and their scores added up to a total attitude score. When the attitude scores of all the groups are compared, it is seen that from pre-test to the post-test, the attitude of learners towards the writing lessons was affected positively based on the higher scores on the means of post-tests. The difference of the means is the lowest in the control group, almost no difference, since the control group had no manipulation on the regular writing instruction applied in the institution. In addition to having a process-based approach, the experimental groups having a strategy for thinking seems to affect learner attitude positively.

In the non-digital VTS group, ability aspect of attitude and the overall attitude score of participants had a statistically significant difference; in the digital VTS group,

ease and ability aspects of attitude had a statistically significant difference; while in the control group only with ease aspect of attitude there was a statistically significant difference. That is why, it can be concluded that the participants in the non-digital VTS group found themselves more capable after receiving a strategy training for the discussions and their perception of writing lessons were influenced positively thanks to VTS embedment. Similarly, the digital VTS group considered themselves to be more capable after the online VTS discussions and found it easier in comparison to the previous lessons they had. Finally, there does not seem to be much of a change in the control group regarding the attitude towards the writing instruction. Ease seems to be the only aspect, most probably having expanded group discussions before they started writing helped them find more ideas about what to write easier. Yet, the comparison on the difference scores of the three groups did not disclose any significant difference in any of the aspects.

Even though the findings of the quantitative questionnaire data showed that there was a difference in the learners' attitude when there was VTS discussions, the difference was expected to be higher than it was. As it is suggested in the literature, the learners are more motivated and engaged with the writing process when the discussions are carried out as a pre-writing activity (Beiki, Gharagozloo, and Raissi, 2020; Wagner, Parra, and Proctor, 2017). Additionally, due to the use of VTS in the discussions, learners' perception of their language skills, critical thinking, and cultural awareness increases (Bomgaars and Bachelor, 2000).

When the open-ended questions directed to VTS groups were examined, there was a deeper understanding of learners' attitudes towards the instruction thanks to the qualitative data collected. Regarding whether learners found the use of visuals during the

discussions helpful or not, all of the participants found it useful. The reasons why they found it beneficial changed from participant to participant; among the 32 participants, 13 of them stated that the visuals gave them ideas and 5 of them stated that the visuals helped them gain different perspectives and improved their imagination. A minority of the participants expressed that the visuals made them think ($n = 3$) and guided them during the writing process ($n = 1$). The question of whether VTS improved their writing or helped their writing process, the participants expressed that it gave them more ideas ($n = 6$), enabled learning from peers ($n = 4$), organized their ideas ($n = 3$) and made them think about details ($n = 2$).

Another aspect that was examined in the open-ended questions was whether the VTS group that did online discussions would prefer having face-to-face discussions instead of online ones. Among the 12 participants, only 4 of them chose face-to-face option over online without giving any reasons for their choices. The rest of the group chose the online discussion over the face-to-face one for the following reasons; it is easy to understand ideas online as well, they can learn more because it is fun to have online discussions, discussion is managed better when it is online, interaction is easier and faster online, and finally online settings are easier to participate in for the discussions. Lastly, the participants were asked about their feelings during the VTS discussions (both face-to-face and online) and the majority of the group ($n = 13$) stated that they found it enjoyable because they had fun during the discussions while some of them felt excited ($n = 2$), curious ($n = 1$), confident ($n = 1$), shy ($n = 1$), comfortable ($n = 1$), and nervous ($n = 1$).

It can also be said that VTS affected the participants' thinking processes as well based on the following comments made by two participants. Participant 5 (non-digital

VTS group) stated that “It improves your speaking ability and also you can look in different perspectives.” and participant 23 added that “It made me think deeply and organize my ideas and gave the opportunity to share with class.”. Also, one of the participants stated that VTS discussions directly affected their writing process as follows: “Since you have to organize what you want to say, the same goes for writing too. It made me unintentionally organize my ideas and how I am going to write my essay.” (Participant 42, non-digital VTS group).

Overall, the participants of VTS discussions, regardless of having them face-to-face or online, found the use of visuals beneficial for the discussions with respect to idea development and variety in perspective and found VTS helpful for the writing process especially for getting ideas and learning from others. Also, the experience of having VTS discussions was found enjoyable and positive by the participants. To sum up, the learners’ attitude towards L2 writing instruction and their perception of capacity were affected positively by the intervention thank to the use of artwork as visual inputs, the embedment of a thinking strategy that makes them question, and the classroom discussions.

5.3.4 The relation among writing skills, thinking skills, and learner attitude

In order to examine a possible relationship among learners’ L2 writing performance, thinking skills, and attitudes, the difference scores were tested with Pearson Product Moments Correlation Coefficient. In doing so, to answer the fourth research question, the following two relationships were examined: Does learners’ L2 writing performance affect their thinking skills, or vice versa? Or does learners’ attitude affect their L2 writing performance or thinking skills?

For the non-digital VTS group, the findings proved that there is a strong positive relationship between learners' L2 writing performance and thinking skills. More specifically, the content, organization, and vocabulary aspects of writing performance is correlated with all (depth, clarity, elaboration, dimensional thinking, restrictiveness, and insightfulness) aspects of thinking. However, there is no relation of use of language and mechanics with six aspects of thinking. Also, the overall L2 writing performance score is positively correlated with aspects of thinking and overall thinking scores. It can be concluded that a learners' writing performance goes hand in hand with their thinking skills or vice versa. It cannot be concluded that a learner who has a high level of proficiency performs well with thinking skills. The higher a score in content is, the better chances of reflecting depth, elaboration, clarity etc. in writing there is. The same idea is valid for the vocabulary and organization, these are constructs reflecting the thinking process in contrast to mechanics or use of language. The results are supported by the previous research indicating that thinking is a crucial facet of writing (Lincoln and Idris, 2015; Listyani, 2018; Hung and Van, 2018; Hyland, 2007; Rohman, 1965). Although it was expected that there would be some level of connection between learners' attitude and their writing performance or thinking skills on the basis that learners are more likely to engage in tasks and perform better when they have a positive attitude, but there was no statistically significant correlation found for the non-digital VTS group.

With regard to the digital VTS group, the findings proved that there is a strong positive relationship between learners' L2 writing performance and thinking skills. In contrast to the non-digital VTS group, there was not a complete relation between content, organization, and vocabulary aspects of writing and six aspects of thinking. There was a relation of content with clarity and dimensional thinking, no relation of

organization with any aspects of thinking, and finally a relation of vocabulary with restrictiveness and insightfulness. Also, the total L2 writing performance score is correlated with depth, clarity, dimensional thinking aspects of thinking and the overall thinking skills score. Since this group had their discussions on an online platform, this might have affected the way they organized their ideas. The reason why there is less relation between writing performance and thinking skills could be attributed to the smaller number of participants affecting the distribution negatively or to the digital platform's difference from a face-to-face interaction (e.g., the participants might have neglected reading one another's comments closely or the absence of a teacher in the digital platform could have presented a burden to the moderation of discussions). Considering the attitude results, interestingly, the organization aspect of writing performance had some sort of a relation with learners' attitude towards writing. Yet, there was no statistically significant relation between thinking skills and attitude similar to the non-digital VTS group.

As to the control group, the findings proved that there is a strong positive relationship between learners' L2 writing performance and thinking skills. In contrast to the non-digital VTS group, there was not a complete relation between content, organization, and vocabulary aspects of writing and six aspects of thinking. There was a relation of content with depth, elaboration, restrictiveness and insightfulness, and also a relation of organization with elaboration. Dissimilarly, there was a relation of use of language with clarity, which was not available in the two experimental groups, and interestingly there was a relation of mechanics with depth, clarity, dimensional thinking, and restrictiveness. Finally, there was no relationship between vocabulary and aspects of thinking. The different findings between control group and the digital VTS group

(control group findings indicating more relationships among more items) may designate that the online discussion platform may have prevented learners from reflecting their ideas in digital writing method since they are not familiar with that format. It is thought that the difference roots from the divergence in the writing format and the results of digital VTS group could have been more similar to the non-digital VTS group if writings were handwritings. Lastly, although it was expected that there would be some level of connection between learners' attitude and their writing performance or thinking skills, there was no statistically significant correlation there either, similar to non-digital VTS group.

In conclusion, there seems to be a strong relationship between writing performance and thinking skills, especially in the aspect of content, vocabulary, and organization. It accounts for the fact that ideas are transmitted using words, the more ideas a learner has, the more content she can generate, and having ideas or words to express oneself are not adequate unless a learner can express herself fluently and clearly by organizing her ideas with smooth transitions. That is why, thinking and language are intertwined in a cycle where they foster one another. Also, we cannot expect that learners' attitude would positively or negatively affect their L2 writing performance or thinking skills involved in writing based on the findings.

5.4 Pedagogical implications

The present study informs educational settings that involve writing and classroom discussions, meanwhile mainly addressing EFL contexts in which writing instruction and discussions are commonly occur. As Listyani (2018) claimed, writing is a challenging task for learners regardless of the language that they write in. Also, Rowland, Smith, and

Lowrey (2020) point out to the fact that the current pedagogical applications in the writing classes have some issues and the instructors may also find it challenging to teach learners writing especially in L2. The participants of the current study in the VTS groups stated that they wanted to continue having more lessons centered around an artwork and having discussions. It was also observed that the participants were dedicated to completing the writing task and more engaged with it in comparison to the other writing lessons the teacher-researcher had with the learners. To further address this challenge in educational setting, the pedagogical implications derived from the study are presented in this section.

Firstly, the results showed that there was a strong and positive correlation of writing performance, in the aspects of content, organization, and vocabulary with thinking. That is why, language instructors need to keep in mind that the time given to thinking before actual writing starts is crucial. The researcher observed in the writing lessons, the learners do not give enough time to think or organize their ideas in the form of an outline, it takes time for learners to realize that pre-writing phase is significant for the quality and ease of their writing process. Instead of waiting for learners to be convinced about this fact with experience, using a strategy such as VTS in the pre-writing stage, technically already gave participants the time to think and gather ideas for their writing. Considering there can be learners who do not follow the feedback and skip the pre-writing phase, VTS discussions solved that problem in the learning environment as well, mostly because the pre-writing was not carried individually but carried as a group. Another message to be taken from the results is that since writing is a complicated process in which learners are expected to reflect higher-order thinking skills such as analysis and synthesis, these skills need to be taught by the instructors because

of their practical nature. One of the most beneficial way of doing so is through strategy training, thus a strategy, which aims to develop thinking skills that are transferrable to all subject areas such as VTS, can be taught and practiced by the instructors as a pre-writing strategy. Even within four weeks of time, it was quite observable that the participants who looked at the visual input started giving evidence after stating their observation and linked their observation to something personal. They also started analyzing the visual and explained the connection between their evidence and comment. It was due to the repetitive nature of VTS questions that are asking for evidence and detailed observation. The participants knew which questions was going to follow their description, so in time they started answering them before the questions were directed at them. It can be said that the questions being in a certain format and following a pattern created a pattern of thinking and presenting thoughts in learners. Additionally, the adapted questions on Bloom's taxonomy were also crucial for the discussions in that the higher order thinking skills triggered such as evaluation and synthesis were reinforced. There were more complicated questions that required more thinking and asked for learner creativity. It was observed that adapted questions took learners' thinking to next levels more than the VTS questions. It was important for the discussions to have a structured and ready questions and the responses coming from the participants got more elaborate, detailed, creative, complex, and intricate as the questions directed got to the next level. However, there was one thing to be watched out by the teacher, the responses at some point diverted from the main topic or became unrelated to the discussion or the artwork. This can be attributed to the artwork being open to interpretation, learners' creativity, and also comments building on one another – participants took one another's comments and

make it more fun sometimes without considering its relatability to the discussion. At that point, the teacher needs to take on the moderator role to keep the discussion on track.

Secondly, language learners in a classroom may have various backgrounds and needs, to fulfill the needs of learners and balance out the differences in their background in learning (Press and Epstein, 2007), VTS offers a variety in writing instruction to cater for the needs, strengths, and weaknesses of learners by putting away the traditional ways of bringing a visual into the classroom or having a discussion before writing tasks. As Hyland (2007) proposes, having discussions also compensates for the differences in learners' background knowledge since the discussions create opportunities for the personal experience and knowledge to be shared by the members of the groups, creating a collective knowledge at the end. This brings out another aspect of scaffolding for the learners by enabling an exchange of information between non-experts as well (McDonough, 2015).

Thirdly, the use of visuals within the VTS creates a connection between thinking and the visuals used (McLoughlin and Krakowski, 2001). Due to the repetitive analytical questions VTS uses, learners are encouraged to follow a pattern of thinking, questioning, and wondering. It can be suggested that with VTS, learners are able to develop visual thinking and learning by reasoning, knowledge construction, and communication. Thus, instructors can apply VTS to reinforce higher order thinking skills. Moreover, the connection between thinking and visual was revealed in the writing process. The writing prompt did not present the artwork used in the discussions but still the participants were able to make a connection between the two. Naturally, they had the tendency to take what was discussed and shared into their own writings.

Fourthly, Guo et al. (2020) reports that the instructors may be unsure about how to embed visuals into their lessons or how to utilize them meaningfully and successfully. VTS has a certain methodology about how to integrate visuals into lessons and has repeated and productive research in various areas showing its impact on higher order thinking skills, thus it can be used by language instructors as well. It was observed that having a certain strategy for the discussions or the writing instruction made the teacher's and students' job easier. The teacher needed to be careful with the choice of visual, after the choice the rest was already set. The students also had a clear idea of what was going to happen next and what was expected of them for the tasks, thus the design of the discussions made the lesson go smoother for both sides.

Finally, VTS brings all types of visuals into lessons, but when it is especially applied with artwork, in addition to fostering creativity, imagination, intercultural knowledge and awareness, it triggers crucial skills for writing such as analytical thinking and evaluation since learners try to decode the multiple layers of meaning available in the artwork and support their interpretations by finding cues in the artwork (Moeller et al., 2013). At the end, it can be concluded that VTS teaches learners how to think not just what to think. When the participants of the VTS discussions realized and felt that they were able to make comments easily and share them without any judgment by the others, they felt more comfortable with sharing their ideas because the discussions did not have any correct answer or there was no specific destination to be arrived at the end. At the beginning of the discussions, the participants looked for the approval of the teacher after they made a comment. In time, they recognized that the teacher was only paraphrasing what they said and there were no correct responses, they got used to the idea of open interpretation but with justification. All mattered was their contribution and

interpretation, that is why the discussions created a safe and welcoming environment for the learners and they contributed more than usual. Especially with the discussions, there are silent learners who either do not want to participate or are shy to participate. Thanks to the pattern of questions and open-to-interpretation nature of the discussions, there were silent learners who became more active. Also, the transition from simpler visuals to more complex ones and the use of an easy and familiar question-what is going on in the picture- enabled more participation and risk-taking on the side of the learners. When it comes to the length of discussions, it was longer than the regular discussions carried with the learners prior to the study, the discussions were cut at some point because the lesson ended. If there were no time limitation, the discussions could have continued longer. Based on the observation, it was due to the amount of learner contributions, the number of contributors to the discussions, and interest of the learners to the visual shown. The participants wanted to elaborate on their own comments, build up on another comment, figure out the meaning behind the visual, and listen to different interpretations. In order to have such a high interest and engagement in the discussions, the two factors are significant; one is the choice of visual and the other is a safe discussion environment that gives them a permission to wonder. In relation to this, the discussion in the control group that was carried out with the same artwork but with a regular discussion environment without a strategy revealed the difference in the embedment of a thinking strategy. The discussions in the group started with the presentation of the artwork and the question of “What do you see in the picture?”. The participants of this group also wanted to have more discussions with artwork and enjoyed the process, however the discussions were stuck at some point. There was a clear gap in the number of comments and their complexity in thinking. Thanks to the

adapted questions in the VTS discussions and the pattern of thinking in VTS, the participants in the experimental group were able to contribute more and think deeply whereas in the control group the ideas generated were limited and the participants could not take their arguments into next level by adding any evidence or interpretation. They were stuck at presenting an argument and some of them were able to present some justifications for their ideas. They also had difficulty in deciding where to start commenting and how to approach the visual. The discussions in this group were not as rich as the experimental group in terms of content. Also, there were silent learners who did not want to contribute and there were a certain group of speakers who were active in the discussions.

5.5 Limitations and recommendations for further research

The present study brings an interdisciplinary strategy and applies it to EFL context, which is a quite rare study area in the field. In addition to VTS not being applied in EFL contexts commonly, it offers a new methodology shaped with Bloom's taxonomy to be applied both face-to-face and online. Additionally, it highlights a rubric for thinking that can be used in writing evaluation by instructors and learners. Finally, it introduces a pre-writing strategy that can be applied in L2 writing instruction. However, there are some limitations in the study that can be removed in the further research.

The first and the biggest challenge of the study is the limited number of participants. At the beginning of the study, there were 24 participants in each group and overall, 72. Yet, at the end of the study there were 50 participants' data valid to be involved in the analysis because the data was collected at a time when Covid-19 spread a lot and hindered stable attendance to school. So, the requirement for the inclusion in the

study data was that all the participants must be in the pre-test, intervention lessons, and the post-test, but those who were missing in any one of them were excluded from the data. Therefore, if the study was repeated, the number of participants could be kept higher for each group.

The other limitation is that even though the groups were assigned randomly, the participants were not selected randomly since convenient sampling method was used, if the study to be repeated, a random sampling can be done to have an experimental study. Moreover, the number of participants being low affected the distribution of the data in that the numbers were too low to form a normal distribution and even if there seems to be a significant difference in the results, the number being too low affected the statistical calculations in a way that analysis could not name the difference as significant. If the numbers were higher, the results found could have been significant. Yet, to overcome this lack in the distribution, the part of the data that was normally distributed was analyzed with parametric tests, while the data that was not normally distributed was analyzed with non-parametric tests to increase the chances of detecting a probable significant difference. Regarding the participants, the level of proficiency was decided based on the institutional exam, in further research more valid and reliable tests can be applied before the intervention starts.

Another limitation is the intervention period being four weeks. Since the study is carried out at a K12 school, there is a curriculum to be applied based on the Ministry of Education regulations. That is why, the lesson plans had to be altered for the studies at the minimum period; four weeks. If there were more time for the intervention, the findings could have provided more clear results on the impact of the intervention over the writing performance and thinking skills. On top of expanding the intervention time,

further research can embed a delayed test to observe the impact of the manipulation thoroughly and to examine how much of the skills are retained in a longer period of time.

One aspect of the study that could have presented a main limitation is the teacher-researcher effect. Since the teacher was also the researcher, it could easily have had an effect on learners' being objective in their evaluations or even deciding whether they participated more due to the design or teacher motivation. It can shed light more on the results if the study is repeated with another teacher and the researcher observes the whole process from a distance.

When it comes to the intervention design, the intention at the beginning was to have the digital discussions asynchronously to observe the differences between face-to-face and digital one. The aim was to engage all learners and to observe how the format of the discussions might affect learners' contributions. However, Covid-19 having a negative effect on attendance and tracking of task completion, the discussions were carried out synchronously. Further research can carry out the same design with asynchronous discussions to observe the differences and the impact of these differences on learner outputs in terms of quantity and quality.

The qualitative data reinforces the quantitative data gathered in research, to enable that in the present study, the questionnaires had open-ended questions. Further studies could involve interviews carried out with the participants, especially to observe more about learners' attitude and perception closely. Additionally, this study examines the impact of the VTS discussions on learners' writing performance, there could be an additional aspect questioning how much of the content discussed in the groups are reflected in the writings as well. This could provide additional information about the

place of discussions in social learning settings. Finally, the future research can also focus on different proficiency levels and different levels of K12 or university students to widen the spectrum that the findings can be generalized to.

5.6 Conclusion

The findings of the study revealed that a process-based writing instruction that embeds a VTS strategy to be applied in pre-writing discussions improves learners' L2 writing performance, which is in line with previous research (Gutiérrez et al., 2015; Cappello and Walker, 2016; Donato and Brooks, 2008; Bomgaars and Bachelor, 2000; Li and Zhang, 2021) especially on the constructs of content, organization, and vocabulary. When it comes to thinking skills, the groups in which VTS was applied, the thinking scores on the sub-categories were higher in comparison to the control group that did not have VTS discussions. Thus, a pre-writing phase is crucial in that learners' thinking process can be enhanced to the higher order skills such as analysis, critical thinking, and synthesis with strategy training and classroom discussions, which is parallel with preceding studies (Lincoln and Idris, 2015; Piergiovanni, 2014; Wagner, Parra, and Proctor, 2017; Listyani, 2019). Learners' attitude seems to enhance when pre-writing strategies and the use of visuals are embedded in lesson plans as the results indicated, which is in line with the previous research (Beiki, Gharagozloo, and Raissi, 2020; Wagner, Parra, and Proctor, 2017). Moreover, the correlation between thinking skills and learners' writing performance was found out to be strongly positive, which in return reminds the instructors of focusing on the pre-writing phase to facilitate better conditions for learners to improve on what to think and how to think. However, learners' attitude was not found to be a criterion affecting learners' writing or thinking skills. The present

study tried to offer some information about a new pre-writing strategy that can be applied in EFL contexts by enhancing it with Bloom taxonomy adaptations for classroom discussions both in face-to-face and online settings. It is recommended for the further research to have a bigger sample size, random sampling, longer intervention period, delayed test, and supplementary qualitative data with interviews.

APPENDIX A

BACKGROUND QUESTIONNAIRE

Demographic Information	
1. How long have you been studying English?	
2. Have you ever studied English in an English-speaking country?	a. Yes b. No If yes, how long?:
3. Do you practice your English writing outside the classroom?	a. Yes b. No If yes, how?:
4. How do you rate your English writing skills?	a. Excellent b. Good enough c. Fair d. Poor
5. How do you rate your English-speaking skills?	a. Excellent b. Good enough c. Fair d. Poor
6. Have you taken any courses on writing except the school lessons?	a. Yes b. No
7. How often do you write in English?	a. Frequently b. Sometimes c. Rarely d. Never
8. In which situations do you write in English?	a. Schoolwork b. Online games c. Social media d. Texting e. Other:
What kind of difficulties you face when writing in English?	

APPENDIX B

SUMMARY OF BACKGROUND QUESTIONNAIRES

CONTROL GROUP

	Age	Gender	Exposure to English	Practicing English writing outside school	English writing skills rated as	Frequency in English writing
P1	14	F	9	Y	Excellent	Frequently
P2	14	M	7	Y	Fair	Rarely
P3	14	M	9	Y	Good Enough	Frequently
P4	14	M	9	Y	Good Enough	Sometimes
P5	15	F	9	N	Fair	Rarely
P6	14	M	9	Y	Good Enough	Sometimes
P7	14	M	9	Y	Good Enough	Sometimes
P8	15	F	9	N	Good Enough	Sometimes
P9	14	F	9	Y	Excellent	Sometimes
P10	14	F	7	N	Good Enough	Sometimes
P11	14	F	9	Y	Excellent	Frequently
P12	14	M	9	N	Fair	Sometimes
P13	16	M	7	Y	Good Enough	Sometimes
P14	14	F	9	N	Excellent	Sometimes
P15	14	F	9	N	Good Enough	Sometimes
P16	13	F	7	Y	Excellent	Frequently
P17	13	F	7	Y	Fair	Sometimes
P18	15	M	9	Y	Fair	Sometimes

Note: Exposure to English is numbered as years. Y and N stand for Yes and No.

NON-DIGITAL VTS GROUP

	Age	Gender	Exposure to English	Practicing L2 Writing outside School	L2 Writing Skills Rated as	Frequency in L2 Writing Practice
P1	14	M	9	Y	Good Enough	Frequently
P2	14	F	9	Y	Good Enough	Frequently
P3	16	M	9	N	Good Enough	Sometimes
P4	14	F	9	N	Excellent	Frequently
P5	15	F	9	N	Good Enough	Rarely
P6	13	F	7	Y	Excellent	Sometimes
P7	14	F	9	N	Good Enough	Sometimes
P8	14	M	9	N	Good Enough	Sometimes
P9	15	F	9	N	Good Enough	Sometimes
P10	14	F	9	Y	Good Enough	Sometimes
P11	14	M	7	Y	Fair	Sometimes
P12	15	M	9	N	Excellent	Frequently
P13	15	M	9	N	Good Enough	Rarely
P14	15	M	9	N	Good Enough	Never
P15	14	F	9	N	Good Enough	Frequently
P16	13	M	7	N	Good Enough	Rarely
P17	13	F	9	Y	Excellent	Sometimes
P18	15	F	9	Y	Fair	Sometimes
P19	15	F	9	N	Excellent	Sometimes
P20	15	M	7	Y	Good Enough	Rarely

Note: Exposure to English is numbered as years. Y and N stand for Yes and No.

DIGITAL VTS GROUP

	Age	Gender	Exposure to English	Practicing L2 Writing outside School	L2 Writing Skills Rated as	Frequency in L2 Writing Practice
P1	14	F	9	N	Excellent	Sometimes
P2	14	M	9	N	Good Enough	Rarely
P3	14	F	9	Y	Good Enough	Sometimes
P4	14	M	9	N	Good Enough	Sometimes
P5	14	M	7	N	Good Enough	Sometimes
P6	14	M	9	Y	Good Enough	Frequently
P7	14	F	7	Y	Good Enough	Frequently
P8	14	F	9	N	Good Enough	Sometimes
P9	13	F	9	N	Good Enough	Sometimes
P10	14	M	7	N	Fair	Sometimes
P11	14	F	9	Y	Good Enough	Sometimes
P12	14	M	9	Y	Good Enough	Sometimes

Note: Exposure to English is numbered as years. Y and N stand for Yes and No.

APPENDIX C

PRE-TEST AND POST-TEST WRITING PROMPT

Writing topic for the pre-test and post-test:

Nowadays, our life is getting a lot simpler and more convenient because of various intelligent machines. However, some people think that our brains will get lazy in a world run by intelligent machines. Write a composition of at least 200 words on the following topic: *With intelligent machines to do the thinking, will our brains get lazy?*

Please follow these three steps to plan for your writing:

- (1) Giving your opinions on agreeing or disagreeing with the writing topic;
- (2) Generating and evaluating ideas and evidence that are for and against the writing topic;
- (3) Selecting and organizing ideas and evidence into a writing plan.

APPENDIX D
INTERVENTION TASKS

Writing Prompt 1

Which one of the following statements do you agree? Pick one and write an essay of 200 words about this topic.

- a. “The whole secret of existence is to have no fear.” *Vivekananda*
- b. We all scream and we all have fears.

Please follow these three steps to plan for your writing:

- (1) Giving your opinions on agreeing or disagreeing with the writing topic;
- (2) Generating and evaluating ideas and evidence that are for and against the writing topic;
- (3) Selecting and organizing ideas and evidence into a writing plan.

Writing Prompt 2

Which one of the following is the most important factor in surviving and succeeding in today’s world? Pick one and write an essay of 200 words about this topic.

- a. Unity
- b. Effort
- c. Luck

Please follow these three steps to plan for your writing:

- (1) Giving your opinions on agreeing or disagreeing with the writing topic;
- (2) Generating and evaluating ideas and evidence that are for and against the writing topic;
- (3) Selecting and organizing ideas and evidence into a writing plan.

Writing Prompt 3

Which one of the following quotes do you agree? Pick one and write an essay of 200 words about this topic.

- a. “Curiosity kills the cat.” *Steven Wright*
- b. “Curiosity keeps leading us down new paths.” *Walt Disney*

Please follow these three steps to plan for your writing:

- (1) Giving your opinions on agreeing or disagreeing with the writing topic;
- (2) Generating and evaluating ideas and evidence that are for and against the writing topic;
- (3) Selecting and organizing ideas and evidence into a writing plan.

Writing Prompt 4

What is your opinion about the following question? Write an essay of 200 words about this topic.

- Will racism ever disappear?

Please follow these three steps to plan for your writing:

- (1) Giving your opinions on agreeing or disagreeing with the writing topic;
- (2) Generating and evaluating ideas and evidence that are for and against the writing topic;
- (3) Selecting and organizing ideas and evidence into a writing plan.

APPENDIX E
WRITING RUBRIC

ASPECT	SCORE	LEVEL/CRITERIA
CONTENT	30-27	EXCELLENT TO VERY GOOD: knowledgeable •substantive •thorough development of thesis • relevant to assigned topic
	26-22	GOOD TO AVERAGE: some knowledge of subject •adequate range •limited development of thesis •mostly relevant to the topic, but lacks detail
	21-17	FAIR TO POOR: limited knowledge of subject •little substance •inadequate development of topic
	16-13	VERY POOR: does not show knowledge of subject •non-substantive •not pertinent •OR not enough to evaluate
ORGANIZATION	20-18	EXCELLENT TO VERY GOOD: fluent expression •ideas clearly stated/ supported •succinct •well-organized •logical sequencing •cohesive
	17-14	GOOD TO AVERAGE: somewhat choppy • loosely organized but main ideas stand out • limited support • logical but incomplete sequencing
	13-10	FAIR TO POOR: non-fluent •ideas confused or disconnected •lacks logical sequencing and development
	9-7	VERY POOR: does not communicate • no organization • OR not enough to evaluate
VOCABULARY	20-18	EXCELLENT TO VERY GOOD: sophisticated range •effective word/ idiom choice and usage •word form mastery •appropriate register
	17-14	GOOD TO AVERAGE: adequate range •occasional errors of word/ idiom form, choice, usage <i>but meaning not obscured</i>
	13-10	FAIR TO POOR: limited range •frequent errors of word/ idiom form, choice, usage • <i>meaning confused or obscured</i>
	9-7	VERY POOR: essential translation •little knowledge of English vocabulary, idioms, word form •OR not enough to evaluate
LANGUAGE USE	25-22	EXCELLENT TO VERY GOOD: effective complex constructions • few errors of agreement, tense, number, word order/ function, articles, pronouns, prepositions
	21-18	GOOD TO AVERAGE: effective but simple constructions •minor problems in complex constructions •several errors of agreement, tense, number, word order/ function, articles, pronouns, prepositions but <i>meaning seldom obscured</i>
	17-11	FAIR TO POOR: major problems in simple/ complex constructions •frequent errors of negation, agreement, tense, number, word order/ function, articles, pronouns, prepositions and/ or fragments, run-ons, deletions •meaning confused or obscured
	10-5	VERY POOR: virtually no mastery of sentence construction rules •dominated by errors •does not communicate • OR not enough to evaluate
MECHANICS	5	EXCELLENT TO VERY GOOD: demonstrates mastery of conventions •few errors of spelling, punctuation, capitalization, paragraphing
	4	GOOD TO AVERAGE: occasional errors of spelling, punctuation, capitalization, paragraphing but <i>meaning not obscured</i>
	3	FAIR TO POOR: frequent errors of spelling, punctuation, capitalization, paragraphing •poor handwriting •meaning confused or obscured
	2	VERY POOR: no mastery of conventions •dominated by errors of spelling, punctuation, capitalization, paragraphing •handwriting illegible •OR not enough to evaluate

APPENDIX F
THINKING RUBRIC

1	OBVIOUS States the obvious, just scratches the surface, doesn't stretch to go beyond the given information or surface story.	FUZZY Thinking moves aren't clear (questions slide into statements, reasons slide into claims, observations slide into interpretations). Sprawling: rambling, unfocused, disorganized. Loses sight of main ideas or goals.	SIMPLISTIC Under-described, no detail or nuance. Overly broad, overly simplified, overly generalized.	ONE-DIMENSIONAL Only touches on one layer or dimension of a topic, work of art, or idea. Doesn't see complexity, layers, or other viewpoints.	RESTRICTED Closure-oriented. Doesn't seem to want to explore big ideas or ask hard questions. Often shows bias, resistance to thinking	TANGENTIAL Doesn't capture or recognize important themes, characteristics or elements. Strays from the topic. Hovers over unimportant details or ideas.	totals
2							
3	BEYOND THE GIVEN Probes beneath the surface, reaches beyond the obvious, stretches for new applications, questions, connections.	CLEAR & FOCUSED Thinking moves are clearly differentiated, thinking has a clear structure. Goals and purposes are clear and appropriately met. Anchored to main ideas, conceptually well-organized.	ELABORATED Rich in detail, evocative, imaginative, nuanced, descriptive	MULTI-DIMENSIONAL Touches on several layers or dimensions (e.g., facts, big ideas or themes, deep structure, puzzles, perspectives). Recognizes complexity, recognizes that there are different levels, layers, or perspectives.	GENERATIVE Expands or extends thinking in new directions. Broadens understanding, opens up new lines of inquiry. Often reflects curiosity and openness.	INSIGHTFUL , captures the heart of things. Identifies key themes, characteristics or elements. Sees deep structure. Shows an appreciation for the relative importance of things.	totals
4							

APPENDIX G
QUESTIONNAIRES

PRE-QUESTIONNAIRE (Control, Digital VTS, Non-Digital VTS)

The following are statements about your attitude towards writing in English. For each question, you can answer as “Strongly Disagree, Disagree, Uncertain, Agree, Strongly Agree”. This questionnaire is only going to be used for research purposes. Please take your time to answer as honestly as possible.

	Strongly Disagree	Disagree	Uncertain	Agree	Strongly Agree
Enjoyment					
1. I like to write in English.					
2. Writing in English is a waste of time.					
3. I feel relaxed when I write in English.					
4. I like people to read what I have written in English.					
5. I enjoy writing in English.					
6. I feel excited about writing in English.					
Ease					
7. It is easy for me to write in English.					
8. It's easy for me to remember information when I am writing in English.					
9. It is easy for me to organize my ideas when I write in English.					

10. It is easy for me to get ideas when I write in English.					
11. It is easy for me to write my ideas in English.					
Ability					
12. People understand what I'm saying when I write in English.					
13. I like my English writing to be graded.					
14. I can express my ideas when I write in English.					
15. I think my English papers look good.					
16. I think about how long my English writing should be.					
17. I think I am a good writer.					
18. I get high grades for my English writings.					
Strategy use					
19. Before I write, I outline the ideas I want to write.					
20. Before I write, it helps me to mentally visualize the ideas I want to write.					
21. Before I write in English, I like to plan what I am going to write.					
22. When I write in English, I think about the paragraphs I want to use.					
23. When I write in English, I think about the topic sentences I want to use.					

POST QUESTIONNAIRE: NON-DIGITAL VTS GROUP

	Strongly Disagree	Disagree	Uncertain	Agree	Strongly Agree
Enjoyment					
1. I liked to write in English.					
2. Writing in English was a waste of time.					
3. I felt relaxed when I wrote in English.					
4. I liked people to read what I had written in English.					
5. I enjoyed writing in English.					
6. I felt excited about writing in English.					
Ease					
7. It was easy for me to write in English.					
8. It was easy for me to remember information when I was writing in English.					
9. It was easy for me to organize my ideas when I wrote in English.					
10. It was easy for me to get ideas when I wrote in English.					
11. It was easy for me to write my ideas in English.					

Ability					
12. People understood what I was saying when I wrote in English.					
13. I liked my English writing to be graded.					
14. I could express my ideas when I wrote in English.					
15. I think my English papers looked good.					
16. I thought about how long my English writing should be.					
17. I think I was a good writer.					
18. I got high grades for my English writings.					
Strategy use					
19. Before I wrote, I outlined the ideas I wanted to write.					
20. Before I wrote, it helped me to mentally visualize the ideas I wanted to write.					
21. Before I wrote in English, I liked to plan what I was going to write.					
22. When I wrote in English, I thought about the paragraphs I wanted to use.					
23. When I wrote in English, I thought about the topic sentences I wanted to use.					

24. Overall, I rate my writing ability as

a. Excellent

b. Good

c. Fair

d. Poor

25. Did you find the images/pictures used in class helpful?

Yes,

because.....

No, because

.....

26. How do you think the discussions with the images helped your writing?

.....

27. How did you feel during the discussions?

.....

28. Any positive or negative comments you have about the discussions and writings we

had:

.....

.....

.....

POST QUESTIONNAIRE: DIGITAL VTS GROUP

	Strongly Disagree	Disagree	Uncertain	Agree	Strongly Agree
Enjoyment					
1. I liked to write in English.					
2. Writing in English was a waste of time.					
3. I felt relaxed when I wrote in English.					
4. I liked people to read what I had written in English.					
5. I enjoyed writing in English.					
6. I felt excited about writing in English.					
Ease					
7. It was easy for me to write in English.					
8. It was easy for me to remember information when I was writing in English.					
9. It was easy for me to organize my ideas when I wrote in English.					
10. It was easy for me to get ideas when I wrote in English.					
11. It was easy for me to write my ideas in English.					

Ability					
12. People understood what I was saying when I wrote in English.					
13. I liked my English writing to be graded.					
14. I could express my ideas when I wrote in English.					
15. I think my English papers looked good.					
16. I thought about how long my English writing should be.					
17. I think I was a good writer.					
18. I got high grades for my English writings.					
Strategy use					
19. Before I wrote, I outlined the ideas I wanted to write.					
20. Before I wrote, it helped me to mentally visualize the ideas I wanted to write.					
21. Before I wrote in English, I liked to plan what I was going to write.					
22. When I wrote in English, I thought about the paragraphs I wanted to use.					
23. When I wrote in English, I thought about the topic sentences I wanted to use.					

24. Overall, I rate my writing ability as

- a. Excellent b. Good c. Fair d. Poor

25. Did you find the images/pictures used in the discussions helpful?

Yes,
because.....

No, because
.....

26. How do you think the online discussions with the images helped your writing?

.....

27. How did you feel during the online discussions?

.....

28. Do you think having the discussions online was helpful?

Yes, because
.....

No, because
.....

29. Do you think it would be much better if you had the discussions face to face in the classroom?

Yes, because
.....

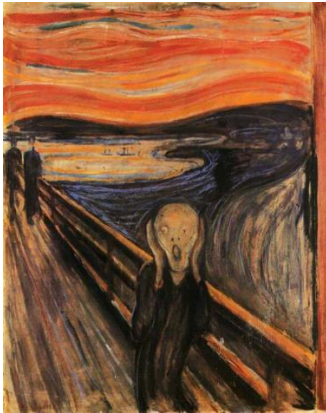
No, because
.....

30. Any positive or negative comments you have about the discussions and writings we had:

.....
.....
.....

APPENDIX H

VISUAL INPUT (ARTWORKS FOR THE DISCUSSIONS)



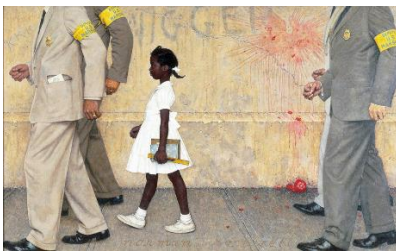
The Scream, Edward Munch, 1895



The Potato Eaters, Vincent van Gogh, 1885



What is going on, Paul G. Fischer, 1899



The Problem We All Live With, Norman Rockwell, 1963

APPENDIX I

BLOOM'S TAXONOMY AND VTS

Level	Knowledge	Comprehension	Application	Analysis	Evaluation	Synthesis
Application to Art and English	What happened after...?	Can you write in your own words...?	Do you know another instance where...?	Which events could have happened...?	Judge the value of...	Can you see a possible solution to...?
	How many...?	What do you think could have happened next...?	Could this have happened in...?	How was this similar to...?	Can you defend your position about...?	If you had access to all resources how would you deal with...?
	Who was it that...?	Who do you think...?	Can you group by characteristics such as...?	What was the underlying theme of...?	Do you think ... is a good or a bad thing?	Why don't you devise your own way to deal with...?
	Can you name the...?	What was the main idea...?	What factors would you change if...?	What do you see as other possible outcomes?	How would you have handled...?	What would happen if...?
	Describe what happened at...?	Who was the key character...?	Can you apply the method used to some experience of your own...?	Can you compare your ... with that presented in...?	What changes to ... would you recommend?	How many ways can you...?

Note. Adapted by the authors from *Differentiating Instruction in the Regular Classroom: How to Reach and Teach All Learners, Grades 3-12* by Diane Heacox, Ed.D., copyright 2002. Free Spirit Publishing Inc., Minneapolis, MN. Available from http://aaa.mpls.k12.mn.us/printview/Bloom_s_Taxonomy.html and <http://www.teachers.ash.org.au/researchskills/dalton.htm>

APPENDIX J

VTS ADAPTED DISCUSSION QUESTIONS

VTS Questions

1. What is going on in this picture? 2. What do you see that makes you say that?
3. What else can you find?

Visual 1

Discussion Questions

1. What kind of adjectives would you use to describe the artwork? (Knowledge)
2. What is the main message or feeling that you get? (Comprehension)
3. Do you know another painting that gives away a similar message? (Application)
4. What can you say about the painter after seeing the painting? (Analysis)
5. If you could, what would you change about the painting? (Evaluation)
6. If you were to rename the painting, what would the title be? (Synthesis)
7. What do you think happens before and after this particular scene in the painting? (Synthesis)
8. If this painting had sound effects, what would they sound like? (Synthesis)

Visual 2

Discussion Questions

1. What kind of adjectives would you use to describe the artwork? (Knowledge)
2. Who do you think these people are and what do they represent? (Comprehension)
3. Can you think of a similar instance in which you have had or observed a similar environment? (Application)
4. What is the underlying theme of the painting? (Analysis)
5. Can you evaluate the value of coming together at the same table with family members? (Evaluation)
6. Can you imagine what kind of thoughts go through their minds? (Synthesis)
7. If you were to rename the painting, what would the title be? (Synthesis)
8. If this painting had sound effects, what would they sound like? (Synthesis)

Visual 3

Discussion Questions

1. Where do you think this place is? (Knowledge)
2. What kind of adjectives would you use to describe the artwork? (Knowledge)
3. What do you think could have happened next? (Comprehension)
4. Can you think of an instance where you come across with something similar?
(Application)
5. What event do you think happened there? (Analysis)
6. Can you criticize people's reactions and attitude in the painting? (Evaluation)
7. If you could ask the painter a question, what would your question be? (Synthesis)
8. What would it like to be in this painting and what would you do? (Synthesis)

Visual 4

Discussion Questions

1. Who is the girl? (Knowledge)
2. What kind of adjectives would you use to describe the artwork? (Knowledge)
3. What is the main message or feeling that you get? (Comprehension)
4. Can you think of an instance where you come across with something similar?
(Application)
5. What does this painting say about the world we live in? (Analysis)
6. Can you argue the reasons why the girl is accompanied by four Marshalls?
(Evaluation)
7. What do you think happens before and after this particular scene in the painting?
(Synthesis)
8. If you were to rename the painting, what would the title be? (Synthesis)

ONLINE DISCUSSION 001

Visual 1

NEW ROUNDTABLE

Online RoundTables

Visual 1

Pilot

Live RoundTables

Responses (20) Oldest

+ Add Response

Taras Shevchenko

Gauhar Jaan

Marie Curie

Jackie Forster

Srinivasa Ramanujan

Yuri Nikulin

Lola Flores

Bruce Lee

Nino Rota

Art Clokey

Sitara Devi

INVOKE SUMMARY

Anonymity: on Assessment: on Peer Feedback:

Discussion prompt by **FATMA BANU ÖZBEK** Edit

Learning Goals In this discussion, you are presented an image and expected to comment on it. Please take a minute to look at and analyze the image. Then, you can...

Responses

Taras Shevchenko 2 months ago

Hello, I am Burak. I don't want to be anonymous, I don't want to be Taras Shevchenko.

Gauhar Jaan 2 months ago

In this image we see a man and a little girl. And the man looks homeless and doesn't have a good looking. And the girl looks good..

Marie Curie 2 months ago

In this picture, we can see a nice dressed girl who is holding an axe at the back while on the other side, a poorly dressed man who holds a..

Jackie Forster 2 months ago

There is an ugly guy sitting on a chair and a pretty girl standing next to him. The guy is secretly holds a bouget but the girl holds an axe...

Srinivasa Ramanujan 2 months ago

Discussion Questions: 1. In this picture, we see a girl and a man. The man looks like he is beaten up, and the girl looks looks clean. But on..

Yuri Nikulin 2 months ago

The girl looks cute, happy and harmless. And the man looks dangerous, he looks like he is going to do something bad. But who

Lola Flores 2 months ago Edited (4)

Hi am Beren not Lola Flores. they are father and daughter. the father

APPENDIX L

ETHICS COMMITTEE APPROVAL

Evrak Tarih ve Sayısı: 01.11.2021-36420

T.C.
BOĞAZİÇİ ÜNİVERSİTESİ
SOSYAL VE BEŞERİ BİLİMLER YÜKSEK LİSANS VE DOKTORA TEZLERİ ETİK İNCELEME
KOMİSYONU
TOPLANTI KARAR TUTANAĞI

Toplantı Sayısı : 22
Toplantı Tarihi : 13.10.2021
Toplantı Saati : 14:00
Toplantı Yeri : Zoom Sanal Toplantı
Bulunanlar : Prof. Dr. Ebru Kaya, Prof. Dr. Fatma Nevra Seggie, Dr. Öğr. Üyesi Yasemin Sohtonik İlkmen
Bulunmayanlar :

Fatma Banu Özbek
Yabancı Diller Eğitimi Bölümü

Sayın Araştırmacı,
"The impact of Visual Thinking Strategies discussions on Turkish EFL high school students' writing skills"
başlıklı projeniz ile ilgili olarak yaptığımız SBB-EAK 2021/59 sayılı başvuru komisyonumuz tarafından 13
Ekim 2021 tarihli toplantıda incelenmiş ve uygun bulunmuştur.

Bu karar tüm üyelerin toplantıya çevrimiçi olarak katılımı ve oybirliği ile alınmıştır. COVID-19 önlemleri
kapsamında kurul üyelerinden ıslak imza alınmadığı için bu onay mektubu üye ve raportör olarak Fatma
Nevra Seggie tarafından bütün üyeler adına e-imzalanmıştır.

Saygılarımızla, bilgilerinizi rica ederiz.

Prof. Dr. Fatma Nevra SEGGIE
ÜYE

e-imzalıdır
Prof. Dr. Fatma Nevra SEGGIE
Raportör

SOBETİK 22 13.10.2021

Bu belge 5070 sayılı Elektronik İmza Kanununun 5. Maddesi gereğince güvenli elektronik imza ile imzalanmıştır.



T.C.
İSTANBUL VALİLİĞİ
İl Millî Eğitim Müdürlüğü

GÜNLÜDÜR

Sayı : E-59090411-44-44619591
Konu : Anket ve Araştırma İzni (Fatma Banu ÖZBEK)

01.03.2022

BOĞAZIÇI ÜNİVERSİTESİ REKTÖRLÜĞÜNE
(Sosyal Bilimler Enstitüsü Müdürlüğü)

İlgi : a) Yenilik ve Eğitim Teknolojileri Genel Müdürlüğünün 21.02.2020 tarihli ve 2020/2 sayılı genelgesi.
b) Valilik Makamının 24.02.2022 tarihli ve 44368843 sayılı oluru.

Valilik Makamının Anket ve Araştırma İzni konulu ilgi (b) oluru ve kullanılması uygun görülen ölçme araçlarının Müdürlüğümüzce müburlenen örnekleri ekte gönderilmiştir.

İlgi (a) genelgenin 28. maddesinde; "Araştırma uygulama izni alan kamu kurum ve kuruluşları, uluslararası kuruluşlar, üniversiteler, sivil toplum kuruluşları ve araştırmacılar tamamladıkları bilimsel araştırma ile ilgili sonuç raporlarını, izni aldıkları ilgili birime çalışma bitiminden itibaren 30 gün içerisinde göndereceklerdir." ifadesi yer almaktadır.

Olur gereğince işlem yapılması ve araştırma sonuç raporunun ekte sunulan örneğe göre Müdürlüğümüz Strateji Geliştirme Şubesine gönderilmesi hususlarında gereğini arz ederim.

Abdullahman ENSARİ
İl Millî Eğitim Müdürü a.
Şube Müdürü

Ek:

- 1- Valilik Oluru (1 Sayfa)
- 2- Rapor Örneği
- 3- Ölçekler

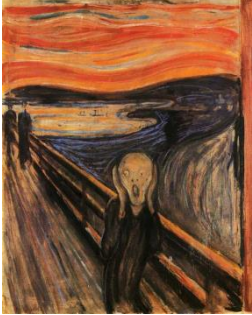

Bu belge güvenli elektronik imza ile imzalanmıştır.

Adres : Bızcıdere Mah. İsmail Ökten Cad. No: 1 Sultanahmet Fatih İstanbul Belge Doğrulama : <https://www.turkiye.gov.tr/meb-elys>
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Kep Adresi : meb@hs01.kep.tr İnternet Adresi : <http://istanbul.meb.gov.tr/>

Bu evrak güvenli elektronik imza ile imzalanmıştır. <https://evraksorgu.meb.gov.tr> adresinden 4532-edf0-3c42-9e24-68c9 kodu ile teyit edilebilir.

APPENDIX M

WRITING PROMPTS WITH DISCUSSION QUESTIONS

Visual Input	Bloom Taxonomy Adapted Discussion Questions	Writing Prompt
 <p><i>The Scream,</i> <i>Edward Munch,</i> <i>1895</i></p>	<ol style="list-style-type: none"> 1. What kind of adjectives would you use to describe the artwork? (Knowledge) 2. What is the main message or feeling that you get? (Comprehension) 3. Do you know another painting that gives away a similar message? (Application) 4. What can you say about the painter after seeing the painting? (Analysis) 5. If you could, what would you change about the painting? (Evaluation) 6. If you were to rename the painting, what would the title be? (Synthesis) 7. What do you think happens before and after this particular scene in the painting? (Synthesis) 8. If this painting had sound effects, what would they sound like? (Synthesis) 	<p>Which one of the following statements do you agree? Pick one and write an essay of 200 words about this topic.</p> <ol style="list-style-type: none"> a. “The whole secret of existence is to have no fear.” <i>Vivekananda</i> b. We all scream and we all have fears. <p>Please follow these three steps to plan for your writing:</p> <ol style="list-style-type: none"> (1) Giving your opinions on agreeing or disagreeing with the writing topic; (2) Generating and evaluating ideas and evidence that are for and against the writing topic; (3) Selecting and organizing ideas and evidence into a writing plan.
 <p><i>The Potato Eaters,</i> <i>Vincent van Gogh,</i> <i>1885</i></p>	<ol style="list-style-type: none"> 1. What kind of adjectives would you use to describe the artwork? (Knowledge) 2. Who do you think these people are and what do they represent? (Comprehension) 3. Can you think of a similar instance in which you have had or observed a similar environment? (Application) 4. What is the underlying theme of the painting? (Analysis) 5. Can you evaluate the value of coming together at the same table with family members? (Evaluation) 6. Can you imagine what kind of thoughts go through their minds? (Synthesis) 	<p>Which one of the following is the most important factor in surviving and succeeding in today’s world? Pick one and write an essay of 200 words about this topic.</p> <ol style="list-style-type: none"> a. Unity b. Effort c. Luck <p>Please follow these three steps to plan for your writing:</p> <ol style="list-style-type: none"> (1) Giving your opinions on agreeing or disagreeing with the writing topic; (2) Generating and evaluating ideas and evidence that are for and against the writing topic; (3) Selecting and organizing ideas and evidence into a writing plan.



*What is going on,
Paul G. Fischer,
1899*

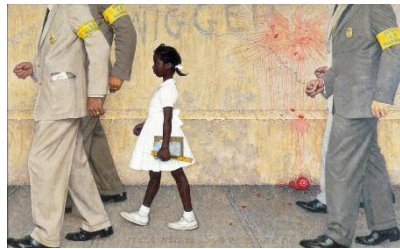
1. Where do you think this place is? (Knowledge)
2. What kind of adjectives would you use to describe the artwork? (Knowledge)
3. What do you think could have happened next? (Comprehension)
4. Can you think of an instance where you come across with something similar? (Application)
5. What event do you think happened there? (Analysis)
6. Can you criticize people's reactions and attitude in the painting? (Evaluation)
7. If you could ask the painter a question, what would your question be? (Synthesis)
8. What would it like to be in this painting and what would you do? (Synthesis)

Which one of the following quotes do you agree? Pick one and write an essay of 200 words about this topic.

- a. "Curiosity kills the cat." *Steven Wright*
- b. "Curiosity keeps leading us down new paths." *Walt Disney*

Please follow these three steps to plan for your writing:

- (1) Giving your opinions on agreeing or disagreeing with the writing topic;
- (2) Generating and evaluating ideas and evidence that are for and against the writing topic;
- (3) Selecting and organizing ideas and evidence into a writing plan.



*The Problem We All Live With,
Norman Rockwell,
1963*

1. Who is the girl? (Knowledge)
2. What kind of adjectives would you use to describe the artwork? (Knowledge)
3. What is the main message or feeling that you get? (Comprehension)
4. Can you think of an instance where you come across with something similar? (Application)
5. What does this painting say about the world we live in? (Analysis)
6. Can you argue the reasons why the girl is accompanied by four Marshalls? (Evaluation)
7. What do you think happens before and after this particular scene in the painting? (Synthesis)
8. If you were to rename the painting, what would the title be? (Synthesis)

What is your opinion about the following question? Write an essay of 200 words about this topic.

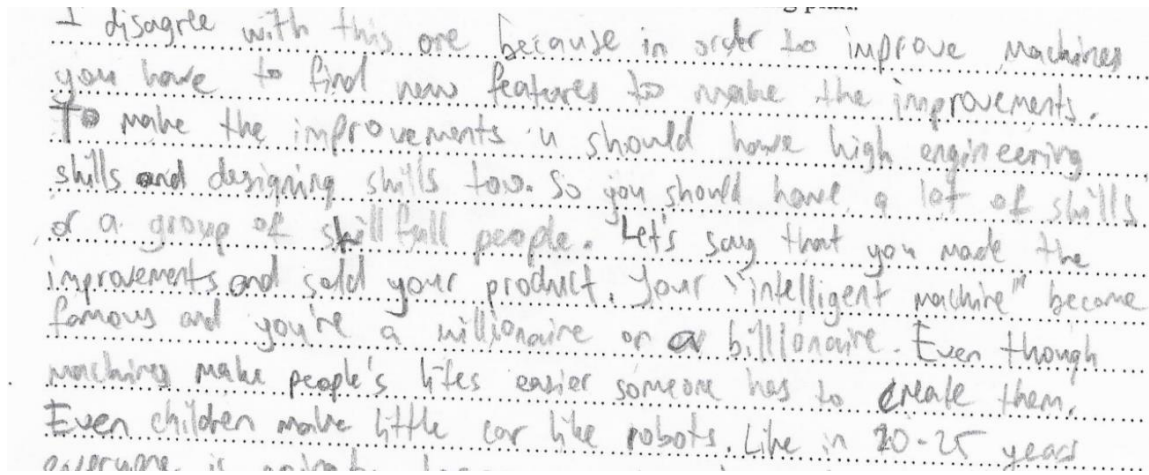
- Will racism ever disappear?

Please follow these three steps to plan for your writing:

- (1) Giving your opinions on agreeing or disagreeing with the writing topic;
- (2) Generating and evaluating ideas and evidence that are for and against the writing topic;
- (3) Selecting and organizing ideas and evidence into a writing plan.

APPENDIX N

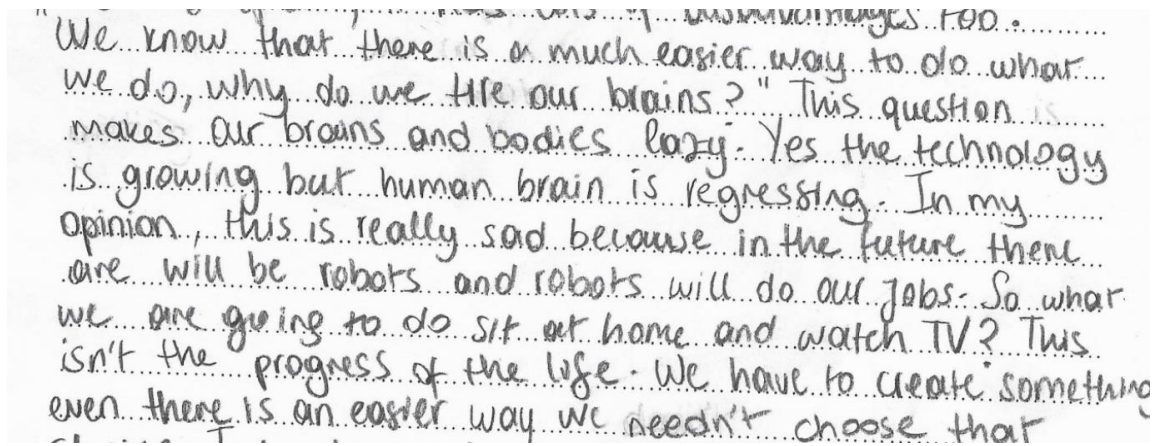
SAMPLES FROM RATED PAPERS



I disagree with this one because in order to improve machines you have to find new features to make the improvements. To make the improvements u should have high engineering skills and designing skills too. So you should have a lot of skills of a group of skill full people. Let's say that you made the improvements and sold your product. Your "intelligent machine" became famous and you're a millionaire or a billionaire. Even though machines make people's lives easier someone has to create them. Even children make little car like robots. Like in 20-25 years...

A sample from VTS discussion group, post-test prompt

In this extract, it can be seen that the learner presented a claim and made a point at the beginning. Afterwards, the observation shared is supported with an example and the learner justifies the claim made. Observation + Evidence



"We know that there is a much easier way to do what we do, why do we tire our brains?" This question makes our brains and bodies lazy. Yes the technology is growing but human brain is regressing. In my opinion, this is really sad because in the future there are will be robots and robots will do our jobs. So what we are going to do sit at home and watch TV? This isn't the progress of the life. We have to create something even there is an easier way we needn't choose that...

A sample from VTS discussion group, post-test prompt

In this extract, the learner presents an argument and criticizes the observation made. Also, making the reader question the observation with the writing style. There is also speculation regarding the possible outcomes. Observation + Speculation

I don't think our brains will get lazy. Machines can't do creative thinking, so humans would still need to do a lot of thinking.

Machines do what they are told. They can't go outside the boundaries of their code. This would limit them from thinking freely. That's why they can't do creative thinking. In fact, the only change automated machines is further automation in our lives. We would still need to do a lot of thinking. Even though machines can think very well, I don't think they will be able to reach human level of thinking.

A sample from digital VTS discussion group, post-test prompt

In this extract, the learner supports an argument or opinion with further explanation. The way the explanation is done is quite clear and to-the-point. While the argument is given, the justification is made through evidence and the learner makes inferences based on the observation done. Observation + Evidence + Inference + Elaboration

intelligent machines, our brains will be even lazier. Our brains get smarter, better when we actively use it and if we don't use it, it will get lazier. Intelligent machines will take over some jobs as well, especially, doctor, factory workers, maybe taxi driving and even more in future. I think that some people will not even work because machines will take over. Some people will get richer and many people will become poor and probably the money they earn will not be enough to live. If you want to avoid that, you should be the one to make or design the machines to get richer. I don't think that our brain will become lazy instantly. It will take 100-150 years to become "lazy" and it is a slow process so there is still time to avoid being

A sample from digital VTS discussion group, post-test prompt

In this extract, the observations are clearly stated and supported with examples. The argument is well-justified and reflection is made on the observations. Inferences are made by speculation and deduction. Observation + Evidence + Reflection + Inference

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