

**Utilizing Ergonomics Based Instruction  
to Develop College Students' EFL Creative  
Writing Skills**

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## Abstract

The current study aims at developing English major's EFL creative writing skills through using Ergonomics based instruction. Sixty two students were randomly divided into two groups: experimental (n=٣١) and control (n=٣١). The experimental group received ergonomics based instruction whereas the control group received regular instruction. An EFL creative writing skills pre-post test was prepared and administered. Results confirmed the significant effect of the ergonomics based instruction on developing the creative writing skills. The students of the experimental group outperformed those of the control one.

**Keywords:** Ergonomics based instruction, EFL creative writing skills, and college students

## ١.١ Introduction

Writing is a basic means for communication that has an important role in constructing knowledge, supporting thinking, and making meaning. It supports reflection on and integration of new knowledge with existing information (Jabali, ٢٠١٨; Su Ping, Verezub, Adi Badiozaman, & Chen, ٢٠١٩). Writing is a distinctive learning mode that contributes to the development of thinking and has a number of features that uniquely match some effective learning strategies. Besides, analysis and synthesis, as higher cognitive functions, appear to be completely enhanced with the help of writing. Thoughts and experiences are made clear and impressive helping people to learn things in all knowledge branches.

Awada, Burston, and Ghannage (٢٠١٩); Jabali (٢٠١٨); Su Ping et al. (٢٠١٩); Tsao, Tseng, and Wang (٢٠١٧); Zarei, Pourghasemian, and Jalali (٢٠١٧) confirmed that writing is the most difficult skill for foreign language learners to master. The challenge lies in creating and sorting out thoughts, yet in addition, in making an interpretation of these thoughts into comprehensible readable texts. The abilities associated with writing are exceptionally intricate. Foreign language writers need to focus on various skills such as planning, organizing, spelling, and word choice.

Recently, there has been noteworthy increase in the utilization of ergonomics in planning and using different sorts of environments where students perform tasks that constitute a major factor of achieving learning goals (Thatcher, Waterson, Todd, & Moray, ٢٠١٨; Tolan, ٢٠١٦; Tsang, So, Lau, Dai, & Szeto, ٢٠١٩). Using ergonomics based instruction supports the

ability to systematically define, design, and develop effective, safe, comfortable and efficient working, learning, and living environments (Liu, Cui, & Dong, ٢٠١٥; Saeed & Ghazali, ٢٠١٧).

### ١.٢ Background of the problem

The problem of the current study was derived from the following resources : **First**, as far as the researchers know, due to their work as teaching staff of TEFL, most English major students' writing performance was poor and their scores were low. Most of them could not write fluently or correctly. Their performance reflected weakness in their writing skills .

**Second**, the review of some related studies, which tackled EFL learners' level of creative writing skills, revealed that there is a weakness in their writing skills in general, and in the creative skills in particular. This weakness is not only at the college level, but also in all levels of education (Abd El-Hallim, ٢٠١١; Abdullatif, ٢٠٠٦; El-Enany, ٢٠٠٩; Mogahed, ٢٠٠٧; Mohammed, Abdel-Hack, & Okasha, ٢٠١١) .

**Third**, a pilot study was conducted to confirm, document and diagnose the problem on a real and scientific basis. The researchers prepared a creative writing test to which a group of ٢٥ EFL students was asked to respond. The participants were second year students enrolled in the English Department, Faculty of Education, Menoufia University, during the second semester of the ٢٠١٨-٢٠١٩ academic year. Findings revealed the profound weakness in their creative writing skills. Their scores confirmed that they have difficulty writing in a creative manner .

### ١.٣ Statement of the problem

The problem of the current study lies in the weakness of ٢nd year English major students, Faculty of Education in creative writing skills. Most of them could not produce unified, coherent, original, fluent, or correct pieces of writing .

### ١.٤ Purpose of the study

The current study aims at developing ٢nd year English major students' creative writing skills (originality, fluency, flexibility, and accuracy) through using the ergonomics based instruction.

### ١.٥ Questions of the study

The current study attempted to answer the following main question :

What is the effectiveness of using Ergonomics Based Instruction in developing ٧nd year English major students' creative writing skills ?

Out of this main question, the following sub questions were stated :

١. What are the creative writing skills ٧nd year English major students should possess ?

٢. How far is the Ergonomics Based Instruction effective in developing ٧nd year English major students' overall creative writing skills ?

a. To what extent is the Ergonomics Based Instruction effective in developing ٧nd year English major students' accuracy skill ?

b. To what extent is the Ergonomics Based Instruction effective in developing ٧nd year English major students' flexibility skill ?

c. To what extent is the Ergonomics Based Instruction effective in developing ٧nd year English major students' fluency skill ?

d. To what extent is the Ergonomics Based Instruction effective in developing ٧nd year English major students' originality skill ?

#### ١.٦ Hypotheses of the Study

١. There would be a statistically significant difference between the mean scores of the experimental group and those of the control group on the overall creative writing skills in favor of the experimental one .

٢. There would be a statistically significant difference between the mean scores of the experimental group and those of the control group on the accuracy skill in favor of the experimental one .

٣. There would be a statistically significant difference between the mean scores of the experimental group and those of the control group on the flexibility skill in favor of the experimental one .

٤. There would be a statistically significant difference between the mean scores of the experimental group and those of the control group on the fluency skill in favor of the experimental one .

٥. There would be a statistically significant difference between the mean scores of the experimental group and those of the control group on the originality skill in favor of the experimental one .

#### ١.٧ Design of the study

The present study was a pre-posttest quasi experimental study. The two groups were pre-tested to assure the homogeneity of their entry level. The experimental group received Ergonomics Based Instruction whereas the control group received regular instruction. Both groups were post-tested.

### ١.٨ Delimitations of the Study

The current study was confined to :

١. A group of ٢nd year English major students (n=٦٢), Faculty of Education, Menoufia University as they are supposed to have basic writing skills and computer skills .

٢. The second semester of the ٢٠١٨-٢٠١٩ academic year .

٣. Four EFL creative writing skills: fluency, originality, flexibility, and accuracy .

### ١.٩ Significance of the study

The current study is significant as it might help :

١. EFL students develop their creative writing skills in an easy and attractive manner. It could enable them to write creatively .

٢. EFL instructors as it offers ergonomics based instruction that exerts a powerful influence on learning and behavior and can help them develop their students' creative writing skills. In addition, it provides them with some effective devices to assess their students' creative writing skills. Also, it could enable them teach EFL more smoothly and effectively .

### ١.١٠ Terminology

#### Creative Writing

Out of creative writing definitions presented by some previous studies (Ann Thaxton, ٢٠١٤; Hanauer & Disney, ٢٠١٤; Morris & Sharplin, ٢٠١٣; Viana & Zyngier, ٢٠١٩), the current study defines creative writing as the ability to express thoughts and feelings on paper in a way that is original, fluent, flexible and accurate.

#### Ergonomics based instruction

The current study adopts the definition of Frederick Knirk (١٩٩٢) which views Ergonomics based instruction as the study of the relationship between students, the work that they perform, and the environment in which such mental and physical activities take place .

### ٢. Review of Literature

#### ٢.١ EFL Writing Challenges

According to Donnelly (٢٠١٠); Su Ping et al. (٢٠١٩), writing is the way that helps make sense of our world. Unfortunately, for numerous EFL learners, English writing appears to be challenging. Among the aspects of writing complexity are the following :

١. As He, Gou, Chien, Chen, and Chang (٢٠١٣); Morris and Sharplin (٢٠١٣); Sauro and Zourou (٢٠١٩); S. Wu, Quentin Dixon, Sun, and Zhang (٢٠١٩) stated, writing is a difficult process as it involves finding words to represent ideas, crafting sentences to express those ideas, and applying both logical and narrative structure to organize those sentences often all at the same time. If writing involves creativity, then the writer must go even a step further. This process requires as close to total concentration as possible. It is a solitary and individual process that works best when free of distractions .

٢. As Bishop, Bizzaro, Culhane, and Cook (٢٠١١); Giberson and Moriarty (٢٠١٠); Nowbakht (٢٠١٩) referred, writing is a noteworthy intellectual challenge because it is a test of thinking ability, language, and memory. A high level of verbal capacity is important to create strong content that unmistakably communicates the ideational substance. Writing capacity further relies upon the capacity to contemplate substantive issues .

٣. According to Bishop et al. (٢٠١١); (Giberson & Moriarty, ٢٠١٠; Hirvela, ٢٠٠٤); Nowbakht (٢٠١٩); S. Wu et al. (٢٠١٩), the nature of writing itself is not interesting enough to motivate English learners to practice regularly. For EFL students, nothing is more disheartening than completing a writing assignment. Barely any individual feels good with a formal composition task .

٤. As referred by Billig (٢٠١٣); He et al. (٢٠١٣); Villamil and de Guerrero (٢٠٠٦), time pressure hinders learners' writing effectiveness. In the EFL classroom, learner will in general be constrained to finish their writing in a specific length of time. Thus, numerous students occasionally cannot accomplish their tasks. An expected problem in the writing classroom is that some students take longer time than others to compose their required pieces of work. Many never finish their writing in class. Time pressure is not often considered a realistic constraint for composing lengthy articles and writing timed scheduled essays does not regularly done outside the scholarly life. For most people, the writing process is lengthier and may involve several tasks before a finished version is produced .

٥. Billig (٢٠١٣); He et al. (٢٠١٣); Nowbakht (٢٠١٩); Praminatih, Kwary, and Ardaniah (٢٠١٩); Ramlal and Augustin (٢٠١٩); Villamil and de Guerrero (٢٠٠٦) maintained that producing expanded, rational, coherent, and fluent writing piece is likely the most difficult thing in language since

the reader has to comprehend what has been composed without requesting illumination or depending on the writer's tone of voice or expression.

### ٢.٢. Forms of Writing

Writing can be arranged into two types: functional and creative. Functional writing refers to the type of writing that intended to convey a specific, direct, and clear message to a particular audience (Praminatih et al., ٢٠١٩). It includes areas such as writing instructions, letterheads, notes, invitations, reports and advertisements. On the other hand, creative writing is a form of writing by which learners express their feelings, emotions, reactions, and ideas in a great literary style (Viana & Zyngier, ٢٠١٩).

This kind of writing involves numerous genres such as writing short stories, poems, plays, novels, articles and descriptions. Fancourt, Garnett, Spiro, West, and Mullensiefen (٢٠١٩) indicated that creative writing can offer avenues of expression, build reading and writing skills, as well as much-needed confidence in the classroom. It strengthens connects among students and the instructors who work with them. It also encourages self-expression, cultivates confidence, upgrades relational abilities, and improves the learners' trust in figuring out how to peruse and write in a foreign language. Stephens (٢٠١٨) referred that the greatest joy of the teacher and the greatest hope for better world lies in the cultivation of creative power. Creativity is the main source of emergence and development of human culture .

### ٢.٣ Creative Writing

Many researchers have presented definitions of creative writing. According to Cain, Ritter, and Vanderslice (٢٠٠٧); Fancourt et al. (٢٠١٩); Mills (٢٠٠٦); Peary and Hunley (٢٠١٥); Reilly and Langan (٢٠١٨), creative writing can be defined as the writing that expresses the writer's thoughts and feelings in a deep, imaginative often unique way that is described by generating original, consistent, and coherent ideas. Mansoor (٢٠١١) defined creative writing as an open-ended design process that builds on innovativeness and is important to learners' thinking skill development .

#### ٢.٣.١ Importance of Creative Writing

Grainger, Gouch, and Lambirth (٢٠٠٥); Smith (٢٠٠٥) asserted that creative writing has progressively gained prominence in the university level because it hones the students' abilities to express their thoughts in a clear way. In addition, it stimulates their imagination, and encourages them

explore life beyond limitations and structure. Zhao (٢٠١٤) assured that creative writing helps students to entertain, foster artistic expression, explore the functions and values of writing, stimulate imagination, think clearly, search for identity and learn to read and write .

Freiman (٢٠١٥) indicated that creative writing stimulates students' imagination and originality helping them to feel the thrill of expressing their own ideas in forms which are different from the usual writing tasks. Creative writing is a tool for language skills development. Stephens (٢٠١٨) described creativity as one of six levels of language skill development. Thus, the role of language teachers can be viewed as procedural facilitators who help students use creative writing techniques and strategies to empower learners to retrieve, combine, and synthesize information, experiences, and images in innovative ways. Creative writing is essential for developing students' cognitive and communication skills as well as their literacy. Creative writing might be viewed as an essential piece of any language program where students are required to achieve high levels of language proficiency as creative writing helps using the language in a skillful manner . Freiman (٢٠١٥); Zhao (٢٠١٤) mentioned the following benefits for creative writing: it is a tool for:

١. developing the students' ability to use words in a powerful and pleasurable way .
٢. helping students discover their creative abilities, increase their awareness, flourish their spirits and emotions .
٣. active involvement, as it provides the perfect opportunity to put out knowledge and feelings to somebody .
٤. self-instruction. Creative writing is one place where learners have the opportunity to express and communicate their thoughts and ideas. It is very useful for training students to express their interests, feelings, ideas, needs, and knowledge in the foreign language and to express them as clearly and correctly as they would do in their mother tongue .

Being skilled at using language creatively has become a valuable asset for a wide range of jobs. The skills that have the most value in the new economy include: the ability to manipulate language, to affect audiences in powerful ways, and to craft evocative stories, characters, images, and voices. Creative writing offers learners the chance to take more control of their own lives through language and imagination skills. Creative Writing can help people



gain more control and understanding of their means of communication (Berninger et al., ٢٠٠٢; He et al., ٢٠١٣; Morris & Sharplin, ٢٠١٣; Rog, ٢٠٠٧; Villamil & de Guerrero, ٢٠٠٦; Wallwork, ٢٠١١; Yancey, Robertson, & Taczak, ٢٠١٤; Zheng, ٢٠١٣).

According to Dai (٢٠١٠), creative writing inspires learners to compose, improves their self-awareness and empowers them to think. It is a powerful method to teach English as a foreign language not only because it is a decent way for improving students' capability in English, but also it has been proven to be an essential part of the recuperation experience of individuals influenced by serious psychological instability. Creative writing has a beneficial role in psychosocial rehabilitation or psychotherapy for people recovering from severe mental illness. It is considered as a means of repairing a fundamental flaw in symbolic functioning, and as a form of cognitive remediation (King, Neilsen, & White, ٢٠١٢).

### ٢.٣.٢ Creative Writing Skills

#### Fluency

The initial step to creative thinking or any imaginative task is having many thoughts as could be allowed to browse, manipulate, inquire about, or assess. Fluency is the capacity to produce many thoughts, which facilitates the innovative process. A literature review has provided a number of definitions for the fluency skill. Tuan (٢٠١٠) defined it as the learner's capacity to produce language in real time without undue pausing or hesitation. Isbell and Raines (٢٠١٣) defined fluency as the generation of many different ideas. The emphasis here is on the number of ideas produced.

The student is fluent when he becomes more proficient at writing down words and sentences into compositions of gradually increasing length. Fluency can be measured by counting the all number of words composed amid a short composition task. At the point when fluency is the center, incorrect spellings, poor word decision, and wrong punctuation are not considered. Consideration is just coordinated to the students' facility in making an interpretation of their ideas into words. Fluency can be estimated through the composition speed (the quantity of words delivered within a limited length of time) and the degree of task completion.

The fluency skill consists of a number of sub-skills. Writing coherent and unified texts, using rich variety of vocabulary, and generating a wide range of ideas are among the fluency sub-skills. Among the recommended procedures for developing fluency is brainstorming. Students can brainstorm as a class or in groups to construct fluency by making lists or concept maps. Brainstorming using some internet applications such as a wiki page can advance longer-term fluency since it enables learners to include more out of this world to them. There are also other fluency prompts like asking the students to think about things that have a particular feature (e.g. fast, open, fly) .

### **Flexibility**

Flexibility is the capacity to take a gander at an inquiry or subject from an alternate edge. One can do this by moving to a contradicting perspective, direction, time, or place. Isbell and Raines (٢٠١٣) defined flexibility as the ability to change direction or think in another way. As stated by Starko (٢٠١٠), flexibility in thinking generally denotes the capacity to take a gander at a circumstance from numerous perspectives or to produce numerous classifications of reactions. Flexibility produces an assortment of thoughts. Constraining one's perspective to a sole point of view limits potential outcomes. Adaptable masterminds find totally different areas of probability, including distinctive clarification of logical information. Flexibility additionally advances relational and culturally diverse comprehension. It may likewise prompt innovation, the most subtle part of imagination.

Morris and Sharplin (٢٠١٣) measured flexibility in two ways, idea-list flexibility and story flexibility. Idea-list flexibility was defined as the number of different kinds of ideas which appeared in each day's list whereas story flexibility was defined as the number of different approaches to the topic that the learner used in the story itself .

The student is flexible when he is able to think divergently in varied directions of thinking to generate as many varied ideas as possible for writing (Su Ping et al., ٢٠١٩). In addition, the student is flexible when he is able to think about topics from different points of view. A flexible writer can write freely using varied linguistic patterns showing high linguistic competency. Flexibility in writing is a strong sign of high mental and communicative abilities. Based on the flexible thinking ability, a student can

show a flexible writing ability. Consequently, it is vital to develop students' divergent thinking skills in order to help them write flexibly (Giberson & Moriarty, ٢٠١٠). In addition, it is recommended to expose the students to a wide variety of language styles, structures, and patterns so as to help them write flexibly .

Flexibility, at the level of ideas, can be built through using unexpected juxtapositions, such as combining different senses, time periods, people, or places. Other prompts may include asking learners to think about other uses for things (e.g. uses for a paperclip). Paraphrasing is another good exercise for developing the students' flexibility skill at the level of words and sentences .

### **Originality**

Originality is the quality that creates exceptional thoughts or unique unusual ideas. It requires the greatest risk-taking and is the heart of innovation. Perhaps, it is one facet of creativity that cannot be forced, only reinforced. Isbell and Raines (٢٠١٣) claimed that originality is the generation of truly unique ideas. These ideas are not like any other products; they are one-of-a-kind ideas. Zergollern-Miletić and Horváth (٢٠٠٩) considered every student writer as a thinker and original learner. The literature on writing placed originality as an important component of powerful writing. The notion of writing is tightly connected with identity as writers have to represent themselves in their texts and establish their identities. Originality is their way to establish identities. Thinking in a new way, generating unique ideas, and finding unfamiliar solutions may help students be proud of their work and feel different. This is a profound need that should be met by special circumstances in learning contexts. Originality may emerge from unlikely juxtapositions, similar to flexibility prompts. Students can be asked to think about unfamiliar or unique aspects of things (e.g. unfamiliar places for rest, strange use for gum) .

### **Accuracy**

Tuan (٢٠١٠) defined accuracy as the ability to avoid error in performance, possibly reflecting higher levels of control in the language. The accuracy skill is a basic feature in any effective writing. It is not appropriate to write in an original flexible and fluent way with numerous errors. This negatively affects the audience. Accuracy skill covers a wide range of sub-skills such

as grammar, structures, punctuation, capitalization, and spelling. Accurate writing reflects accurate high language competency. High accuracy in writing is a strong indicator of success in many school subjects .

#### ٢.٤ Ergonomics based Instruction

Ergonomics deals with the application of information about learners' behavior, abilities and limitations to the teaching of English as a foreign language. Ergonomics emphasize the utilization of tools, tasks, activities and environments for productive, safe and effective human use (Kedzior, ٢٠١٨). The objective of ergonomics is to guarantee a solid match between the learners and their learning environment, consequently amplifying learners' wellbeing, health, productivity and efficiency .

The formal meaning of ergonomics, endorsed by the International Ergonomics Association (IEA), is that Ergonomics (or human variables) is the logical control worried about applying hypotheses, standards, information and strategies to structure in order to optimize human well-being and overall system performance (Dul & Weerdmeester, ٢٠٠٨; Thatcher et al., ٢٠١٨). Ergonomics, also referred to as human factors, is the science of properly fitting the work environment to a person. It is important to ELT professionals due to the opportunities for improving human performance within the work environment .

According to Kroemer Elbert, Kroemer, and Kroemer Hoffman (٢٠١٨), most of performance improvement opportunities reside in the environment. The environment may be a work tool or piece of equipment or the spatial surroundings in which learning is conducted (Muchinsky, ٢٠٠٠). The goal of ergonomics is to help students to be more effective by matching the requirements and demands of learning to the abilities and limitations of learners rather than trying to force learners to fit learning. (Pyzdek, ٢٠٠٣; Womack & Jones, ٢٠٠٣). Ergonomics can be applied on a micro- as well as a macro-scale. It could be connected to new design as well as existing ones, and its adequacy can be judged. In short, ergonomics allows us to ever strive to improve human and system performance, comfort, and the quality of life (Gaudiot & Martins ٢٠١٩; Thatcher et al., ٢٠١٨) .

#### The Ergonomics of Curriculum

According to Choppin, Roth McDuffie, Drake, and Davis (٢٠١٨), curriculum ergonomics concentrates on how curriculum materials impact the teachers' work, and how they can intentionally be designed to ease or

direct the accomplishing specific types of guidance; an emphasis on ergonomics investigates how educational programs' design can push instructors to change their use of curriculum resources and ultimately how they transform their instructional practices.

Curriculum ergonomics looks into mingling design in the digital context by thinking about how the design of digital resources can help teachers to select and design tasks with special characteristics and sequencing that match teachers' planning (Morose, ٢٠٠٧). Accordingly, a vital potential result of considering the ergonomics of educational programs' use is the improvement standards for supporting teachers' capacity to understand and utilize curriculum resources to design and enact productive lessons.

### **Classical Ergonomics vs. Cognitive Ergonomics**

Classical ergonomics is considered with the design of machines and the conditions in which they were arranged progressively perfect with learners' activities, with the objective of utilizing machines in more secure, increasingly agreeable, and at last progressively beneficial ways. Research in classical ergonomics concentrated on the physical parts of work and human capacities, for example, power, stance, and reiteration. Cognitive ergonomics paradoxically, centers on the mental parts of work as far as how work influences the brain and how the mind influences the work. cognitive ergonomics emphasizes situational mindfulness and the utilization of educational modules and materials (Leaver & Reader, ٢٠١٦).

### **The Interaction between Curriculum Design and Use**

The main focus of curriculum ergonomics centers on the interaction between the design of curriculum and its usage. It is the connection between the work that teachers exercise to design instruction and the agency imparted by the resources, in that the resources have a great effect on educators' activities (Remillard, ٢٠٠٥, ٢٠١٦). Besides, the idea of resources is conceptualized as something to be altered by instructors according to the setting in which they educate (Ruthven, ٢٠١٢).

Curriculum design occurs in various phases and at different distances from classroom instruction. Remillard (٢٠٠٥) depict three stages: the printed curriculum including digital form; the proposed curriculum teachers plan and transform according to curriculum resources; and the assigned curriculum that is what actually happens in classrooms when lesson plans

are implemented (Choppin et al., ٢٠١٨; Xu, Furie, Mahabhaleshwar, 'Suresh', & Chouhan, ٢٠١٩.)

In short, curriculum ergonomics refers to teachers' capacity to use materials; the alignment design aims and examples of curriculum use; the manners in which curriculum materials impact teaching; and the ways curriculum materials push teachers to take up new types of teaching methods that dissolve boundaries between plan and use (Choppin et al., ٢٠١٨). It underlines how curriculum materials are important tools for teachers to use when designing instruction. Therefore, according to Chedi (٢٠١٥); Choppin et al. (٢٠١٨), the following ergonomics assumptions can be stated:

- ١-Teachers take part in designing dynamic activities draw from curriculum resources to plan, and enact lessons;
- ٢-Teachers work within instructional settings that impact their practices ;
- ٣-Teachers' professional development, belief framework, and prior instructional experiences influence how they perceive and use curriculum resources.

### **Ergonomics Environment**

Ergonomics recommends creating a stress-free environment through the integration of soft background music, relaxation techniques, and Yogic exercises. The active relaxation consists of physical stretching of the body, paying close attention to the neck, head, and shoulders. Sometimes these exercises were done sitting down on comfortable chairs and at times, they would be standing up (Butt, ٢٠١٢; Gu, Zhang, & Gu, ٢٠١٩; Martins & Gaudiot, ٢٠١٢). Tension waves for relaxation were also used. This exercise consists of dividing the body into six sections and pressing tension on one section, holding the tension, and then relaxing each body part. This was done through different sections of the body. Yogic breathing was considered a good relaxation technique. The process consists of exhaling deeply yet slowly and then, inhaling through the nose paying attention to the abdomen and chest. This was done more than one time following a specific process with the purpose of emptying stale air out of the lungs which was then followed by mind calming exercises. The purpose was to calm the mind after students were physically relaxed. The process consists of watching one's breathing and experiencing imaginative fantasy trips. During these trips, students were encouraged to close their eyes and imagine a pleasant

experience (Butt, ٢٠١٢; Gu et al., ٢٠١٩; Martins & Gaudiot, ٢٠١٢; Thatcher et al., ٢٠١٨; Tsiriotakis, Vassilaki, Spantidakis, & Stavrou, ٢٠١٦) .

Memories of fulfillment and motivational situations possibly from the past when students felt secure and motivated to learn were often used. These imaginary scenes had to be explained with details paying close attention to how the students would feel, who is around, and physical descriptions of the place (Chedi, ٢٠١٥; Choppin et al., ٢٠١٨; Mok & Fan, ٢٠١٨). The teacher who would be guiding this trip plays a rather important role since the message needed to be portrayed in a calm manner, paying attention to pauses and tone of voice (Dziuban, Picciano, Graham, & Moskal, ٢٠١٥; Martins & Gaudiot, ٢٠١٢; Tsiriotakis et al., ٢٠١٦). Researchers argue that there are advantages of relaxation and fantasy trips which include discipline problems, more eagerness to participate in classes, more enthusiasm for classwork, and a union of reason with intuition for creative thinking (Saperia et al., ٢٠١٩). In other words, these fantasy trips or relaxation techniques may be beneficial to calm down students who may have disciple problems and lack of concentration. Other researchers have also studied the connection of these elements in student achievement. The musical compositions are very emotional, with a great wealth of melody and harmony and with great dynamic and rhythmic concerts (Veloso & Carvalho, ٢٠١٢) .

### **Classroom Settings**

The classroom can be a pleasant place to enhance the student's learning atmosphere if the chairs are comfortable and the teaching pantomimes are attractively arranged. The walls are painted in a cheerful colour, and plants can be arranged to provide a home-like atmosphere. Pictures, representative of different cultures, can also be posted to promote cultural appreciation. A lively, varied set of stimuli can also be maintained through seating patterns. Semi-circle seating is far more preferable than conventional row blocks. The W shape is recommended when the class is large. When students are looking at each other, seeing faces and real expressions, they are much more likely to engage in a real communication with each other and allow full eye-contact when doing pair work (Tsiriotakis et al., ٢٠١٦; Zyngier, Viana, Burke, Fialho, & Zyngier, ٢٠١٦) .

### **EFL Learning Environment**

Wu (٢٠٠٦) claimed that designing a strong learning environment for foreign language learning includes allowing spaces for small group and peer-to-peer interactions, making print and other materials available in the target language. The EFL learning environment can be achieved to the utmost if visual stimuli are appropriately arranged. It is important to create posters that blend language paradigms with decorative visual shapes, balanced in different colors (Shinn, Romaine, Casimano, & Jacobs, ٢٠٠٢; Taylor, ٢٠٠٩; Thatcher et al., ٢٠١٨). Attractive, aesthetically pleasing ethnic landscapes and cultural scenes can be arranged to surround language information posters (Puteh, Che Ahmad, Noh, Adnan, & Ibrahim, ٢٠١٥; Woolner & Hall, ٢٠١٠; W. Wu, ٢٠٠٦). Visual images and linguistic content together can stimulate both hemispheres of the brain for active decoding. The pictures and visual objects can be replaced and rearranged in order to keep the room visually alive.

Informing and sharing learning strategies with support staff, such as librarians, physical education teachers, and music teachers are essential for effective EFL learning environment. He, Chang, and Chen (٢٠١١) assured that a good learning environment has to improve the learning outcome, provide learners with care and support, inspires and boosts the learning spirit, cultivates responsibility in the learner. The EFL learning environment elements can be effectively managed, and frequently experienced, by examining those participating in the teaching learning process. Those elements included the physical environment and the instructional arrangements .

### **Physical Environment**

The previous studies about physical environment of learning institutions were conducted mostly during the mid-twentieth century when behavioral studies were at their height (Woolner & Hall, ٢٠١٠). The physical aspects of the environment, including seating arrangements, noise, temperature, classroom size, and lighting, are vital considerations in keeping students focused on the subject instead of their own personal comfort. Providing enough personal space, quick access to learning materials, stimulating decor, and easily adaptable furnishings allow an instructor to construct a curriculum much more varied and tailored to the students' needs (Puteh et al., ٢٠١٥). For example, in a classroom without movable furniture, a teacher



must go to great lengths to facilitate small group work or a total-class discussion, either by relocating an entire class or forcing students to sit uncomfortably.

The more efficient and comfortable the place, the more flowing the time will be for creating more opportunities for innovative teaching strategies and interactions. The physical environment is a foundation for the building of the instructional arrangements and social relationships in the classroom (Cleveland & Fisher, ٢٠١٤; Puteh et al., ٢٠١٥; Woolner, ٢٠١٠). The appropriate physical EFL learning environment should include using tools that enable students to read or pursue their own English-related interests; and a greater use of technology, including videos, computers and accessibility to the internet .

### **Instructional Arrangements**

The instructional arrangements of the learning environment are a vast collection of the actual aspects that enable and quantify learning. These aspects cover the material and media used to present the information, the information itself, the teaching strategies and activities employed in presenting and retaining information environment (Bennett, Alexandre, & Jacobs, ٢٠٠٦) .

### **The Use of Colours**

The colours are expressed through a language that not only represents the reality image, but also generates signals with meanings. Environments made by colouring can make distinctive impressions that go from quiet and joy to sadness and depression (Isbell & Raines, ٢٠١٣). Each colour communicates an important meaning and incites a response and feeling. Our body has an interpretation and reacts to certain colors creating physical and emotional reactions such as blood pressure, eye fatigue, brain development, power, etc. Thinking about the learning environment, utilizing colours can build focus and decrease of the eye fatigue levels (Butt, ٢٠١٢; Cleveland & Fisher, ٢٠١٤). People who stay in tedious situations might be directed to feelings of tiredness, difficulty in concentration and monotony. The use of colour also depends on the learners' age group (Bennett & Tien, ٢٠٠٦; Wu, ٢٠٠٦). For small learners, the brilliant and bright colours help to complete their extroverted nature. For elementary and high school, cool colours are

recommended by their ability to pay attention. Colours have a big role in initiating students' active learning.

### ٣- Method

#### ٣.١ Participants of the study

The participants of this study were ٦٢ second year English major students, Faculty of Education, Menoufia University. They were divided into two groups; experimental and control .

#### ٣.٢ Instruments and Instructional Materials of the Study

##### ٣.٢.١ An EFL Creative Writing Test

In order to measure the participants' creative writing skills (originality, fluency, flexibility, and accuracy) before and after experimentation, the researchers prepared an EFL Creative Writing test (Appendix A) .

##### ٣.٢.٢ Aim of the Creative Writing Test

The test was used as a pre-test to determine the entry level of the participants in creative writing skills, and as a post-test to investigate the effectiveness of ergonomics-based instruction on the participants' creative writing skills .

##### ٣.٢.٣ Description of the EFL Creative Writing Test

After reviewing the literature concerning the types of questions that can be used to test the creative writing skills, the researchers constructed the test, taking into consideration the following points :

١. The test covered the four target creative writing skills .
٢. The test was suitable in length, complexity, and familiarity of the topics.

#### **The test consisted of five questions :**

**The first question** tested students' accuracy skill. It consisted of a given passage which contained some errors in spelling, grammar, vocabulary, and punctuation. Students were asked to read the passage, find the errors, and then correct them .

**The second question** tested students' flexibility skill. It consisted of a given paragraph which students were asked to restate in their own words .

**The third question** tested students' fluency skill. It consisted of two topics. Students were asked to generate as many related ideas as possible, and then choose one idea for each topic to write about as much they can .

The fourth question tested students' originality skill. It consisted of two pictures, to which students were asked to respond by writing a paragraph about each describing what they felt or remembered when they saw them.

The fifth question tested students' originality skill. It consisted of two "what if" questions. Students were asked to write their thoughts on each of the questions

### **Test Validity**

The EFL Creative Writing Test was submitted to a panel of specialists in Teaching English as a Foreign Language to judge test validity in terms of clarity and suitability. They were requested to add, remove, or modify any part as they see fit. Some valuable remarks were provided, and then taken into consideration. Modifications were made .

### **Test Reliability**

The test re-test method was used to compute the test reliability. The test was administered twice to the same students (٢٠ English major students, Faculty of Education, Menoufia University). Those students were randomly selected and were not included in the sample of the experiment. Reliability of the test was estimated by comparing scores of the students in both the first and the second administrations. The correlation coefficient was calculated using Pearson's correlation coefficient ratio. The reliability co-efficient was ( $R=0.94$ ) thus, proving that the test was statistically reliable .

### **Test Timing**

To estimate the approximate time of the EFL Creative Writing Test, the researchers recorded the time taken by each participant to answer the test during the pilot administration. The time of the test was calculated by using the following formula :

$T_1 + T_2 / 2$ . So, the time of the test was ١٠٠ minutes

### **Test Scoring**

A rubric was prepared by the researchers to score the test. Three raters (the researchers and another EFL instructor) used the rubric to grade the students' writing in the pre and posttests. Correlation coefficient ( $R=0.91$ ) was calculated between the grades given by the raters, which indicated a high degree of objectivity. The total mark of the test is ٨٠. For each of the four target skills, ٢٠ marks were given: ٥ marks for each sub skill .

### **٣.٣ An EFL Creative Writing Rubric**

A rubric was prepared by the researchers to score the test. It was built on using the analytical approach in evaluating students' writings. The rubric included the four creative writing skills: accuracy, originality, flexibility, and fluency. Each skill consisted of four sub-skills. The scale consisted of four points: (١) poor, (٢) developing, (٣) competent, and (٤) advanced. The preliminary version of the rubric was submitted to the jury panel to judge its validity. The jury recommended using more definite words so as to be able to assess the students' skills accurately. After making the recommended modifications, the final form of the rubric was shown in appendix B.

### ٣.٤ Ergonomics based program (Appendix C)

#### Program aim and objectives

By the end of the proposed program, students would be able to :

١. Generate original ideas for writing .
٢. Generate a large number of ideas for writing.
٣. Generate varied ideas for writing .
٤. Use correct structures to write paragraphs.
٥. Use appropriate vocabulary to write paragraphs .
٦. Use punctuation marks accurately.
٧. Write coherent paragraphs .
٨. Write unified paragraphs .
٩. Write well-structured paragraphs .

#### Program Description

##### Developing hands-on ergonomics session

This hands-on ergonomics session is designed for students to experience the ergonomics training modules that have been developed for learners. The modules relate to grip strength, effective breathing, optimizing chairs, and backpack safety. Three extra modules were created for lifting, posture and movement, and optimal posture for using a keyboard and mouse (Bennett, Alexandre, & Jacobs, ٢٠٠٦). Learners are divided into small groups while doing the activities of each module and recording the results on individual worksheets. During discussing results, feedback is elicited from the students on the process and materials .

##### Training module activities

##### Grip strength testing

The grip strength movement is intended to show how reiteration of a similar movement can influence the hand and all muscles in general. Learners are

asked to measure and record grip strength before and after when squeezing foam objects. They are told to set aside three measurements every effort for each hand for right and left hands.

### **Effective breathing**

Amid time spent sitting still, particularly when utilizing technology, breathing frequently ends up shallow and circulation can be confined. The viable breathing module centers on breathing, circulation and posture. The participants are told to lie on a mat and experience chest and belly breathing while at the same time lying on back and stomach.

### **Optimizing chair**

In this module, participants take estimations for one another to permit determination of individual ideal seating height and depth. Then, sitting on the tabletop, learners holds a meter/yard stick behind the buttocks. This helps the student to measure the distance from the buttock to the back of the knee without physical contact. This estimation is recorded after the approximate width of ٣ fingers is calculated as the ideal seat depth.

### **Ergonomics Based Activities**

The researchers designed some figures, concept maps, and diagrams. These visual expressive forms are to enrich the content, clarify complex items, summarize some points, and arouse the students' interest. Most of the used texts, figures, and diagrams are animated. This animation helped in attracting the students' attention and in helping recognize the development of presented content. The slide appeared, then with the mouse click another part appeared, and then another one. Even some of these animations and transitions were accompanied by voices so as to attract the students' attention.

To enrich the learning environment and to meet the students' various learning needs, the researchers used the [www.youtube.com](http://www.youtube.com) site to add some content-related videos. These videos provided more information, clarification, simplification, and motivation. Concerning the content of grammar, some videos containing content-related songs, situations or explanations were added. Another group of videos were used to arouse students' creative thinking. There were other writing-related videos as well. Colors were also used to contrast content, to show the difference, or to show similarity. Also, pictures were added to the content of the course to serve

many functions. For more clarification, exploration, and examples for the content parts, the researchers used hyperlinks to external websites which contained a rich content for developing the English language writing, grammar and vocabulary. In addition, other sites contained valuable resources that could develop students' creativity .

#### ٤. Results and Discussion

##### ٤.١ First: Results of the EFL Creative Writing Test

This section summarizes the data collected from administering the EFL Creative Writing Test to the two groups before and after the experimentation and the statistical treatment of the data. Statistical Package for the Social Sciences (SPSS, version١٢) was used to analyze students' scores on the pre and posttests. Results are shown in the light of the study hypotheses and questions .

##### ٤.١.١ Results of the pre-test

The EFL creative writing test was administered as a pre-test to both groups to specify their entry level .

**Table (١): Results of Pretesting the Experimental and Control groups on the Overall Creative Writing Skills**

Skill	Group	N	M	SD	df	T	Sig.
Overall creative writing	Exp.	٣٢	٢٩.٧٥	٣.٩١	٦٢	٠.٠٦١	Not significant
	Con.	٣٢	٢٩.٦٩	٣.٨٤			
Accuracy	Exp.	٣٢	٣.٧٨	٠.٧٩	٦٢	١.٠٨٧	Not significant
	Con.	٣٢	٤.٠٣	١.٠٣			
Flexibility	Exp.	٣٢	٣.٦٣	١.٢٤	٦٢	٠.٤٤٧	Not significant
	Con.	٣٢	٣.٧٥	٠.٩٨			
Fluency	Exp.	٣٢	٣.٠٠	١.٦٣			

	Con.	٣٢	٢.٥٠	١.٦١	٦٢	١.٢٣٧	Not significant
Originality	Exp.	٣٢	٧.٢٨	١.٠٥	٦٢	٠.١٠٣	Not significant
	Con.	٣٢	٧.٣١	١.٣٥			

As table (١) shows, the t- value of the overall creative writing skills is ٠.٠٦١ which is not statistically significant. It means that there is no significant difference between the experimental and control groups regarding their overall creative writing skills. Besides, the t-values of the four skills of participants are ١.٠٨٧, ٠.٤٤٧, ١.٢٣٧, ٠.١٠٣ orderly. This result indicated that the difference between the two groups regarding the four creative writing skills is statistically insignificant .

**Table (٢): Results of the Experimental and Control groups on the Post-test of the Creative Writing Skills**

Skill	Group	N	M	SD	df	T	Sig.
Overall creative writing skills	Exp.	٣٢	٤٨.٩١	٢.٨٢	٦٢	١٨.٠٧٩	significant
	Con.	٣٢	٣٥.٣٥	٣.١٧			
Accuracy	Exp.	٣٢	٧.٩ ٤	٠.٨٠	٦٢	١٠.٠٥٥	significant
	Con.	٣٢	٤.٥ ٦	١.٧٢			
Flexibility	Exp.	٣٢	٧.٦٦	١.١٠	٦٢	٧.٠٢٣	significant
	Con.	٣٢	٥.٦٦	١.١٨			

Fluency	Exp.	٣٢	٩.١٩	٠.٦٩	٦٢	٧.٢٨٤	significant
	Con.	٣٢	٤.٧٢	٣.٤٠			
Originality	Exp.	٣٢	١٣.٨٤	٠.٧٧	٦٢	٨.٤٩٠	significant
	Con.	٣٢	١٠.٦٩	١.٩٦			

To verify the First hypothesis: There is a statistically significant difference between the experimental and control groups in the posttest mean scores of overall creative writing in favor of the experimental group, t-test was administered to investigate the significance of differences between the two groups. The result indicated that the t- value of overall creative writing is ١٨.٠٧٩ which is highly significant. It means that the participants of the experimental group who received ergonomics based instruction outperformed those of the control group who received regular instruction .

To verify the second hypothesis: There is a statistically significant difference between the experimental and control groups in the posttest mean scores of creative writing skills, t-test was administered to investigate the significance of differences between the two groups. The result indicated that the t- values of the four creative writing skills are ١٠.٠٥٥, ٧.٠٢٣, ٧.٢٨٤, and ٨.٤٩٠ orderly. This result indicated that the differences between the two groups are statistically significant. The participants of the experimental group who received ergonomics based instruction outperformed those of the control group who received regular instruction.

**The results of the current study might be due to the following:**

The components of the ergonomics environment where the participants of the current study were trained to acquire the creative writing skills were so motivating. These components are illustrated as follows :

**First:** Using websites, videos and power point presentations was highly interesting for the students. New generations of learners are Internet savvy. They spend most of their time using computers and Internet applications. In this digital context, they gain higher degrees of autonomy while writing and



providing feedback to their peers. Web based language instruction helped learners produce better writing quality and more writing quantity .

**Second:** creating a climate that is non-threatening to learners as comfortable settings allowed learners to spend more time focusing on the content. Learners also could overcome their fears of inaccurate pronunciation and engage in a learning environment under lower risk circumstances .

**Third:** the design of curriculum resources exerts a strong tacit influence on how the researchers use these resources to address their instructional goals. This relates to the concept of curriculum ergonomics by pointing to the ways resources function to fit the program's purposes.

**Fourth:** the design of ergonomics curriculum made it easy for students to access the materials anytime and interact with the instructor and other classmates .

**Fifth:** using the internet provided students with a rich resource of information, educational journals, online services like encyclopedias, and Internet search engines. These resources helped students acquire raw, authentic materials for work and projects. There are many resources on the Internet that can actually help language teaching and learning .

**Sixth:** Using musical lyrics through learning created a relaxing atmosphere that motivated students to learn and participate with more self-confidence and interactivity.

**Seventh:** sitting in semi circles increased interaction among students to brainstorm, share, and cooperate. It made it easy for them to carry out different activities .

**Eighth:** getting students to do some athletic exercises at the beginning and end of each stage or activity was so motivating to them.

#### • Conclusion

The current study aimed to develop the EFL creative writing skills of the second year English major students, Faculty of Education, through using Ergonomics based instruction. The researchers designed a creative writing test, administered before experimentation, and revealed the profound weakness of the two groups in creative writing skills. An EFL Creative Writing program was designed and taught by the researchers using the ergonomics based instruction. Administering the Creative Writing Test after the experimentation revealed a noticeable development in the experimental

group's creative writing skills. It was concluded that ergonomics based instruction is effective in developing the EFL creative writing skills of the second year English major students, Faculty of Education, Menoufia University .

### **٦. Pedagogical Implications**

One of the main implications of this study is the effect which Ergonomics has on maximizing learners' comfort, safety and health, productivity and efficiency. On the other hand, Ergonomics also affects EFL education and training concerning the teaching and learning strategies and resources .

The study implies that the conventional methods are outdated because they focus only on the factual knowledge of the foreign language. Creating an ergonomic environment becomes essential as it makes a strong connection between the physical environment, the creative writing content, and the activities which students perform .

Another implication of this study is that ergonomics activities are effective as they encourage students to discover, generate, vary, interpret, and relate the language to the situations that best illustrate it.

### **٧. Recommendations**

Based on the findings of the current study, the following recommendations were made:

١. English language teachers should be provided with professional development training on how to use ergonomics based instruction to develop students' language skills.
٢. Curriculum designers should make use of ergonomics based instruction when designing English curricula .
٣. English language teachers should consider the importance of carrying out physical activities before, during and after being engaged in language tasks .
٤. English language teachers should focus on ergonomic activities that stimulate students' higher thinking skills like analysis, evaluation, and creation, not only recalling information .

### **٨. Suggestions for Further Research**

Based on the study findings, the following suggestions for further research can be offered:

١. Investigating the effectiveness of the Ergonomics based instruction in developing the other language skills .

٢. Investigating the effects of Ergonomics based instruction in developing students' tendency to think-in-English rather than thinking-in-Arabic.
٣. Investigating the effectiveness of the Ergonomics based instruction in improving the self-efficacy of students.
٤. Investigating the effectiveness of the Ergonomics based instruction in the primary, preparatory, and secondary stages.

### References

- Abd El-Hallim, N. L. (٢٠١١). The Effectiveness of some active learning strategies in developing the creative writing skills in English and the cooperative attitudes among the preparatory stage students at the experimental language schools. (Doctoral dissertation), Faculty of Education, Zagazig University .
- Abdullatif, O. L. (٢٠٠٦). The effect of training first year English majors of the Faculty of Education in integrating creative reading and writing skills on their performance in these skills. (Master's Thesis), Elminia University, Faculty of Education .
- Ann Thaxton, T. (٢٠١٤). Creative Writing in the Community: A Guide: Bloomsbury Academic.
- Awada, G., Burston, J., & Ghannage, R. (٢٠١٩). Effect of student team achievement division through WebQuest on EFL students' argumentative writing skills and their instructors' perceptions. Computer Assisted Language Learning, ١-٢٦. doi:١٠.١٠٨٠/٠٩٥٨٨٢٢١.٢٠١٨.١٥٥٨٢٥٤
- Bennett, C., Alexandre, M., & Jacobs, K. (٢٠٠٦). Developing hands-on ergonomics lessons for youth. Paper presented at the International Ergonomics Association ١٦th World Congress, Maastricht, Netherlands .
- Berninger, V., Vaughan, K., Abbott, R., Begay, K., Byrd, K., Curtin, G., . . . Graham, S. (٢٠٠٢). Teaching spelling and composition alone and together: Implications for the simple view of writing. Journal of Educational Psychology, ٩٤, ٢٩١-٣٠٤ .
- Billig, M. (٢٠١٣). Learn to Write Badly: How to Succeed in the Social Sciences: Cambridge: Cambridge University Press.

- Bishop, W., Bizzaro, P., Culhane, A., & Cook, D. (٢٠١١). Composing Ourselves as Writer-teacher-writers: Starting with Wendy Bishop: Hampton Press.
- Butt, M. S. (٢٠١٢). Effects of physical environment factors on workers' health in micro and small sized industries of Pakistan. (Master's Programme in Public Health), Lund University, Faculty of Medicine .
- Cain, M. A., Ritter, K., & Vanderslice, S. (٢٠٠٧). Can it Really Be Taught? Resisting Lore in Creative Writing Pedagogy (First Edition ed.): Heinemann. ;
- Chedi, J. (٢٠١٥). The Need for the Incorporation of Ergonomics into Curriculum of the Technical and Vocational Education and Training for Teacher/Trainer Professionalization. Paper presented at the The ٣rd UPI International Conference on Technical and Vocational Education and Training (TVET) .
- Choppin, J., Roth McDuffie, A., Drake, C., & Davis, J. (٢٠١٨). Curriculum ergonomics: Conceptualizing the interactions between curriculum design and use. International Journal of Educational Research, ٩٢, ٧٥-٨٥. doi: <https://doi.org/10.1016/j.ijer.2018.09.015>
- Cleveland, B., & Fisher, K. (٢٠١٤). The evaluation of physical learning environments: A critical review of the literature. Learning Environments Research, ١٧. doi: [10.1007/s10984-013-9149-3](https://doi.org/10.1007/s10984-013-9149-3)
- Dai, F. (٢٠١٠). English-language creative writing in mainland China. World Englishes, ٢٩(٤), ٥٤٦-٥٥٦. doi: [10.1111/j.1477-971X.2010.01681.x/pdf](https://doi.org/10.1111/j.1477-971X.2010.01681.x/pdf)
- Donnelly, D. (٢٠١٠). Does the Writing Workshop Still Work? : Multilingual Matters.
- Dul, J., & Weerdmeester, B. (٢٠٠٨). Ergonomics for beginners. CRC Press: Boca Ranto, FL.
- Dziuban, C. D., Picciano, A. G., Graham, C. R., & Moskal, P. D. (٢٠١٥). Conducting research in online and blended learning environments: New pedagogical Frontiers (first ed.): Routledge.
- El-Enany, N. A. (٢٠٠٩). The effectiveness of a program based upon predictive reading on developing the creative writing skills of the English department students at faculties of Education. (Doctoral Dissertation), Mansoura University, Damietta Faculty of Education .

- Fancourt, D., Garnett, C., Spiro, N., West, R., & Mullensiefen, D. (٢٠١٩). How do artistic creative activities regulate our emotions? Validation of the Emotion Regulation Strategies for Artistic Creative Activities Scale (ERS-ACA). PLoS One, ١٤(٢), e٠٢١١٣٦٢. doi:١٠.١٣٧١/journal.pone.٠٢١١٣٦٢
- Freiman, M. (٢٠١٥). A 'Cognitive Turn' in Creative Writing – Cognition, Body and Imagination. New Writing, ١٢(٢), ١٢٧-١٤٢. doi:١٠.١٠٨٠/١٤٧٩٠٧٢٦.٢٠١٥.١٠.١٦٠.٤٣
- Gaudiot, F., & Martins , B. (Eds.). (٢٠١٩). The Classroom Built Environment as an Inclusive Learning Process for the Deaf Students: Contribution of Ergonomics in Design (Vol. ٧٧٧): Springer, Cham.
- Giberson, G. A., & Moriarty, T. A. (٢٠١٠). What we are Becoming: Developments in Undergraduate Writing Majors. Logan, Utah: Utah State University: All USU Press Publications
- Grainger, T., Gouch, K., & Lambirth, A. (٢٠٠٥). Creativity and Writing: Developing voice and verve in the classroom. Oxfordshire,UK: Routledge.
- Gu, P., Zhang, Y., & Gu, H. (٢٠١٩). Creating a technology-enhanced constructivist learning environment for research ability development in a BA Thesis Writing course. Computer Assisted Language Learning, ١-٢٩. doi:١٠.١٠٨٠/٠٩٥٨٨٢٢١.٢٠١٩.١٥٧٦٧٣٥
- Hanauer, D., & Disney, D. (٢٠١٤). Exploring Second Language Creative Writing: Beyond Babel. Linguistic Approaches to Literature, ١٩. doi:https://doi.org/١٠.١٠٧٥/lal.١٩
- He, T. H., Chang, S. M., & Chen, S. H. (٢٠١١). Multiple goals, writing strategies, and written outcomes for college students learning English as a second language. Percept Mot Skills, ١١٢(٢), ٤٠١-٤١٦. doi:١٠.٢٤٦٦/١١.٢١.٢٨.Pms.١١٢.٢.٤٠١-٤١٦
- He, T. H., Gou, W. J., Chien, Y. C., Chen, I. S., & Chang, S. M. (٢٠١٣). Multi-faceted Rasch measurement and bias patterns in EFL writing performance assessment. Psychol Rep, ١١٢(٢), ٤٦٩-٤٨٥. doi:١٠.٢٤٦٦/٠٣.١١.Pr٠.١١٢.٢.٤٦٩-٤٨٥
- Hirvela, A. (٢٠٠٤). Connecting Reading and Writing in Second Language Writing Instruction. The Reading Matrix, ٨(١) .(

- Isbell, R. T., & Raines, S. C. (٢٠١٣). Creativity and the Arts with Young Children (٣rd ed.). USA :Wadsworth Cengage Learning.
- Jabali, O. (٢٠١٨). Students' attitudes towards EFL university writing: A case study at An-Najah National University, Palestine. Heliyon, ٤(١١), e٠٠٨٩٦. doi:١٠.١٠١٦/j.heliyon.٢٠١٨.e٠٠٨٩٦
- Kedzior, K. (٢٠١٨). Introduction to human factors and ergonomics. Int J Occup Saf Ergon, ١. doi:١٠.١٠٨٠/١٠٨٠٣٠٤٨٢٠١٨.١٤٦٣٧٤٤
- King, R., Neilsen, P., & White, E. (٢٠١٢). Creative writing in recovery from severe mental illness. International Journal of Mental Health Nursing. doi: <http://onlinelibrary.wiley.com/doi/١٠.١١١١/j.١٤٤٧-٠٣٤٩.٢٠١٢.٠٠٨٩١.x/pdf>
- Knirk, F. (١٩٩٢). Facility Requirements for Integrated Learning Systems. Educational Technology,, ٣٢(٩), ٢٦-٣٢ .
- Kroemer Elbert, K. E., Kroemer, H. B., & Kroemer Hoffman, A. D. (٢٠١٨). Chapter ١٥ - Why and How to Do Ergonomics. In K. E. Kroemer Elbert, H. B. Kroemer, & A. D. Kroemer Hoffman (Eds.), Ergonomics (Third Edition) (pp. ٦٤٧-٦٥٧): Academic Press.
- Leaver, M., & Reader, T. W. (٢٠١٦). Human Factors in Financial Trading: An Analysis of Trading Incidents. Human Factors, ٥٨(٦), ٨١٤-٨٣٢. doi:١٠.١١٧٧/٠٠١٨٧٢٠٨١٦٦٤٤٨٧٢
- Liu, L., Cui, X., & Dong, H. (٢٠١٥). Ergonomics Design Research on Writing Tools for Children. Procedia Manufacturing, ٣, ٥٨٥٩-٥٨٦٦. doi:<https://doi.org/١٠.١٠١٦/j.promfg.٢٠١٥.٠٧.٨٩٠>
- Mansoor, A. (٢٠١١). New Writing. The International Journal for the Practice and Theory of Creative Writing, ٧(٢), ٢٠١ .
- Martins, L. B., & Gaudiot, D. M. (٢٠١٢). The deaf and the classroom design: a contribution of the built environmental ergonomics for the accessibility. Work, ٤١ Suppl ١, ٣٦٦٣-٣٦٦٨. doi:١٠.٣٢٣٣/wor-٢٠١٢-٠٠٧-٣٦٦٣
- Mills, P. (٢٠٠٦). The Routledge Creative Writing Coursebook (١ edition ed.): Routledge.
- Mogahed, M. M. (٢٠٠٧). The Effectiveness of Using the Process Writing Approach in Developing the EFL Writing Skills of Al-Azhar Secondary Stage Students and Their Attitudes Towards It. (Doctoral dissertation), Mansoura University, Faculty of Education .

- Mohammed, F. S., Abdel-Hack, E. M., & Okasha, M. A. (٢٠١١). The effectiveness of the portfolio assessment approach in developing EFL creative writing among secondary school students. *Educational and Psychological Studies*, ٧٠, ٢٧٣-٣٠٠ .
- Mok, I., & Fan. (٢٠١٨). *Curriculum Ergonomics: A Rich Task Experience From An Asian Perspective*.
- Morose, T. (٢٠٠٧). Using an interactive website to disseminate participatory ergonomics research findings: an exploratory study. (Master of Science), the University of Waterloo ,
- Morris, G., & Sharplin, E. (٢٠١٣). The assessment of creative writing in Senior Secondary English: A colloquy concerning criteria. *English in Education*, ٤٧(١), ٤٩-٦٥. doi:١٠.١١١١/eie.١٢٠٠٤
- Muchinsky, P. M. (٢٠٠٠). *Psychology applied to work (Vol. CA): Belmont, Wadsworth/Thomson Learning*.
- Nowbakht, M. (٢٠١٩). The Role of Working Memory, Language Proficiency, and Learners' Age in Second Language English Learners' Processing and Comprehension of Anaphoric Sentences. *J Psycholinguist Res*, ٤٨(٢), ٣٥٣-٣٧٠. doi:١٠.١٠٠٧/s١٠٩٣٦-٠١٨-٩٦٠٧-٢
- Peary, A., & Hunley, T. C. (٢٠١٥). *Creative Writing Pedagogies for the Twenty-First Century (1st edition ed.): Southern Illinois University Press*. ;
- Praminatih, G. A., Kwary, D. A., & Ardaniah, V. (٢٠١٩). Is EFL students' academic writing becoming more informal? *Journal of World Languages*, ١-١٢. doi:١٠.١٠٨٠/٢١٦٩٨٢٥٢.٢٠١٩.١٥٧٠٦٦٤
- Puteh, M., Che Ahmad, C. N., Noh, N., Adnan, M., & Ibrahim, M. H. (٢٠١٥). *The Classroom Physical Environment and Its Relation to Teaching and Learning Comfort Level (Vol. ٥)*.
- Pyzdek, T. (٢٠٠٣). *The Six Sigma handbook revised and expanded: A complete guide for green belts, black belts, and managers at all levels*. . New York, NY: McGraw-Hill.
- Ramlal, A., & Augustin, D. S. (٢٠١٩). Engaging students in reflective writing: an action research project. *Educational Action Research*, ١-١٦. doi:١٠.١٠٨٠/٠٩٦٥٠٧٩٢.٢٠١٩.١٥٩٥٠٧٩

- Reilly, D. A., & Langan, S. (٢٠١٨). Ask Me about My Pearls: Burn Care, Ethics, and Creative Writing. *AMA J Ethics*, ٢٠(١), ٥٨٩-٥٩٤. doi:١٠.١٠٠١/journalofethics.٢٠١٨.٢٠.٦.pnar١-١٨٠٦
- Remillard, T. (٢٠٠٥). Examining Key Concepts in Research on Teachers' Use of Mathematics Curricula. *Review of Educational Research*, ٧٥(٢), ٢١١-٢٤٦. doi:١٠.٣١٠٢/٠٠٣٤٦٥٤٣.٧٥.٠٢٢١١
- Remillard, T. (Ed.) (٢٠١٦). Keeping an eye on the teacher in the digital curriculum race. Charlotte, NC: Information Age Publishing.
- Rog, L. J. (٢٠٠٧). *Marvellous Minilessons for Teaching Beginning Writing*. K-٢: International Reading Association.
- Ruthven, K. (٢٠١٢). Constituting Digital Tools and Materials as Classroom Resources: The Example of Dynamic Geometry. In (pp. ٨٣-١٠٣).
- Saeed, M. A., & Ghazali, K. (٢٠١٧). *Language Learning & Technology*, ٢١(٢), ٢٠٠.
- Saperia, J., Genis, S., Scaffidi, M., B Satchwell, J., Gimpaya, N., Tham, D., & Grover, S. (٢٠١٩). A٢٢٦ Impact of a Virtual Reality Intervention on Ergonomics in Colonoscopy (Vol. ٢).
- Sauro, S., & Zourou, K. (٢٠١٩). *Language Learning & Technology*, ٢٣(١), ١.
- Shinn, J., Romaine, K. A., Casimano, T., & Jacobs, K. (٢٠٠٢). The effectiveness of ergonomic intervention in the classroom. *Work*, ١٨(١), ٦٧-٧٣.
- Smith, H. (٢٠٠٥). *The Writing Experiment: Strategies for Innovative Creative Writing* (Vol. null).
- Starko, A. J. (٢٠١٠). *Creativity in the classroom*. UK: Routledge, Taylor & Francis.
- Stephens, G. (٢٠١٨). Transferable skills and travelling theory in creative writing pedagogy. *New Writing*, ١٥(١), ٦٥-٨١. doi:١٠.١٠٨٠/١٤٧٩٠٧٢٦.٢٠١٧.١٣٦٩١٢٨
- Su Ping, R. L., Verezub, E., Adi Badiozaman, I. F. b., & Chen, W. S. (٢٠١٩). Tracing EFL students' flipped classroom journey in a writing class: Lessons from Malaysia. *Innovations in Education and Teaching International*, ١٠-١٢. doi:١٠.١٠٨٠/١٤٧٠٣٢٩٧.٢٠١٩.١٥٧٤٥٩٧



- Taylor, A. (٢٠٠٩). Linking architecture and education: Sustainable design for learning environments.
- Thatcher, A., Waterson, P., Todd, A., & Moray, N. (٢٠١٨). State of Science: ergonomics and global issues. *Ergonomics*, ٦١(٢), ١٩٧-٢١٣. doi: ١٠.١٠٨٠/٠٠١٤٠١٣٩.٢٠١٧.١٣٩٨٨٤٥
- Tolan, Z. R. (٢٠١٦). *Educational Ergonomics and the Future of the Mind*. Springer, New York, NY.
- Tsang, S. M. H., So, B. C. L., Lau, R. W. L., Dai, J., & Szeto, G. P. Y. (٢٠١٩). Comparing the effectiveness of Integrating Ergonomics and Motor Control to conventional treatment for pain and functional recovery of work-related neck-shoulder pain: A randomized trial. *Eur J Pain*. doi: ١٠.١٠٠٢/ejp.١٣٨١
- Tsao, J. J., Tseng, W. T., & Wang, C. (٢٠١٧). The Effects of Writing Anxiety and Motivation on EFL College Students' Self-Evaluative Judgments of Corrective Feedback. *Psychol Rep*, ١٢٠(٢), ٢١٩-٢٤١. doi: ١٠.١١٧٧/٠٣٣٢٩٤١١٦٦٨٧١٢٣
- Tsiriou, I. K., Vassilaki, E., Spantidakis, I., & Stavrou, N. A. (٢٠١٦). The Examination of the Effects of Writing Strategy-Based Procedural Facilitative Environments on Students' English Foreign Language Writing Anxiety Levels. *Front Psychol*, ٧, ٢٠٧٤. doi: ١٠.٣٣٨٩/fpsyg.٢٠١٦.٠٢٠٧٤
- Tuan, L. T. (٢٠١٠). Enhancing EFL Learners' Writing Skill via Journal Writing. *English Language Teaching*, ٣(٣), ٨١-٨٨.
- Veloso, A., & Carvalho, S. (٢٠١٢). Music composition as a way of learning: Emotions and the situated self. In (pp. ٧٣-٩١).
- Viana, V., & Zyngier, S. (٢٠١٩). Creative writing and iconicity in English as a foreign language. *New Writing*, ١٦ (١), ٣٨-٤٩. doi: ١٠.١٠٨٠/١٤٧٩٠٧٢٦.٢٠١٨.١٤٧٦٥٥٤
- Villamil, O. S., & de Guerrero, M. C. (٢٠٠٦). *Sociocultural theory: A framework for understanding socio-cognitive dimensions of peer feedback*: New York: Cambridge University Press.
- Wallwork, A. (٢٠١١). *English for Writing Research Papers*: Springer.
- Womack, J. P., & Jones, D. T. (٢٠٠٣). *Lean thinking: Banish waste and create wealth in your corporation*: New York, NY: Free Press.

- Woolner, P. (٢٠١٠). The Design of Learning Spaces: Continuum; London, UK.
- Woolner, P., & Hall, E. (٢٠١٠). Noise in schools: a holistic approach to the issue. International journal of environmental research and public health, ٧(٨), ٣٢٥٥-٣٢٦٩. doi:١٠.٣٣٩٠/ijerph٧٠٨٣٢٥٥
- Wu, S., Quentin Dixon, L., Sun, H., & Zhang, P. (٢٠١٩). Breadth or depth: the role of vocabulary in Chinese English-Language beginning writers' development. International Journal of Bilingual Education and Bilingualism, ١-١٧. doi:١٠.١٠٨٠/١٣٦٧٠٠٥.٢٠١٩.١٥٧٢٠٦٦
- Wu, W. (٢٠٠٦). EFL Optimal Learning Environment: Perspectives of Faculty and Students in a Taiwanese Technical University. (Doctor of Education), The University of South Dakota, Adult and Higher Education Program in the Graduate School .
- Xu, W., Furie, D., Mahabhaleshwar, M., 'Suresh', B., & Chouhan, H. (٢٠١٩). Applications of an interaction, process, integration, and intelligence (IPII) design approach for ergonomics solutions. Ergonomics, ١-٦٦. doi:١٠.١٠٨٠/٠٠١٤٠١٣٩.٢٠١٩.١٥٨٨٩٩٦
- Yancey, K. B., Robertson, L., & Taczak, K. (٢٠١٤). Writing Across Contexts: Transfer, Composition, and Sites of Writing (first ed.): Utah State University Press.
- Zarei, G. R., Pourghasemian, H., & Jalali, H. (٢٠١٧). Language Learners' Writing Task Representation and Its Effect on Written Performance in an EFL Context. J Psycholinguist Res, ٤٦(٣), ٥٦٧-٥٨١. doi:١٠.١٠٠٧/s١٠٩٣٦-٠١٦-٩٤٥٢٠
- Zergollern-Miletić, L., & Horváth, J. (Eds.). (٢٠٠٩). Coherence and originality in university students' writing in EFL: The Zagreb-Pécs project (Vol. ١٣٥-١٥١). Pécs: Lingua Franca Csoport.
- Zhao, Y. (٢٠١٤). L٢ Creative Writers' Identities: Their Cognitive Writing Processes and Sense of Empowerment. New Writing, ١١(٣), ٤٥٢-٤٦٦. doi:١٠.١٠٨٠/١٤٧٩٠٧٢٦.٢٠١٤.٩٥٦١٢٤
- Zheng, B. (٢٠١٣). Social Media and Classroom Writing: Participation, Interaction, and Collaboration. (Doctoral dissertation), University of California, Irvine .

- Zyngier, S., Viana, V., Burke, M., Fialho, O., & Zyngier, S. (٢٠١٦). Empirical Stylistics in an EFL Teaching Context: Comparing Virtual and Face-to-Face Reading Responses: John Benjamins.