Using a Constructivism–Based WebQuest Program on Developing Technical Colleges Students’ Written Communication: A Dissertation Submitted in Partial Fulfilment of the Requirements

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Abstract:
This study aimed to investigate the effect of a Constructivism–Based Program on Developing Technical Colleges Students’ English Language Written Communication Skills Using WebQuests. Literature and related studies concerning written communication skills and WebQuests were reviewed. A one-group pretest–posttest design was employed, along with a mixed research approach incorporating both quantitative and qualitative methodologies. The participants were forty (N=40) students enrolled in the first year, Industrial Technical Institute, Mataria Technical College, in the academic year 2022–2023. The written communication skills were delimited to reading and writing skills which were appropriate to technical colleges students. The instruments of the study included Reading skills list, Writing skills list, The Pre/ Post written communication test, Reading Rubric, Writing Rubric; and, Satisfaction questionnaire. A website with the six components of WebQuest was designed and the activities of reading and writing skills were uploaded. The students’ pre / post test scores were analyzed using the appropriate statistical techniques. Findings of the study indicated that there were statistically significant differences between the students’ scores in the pre and post tests in favor of the post test due to the WebQuest program. Thus, the proposed program was effective in developing Technical Colleges students’ English Language written communication skills.

Key words: constructivism, written communication, reading, writing and WebQuest.

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Introduction

English for specific purposes (ESP) is an approach to language learning which is based on learners’ needs where students need to reach an adequate level of English to fulfill their recent and future work duties in a professional manner in the workplace. All decisions as to content and method are based on the learner’s reasons for learning. ESP focuses on language that is used in real professional context rather than on teaching grammar, structure and vocabulary unrelated to the learner’s mainstream subject. It helps learners to accomplish and fulfill their academic and occupational needs. (Hyland, 2022, pp.203,204).

Egyptian Technical Colleges are an example of instructional institutions which basically include ESP in their programs. These colleges are specialized in different technical fields, such as Industry, Commerce, Tourism and Hotel Management, Optics and Social service.

Communication is an essential aspect of ESP courses for technical college students. It is vital for those students to master written communication skills whereby they can advance in the workplace. Written Communication has become such an important part of our everyday professional lives. Therefore, competence in written communication is a
professional requirement, particularly in relation to the effective operation of the organizations. Written communication skills can be learned and practiced. They involve learning about how to read and write appropriately, how to exactly communicate what should be said, what mode of communication is best and what factors are influencing people's ability to send and receive messages successfully. (Maruntelu, C.L. & Galbeaza, A., 2019, p.47; Paretti, Eriksson & Gustafsson, 2019, pp. 27,28)

Henceforth, communicating through reading and writing is essential for Technical College students’ development, since reading and writing skills are critical to success in the workplace and in predicting job success. If students can communicate well through reading and writing, they can get their message across to others in an effective way and they then have accurate instructions to complete their assigned tasks.

Constructivism is a generally accepted approach in foreign language teaching where the classroom goals are focused on all the components (grammatical, discourse, functional, sociolinguistic, and strategic) of communicative competence. Constructivist language techniques are designed to engage learners in the authentic, pragmatic, and functional use of
language for meaningful communication purposes. In a constructivist class, students ultimately need opportunities to use the language productively outside the classroom. So, it is important to equip the students with written communication skills necessary to communicate in those contexts. Students are encouraged to take control of and feel responsible for their own learning and teachers help their students in constructing and understanding their written communication tasks. (Qiu, 2019: pp. 9–12)

Due to the importance of written communication skills in general and reading and writing skills in particular, to technical students, many studies amid at developing these skills.

The positive impact of Web Quests on students' language learning performance was reported by many researchers such as Al-Sayed (2018), Zaki (2017), Al-Shamisi, (2016) and Eltantawi (2015). Their studies aimed at developing students' autonomy and multi-literacies, supporting them to understand and transform information in hyper textual resources. Furthermore, they encouraged students to self-assess their learning process.

The effect of WebQuests on the language skills of ESP students has also been investigated and proved successful in
various specializations, such as environmental studies (Chang, Chen & Hsu, 2011), Ecology (Rudneva, Valeeva, Nigmatzyanova & Guslyakova, 2018), and ESP for People’s Police university (Thu, 2013). The results of these studies showed that using WebQuests influenced students’ learning performance positively and promoted their communicative competence regarding both oral and written language skills.

For technical college students, WebQuests have the potential to develop their ESP skills. Baguzina (2020), for example, claimed that WebQuests developed both vocational and English language skills of post-graduate students specializing in International Business and Management as they promoted students’ communicative competence. Laborda (2009, p. 258), on the other hand, asserted that WebQuests could be critical to enhance technical students’ professional communication, as they were examined in the case of developing students’ English communication skills in Tourism studies context. The researcher pointed out that WebQuests can trigger the situations necessary to develop both written and oral communication. The presented framework aimed at helping students’ skills both in language development and professional growth through addressing three main aspects of the use of WebQuests: as a social
constructivist learning approach, as a professional development activity and as an oral development task.

Despite the importance of written communication skills in general and reading and writing in particular, teaching written communication has been undervalued in technical institutions and English language teachers have continued to teach reading and writing just as repetition of drills or memorization of dialogues.

**Context of the problem**

Being a teacher at Industrial Technical Institute, Mataria Technical College, the researcher has noticed that the great majority of the students face a problem in reading and writing in English. Through her teaching and communicating with students, she noticed that students are very shy to read as they are poor at reading in English. They tend to translate word by word and lack focus on the overall purpose of a text. Also, they have insufficient writing skills, mainly because they do not practice writing. They do not know how to express or organize their thoughts or how to start their writing.

**The Pilot Study**

The researcher conducted interviews with some managers of companies such as Arab contractors (Osman Ahmed Osman & Co.), El Sewedi Cables, Ghabbour Auto, and Sharp
AC to determine the written communication skills Technical Colleges students will need in their professional career. They reported that Technical Colleges students have to master reading and writing skills that enhance the following written communication forms: letters, memos, e-mails and reports. And so, the researcher assumes the following reading and writing skills to focus on:

**Reading Skills**

- Identifying the purpose of a brief written communication text.
- Extracting significant ideas and details in a piece of written communication.
- Identifying the meaning of key technical words in a written communication text.
- Summarizing, commenting on and responding to information included in a written communication text.

**Writing Skills**

- Focus: The purpose of written communication is focused and stated clearly.
- Content and Sequence: Presenting all essential ideas/information with supporting details in a logical order associated and relevant to the purpose of written communication. (e.g. headings and subheadings)
- Structure: producing a well-structured content, following a format/layout appropriate to the purpose of written communication (e.g. Complete the missing parts in a report)
- Responding to a written communication appropriately (e.g. answering questions, providing information, e-mailing, ...etc.)

**Statement of the problem**

The problem of this study is that Technical Colleges students’ written communication skills (reading and writing) are poor and need to be improved.

To handle this problem, the present study attempted to find an answer to the following main question: ‘How effective would be the use of the proposed constructivism–based program on developing Technical College students’ written communication skills using WebQuests?

**The following sub questions were also answered:**

1. What are the reading and writing skills that Technical Colleges students should have?
2. What are the principles of building the proposed WebQuest– based program in light of Constructivism?
3. What is the effect of the proposed program in developing Technical Colleges students' reading skills?
4. What is the effect of the proposed program in developing Technical Colleges students' writing skills?

5. To what extent are Technical Colleges students satisfied with the suggested Web Quest program?

Study Hypotheses

The study hypothesizes the following:

- There will be statistically significant differences between the mean scores of the research group in the pre–post overall reading test favoring post–testing.

- There will be statistically significant differences between the mean scores of the research group in each reading skill favoring the post–test.

- There will be statistically significant differences between the mean scores of the research group in the pre–post overall writing test favoring post–testing.

- There will be statistically significant differences between the mean scores of the research group in each writing skill favoring the post–test.
Review of Literature and Previous Studies

English for Specific Purposes (ESP) for Technical Colleges' students

Importance and Characteristics of ESP

Fitria (2019, pp. 7-9) pointed out that English for Specific Purposes (ESP) is concerned about the teaching of English to the learners who have specific goals and purposes. These goals may be technical, professional, academic or scientific. The purpose of an ESP course is to enable learners to function appropriately in the target situation. Thus, an ESP program is aim-directed, learner directed and situation-directed. An ESP course has the following three features: authentic material, purpose-related direction and self-direction.

Objectives in Teaching ESP

Strapasson (2015, pp. 85-89) presented five broad objectives on which a specific teaching process is based and should be reached to

- reveal subject-specific language use;
- develop target performance competencies;
- teach underlying knowledge;
- develop strategic competence; and
- foster critical awareness.
Williams (2014, pp. 67-71) distinguished between four types of ESP teaching objectives: proficiency, knowledge, affective, and transfer. Proficiency objectives are concerned with the mastery of the four skills: reading, writing, listening, and speaking. The knowledge objectives are concerned with the acquisition of linguistic and cultural information. The Affective objectives are concerned with the development of positive feelings towards the subject study. Finally, the transfer objectives deal with the ability to generalize from what has been learnt in one situation to other situations.

**Constructivism: Origin and background**

Lister (2020, pp.35–37) asserted that constructivism is generative learning which is the act of creating meaning from what is learned. Knowledge is structured and built in the mind of the student himself when he tries to organize his new experience based on the cognitive framework that already exists in his mind. Thus, knowledge cannot be transferred simply from the brain of a teacher to the student's brain.

**Principles of Constructivism**

Ramsook and Thomas (2019, pp.28–33) listed the following six main principles of constructivism as follows:

- Principle one—Prior knowledge. The idea behind constructivism is that we actively construct our own
learning by using the information we already know to make sense of new information.

- Principle Two – learners learn better when they are actively involved.

- Principle Three – The role of community and social interaction constructivism

- By interacting with others, students get the opportunity to share their views and thus generate a shared understanding related to the concept.

- Principle Four – The influence of culture. The content of the knowledge is influenced by the culture which includes language, values and beliefs. Integrating students’ cultural practices with each aspect of learning promotes students’ ability to connect with what they are learning.

- Principle Five – Experience is essential to knowledge construction.

- Knowledge is constructed by students as they attempt to make sense of their experiences.

- Dimensions of Constructivism
  - Cognitive dimension.
  - Social dimension.
  - Cultural dimension.
• **Constructivism in the language classroom**

• Characteristics of constructivist language teaching and learning

• Hendry, Hays, Challinor & Lynch (2017: pp.7–13) highlighted the fundamental characteristics of constructivist language learning as follows:

• Knowledge is actively constructed by the learner, not passively received from the outside, and therefore; Students' beliefs, attitudes and viewpoints should be taken into consideration.

• Learners have their own individual ideas about the world so, multiple concepts, presentations and content materials are presented and encouraged.

• Although knowledge is personal and individual, the learners construct their knowledge through their interaction with the physical world, collaboratively in social settings and in a cultural and linguistic environment.

• Knowledge is represented in the brain as conceptual structures and it is possible to model and describe them in details. Approaches, opportunities and environmental conditions are created to encourage
meta-cognition, self-analysis, regulation, reflection and awareness.

- Exploration is a favored approach. When students aspire to seek adequate understanding of the concepts and achieve academic goals, aspects that should be emphasized are problem-solving, high order thinking skills, rational decision making, and in depth understanding.

- Scaffolding is facilitated to help students carry out their assignments and activities beyond their abilities.

- The Role of Teachers in a Constructivist Language Classroom
  - Providing experience with the knowledge construction process.
  - Appreciating multiple perspectives.
  - Providing social and emotional learning.
  - Using multiple modes of representation.

- The Role of Students in a constructivist language classroom
  - Engage in the concept, process or skill to be learned.
  - Explore their environment or manipulate materials.
  - Explain the concepts they have been exploring to demonstrate new skills.
• Elaborate and develop deeper and broader understanding of major concepts obtain more information and refine their skills through new experiences.

• Evaluate their understanding, abilities and progress.

Written Communication

Sonnenschein and Ferguson (2020: p.42) explained that written communication is the presentation of ideas or compositions that make a clear point and supply detail supporting that point and demonstrate unity and coherence of thought. The mastery of good written English and the ability to comprehend and write about information acquired through reading are skills of written communication.

Importance of written communication to Technical College students

According to Eggleston & Rabb (2018, pp.84–89), written communication skills are essential for ESP students as well as professionals because professional ability and performance are strongly linked with written communication competence. Many employers specifically identify written communication skills as a job requirement. They place a high premium on written communication skills as professional students will be
expected to spend a significant amount of time in written communication.

**Elements of written communication**

- Clarity.
- Courtesy.
- Accuracy.
- Brevity.
- Correct Language.
- Correct Attitude.
- Coherence.

**Types of Written Communication**

**Memos**

A memo is a short, written, authenticated, and formal communication technique only used within an organization or workplace among the employees of an organization to provide and share work-related information or to ask/request for some form of work-related actions to take place. (Alam, 2021, p.75)

**Business Letters**

A business letter is a letter which is used by organizations to communicate in a professional way with customers, other companies, clients, shareholders investors, etc. Business
letters use formal language and a specific format. Companies use it to convey important information and messages (Lannon and Gurak, 2021, pp. 49-51)

A business letter is a formal document which provides recipients with specific information, such as a notification of an award or a note of appreciation for a donation. Business letters also can be used to persuade recipients to take some type of action such as employment. (Ahmadi, 2019, p. 11)

E-mails

Sabbagh (2021, p. 25-28) stated that e-mail is a way to send and receive messages across the internet. It is a communication tool that allows information flow and sharing, in large quantities and simultaneously to multiple recipients, regardless of where they are, at reduced costs. When e-mail is provided to employees by the organization, it is assumed as a working tool and should be only used for the work-related tasks and activities that are set by those employees.

Business Reports

Das (2017, p. 2) defined a business report as a formal communication written for a specific, significant business purpose that includes a description of procedures followed for collection and analysis of data, their significance, the conclusions drawn from them and the recommendations, if
required. It helps the interested persons to get insight into the problem and assists in decision making and problem-solving.

**Essential written communication skills**

The current study and the review of literature are limited to some reading and writing skills of written communication.

Written communication in ESP contexts

Rus (2020: pp. 89–96) asserted that learning language successfully comes through having to communicate real meaning. When learners are involved in real communication, their natural strategies for language acquisition will be used, and this will allow them to learn to use the language. ESP is an approach to language teaching in which all decisions as to content and method are based on the learner’s reason for learning. Communicative language teaching makes use of real-life situations integrated to the needs of communication. The teacher sets up situations that students are likely to encounter in real professional life, creates the appropriate environment in order to stimulate tasks that permit students to be the protagonists of their own learning. The real-life simulations change daily. Students’ motivation to learn comes from their desire to communicate in meaningful ways about meaningful topics related to their field of specialization and their future career.
WebQuests

Tsichouridis, Batsila, Vavougios & Tsihouridis (2020: pp.395–405) state that WebQuests are inquiry-oriented activities in which most or all of the information used by learners is drawn from the web. They are inquiry-oriented group projects that use internet resources to investigate particular topics. Free websites exist that facilitate the design of such projects as well as the sharing of results.

WebQuests are believed to be valuable language learning tools. They provide opportunities for collaboration and the practice of integrated language skills such as reading, writing and speaking. They are also claimed to be beneficial for English as a foreign language students, because they expose students to authentic materials, provide meaningful content and offer possibilities for real communication in the target language.

Using WebQuests gives students the opportunity to be exposed to many resources while they are in the classroom. Students' engagement with this method develops a deeper understanding of the content when compared to the traditional method of learning. To complete a WebQuest task, students search through links provided on the WebQuest. These links
are relevant to the topic and are efficient and focused learning tools. (Zeng and Fu, 2019, pp. 77–81)

**Components of WebQuests**

1. **Introduction**

   The introduction of a WebQuest provides basic information and motivational scenarios.

2. **Task**

   The task should be inherently important, feasible and interesting, and should engage students in solving real problems.

3. **Process**

   The process refers to clear and appropriate stages. Steps which students should complete should be outlined in the process section.

4. **Resources**

   A great WebQuest uses sites that are readable, interesting to students, up–to–date and accurate.

5. **Evaluation**

   These tools set the criteria for appropriate learning targets for students. The standards of evaluation should be fair, clear, consistent, and specific and explicit to help students understand the task effectively.
6. Conclusion

The conclusion should allow students to reflect upon the WebQuest experience and the task.

Advantages of implementing WebQuests in the ESP classroom

Nataliia, Larisa, Maryna, Nataliia and Svitlana (2022, pp. 288-300) proposed some advantages for using Web Quests in the ESP classroom as follows:

- It promotes the effective use of time by students; students use the links given by the teacher and search for information in a structured efficient manner.
- The provision of rich authentic current information and exposure to colorful visual elements enhance flexibility of individual learning pace. It also reinforces learning of the subject matter, as students are required to read, think, analyze, synthesize and evaluate information.
- Web Quests foster students' critical thinking skills by encouraging different learning tasks and expression of opinions. It also supports constructivist learning that incorporates thinking and knowledge application and fosters problem solving skills.
Method

Design of the study

This study employed the one-group pretest-posttest design along with a mixed research approach incorporating both quantitative and qualitative methodologies.

Participants of the study

The participants of the current study were forty (N = 40) students enrolled in the 1st year at Mataria Industrial Technical Institute, Mataria Technical College, in the 1st Semester, the academic year 2022-2023.

Instruments of the study

The instruments of the current study were the following:

- Reading skills list,
- Writing skills list,
- The Pre/ Post written communication test,
- Reading Rubric,
- Writing Rubric; and,
- Satisfaction questionnaire.

The program Aim

The overall aim of the WebQuest program was to develop the participants' written communication skills (reading and writing skills).
Content of the WebQuest Program

The content of the program was selected to fulfil its purpose and reflect its objectives. The researcher launched a website for the suggested program at the following address: https://sites.google.com/view/writtencommunication/%D8%A7%D9%84%D8%B5%D9%81%D8%AD%D8%A9%D8%A7%D9%84%D8%B1%D8%A6%D9%8A%D8%B3%D9%8A%D8%A9.

The WebQuest was divided into four units. Each unit tackled one type of written communication that the students could search for and get information about as well as find answers to their tasks (i.e., email, memo, report and letter). Each unit included a variety of activities on the addressed type of written communication, in addition to three written communication tasks that the participants were assigned to accomplish collaboratively.

Analysis and Discussion of Results

Quantitative Results of the Study

Testing the validity of the first hypothesis

The first hypothesis of the current study states that: "There is a statistically significant difference between the mean scores of the students in the overall reading skills of the pre–test and the post–test, in favor of the post–test."
To check the validity of this hypothesis, the researcher calculated students’ reading scores in the pre/post-test using paired samples t-test (SPSS, Version 27).

Meeting all the requirements, the data of the pre-post reading test were then analyzed using the paired samples t-test, using SPSS. The following table shows the statistics of the pre/post-test.

Table (4.1): Paired samples t-test for the overall reading skills pre/post-tests

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>t-value</th>
<th>P-value</th>
<th>Effect</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reading</td>
<td>Pre</td>
<td>40</td>
<td>24.00</td>
<td>5.08</td>
<td>37.89</td>
<td>0.000</td>
</tr>
<tr>
<td></td>
<td>Post</td>
<td>40</td>
<td>62.50</td>
<td>7.92</td>
<td></td>
<td>0.88</td>
</tr>
</tbody>
</table>

As shown in table (4.1), there is a significant difference between the scores of the students in the post-test (M=62.50, SD=7.92) and in the pre-test (M=24.00, SD=5.08); t (39) = 37.89, p = 0.000. The significance of t is (0.000), which is smaller than (0.05), and this means that there is a statistically significant difference between students ‘mean scores of the post-test and those of the pre-test in the overall reading skills in favor of the post-test. This indicates that the objectives of the study were achieved in raising the reading level of the study group.
Testing the validity of the second hypothesis.

The second hypothesis of the current study states that: "There are statistically significant differences between the mean scores of the students’ pre–posttest in each reading sub–skill in favor of the post–test."

Table (4.2): Paired samples t–test for the reading pre–posttest

<table>
<thead>
<tr>
<th>Reading Skills</th>
<th>N</th>
<th>Mean (M)</th>
<th>Std. Deviation (SD)</th>
<th>t–value</th>
<th>p–value</th>
<th>Effect</th>
</tr>
</thead>
<tbody>
<tr>
<td>Identifying the purpose of a brief written communication text</td>
<td>40</td>
<td>6.62</td>
<td>2.37</td>
<td>24.03</td>
<td>0.000</td>
<td>0.94</td>
</tr>
<tr>
<td>Extracting the significant ideas and details in a piece of written communication text</td>
<td>40</td>
<td>6.62</td>
<td>2.62</td>
<td>17.66</td>
<td>0.000</td>
<td>0.89</td>
</tr>
<tr>
<td>Pre</td>
<td>40</td>
<td>5.12</td>
<td>0.79</td>
<td>25.66</td>
<td>0.000</td>
<td>0.94</td>
</tr>
<tr>
<td>Post</td>
<td>40</td>
<td>14.75</td>
<td>2.51</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Summarizing, commenting on and/or responding to</td>
<td>40</td>
<td>5.50</td>
<td>1.51</td>
<td>16.42</td>
<td>0.000</td>
<td>0.87</td>
</tr>
</tbody>
</table>
As shown in table (4.2), there is a significant difference between the scores of the students in the post-test (M=18, SD=2.48) and in the pre-test (M=6.62, SD=2.37); t (39) = 24.03, p = 0.000. The significance of t is (0.000), which is smaller than (0.05), and this means that there is a statistically significant difference between students’ mean scores of the pre-posttest in the first skill of reading “Identifying the purpose of a brief written communication text”. Thus, the program was effective in developing Identifying the purpose of a brief written communication text skill.

Table (4.2) shows that there is a significant difference between the scores of the students in the post-test (M=16.62, SD=2.86) and in the pre-test (M=6.62, SD=2.62); t (39) = 17.66, p = 0.000. The significance of t is (0.000), which is smaller than (0.05), and this means that there is a
statistically significant difference between students’ mean scores of the pre–posttest in the second reading skill,

“Extracting the significant ideas and details in a piece of written communication”. Thus, the program was effective in developing Extracting the significant ideas and details in a piece of written communication skill.

Table (4.2) above indicates that there is a significant difference between the scores of the students in the post–test (M=14.75, SD=2.51) and in the pre–test (M=5.12, SD=0.79); t (39) = 25.66, p = 0.000. The significance of t is (0.000), which is smaller than (0.05), and this means that there is a statistically significant difference between students’ mean scores of the pre–posttest in the reading skill, “Identifying the meaning of key technical words in a written communication text”. Thus, the program was effective in developing Identifying the meaning of key technical words in a written communication text.

Table (4.2) shows that there is a significant difference between the scores of the students in the post–test (M=13.25, SD=3.11) and in the pre–test (M=5.50, SD=1.51); t (29) = 16.42, p = 0.000. The significance of t is (0.000), which is smaller than (0.05), and this means that there is a statistically significant difference between students’ mean
(scores of the pre–posttest and those of the pre– test in the fourth skill of reading, “Summarizing, commenting on and/or responding to information included in a written communication text”. Thus, the program was effective in Summarizing, commenting on and/or responding to information included in a written communication text.

The Effect size

To measure the total effect of the suggested program on developing the overall reading skills, Eta square (Ƞ^2) value was calculated.

Table (4.3): The effect size of the overall reading skills

<table>
<thead>
<tr>
<th>Skills</th>
<th>Tc</th>
<th>ETA– Square</th>
<th>Strength</th>
</tr>
</thead>
<tbody>
<tr>
<td>As a whole</td>
<td>37.89</td>
<td>0.97</td>
<td>Large</td>
</tr>
</tbody>
</table>

The results of table (4.3) show that the effect size of the test was (0.97), which is greater than the minimum ETA squared of (0.14), and this indicates that there is an effect of the suggested program on improving the overall reading skills.

To measure the effect of the suggested program on developing each reading skill, Eta square (Ƞ^2) value was calculated.
Table (4.4): The effect size of each reading skill

<table>
<thead>
<tr>
<th>Skill</th>
<th>Tc</th>
<th>ETA− Square</th>
<th>strength</th>
</tr>
</thead>
<tbody>
<tr>
<td>Identifying the purpose of a brief written communication text</td>
<td>24.03</td>
<td>0.94</td>
<td>Large</td>
</tr>
<tr>
<td>Extracting the significant ideas and details in a piece of written communication</td>
<td>17.66</td>
<td>0.89</td>
<td>Large</td>
</tr>
<tr>
<td>Identifying the meaning of key technical words in a written communication text</td>
<td>25.66</td>
<td>0.94</td>
<td>Large</td>
</tr>
<tr>
<td>Summarizing, commenting on and/or responding to information included in a written communication text</td>
<td>16.42</td>
<td>0.87</td>
<td>Large</td>
</tr>
</tbody>
</table>

As shown in table (4.4), the size of the impact of Identifying the purpose of a brief written communication text skill reached (0.94), which is greater than the minimum for ETA squared of (0.14), and this indicates that there is an impact of the suggested program on improving Identifying the purpose of a brief written communication text skill.

The results of table (4.4) show that the size of the impact Extracting the significant ideas and details in a piece of written communication skill reached (0.89), which is greater than the minimum for Eta squared of (0.14), and this indicates that there is an impact of the suggested program on improving Extracting the significant ideas and details in a piece of written communication skill.

The results of table (4.4) also show that the size of the impact of Identifying the meaning of key technical words
in a written communication text skill reached (0.94), which is greater than the minimum for ETA squared of (0.14), and this indicates that there is an impact of the suggested program on improving Identifying the meaning of key technical words in a written communication text skill.

The results of table (4.4) show that the size of the impact of Summarizing, commenting on and/or responding to information included in a written communication text skill reached (0.87), which is greater than the minimum for Eta squared of (0.14), and this indicates that there is an impact of the suggested program on improving Summarizing, commenting on and/or responding to information included in a written communication text skill.

**Testing the validity of the third hypothesis**

The first hypothesis of the current study states: "There is a statistically significant difference between the mean scores of the students in the overall writing skills of the pre–test and the post–test, in favor of the post–test."

To check the validity of this hypothesis, the researcher calculated students’ writing scores in the pre/post–test using paired samples t–test (SPSS, Version 27).

Meeting all the requirements, the data of the pre–post reading test were then analyzed using the paired samples t–
test, using SPSS. Table (4.5) shows the statistics of the pre/post-test.

Table (4.5): Paired samples t-test for the overall writing skill pre/post-tests

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>t-value</th>
<th>p-value</th>
<th>Effect</th>
</tr>
</thead>
<tbody>
<tr>
<td>writing Skills Pre</td>
<td>40</td>
<td>26.50</td>
<td>6.52</td>
<td>32.05</td>
<td>0.000</td>
<td>0.96 Large</td>
</tr>
<tr>
<td>Post</td>
<td>40</td>
<td>67</td>
<td>7.14</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

As shown in table (4.5), there is a significant difference between the scores of the students in the post-test (M=67.00, SD=7.14) and in the pre-test (M=26.50, SD=6.52); t (39) = 32.05, p = 0.000. The significance of t is (0.000), which is smaller than (0.05), and this means that there is a statistically significant difference between students ‘mean scores of the post-test and those of the pre-test in the overall writing skills in favor of the post-test. This indicates that the objectives of the study were achieved in raising the writing level of the study group.

**Testing the validity of the fourth hypothesis**

The second hypothesis of the current study states that: "There are statistically significant differences between the mean scores of the students’ pre-posttest in each writing skill in favor of the post-test."
As shown in table (4.6), there is a significant difference between the scores of the students in the post–test (M=19.50, SD=1.51) and in the pre–test (M=7.25, SD=2.76); \( t(39) = 25.95, p = 0.000 \). The significance of \( t \) is (0.000), which is smaller than (0.05), and this means that there is a statistically significant difference between students’ mean scores of the pre–posttest in the first writing skill, “Structure”. Thus, the program was effective in developing Structure skill.
The significance of t is (0.000), which is smaller than (0.05), and this means that there is a statistically significant difference between students’ mean scores of the pre–posttest in the second writing skill, “Focus”. Thus, the program was effective in developing the Focus skill.

Table (4.2) above indicates that there is a significant difference between the scores of the students in the post–test (M=15.87, SD=2.74) and in the pre–test (M=6.75, SD=2.41); t (39) = 17.09, p = 0.000. The significance of t is (0.000), which is smaller than (0.05), and this means that there is a statistically significant difference between students’ mean scores of the pre–posttest in the third writing skill, “Content and Sequence”. Thus, the program was effective in developing Content and Sequence.

Table (4.2) shows that there is a significant difference between the scores of the students in the post–test (M=13.46, SD=3.47) and in the pre–test (M=5.76, SD=2.15); t (39) = 14.08, p = 0.000. The significance of t is (0.000), which is smaller than (0.05), and this means that there is a statistically significant difference between students’ mean scores of the pre–posttest and those of the pre–test in the fourth writing skill, “Responding to a written communication text appropriately”. Thus, the program was effective in
developing Responding to a written communication text appropriately.

**The Effect size**

To measure the total effect of the suggested program on developing the overall writing skills, Eta square ($\eta^2$) value was calculated.

Table (4.7): The effect size of the overall writing skills

<table>
<thead>
<tr>
<th>Skills</th>
<th>Tc</th>
<th>ETA– Square</th>
<th>strength</th>
</tr>
</thead>
<tbody>
<tr>
<td>As a whole</td>
<td>32.05</td>
<td>0.97</td>
<td>Large</td>
</tr>
</tbody>
</table>

The results of table (4.7) show that the effect size of the test was (0.97), which is greater than the minimum ETA squared of (0.14), and this indicates that there is an effect of the suggested program on improving the overall writing skills.

To measure the effect of the suggested program on developing each separate writing skill, Eta square ($\eta^2$) value was calculated.

Table (4–8): The effect size of each writing skill

<table>
<thead>
<tr>
<th>Skill</th>
<th>Tc</th>
<th>ETA– Square</th>
<th>strength</th>
</tr>
</thead>
<tbody>
<tr>
<td>Structure</td>
<td>25.95</td>
<td>0.95</td>
<td>Large</td>
</tr>
<tr>
<td>Focus</td>
<td>24.18</td>
<td>0.94</td>
<td>Large</td>
</tr>
<tr>
<td>Content and Sequence</td>
<td>17.09</td>
<td>0.88</td>
<td>Large</td>
</tr>
<tr>
<td>Responding to a written communication text appropriately.</td>
<td>14.08</td>
<td>0.84</td>
<td>Large</td>
</tr>
</tbody>
</table>
As shown in table (4.8), the size of the impact of the Structure skill reached (0.95), which is greater than the minimum for ETA squared of (0.14), and this indicates that there is an impact of the suggested program on improving the Structure skill.

The results of table (4.8) show that the size of the impact of the Focus skill reached (0.94), which is greater than the minimum for Eta squared of (0.14), and this indicates that there is an impact of the suggested program on improving the Focus skill.

The results of table (4.8) also show that the size of the impact of the Content and Sequence skill reached (0.88), which is greater than the minimum for ETA squared of (0.14), and this indicates that there is an impact of the suggested program on improving the Content and Sequence skill.

The results of table (4.8) show that the size of the impact of the Responding to a written communication text appropriately skill reached (0.84), which is greater than the minimum for Eta squared of (0.14), and this indicates that there is an impact of the suggested program on improving the Responding to a written communication text appropriately skill.
Discussion of the results

As shown from the statistical analysis, the results obtained on the posttest indicated that the participants of the study group have achieved significant improvement in written communication skills (reading and writing skills).

The WebQuest provided students with a variety of reading materials, helped them to use the acquired knowledge from the reading resources and provided them with the specific information to complete their tasks in writing. Exposing students to reading materials through the WebQuests made students outperform in writing skills.

The WebQuest enhanced the online reading and writing skills of the students. Reading online is the most challenging activity for the ESP learners. There were some difficulties that faced learners such as inadequate proficiency of English and the lack of researching skills. The researcher tackled these problems by training students on how to enhance the required online skills. Students were scaffolded by the teacher and by their peers. Students received an orientation session to be familiarized with the WebQuest; they received an overall idea about the website and how to deal with it.

Another attribute of the WebQuest is collaborative learning. Using WebQuest enhanced vital cooperation and
collaboration among students. A positive finding showed that working in groups allowed some of the low proficient students to check their answers and the meaning of difficult words with their peers before presenting the information to the whole group.

WebQuest increased student– student communication which provided fluency practice and reduced the dominance of the teacher. Students became more independent through letting them work in groups to read the assigned web sites and write the assigned tasks.

**Qualitative Results of the Study**

**Participants’ Satisfaction Questionnaire**

The 1st question was about what the students liked and disliked most in WebQuest. Some of what they stated in this respect was as follows:

- The WebQuest included lots of materials with visual aids and that was very motivating.
- The WebQuest is flexible as everyone can participate in the website at any time from everywhere.
- We enjoyed arranging work group; group work has a positive effect on promoting relationships among friends.
The 2nd question considered the benefits the students got out of WebQuest. Some of what they stated in this respect was as follows:

- WebQuest helped us to take responsibility for our learning and enhanced our motivation.
- It improved our research skills and provided access to current and up-to-date technical information.

The 3rd question is related to the participants’ opinions about group work versus individual work. Their responses showed that about 25 students preferred group work, in contrast with 12 students who liked individual work more and (3) students who liked mixed activities.

The 4th question was concerned with the participants’ opinions about WebQuest activities and which they enjoyed more: reading activities or writing activities.

17 students enjoyed reading activities. They stated that WebQuest activities made reading and information accessibility easier and more enjoyable.

23 students enjoyed writing activities. They said that WebQuest writing activities were useful, motivating and enjoyable in addition to enhancing self-confidence and independent learning.
The 5th question in the Participants’ Satisfaction Questionnaire asked the participants to state their suggestions for improving written communication WebQuest in case it would be implemented again. They stated, for example,

- We should be given the rules of reading and writing in English first.
- We need to add a conversation course for free because we need to improve our listening and speaking skills and we need to correct our pronunciation.

The sixth question investigated Students’ opinions about the activities they had. 23 students choose very satisfied, 12 students choose moderately satisfied 5 students choose Slightly satisfied.

The seventh question investigated Students’ opinions about the extent to which the course developed their written communication skills. 28 students choose very satisfied, and 12 students choose moderately satisfied.

The last question investigated Students’ opinions about how far they were overall satisfied with the WebQuest course. 33 students choose very satisfied, and 7 students choose moderately.
Findings of the study

Using WebQuest proved to be effective in developing students' reading and writing skills. This was proved by analyzing the results of the pre and post – reading and writing test through using T. test and calculating the effect size. In other words, it can be said that the written communication skills were developed due to using the WebQuest program.
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أثر برنامج قائم على النظرية البنائية في تنمية مهارات الاتصال الكتابي في اللغة الإنجليزية لدى طلاب الكليات التكنولوجية باستخدام الرحلات المعرفية

أ. بسمة عبد المنعم السلاموني

د. زينب علي النجار

د. داليا إبراهيم يحيى

المستخلص:

هدفت الدراسة إلى معرفة أثر برنامج قائم على النظرية البنائية في تنمية مهارات الاتصال الكتابي في اللغة الإنجليزية لدى طلاب الكليات التكنولوجية باستخدام الرحلات المعرفية. واقتصرت الدراسة الحالية على مهارات القراءة والكتابة التي تناسب طلاب الكليات التكنولوجية. وتتم مراجعة المؤلفات والدراسات ذات الصلة المتعلقة بمهارات التواصل الكتابي والرحلات المعرفية للإجابة على أسئلة الدراسة، واستخدمت الباحثة تصميم الاختبار القبلي والبعدي للمجموعة الواحدة إلى جانب منهج بحث مختلط يتضمن المنهجيات الثلاثية والمنوعية. وبلغ عدد المشاركين أربعين طالبًا وطالبًا مسجلين بالفرقة الأولى بالمعهد الفني الصناعي بالمدرسة التكنولوجية للمدرسة الثانوية للعام الدراسي 2022-2023. أدوات الدراسة الحالية هي قائمة مهارات القراءة، وقائمة مهارات الكتابة، واختبار الاتصال الكتابي قبل / بعد، مقياس تحليلى لمهارة القراءة، و، مقياس تحليلى لمهارة الكتابة؛ واستبيان الرضا. وتم إعداد البرنامج وتصميم موقع إلكتروني لنقل الرحلات المعرفية واستخدام الأساليب الإحصائية المناسبة. وأظهرت النتائج الدراسة إلى وجود فروق ذات دلالة إحصائية بين الاختبار القبلي والبعدي لمهارات القراءة والكتابة لصالح الاختبار البديل تعزى لبرنامج الرحلات المعرفية. وأخيراً، تم التوصل إلى أن البرنامج القائم على النظرية البنائية كان له تأثير كبير على تطوير مهارات الاتصال الكتابي باللغة الإنجليزية لدى طلاب الكليات التكنولوجية باستخدام الرحلات المعرفية.

الكلمات المفتاحية: النظرية البنائية، الاتصال الكتابي، القراءة، الكتابة، الرحلات المعرفية.

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