Integrating Competency Based Learning and Infographics to Develop Official Experimental Secondary School Students' EFL Higher Level Reading Comprehension

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Abstract

The present study aimed at developing higher level of reading comprehension skills among first year secondary stage students using a program based on integrating competency-based learning and infographics. No previous studies dealt with the integration between competency-based learning infographics using Edward Anthony's Scheme in which he identified three levels of conceptualization and organization, which he termed approach, method, and technique, so this is the novelty point of the current study. There were 35 participants for the experimental group and the same number for the control group. A skills list of higher level reading comprehension was designed and juried. Then a pre/post test of higher level reading comprehension was juried and administered to the participants of the two groups. The program was designed and administered in the second term of the academic year 2023 and lasted for the entire term with one session per week for the experimental group. Results of the study revealed that the experimental group's post results exceeded its pre results in the postadministration of the reading comprehension test. Furthermore, it could be determined that the proposed program substantially enhanced the stated dependent variable.

Keywords: Competency based learning, infographics, reading comprehension.

1. Introduction

To teach a foreign language teachers should use four skills; speaking, listening, reading and writing. Of these four, reading plays the most important role in different levels of EFL students; such as elementary, intermediate, and advanced. To speak a foreign language is important in the first stage but to learn a foreign language completely is dependent on developing reading ability. Yazar (2013) explained three phases in the reading process: pre-reading, while-reading, and post-reading. In pre-reading phase the teacher tries to introduce and arouse interest in the topic, motivate learners by giving a reason for reading and provide some language preparation for the text. In while-reading phase the teacher tries to help students to understand the writer's purpose, to understand the text structure and to clarify text content. Post-reading phase aims to consolidate or reflect upon what has been read and relate the text to the learners' own knowledge, interests or views.

Vocabulary and word knowledge are important factors that pave the way for comprehension. Perfetti & Hart (2002) developed "The lexical quality hypothesis" which suggests that reading skills are underpinned by knowledge of words including orthography, phonology, morphology, and meaning. The recognition of words is crucial for understanding sentences. Reading texts begins with the identification of individual words, i.e. the processes that change the visual input into a linguistic presentation. In order to comprehend a text the reader must mingle between the meaning of each sentence and the

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evaluation of the information in the text. Readers need to use their prior knowledge so that they could do this evaluation. It is this level of comprehension in which readers can reflect a situation, or in other words they are able to choose the appropriate meaning to the situation.

Competency-Based Learning (CBL) is an approach for teaching and learning which fundamentally begins from an academic and professional description of all the knowledge and competences that need to be developed by students seeking a given course of studies. CBL builds on an investigation on the professional requirements which will help to determine and prioritize the crucial competences required for a given professional or specialty area. CBL is based on a teaching-learning system that regularly develops students' autonomy and ability to learn how to learn. CBL gives a great enhancement to learning methodologies, closer controlling and tutoring of students in groups or individually, in addition to a range of techniques for assessing learning. The teaching role of the professor or lecturer is altered, so he/she can focus on organizing, supervising and assessing students' learning (Sanchez and Ruiz, 2008).

O'Sullivan and Burce (2014) explained some attributes of competency- based education in the learning process that are as follows: it helps understand how learners learn, match principles of learning and teaching, facilitate rather than control learning, model humility, critical thinking, respect, and caring all times. Moreover, support acquisition of knowledge, skills and professional behaviors in all learning domains (cognitive, psychomotor, affective), promote and expect learner accountability for learning. In addition, provide timely specific feedback on learner progress beginning with learner self-assessment, individualize learning experiences according to

needs and expect increasing complexity of performance as the learner progresses throughout the program.

Infographics is a format which uses graphic visual pictures to show the information, knowledge or data effectively (Bicen and Beheshti, 2017:99). According to Smiciklas (2012:11), people use four primary learning styles to understand information; they are: (1) visual, people learn by viewing graphic formats such as maps, charts and diagrams instead of words, (2) Auditory, people learn by listening to spoken words, (3) Read/Write, people learn by reading or writing words, (4) Kinesthetic, people learn through experience. **Infographics** means presenting information, data or knowledge quickly and clearly in a visual form. Infographics can enhance understanding by using graphics to improve the ability of the human visual system in comprehending information more easily efficiently (Hertavera, 2019:38). Smiciklas (2012:3) assumed that an infographic is a kind of picture that integrates data with design help individuals and organizations briefly communicate messages to their audience.

Context of the Problem

The researcher has identified the problem after reviewing previous researches and related studies; it was found that reading comprehension is still neglected at our schools and classes. Students are quite weak in English in general and reading in particular, as a result, they still find difficulties in reading comprehension. They also rely on word-to-word translation when reading English (Ortlieb, 2013; Almutairi, 2018; Abd El-Fattah, 2021; Abu Abeeleh, 2021). Previous studies concerning the Egyptian context indicated that the Egyptian students have poor mastery of reading comprehension skills (Omar, 2018; Barakat, 2017; Badr, 2020; Ibrahim, 2020). Reseachers conducted these studies on different samples in

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different stages and introduced solutions for the lack found in reading comprehension skills.

To document the problem of the study, the researcher conducted a pilot study to investigate the problem of EFL students' weakness in reading comprehension and having lower level of proficiency. The participants consisted of a random 30 EFL official first year secondary stage students in Omar Alfarouq Official Experimental School in Alzaqaziq city, Alsharqeya governorate during the second term of academic year 2021/2022.

Statement of the problem

The problem of this study lies in the low level of reading comprehension among the official experimental first year secondary stage students. Thus, the present study aims at investigating the effectiveness of integrating competency based learning and infographics to develop higher level reading comprehension.

The study attempts to find answers for the following main question:

- What is the effect of a program based on integrating competency based learning and infographics on developing official secondary school students' EFL higher level reading comprehension?

The main question can be divided into the following sub-questions:

- 1. What are the higher levels of reading comprehension (evaluation/creativity) required for first year secondary stage students?
- 2. To what extent do first year secondary stage students possess higher levels of reading comprehension skills?

2. Literature Review

2.1. EFL Reading

2.1.1 What is EFL Reading?

Reading is a vital and crucial skill that every student needs to acquire to gain knowledge, skills and experiences to be efficient learners. Reading has an interactive nature that involves decoding words, comprehending, understanding, and constructing meaning from text. A considerable number of theories, models of reading, strategies and different instructions have been suggested and investigated to understand the nature of reading process.

2.1.2 Reading Comprehension Levels

Comprehension means understanding. It is the potential to understand the meaning of something. Reading comprehension is the first goal of reading (Sari, 2016). The reader can comprehend text in three different ways; first through reading on the lines such as picking up factual information from the text and summarizing the main ideas in his/her own words. Second, through reading between the lines; in which readers infer or figure out information through clues in the text and through linking these clues to their background knowledge, they can also guess the meaning of a word or phrase from clues in the text. Third, through reading beyond the lines; readers in this way apply ideas from the text to another different situation, evaluate ideas and make their opinion (Adarmaja, 2008).

Tompkins (2017) pointed out four levels of reading comprehension: literal, inferential, critical, and evaluative. The first level is literal comprehension; students here try to find main ideas, details, differentiate between similarities and differences and find the reasons which mentioned in an explicit way. The second level is inferential comprehension; readers here use cues which exist in the content, indirect information, and their background knowledge to detect deductions. In this level, readers make predictions, recognize cause and effect, and

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identify the author's purpose. The third level is the critical comprehension; in which readers analyze symbolic meaning, distinguish facts from opinions, and draw conclusions. The most essential level of comprehension is the evaluative; in which readers discover bias, find out the effectiveness of persuasive techniques, and assess the quality of text.

Heilman et al., (1981, cited in Sari, 2016) classified the comprehension skill levels to: a) literal level; in this simple level readers are asked to give the fact as mentioned by the writer. Questions in this level are factual and detailed, for example (what is, how old, when). knowledge of word meanings, recalling of ideas directly stated or paraphrased in own word, understanding of grammatical clue-subject, verb, pronoun, conjunction, recalling of main idea explicitly stated, and knowledge of sequence of information presented in the text are the abilities that refer to the literal level. b) Interpretive level, readers in this level go beyond the information given in the text. They have to detect the importance of the data to consider different relationships such as cause and effect, part to whole, to make comparison, to draw conclusion and inference and to make generalizations. Questions for this level are like (why, what evidence, what you can conclude). Reasoning with the information presented to understand the writer's tone, purpose and attitude, inferring factual information, main ideas, comparison, cause-effect relationships not explicitly stated in the text are examples for the abilities that attached to the interpretive level. c) critical level, students in this level learn to evaluate and judge the information and the way the writer uses language, note the evidence of the writer's bias, qualifications, his point of view, intent and truthfulness. Questions for this level are like (judge, what would be the result of, how would you describe).

Abilities which are used here in this level are (reacting to information in a text indicating its meaning to the reader, analyzing and evaluating the quality of written information in terms of some standards). d) Creative level, in this level readers get involved in the presented information to use it to formulate or rethink ideas of their own. Questions here are open-ended which require readers to add their own knowledge, view, and value to the answers, for example (what would you do if, what does the text tell you about). The abilities used in this level are (knowledge of emotional response of literary techniques, knowledge of response of forms, style and structures).

Briefly, literal level includes getting information which is explicitly stated. Inferential/ interpretive level includes reading between the lines. Critical level includes evaluating of written text. Creative level includes rethinking and formulating ideas. Each level has its own abilities or skills which are higher than the level before.

2.2. Competency Based Learning

2.2.1 Background of Competency Based Learning

Competency-Based Learning (CBL) is an application of the principles of Competency-Based Education (CBE) to language teaching (Richard & Rodgers, 2001). CBE is not a new concept and its origins could be traced back hundreds of years in the time of the medieval ages (Nodine, 2016). Unlike input based instructional approaches that depend on the hypothesis that effective learning will happen through developing the syllabi and materials which students are going to be exposed to, outcome-based approaches, like CBE assert that educators' concentration should be directed to what learners will be able to do by the end of the instruction. CBE is an approach where stakeholders who are in charge of the development of society and employment are joined by educational institutions in

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deciding about curricula, syllabi, and their objectives. It is a kind of learning that allows learners to obtain the type of instruction that makes them acquire the generic and specific competences required in the workplace (Boulmaiz, 2019).

Kellogg (2018) viewed that CBE is different from traditional education also known as "seat time" education in several ways. The table below shows a comparison between traditional education that many have experienced and competency based education.

Table (1): Traditional education versus Competency based education

Traditional Education	Competency Based Education
Time-based	Outcome-based
Passive learning	Active learning
Fragmented curriculum	Integrated curriculum
Isolation	collaboration
Textbook-driven	Research-driven
Teacher-centered	Student-centered
print	multimedia
Facts and memorization	High-order thinking

Adopted from (Kellogg, 2018:4)

2.2.2 Features of Implementing CBE Programs

According to Nunan (2013) "Teaching ESL to competencies requires the instructional focus to be on functional competencies and life-coping skills. It is not what the students know about language but what they do with language" (p.25). Auerbach (1986) pointed out eight features included in the implementation of the CBE programs in ESL classrooms:

- 1. A focus on successful functioning in society. The aim is to make students autonomous individuals capable of coping with the demands of the world.
- 2. A focus on life skills. Instead of teaching language in isolation, CBLT teaches language as a function of communication about concrete tasks. Students are taught just those language forms/ skills required by the situations in which they will function. These forms are determined by "empirical assessment of language required".
- 3. Task or performance centered orientation. What counts is what students can do as a result of instruction. The emphasis is on obvious behaviors rather than on knowledge or the ability to talk about language and skills.
- 4. Modularized instruction. Language learning is broken down into meaningful chunks. Objectives are broken into narrowly focused sub-objectives so that both teachers and students can get a clear sense of progress.
- 5. Outcomes are made explicit. Outcomes are public knowledge, known and agreed upon by both learner and teacher. They are specified in terms of behavioral objectives so that students know what behaviors are expected of them.
- 6. Continuous and ongoing assessment. Students are pre-tested to determine what skills they lack and post-tested after instruction on that skill. If they do not achieve the desired level

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of mastery, they continue to work on the objective and are retested.

- 7. Demonstrated mastery of performance objectives. Rather than the traditional paper and pencil tests, assessment is based on the ability to demonstrate pre-specified behaviors.
- 8. Individualized, student-centered instruction. In content, level, and pace, objectives are defined in terms of individual needs; prior learning and achievement are taken into account in developing curricula. Instruction is not time-based; students progress at their own rates and concentrate on just those areas in which they lack competence (pp. 414-415).

2.3. Infographics

2.3.1 Definition of Infographic

Information graphics, often known as infographics, are the processes of artistically portraying data in a visual form by mixing and organizing text and various graphical components to convey a visual story about a certain topic (Moorfield-Lang, 2011; Virag, 2013). Gallicano et al. (2014) proposed that a well-designed infographic should artistically, graphically, and correctly convey a supported perspective by reducing or refining complex facts into a comprehensible, entertaining, and visually appealing form.

2.3.2 Creating Infographics

The components of making infographics are not new; however infographics are relatively new in instructional materials. During the creation of an infographic, several components such as photographs, drawings, figures, symbols, graphics, and words are utilized to show information, either individually or combined. In this regard, infographics' innovation is suggested by the employment of visual

components in information display and content creation (Dick, 2014). However, it is feasible to generate infographics utilizing popular image processing programs (Photoshop, Picasa, etc.), there are also software especially developed to create infographics (SmartDraw etc.).

There are many web sites that make creating infographics an easy and quick task by using ready-made templates and tools (infogr.am, visual.ly, piktochart etc.). Due environments, the time spent on visual design is cut down and those who prepare the educational content spend more time to build the information. Information should be organized in a perfect way and it should be easily remembered and can be compared with a genuine flow in order to prepare an effective infographic (Lankow, et al., 2012). In this way, infographics which supply the necessary information with an easy to understand structure can be prepared. Infographics may be utilized to achieve many educational goals. Infographics may be used for a variety of objectives, including demonstrating the link between various concepts, transferring processes and events, presenting course content, and summarizing learned subjects. (Meeusah & Tangkijviwat, 2013).

It is easy to create infographics in different ways. They can be divided as interactive, semi-interactive and non-interactive according to the multimedia components they contain. Non-interactive infographics involve fixed text and visual components (Lankow, Ritchie, Crooks, 2012). In such infographics, the information is limited to the content presented. As well, such infographics can be used by having print outs. Interactive infographics make it possible to use the information in the same or different media sources in addition to the traits of the non-interactive infographics. For example, a related video, audio or animation relevant to the content can be used in these

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infographics. Furthermore, certain additional infographics that allow viewers to pick and access information depending on their preferences belong to this category. This feature allows the information to be displayed as a whole, with components being used to suit the requirement for further information. The application of visual design principles may readily ensure the appealing appearance of infographics. Infographics require an effective strategy to conveying information as well as a visual design. As a result, finding, analyzing, and using relevant information is critical when creating infographics. It is also critical to use instructional design models while creating infographics. According to Davis and Quinn (2013), the points that should be considered when attempting to create good infographics are listed as follows:

- Identification of the purpose,
- Decide on the components that can be used in infographics,
- Determination of the type of infographic to be created,
- Presenting the information in a way that allows learners to understand the subject.

3. Method

3.1. Study Design

In this study, a quasi-experimental design was adopted for one experimental group who received treatment through integrating competency based learning and infographics to develop EFL higher level reading comprehension. The current study adopted a quasi-experimental design. The control group obtained its professional development according to the regular method. Then both groups were pre- and post-tested by the study instruments. The main steps of the research process are summarized in figure 1.

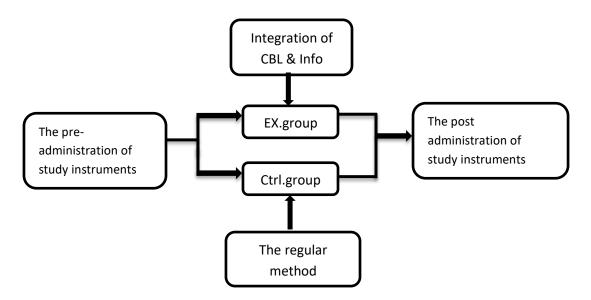


Figure 1. the quasi-experimental design of the study

3.2. Participants

The participants of the present study consisted of official experimental first year secondary stage students (n=35) at Omar Alfarouq Official Secondary School, in Alzaqaziq, Alsharqeya Governorate, during the academic year 2022/2023.

3.3. Instruments

Considering the study variables, the following instruments were designed and administered by the researcher:

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- 1. An EFL higher level reading comprehension checklist.
- 2. An EFL higher level reading comprehension test.
- 3. An EFL higher level reading comprehension rubric.

3.4. The Study Material

The program of the study was prepared by the researcher. It was designed according to the principles of the competency based learning and infographics using Edward Anthony's Scheme in which he identified three levels of conceptualization and organization, which he termed approach, method, and technique. The program aimed at developing EFL first year official experimental secondary students' higher level reading comprehension. The content of the current program is organized in the form of sessions suitable for first year official experimental secondary school students. It includes 12 sessions. Each session included: objectives, teaching aids, teaching methods, content, procedures, activities and evaluation. The sessions are based on 1st year official experimental secondary school Students' Book "New Hello!"

3.5 The Study Hypotheses

- 1. There is a statistically significant difference between the mean scores
- of the experimental group and the control group in the post administration of the EFL higher level of reading comprehension test, in favor of the experimental group.
- 2. The program based on the integration of competency based learning and infographics has a positive effect on the development of the EFL higher level of reading comprehension for the official experimental first year secondary stage students.

4. Results of the Study

The findings of the present study are presented in the light of the hypotheses of the study. Using the Statistical Package for Social Sciences (SPSS) program version (18), the paired sample t-test was used. The present study contains two main hypotheses.

4.1 Findings of the first hypothesis

It has been hypothesized that "There is a statistically significant difference between the mean scores of experimental group and control group in the post administration of the EFL higher level of reading comprehension test, in favor of the experimental group". A one sample t-test was used to verify this hypothesis as shown in the following table.

The following table presents the mean scores, standard deviations, t-value and level of significance of the study group in the pre and post assessment of the overall higher level reading comprehension skills.

Table (2): Findings of t-test of the mean scores of the experimental group and control group in the post test.

Skills	Group	N	Mean	Standard deviation	t. value	df
Critical	Control	35	22.5	1.8	25.6	68
level	Experimental	35	25.3	3.3	25.6	
Creative level	Control	35	23.4	6.5	22.8	68

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	Experimental	35	25.7	2.9		
Total	Control	35	45.7	2.8	24.8	68
	Experimental	35	50.8	4.9	24.6	08

4.2 Findings of the Second hypothesis

It has been hypothesized that "The program based on the integration of competency based learning and infographics has a positive effect on the development of the EFL higher level of reading comprehension for the official first year secondary stage students". Cohen's equation was used to verify this hypothesis as shown in the following table.

The following table presents the mean scores, standard deviations, t-value and level of significance of the study group in the pre and post assessment of the overall higher level reading comprehension skills.

Table (3): Findings of t- test results of comparing of the preand post- EFL higher level Reading comprehension Skills Test.

skills	Test	N	Mean	Standard deviation	t. value	df	Effect size
Critical	Pre	35	19.17	3.05	9.6	34	0.83
level	Post	35	25.11	3.2			

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Creative	pre	35	22.34	1.7	10.2	34	0.82
level	post	35	25.7	2.9			
Total	pre	35	37.8	5.05	10.9	34	0.88
	post	35	50.8	4.9			

5. Discussion and Interpretation of the Findings of the Study

The research questions in the current study were set out to determine whether the use of competency based learning and infographics program would develop the students' EFL higher level reading comprehension skills. Based on the statistical analysis of the results, it is clear that the students' EFL higher level reading comprehension skills have been developed due to the fact of using competency based learning and infographics program.

To illustrate this, the study revealed that the participants showed progress in their performance in the two main higher levels of reading comprehension namely; critical level and creative level. The researcher attributes this progress to the training process which is based on instructing students explicitly using a program based on integration between competency based learning and infographics.

6. Recommendations of the study:

In the light of the results of the present study, the following recommendations could be presented:

1- Developers of English language curriculum should make use of the integration between competency based learning and infographics program.

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- 2- Higher level reading comprehension skills should be a major concern in EFL classes as they are very dominant to stimulate the higher levels of thinking among students.
- 3- Teaching and learning metalinguistic awareness skills through competency based learning and infographics program should be emphasized.
- 4- Sense of involvement in its two types (academic involvement and social involvement) should be focused on by teachers as it is very essential in the whole learning process.

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