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The Correlation between Iraqi EFL University Students' Cognitive Learning Styles and Expository Writing

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Abstract

Making coherent as well as accurate writings may be affected by a variety of factors, among which are cognitive learning styles towards which learners exert effort to realize and understand them in order to achieve better academic outcomes because cognitive styles have a direct impact on the foreign language learning where they contribute to determining the way or pattern in which learners learn and thus contribute to increases their language performance in learning process. These styles maybe related to learners' seeking mastery of new skills or gaining better performance and judgements in comparison with others. Accordingly, the current research is conducted to explore EFL learners' cognitive learning styles and their relationship to expository writing. Thus, it aims at finding out: Iraqi EFL university students' level of cognitive learning styles. Iraqi EFL university students' performance level in expository writing. The correlation between Iraqi EFL university students' cognitive learning styles and performance in expository writing. A sample of (180) Iraqi EFL 3rd year students at the Departments of English-Colleges of Education for human Sciences at three universities; Tikrit, Baghdad and Al-Muthana respectively for the academic year (2024-2025) has been selected. The research design of the current research is a correlational in nature through which two main instruments are used, after being approved and validated by a jury of experts. These are; Cognitive Learning Styles Questionnaire 2) Expository Writing Test which includes two questions that have been developed to collect data. After achieving the validity and reliability and checking the statistical analysis of the instruments, the Questionnaire and the test have been applied on the research sample. The analysis of the collected data reveals specific findings, which are showed as follows: 1) The Iraqi EFL university students have different levels of cognitive learning styles (high, average, and low). An average level in expository writing by Iraqi EFL university students. As for the cognitive learning styles, Iraqi EFL university students have shown a strong correlation with performance in expository writing. On the basis of the above conclusions, some pedagogical recommendations, and suggestions for further studies have been put forward. A study to investigate the EFL learners' cognitive learning styles and their effect on their language proficiency.

Keywords: *The Concept of Cognitive Learning Style, Cognitive Learning Styles Classifications, Expository Writing, Expository Writing Types*

Introduction

The Problem of the Study and Its Significance

Cognitive styles as important criteria in the development and implementation of both curricula and instructional performance. They have emerged as a new dimension withing individual differences through cognitive psychology studies in the field of information processing. Furthermore, cognitive styles are related to an individual's particular mental process including awareness, conscious perception, decision making, problem solving, judgment, reasoning and attention. (Dornyei, 2005). Grigorenko and Sternberg (1995) assert that cognitive

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style concentrates on the basis of discrimination between individuals during their interaction with situation elements in cognitive and perceptual functioning or in personal way of thinking, how individuals learn rather than what they learn. Learning does not occur in all learners at the level and quality.

Expository writing is essential to make learners be familiar with the context of their topic, obviously, it is their tasks to explain the context for them. "Expose", the name of the style itself suggests that the learners expose a topic in a clear and logical way as a step ensures that their readers comprehend what is actually going on. This style of writing promotes critical thinking objectivity, and clear and concise communication comprehensively in proper context. Expository writing's purpose is making written task dealing with definitions, processes, clarifications of ideas, generalizations and principles with the intention of presenting purposeful meaning (Hyland, 2002).

Iraqi EFL learners have poor mastery of writing skills activity. They can not get a satisfactory interpretation of the text through a contextual approach in classroom situations, The students' roles in Iraqi EFL classes are not vital in performing writing activities. For one reason or another they are afraid to take challenging - risk in writing factual or descriptive details in an independent framework of mind according to their original schemata, prior knowledge or background. This shows that the good writer is the active participant who is responsible for constructing, organizing meaning from their own words or ideas using the appropriate vocabulary grammar and tenses in a rank structure (Mohammed, 2012).

The problems of Iraqi EFL learners according to what mentioned above can be summarized as follows:

1- The learners have low ability in writing Expository text.

2- They have poor thinking or difficulties in using grammar and vocabulary in expressing and organizing ideas or and in producing words, sentences, paragraphs and arranging them into a good sequence.

3- EFL instructors' narrow view of the writing process. They look for errors not for ideas, they in fact give their students the impression that writing is grammatically correct sentences.

Accordingly, this research attempts to find a strong relation between cognitive learning styles and its effect on expository writing since writing skill consider as a complex activity done by students.

However, the problem of the research is best illustrated in answering the following questions:

1. What are the Cognitive Learning Styles Iraqi University Students prefer to employ?
2. What is the level of Iraqi University Students in Expository Writing Skill?

1.2 Aims of the Research

This research aims at finding out:

1. Iraqi EFL university students' level of cognitive learning styles.

2. The two aim "Finding out Iraqi EFL university students' performance level in expository" is achieved through using t-test for one independent sample to determine the significance

differences between the arithmetic mean of the sample individuals' scores and the hypothetical mean of the expository as shown is Table (1.1) below:

Table (1.1)

Arithmetic Mean, Standard Deviation, and t-value of Expository and Descriptive Writing

The test	Arithmetic mean	Standard deviation	Hypothetical Mean	T-value		Level of significance	Judgment
				Computed	Critical		
Expository writing	20.572	5.852	20	1.312	1.960	0.05	Insignificant

3. Results Related to the third Aim "to find out the correlation between Iraqi EFL university students' cognitive learning styles and performance in expository writing, Pearson correlation coefficient formula and t-test for the significance of the correlation have been used as illustrated.

1.3 Hypothesis of the Study

The following null hypotheses have been posed:
There is no statistically significant correlation in Iraqi EFL university students cognitive learning styles and expository writing.

1.4 Limits of the Study

This research is limited to Iraqi EFL 3rd year university students at the Colleges of Education for Humanities (English Department) in Tikrit University, Baghdad University, and Al-Muthana University during the academic year (2024-2025).

1.5 Value of the Study

Students

a. a. EFL university students to raise their awareness of how their cognitive learning styles may be correlated with their expository writing, which may be helpful to improve their ability in writing skill and become independent in constructing and organizing the proper texts (autonomous learners).

Teachers and Researchers

a. EFL teachers and instructors as it assist them to develop necessary lesson plans to treat with students which contributes to achieving and improving their learning tasks goals in general and in writing process in particular.
b. EFL teachers to teach efficiently depending on recommendations of the current research concerning activities and practices of classroom, using effective and suitable strategies in teaching writing skill, supporting learners' mental and conceptual dispositions.

c. Researches who can benefit from the results findings of this research as base or a source for further research and as an attempt to enrich their knowledge in the area of academic information in an academic context.

Curriculum

a. Curriculum designers in making decisions about more effective writing activities and enriching the materials with training tasks and exercises that improve the learner's expository writing.

1.6 Definition of Basic Terms

Below are definitions of the basic terms in this study

1- Cognitive Learning Styles

- Johnes (2016) define cognitive learning styles as "stable approaches, or attitudes, preferences, or habitual styles that define individuals' typical modes of perceiving, remembering, problem-solving or making decision, thus including both perceptual and intellectual functioning".
- Johne's definition (2016) is adopted as an operational one because it is suit to the aims of the study.

2- Expository Writing

- Expository writing is a writing style to explain a topic in a logical and straightforward manner, present a topic in a fair and balanced analysis with no references to the writer's opinion or emotion Ramage etal. (2009).

An operational definition of expository writing is a form of writing that aims to explain or inform a topic clearly and logically. It involves presenting facts, providing explanations, and exploring ideas without personal opinions. This form of writing is common in essays, articles, textbook, and reports.

II. Theoretical Background

2.1 The Concept of Cognitive Learning Style

Many scholars emphasize on the concept of cognitive style, Keefe (1979) points out that cognitive styles as "stable attitudes, preferences or habitual strategies that determine individuals' modes of perceiving, remembering, thinking and problem-solving. Gagne (1985) asserts that cognitive style as "an individual's fashion of perceiving information and / or cognitive functioning, including both perceptual and intellectual functioning".

In academic studies, the terms learning style and cognitive style are often used synonymously. Reid (1995) proposes that these terms should be identified to prevent misunderstanding, cognitive styles as " a person's preferred method of mental processing, which involves problem-solving, thought, perceiving and analyzing". On the other hand, learning style is related with the use of cognitive style in education. Riding and Cheema (1991) make an addition that cognitive style can be defined in terms of dipolar dimensions (e.g., concrete – abstract, impulsive-reflective, wholist-analytic), while learning style can encompass a diversity of non-exclusive components (visual, oral and Kinesthetic styles. Rayner (2000) differentiates learning style and cognitive styles based on the consistency in which individuals can interpret knowledge in different contexts. He describes cognitive style as " a consistent method of information that is involved to other affective and behavioral influences of how learners perceive, interact with, and respond to the learning environment " Whereas learning styles are" internally

based change able characteristics, often not perceived or consciously used by individuals for intake and comprehension of information, they can shift with experiences or circumstances, and they can also be trained, and environmentally dependent"

Actually, according to Wang (2008), learning style and cognitive style are different. Cognitive style is "individual's habitual way of organizing and processing information", "learning style contains individual's feelings affective, psychological behaviors and cognitive characteristics, cognitive learning style is regarded to be a vital part of learning style and "it has great contributions to second language acquisition", which can enhance learners' autonomy and help them become successful learners. Additionally, cognitive learning style are relatively stable indicators of how learners respond and use stimulus in the scope of learning utilizing coherent way.

2.2 Cognitive Learning Styles Classifications

Cognitive Learning Styles are classified into several major approaches concerned with the mental processes of perception, memory and thought (Sternbery and Grigorenko,1997).

2.2.1 Random-Intuitive-Concrete-Sequential Style

Random-intuitive of CLS in relation to thinking focuses on tangible, specific details, more theoretical, conceptual, general ideas and involves sensory engagement as well as connection to direct experience from sudden insights. Also, Concrete-Sequential of CLS in relation to thinking focuses on presented information sequentially with concrete facts and data (authenticity) (Kahtz and Kling,1999).

2.2.2 Closure-Oriented Vs Open-Oriented

Closure-oriented style focuses on completing tasks quickly, resolving problems, and getting specific tasks to a definitive end, achieving goals, and moving forward to new objectives. In contrast, open-oriented style is a more adaptable or flexible approach where there is a desire to investigate new possibilities, immerse varied ideas, and remain open to continuing developments or changes. This manner values innovations, ongoing, creative problem-solving, and improvement (Wang, 1998).

2.2.3 Global-Particular Style

Global style relates to right-hemisphere domination in the brain. It takes information holistically concentrating on the wider view and placing the focus on overall meaning first "top-down processing". (Ehrman and Oxford, 1990).

On the other hand, a particular style is more specific and localized (left brain hemisphere). It can be a realizing aspect across different creative and personal areas, a sharing to individual identity and expression "a particular style in any domain is not merely about surface appearance but involves a deeper expression of individuality, creativity and consistency in approach, reflecting a unique perspective and identity". (Keefe, 1979).

2.2.4 Synthesizing – Analytic Style

Synthesizing style can presuppose refining and fine-tunning by careful choosing and integrating elements or parts that complement each other harmoniously, ensuring a seamless and cohesive final outcome. (Curry, 1983).

Conversely, analytic style involves breaking down complex notion into smaller components, examining them systematically, and drawing logical conclusions based on evidence or data. Additionally, it focuses on problem-solving, critical thinking and methodical approach to comprehend and interpreting information. This style emphasizes on analysis and objectivity rather than personal opinions or emotions. (Taylor, 2009).

2.2.5 Sharpening and Leveling Style

Sharpening versus leveling attaches to the cognitive skill of memory. In sharpening and leveling scales, individuals' perceptions, storges, and memories to process information are reflected in two different directions. Applying this level to individuals' learning requires applying plentiful previous memories when trying to assimilate new information with prior knowledge. However, sharpeners seem to select fewer memories when processing new knowledge. (Messick, 1984).

By contrast, levelers, inaccurately blend so many features of memories together and then oversimplify the new material. (Leaver and Atwell, 2002).

2.2.6 Deductive and Inductive Style

These styles note how learners deal with language rules or with spoken and written discourse. Deductive style, also famed as deduction is an elementary form of reasoning that utilizes a general principle, premises or evidence as basis to draw specific and valid conclusions when the premise is proved to be correct (Messick, 1984).

Inductive reasoning is an also called logical approach to making inferences, or conclusions or bottom-up reasoning moving from the specific to general. (Harry, 2002).

2.2.7 Field–Independence–Field–Dependence Style

Field-independence-field dependence style was defined by Witkin etal. (1962) as "the extent to which an individual perceives part of a field as discrete from the surrounding field as a whole, rather than embedded, or the extent to which an individual perceives analytically. Field dependence is, conversely, the tendency to be "dependent" on the total field so that the parts embedded within the field are perceived more clearly as a unified whole, or the extent to which an individual perceives holistically". (Witkin etal., 1977).

2.2.8 Impulsive and Reflective Style

Impulsive-reflective cognitive style, also known as impulsivity and reflectivity are two learning styles in cognitive field, involving with how learners deal with response time. (Yank and Guo,2001).

As brown (2007) states, an impulsive learner is seen as "a person tends to make a quick or gambling guess at an answer to a problem" and a reflective learner as "a person tends to make a slower, more calculated decision". Similar other factors, learners tend to be reflective or impulsive but these styles are not exclusive mutually, for some learners are an admixture of them. Finding a balance between these two styles can direct learners to more efficient and adaptive-making overall.

2.3 Expository Writing

Expository writing aims to detect around particular factual information without containing personal opinions or conjecture or biases. This means, informing and explaining the subject to the readers are required rather than simply describing "explaining Why something is as it is or How something comes about". In this sense, writing with the assumption that readers have little to no background or prior knowledge about the central subject provides them as much information as writer can. The audience should feel as if they have learned something after reading writer's essay (Hyland, 2002).

According to Ramage etal. (2009), an expository essay writing on any subject-matter can be challenging and enriching. It reclines in the conscientious process where an intelligible and unbiased analysis of the selected topic are presented. A deep understanding, research skills, and the capacity to convey information (message) in a logical and coherent manner are required in crafting an expository essay of the chosen topic. In this case, one of the most challenges is avoiding personal opinions and bias, this means that an expository essay can be an objective

exploration of ideas and facts. Through researching, relevant information will be gathered to support the main topic. As well as, choosing reasonable sources and interpreting the data precisely are critical to maintaining the essay's integrity. Furthermore, the challenge expands to maintaining the audience's interest all through the essay. A well-crafted expository essay should engage the readers not only inform or explain. This will be achieving during making the balance in careful consideration of language, tone, and the overall flow of the essay.

To sum up, an expository essay writing is considered as a complex that requires a research combination, analytical thinking, and functional communication skills. It is an effort that demands devotion, time, conscious awareness, and greater attention to detail to produce a well-crafted and informative productive piece. On this basis, EFL students must have perceptual and cognitive ability to write, expository texts because of the complexity of their structures than other modes. Consequently, structures of common expository texts encompass classification, compare/contrast, procedural description, illustration, enumeration or collection, problem-solution, and sequence (Uccelli, 2013).

2.4 Expository Writing Types

Expository writing can be identified in many forms. These include the following: (Lee and Tan, 2020).

1- Cause and Effect Essay

Cause and effect essays discuss the cause (the reason) of a subject matter and its outcome (the effect). By this form, there are attempts to demonstrate why one theme or topic impacts another theme or topic. In addition, this form often depends on research that connects two topics and aims to explore their relationship or consequences simply and definitively.

2- Classification Essay

By using this form, a broad topic will be covered by dividing it into small subcategories. In other words, the specified task is classified into multiple separate sections. "The writer puts information into groups and sub-groups that support the main topic ", "the writer sorts things into useful categories, makes sure all the categories follow a single organizing principle, and gives examples that fit into each category".

3- Descriptive Essay

A descriptive expository essay includes imagery data in specific details that encourages the audience to imagine a situation objectively. By using this form, writers decide to present all the potential information on a given topic such as, relevant factual details, relevant historical facts, background, etc. "the writer explains a particularly topic by showing vivid and precise descriptions, clear organization (chronological, spatial, or logical).

4- Definition Essay

In this form, the given topic is explained in detail. It aims to provide understandable explanation of a specific topic "defining topic in detail" A definition essay defines and explains the meaning of a concept or term, provides a dictionary definition, an extended definition or a standard definition that encompasses explanation and examples to clarify and simplify the meaning.

5- Comparative / Contrast Essay

Comparative and contrast writing means analyzing two ideas, topics, perspectives, or situations against each other. By this form, discussion the similarities (comparison, showing how two or more topics are a like) and differences (contrast, showing how two or more topics are different) between two topics occur while maintaining unbiased perspective.

6- Problem-Solution Essay

Problem solution essay identify and discuss a problem or issue and explore potential solutions or manners to assign or fix it. This form utilizes reliable facts to offer possible solutions to problem subject matter. Typically, it presents problem evidence and then provides well and logical-supported solutions.

7- Analytical Essay

Analytical expository essay intricately examines a single topic to explain certain arguments or prove the theories of writer. In other words, it involves breaking down a topic into its constituent parts to understand its hidden meaning and significance, this means, the essential components and a step-by-step guide to crafting a well-organized analytical essay.

8- Sequential Essay

A sequential expository essay presents a topic or process in sequential order. It is also known as "how-to" essay, this form explains a step-by-step process or procedure. It is often used to explain how something is done or how to complete a certain task.

III. Methodology

3.1 Research Design

The type of research design conducted in the current study is a correlational design method which is the most suitable type among other ones for studying the correlational relationships among the investigated variables and revealing their differences to describe and analyze the phenomenon under study.

3.2 Population and Sample of the Study

The term population refers to "any set of items, individuals, etc. that share common and observable characteristics and from which a sample can be taken" (Richards and Schmidt, 2002).

The population of the present study covers (1047 students) Iraqi EFL 3rd year university students who are studying in morning studies in the departments of English - Colleges of Education for Humanities in Iraq except kurdistan region during the academic year 2024-2025 as shown in Table (1).

Table (1)
Population of the Study

University / College	Sample (Third Year)
College of Education for Humanities / University of Tikrit	96
College of Education for Humanities / Ibn Rushd. University of Baghdad	54
College of Education for Humanities / University of Al-Muthana	30

College of Education for Humanities / University of Diyala	90
College of Education for Humanities / University of Babylon	120
College of Education for Humanities / University of Thi Qar	90
College of Education for Humanities / University of Al-muthana	66
College of Education for Humanities / University of Al-Anbar	70
College of Education for Humanities / University of Al-Araqia	65
College of Education for Humanities / University of Basrah	66
College of Education for Humanities / University of Al-Kufa	80
College of Education for Humanities / University of Kerbalaa'	75
College of Education for Humanities / University of Al-Qaddissiyah	85
College of Education for Humanities / University of Wasit	60
TOTAL	1047

The rationale behind including 3rd year students is that they are more advanced, Knowledgeable, and are expected to employ the variety of language skills learned throughout their studies in their performance.

On the other hand, the term sample, is any group of individuals that is selected to present a population (Richards and Schmidt, 2002). The sample of this study includes (180) Iraqi EFL 3rd year students who are randomly selected from the Departments of English - Colleges of Education for Human Sciences at three Universities: Tikrit (96 students), Baghdad (54 students), and Al-Muthana (30 students) respectively during the academic year (2024-2025).Thus, the study sample size represents approximately (%17.19) of the study community consisting of (1047) students as shown in Table (2).

Table (2)
Sample of the Study

University College	Sample (third Year)	Percentage
College of Education for Humanities / University of Tikrit	96	%53.33
College of Education for Humanities / Ibn Rushd. University of Baghdad	54	%30
College of Education for Humanities / University of Al-Muthana	30	%16.66
Total	180	%100

3.3 Instruments of the Research

The instruments used in the present research include (1) Cognitive Learning Styles Questionnaire by Ehrman and Leaver (2003) has been adopted which consists of (64) items distributed into (8) cognitive styles as follows:

1- Random – Intuitive – Concrete – Sequential (12 / Six for each Style).
2- Closure – Oriented – Open (8 / Four for each Style).
3- Global – Particular (10 / Five for each Style).
4- Synthesizing – Analytic (10 / Five for each Style).
5- Sharpener – Leveler (6 / Three for each Style).
6- Deductive – Inductive (6 / Three for each Style).
7- Field – Independent – Fild Dependent (6 / Three for each Style).
8- Impulsive – Reflective (6 / Three for each Style).

The Questionnaire is rated and scored according do Five-Point Likert scale as Always (5), Often (4), Sometimes (3), Rarely (2), and Never (1) (See Appendix A).

Expository Writing Skill Test which contains two questions:

Q1: "How does Technology Impact Human Communication?"

Q2: "What are the Benefits and challenges of Online Learning?"

The researcher exposures, main instructions to students that follow in writing test as shown in Appendix (B).

3.4 Face Validity

According to Huges and Lavery (2003), face validity is "the extent to which a test meets the expectations of those involved in its use, e.g., administrators, teachers, candidates and test score users". Accordingly, the two instruments are exposed to a group of jurors specialized in the field of linguistics and the filed of methods of teaching English to give their own viewpoints concerning both adequacy and appropriateness of the items or questions of each instrument or measure. Actually, after some minor or slight modifications, the experts show their approval of the appropriateness of the items and questions for the topic and sample concerned. (See Appendix E).

3.5 Pilot Administration of the Instruments

As a scientific procedure before conducting the final version of the research instruments, it is necessary to conduct a pilot research to check the appropriateness of each instrument to the sample of the research. This administration has been conducted in order to:

1- check whether there is any ambiguity in test instruction so that appropriate alternations can be made, and
2- estimate the time allocated for answering the instruments. (Clark-Carter, 2004).

Accordingly, a sample of (50) students have been chosen randomly from the third year EFL students at the college of Education, and University of Samarra to represent the pilot sample. The findings of the pilot research reveal that there is no ambiguity within items as well as instructions for the instruments. It is worth noting that a pilot research is also used to estimate reliability of study instruments. The pilot study is conducted on 12th November of 2024. Also, it has been shown that the time needed for completing the instruments as follows:

CLSsQ (15) minutes

EWST (30) minutes

*** Note:** The present study uses third year student because they are mature and proficient enough to collect the data from them.

3.6 Item Discrimination Power

Calculating the Discrimination Power of items is considered one of its most substantial standard features in the standard reference of the instruments. Through this method, items can be chosen which give the greatest amount of information about the differences in the answers of subjects "item discrimination index refers to whether an item differentiates high scores from low scores on the overall test" (Nunnally, 1978); besides they enable the researcher to delete the undistinguished items, which will contribute to increasing the reliability of the test (Kaplan and Saccuzzo, 2018).

For the sake of finding out the item discrimination power of the research instruments are applied on (49) students "estimating item discrimination is the extreme groups method, that is, the two groups from the extremes (the upper and lower 27%) are compared" (Kaplan and Saccuzzo, 2018). After calculating the mean score the standard deviation of the two groups responses, t-test for two independent samples is used to find out the significance of the variance between the two groups.

After scoring the responses on the two instruments, the total scores of the students have been arranged in descending order from highest to lowest. The two extreme groups are specified of a rate of (27%) of the total scores for each group.

3.7 Scoring Scheme of the Research Instruments

Scoring is the process of meaning responses using numerical scale. Scoring achievements and teachers' attitudes. In the current study, the questionnaire and test are scored using the scheme. It can be noticed that test suits achieving study goals.

3.7.1 Scoring Scheme of the Questionnaires

As for as the scoring scheme is concerned, the CLSsQ consist of (64) items. Each item is given scores ranging from (1-5) depending on participants' responses. See Appendix (A).

3.7.2 Scoring Scheme of the Writing Skill

According to a scoring scheme adopted from Brown (2007), which has been slightly modified by the researcher according to the jurors' suggestions. The scoring scheme consists of five criteria for analyzing students' answers (Content, Organization, Grammar, Vocabulary, and Mechanisms). Each criterion is scored out of (4) and it ranges from (1) to (4). The total score given to students ranges from (4) to (20). The highest score is (20), while the lowest score is (4). Based on that, each question in two parts is scored out (20). However, the total score of WST is (80). The highest score is (80), and the lowest score is (8). See Appendix (C). Brown (2007)

3.8 Reliability of the Research Instruments

One of the essential characteristics of a good instrument is reliability which refers to the consistency or stability of scores values that an instrument elicits (Franzen, 2002). Dunn (2009) claims that "reliability provides information on whether the collection procedure is consistent and accurate". As far as the current study is concerned, three types of reliability are addressed, test-retest, internal consistency, and inter-rater.

3.8.1 Test-Retest

The measurement of test-retest means that if the same respondents complete a test at two different points in time, the responses should be stable and the set of results should be reproducible (Sharma and Sharma, 2006). As far as the present research is concerned. The (CLSsQ) is administered to a sample of (40) participants (the research sample) chosen randomly. After two weeks, the same measures are applied to same sample. Using Pearson Correlation

Coefficient to estimate reliability between the two sets of response results show that reliability value for the (CLSsQ) is (0.864). (Litwin, 1995).

3.8.2 Internal Consistency

The other of reliability examined in this study is the internal consistency of measures items. One of the widely used methods for assessing the internal consistency of the test is Cronbach's Alpha (Franzen, 2002).

Cronbach Alpha Coefficient can range from 0.00 to 1.00 to indicate very low to very high internal consistency. In addition, an Alpha of (0.65-0.80) is often considered adequate for a measure used in human dimension research (Vaske etal., 2016).

Accordingly, the measure of the research (CLSsQ) in found to be of high internal consistency with reliability value of (0.822).

3.8.3 Inter-Rater

Dunn (2009) states that inter-rater reliability as a "measure of the consistency and agreement between two or more raters or observers in their assessments, Judgments, or ratings of a particular phenomenon or behavior". To achieve the reliability of the writing skill test, a sample of (30) students are selected randomly from the main research sample and another specialist corrector* is asked to re-correct their answers according to the approved correction standard. Using Pearson Correlation Coefficient to estimate the reliability between the researcher's correction scores and the external corrector's correction scores, results show that reliability value for the first correction is (0.826) (researcher) and for the second correction is (0.827), which are indicators of good reliability since the agreement of the stability coefficient values.

3.9 Final Application

The instrument in this study is applied in different way. The CLSsQ is administered to the sample of the research. After explaining and clarifying the scales items by the researcher to make sure that there will be no ambiguity. The participants had enough time to consider the items and submit their responses. Thus, this test is applied by eliciting expressions, facts, and opinions from participants by writing about different topics. Before the application of the two instruments, students have been given suitable instructions and guidelines about the purpose of the test and the criteria according to which they will be estimated, like writing rate, type of content, organization, etc. Moreover, they are informed about the criteria to be followed in using (CLS_SQ). The application of the two instruments takes (one) lecture over (3) weeks at each university.

After conducting the statistical and analysis of the items of the scale (CLSs) for English language learners, the scale in its final from consists of (64) item of the declarative phrases type, and each item corresponds to five graded alternatives for the answer, which are given the grades (1, 2, 3, 4, 5). Accordingly, the range of answer grades on the scale ranges between (64-320).

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IV. Presentation of Results

4.1 Results Related to the First Aim. As shown in table (2)

4.1.1 Results Related to the First Aim

To achieve the first aim which states:

"Finding out Iraqi EFL university students' level of cognitive learning styles", a t-test for one -

independent simple is employed to determine the significance differences between the arithmetic mean of the sample individuals' scores and the hypothetical mean for each learning style. The results are shown in Table (2):

Cognitive Learning Styles	Sub-styles	Arithmetic Mean	S.D	Hypothetical Mean	T-value		Level of significance	Judgment
					Computed	Critical		
Random-Intuitive - Concrete-Sequential	Random-Intuitive	16.788	5.360	18	-3.031	1. 960	0.05	Hypothetical Mean
	Concrete-Sequential	21.183	4.322		9.880			sample mean
Closure-Oriented – Open	Closure Oriented	12.383	2.901	12	1.773	1.960	0.05	Insignificant
	Open Oriented	14.011	3.995		6.753			sample mean
Global - Particular	Global	15.266	4.600	15	0.778	1.960	0.05	Insignificant
	Particular	15.738	4.629		2.141			sample mean
Synthesizing - Analytic	Synthesizing	16.555	3.795	15	5.499	1.960	0.05	sample mean
	Analytic	15.383	5.473		0.940			Insignificant
Sharpener - Leveler	Sharpener	9.311	3.759	9	1.110	1.960	0.05	Insignificant
	Leveler	9.222	2.193		1.359			Insignificant
Deductive - Inductive	Deductive	11.705	2.295	9	15.811	1.960	0.05	sample mean
	Inductive	10.016	2.418		5.640			sample mean
Field-Independent - Field-Dependent	Field-Independent	8.250	2.881	9	-3.493	1.960	0.05	Hypothetical Mean
	Field-Dependent	9.972	2.745		4.752			sample mean
Impulsive - Reflective	Impulsive	9.361	3.372	9	1.437	1.960	0.05	Insignificant
	Reflective	7.777	3.200		-5.124			Hypothetical Mean

The above table indicates the following:

- For the cognitive styles (Concrete-Sequential, Open oriented, Particular, Synthesizing, Deductive, Inductive, and Field-Dependent), the t-value of these styles are statistically significant differences in favor of the arithmetic mean of the scale since the calculated t-value is upper than

the critical t-value.

These styles are highly employed by the sample with a very good level. So, these styles are dominant.

- Regarding the cognitive styles (Closure-Oriented, Global, Analytic, Sharpener, Leveler, and Impulsive), the t-value of these styles are no statistically significant differences since the calculated t-value is lower than the critical t-value. This result demonstrates that these styles are employed with an average level by the sample.
- In relation to the learning styles (Random-Intuitive, Field-Independent, and Reflective), the t-value of these styles are statistically significant differences in favor of the theoretical mean of the scale since the calculated t-value is upper than the critical t-value. These styles are lowly employed by the sample.

4.2 Results Related to the Second Aim. As shown in Table (3)

The test	Arithmetic mean	Standard deviation	Hypothetical Mean	T-value		Level of significance	Judgment
				Computed	Critical		
Expository writing	20.572	5.852	20	1.312	1.960	0.05	Insignificant

As the table above shows the following:

- There are no statistically significant differences between the two means (the computed t-value is lower than the critical t-value) and this means that the sample have an average level in expository writing.

4.3 Results Related to the Third Aim. As Shown in Table (4)

Cognitive Learning Styles		Writing Style	Correlation coefficient	T-value		Level of significance	Statistical significance
				Computed	Critical		
Random-Intuitive - Concrete-Sequential	Random-Intuitive	Expository Writing	0.076	1.027	1.960	0.05	Insignificant
	Concrete-Sequential		0.317	4.464	1.960	0.05	Significant
Closure-Oriented – Open	Closure Oriented		0.126	1.702	1.960	0.05	Insignificant
	Open Oriented		0.229	3.180	1.960	0.05	Significant
Global - Particular	Global		0.317	4.464	1.960	0.05	Significant
	Particular		0.019	0.256	1.960	0.05	Insignificant

Synthesizing - Analytic	Synthesizing		0.125	1.689	1.960	0.05	Insignificant
	Analytic		0.182	2.493	1.960	0.05	Significant
Sharpener - Leveler	Sharpener		0.133	1.797	1.960	0.05	Insignificant
	Leveler		0.13	0.175	1.960	0.05	Insignificant
Deductive - Inductive	Deductive		0.012	0.162	1.960	0.05	Insignificant
	Inductive		0.248	3.444	1.960	0.05	Significant
Field-Independent - Field-Dependent	Field-Independent		0.339	4.842	1.960	0.05	Significant
	Field-Dependent		0.227	3.152	1.960	0.05	Significant
Impulsive - Reflective	Impulsive		0.066	0.891	1.960	0.05	Insignificant
	Reflective		0.237	3.291	1.960	0.05	Significant

As table (4) above shows:

- The correlation coefficient values and the t-values between the cognitive learning styles (Concrete-Sequential, Open-Oriented, Analytic, Inductive, Field-Independent, Field-Dependent, and Reflective) and expository writing are statistically significant, since the computed t-values are higher than the critical t-values. This means that there is a positive statistical significance correlation between these styles and expository writing.
- The correlation coefficient values and t-values between the cognitive learning styles (Random-Intuitive, Closure-Oriented, Particular, Sharpener, Leveler, Deductive, and impulsive) and t-values expository writing are no statistically significant, since the computed t-values are lower than the critical t-values. This result indicates that there is no a significant correlation between these styles and expository writing.

VI. Conclusions, Recommendations, and Suggestions for Further Studies

5.1 Conclusions

On the basis of the results obtained, the following conclusions are drawn:

1- By investigating EFL learners' level of (CLS_S), data analysis provides evidence that they have different levels in each style. The findings reveal that:

a. the high level of students in (Concrete Sequential, Open-Oriented, Particular, Synthesizing, Deductive, Inductive, and Field-Dependent styles),

b. the average level in (Closure – Oriented, Global, Analytic, Sharpener, Leveler, and Impulsive Styles), and

c. the low level in (Random-Intuitive, Field-Independent, and Reflective Styles)

EFL learners are at an average level in performing expository writing.

2- EFL learners are at an average level in performing expository writing.

3- Positively correlated with **an exposition writing performance** which are: Concrete –

Sequential, Open-Oriented, Analytic, Inductive, Field-Independent, Field-Dependent, and Reflective;

4- Negatively correlated **with an expository writing performance** which are: Random – Intuitive, Closure – Oriented, Particular, Sharpener, Leveler, Deductive, and Impulsive;

5.2 Recommendations

Based on results discussed above, the following recommendations are suggested:

1- Iraqi EFL teachers are recommended to expand their knowledge about helping students to be more aware of the types of cognitive learning styles in order to adopt and follow such styles for the sake of improving their level in English, in addition to being more internally motivated in order to achieve intended goals. That is achieved through reading extra resources such as books, blogs, encyclopedia, articles, etc. and attending workshops, seminars, and lectures held for relevant topics.

2- EFL students are recommended to be aware of exploiting the available opportunities for exploring new paths for solving problem on their own, away from anxiety and stress that affect the continuity of the learning process. Therefore, reducing them is vital to reinforce cognitive operations.

3- multiple and complex tasks in learning, which require students to think deeply, creatively and comprehensively from a diversity of viewpoints to solve problems in a successful learning environment.

5.3 Suggestions for Further Studies

In the light of current research, further studies need to be under taken as follows:

1- A study to investigate the EFL learners' cognitive learning styles and their effect on their language proficiency.

2- A study to examine EFL learners' working memory and its impact on their writing skill.

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