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Abstract:

The purpose of this study is assessing the impact of CLIL based curriculum on students' integrated skills in ESP. To achieve the study objectives the researcher used a quantitative design comprised (30) first-year secondary students in a quasi-experimental design to measure the effect of teaching an entire module from a CLIL based EFL curriculum on their ESP integrated reading and writing skills. The researcher employed a pre-posttest and test rubric for ESP integrated skills assessment. Results showed that the CLIL based curriculum has an effectiveness which was confirmed through significant improvement in students' ESP integrated reading and writing subskills post implementation of the curriculum at a significant level of (0.01). Notably, the integrated reading and writing subskills had the highest effect size (1.57), followed by ESP reading subskills (1.53), and finally ESP writing subskills (1.33). Based on these findings, recommendations were outlined focusing on enabling secondary students to acquire subject-related content, cultural awareness related to language use, cognitive aspects, and communication skills through application of CLIL principles.

Keywords: Content and Language Integrated Learning – CLIL - English for Specific Purposes - ESP – Integrated Skills – Reading – Writing

Introduction :

English has been the primary language for various fields of science worldwide and remains so today. In our modern era, English stands as the global language of knowledge and is an asset for anyone seeking success in today's world. Proficiency in English enables individuals to effectively communicate with diverse people from around the globe, opening doors to many opportunities for education, career advancement, and personal development. Furthermore, given its significance in business and technology, mastering English can provide individuals with a competitive edge in their respective fields.

Learning and teaching English as a foreign language encompasses various methods and approaches, including the approach known as English for Specific Purposes which has a long tradition, dating from the 1960s, as a movement designed to appeal mostly to adult tertiary students in non-English speaking countries responding to their needs for communication in specific scientific fields and professional settings (Evans, 2000). Canado (2018) emphasized that a key focus of research and practical application in the field of foreign language acquisition has been how to effectively establish connections between linguistic forms and their meanings through teaching English as a foreign language.

Meanwhile, Graham & Dixon (2018) emphasized that over the past 20–25 years, there has been increasing concern on the global expansion of universities, leading to greater use of English as an instructional language in non-English speaking countries. Given this shift towards English-medium programs in universities with a tradition of ESP, it is essential to further investigate the integration of language and content.

Hirvela (2004) maintains that ESP reading and writing are best drawn together through acts of composing where they are used to make meaning by utilizing the constructive process writers use when creating text. This happens by "establishing links to supplies of input, such as source texts, and negotiating new or extended meanings for that input in relationship to other ideas or input in the text being written" (p. 182). Of particular concern to Sullivan, Tinberg, and Blau (2017) is the very reductive and outdated view of reading that transpires when reading and writing are separated and when reading abilities are assessed by standardized tests or specified as part of state standards. In these situations, readers are viewed as passive recipients of information making it difficult for them to use information gleaned from reading in any authentic academic way.

Therefore, it is essential to address specialized English language skills together for the text that students read to align with the presented writing. Consequently, emphasis has been placed on integrating language and content as the most recent approach. The term Content and Language Integrated Learning (CLIL) was coined by David Marsh, University of Finland (2001). CLIL refers to situations where subjects, or parts of subjects, are taught through a foreign language with dual-focused aims, namely the learning of content and the simultaneous learning of a foreign language. However, CLIL teaching has been practiced for many years, from the Babylonian era to the early sixties when bilingual education was introduced in many schools around the world (Pérez, 2018). Therefore, the current study aims to identify the effectiveness of CLIL based curriculum in developing ESP reading and writing skills for secondary students.

The Statement of the Problem

In Egypt, and according to The National Curriculum Framework for English as a Foreign Language (2020) The primary goal of the EFL curriculum is to prepare students linguistically and improve their capacity to effectively communicate in an international context. The curriculum is structured to provide students with the essential English language skills required for further academic pursuits or entry into the workforce. It is crucial for Grade 12 graduates to attain a specified level of proficiency in all four English language competencies, as outlined by The National Authority of Quality Assurance and Accreditation of Education (Ministry of education, 2020).

The current English curriculum at the secondary level appear to be inadequate in equipping students with the necessary skills, as indicated by the researcher educational observations. In the same line, several local studies have highlighted the shortcomings of these curriculum in effectively fulfilling their intended objectives. These studies highlighted the limitations in achieving primary objectives or learning outcomes. Abdel-Mowla (2011) highlighted The Quality of Education in Egypt. His study critiqued the Egyptian curriculum, revealing inadequacies in developing students' critical thinking, problem-solving skills, and creativity. Despite the efforts to improve curriculum content and instructional methods, the study claimed that the curriculum still focuses mainly on rote learning. Zaki (2021) investigated Curriculum Evaluation in the Egyptian Education System, his study delved into the evaluation of the Egyptian curriculum. It found that the current curriculum lacked practical and competency-based aspects, thus needing urgent reform. The report suggests incorporating more hands-on experience and practical skills, along with academic

knowledge.

ESP focuses on teaching English to learners who need it for a particular field, occupation, or purpose, and its connection to curriculum development and evaluation has been widely studied. Postnikova & Dudovich (2016) emphasized ESP curriculum development, implementation, and evaluation. His study investigated the development and evaluation of an ESP curriculum. It concluded that ESP curriculum development needs a founded understanding of learners' needs, clear and achievable goals, suitable instructional approaches, and regular formative and summative assessments to measure the effectiveness of the curriculum. Bouabdallah and Bouabdallah (2015) discussed the Role of Evaluation in ESP Curriculum Development, they assert the crucial role of evaluation in developing ESP curriculum. Their study revealed that by closely monitoring a curriculum's intended goals, teaching methods, and learner progress, necessary adjustments can be implemented to ensure the effectiveness of the curriculum. Thus, it is noticed that all these studies emphasize the essential role of evaluation in curriculum development, particularly for ESP, which requires a tailored approach based on the needs and goals of learners.

Accordingly, the process of reading is recognized as a complex mental task, and students encounter various challenges when attempting to enhance their reading abilities. The interconnected nature of speaking, listening, reading, and writing suggests that these skills are not isolated areas of learning and should not be addressed separately. In ESP education, many teachers conduct a needs assessment to identify the language skills that will be most important for the student's future endeavors.

This study demonstrates how targeted ESP reading and writing encourages students to expand their vocabulary and deepen their understanding within their field of study while also motivating them to use English effectively in everyday scenarios. The current study aims to identify the effectiveness of CLIL based curriculum in developing ESP reading and writing skills for secondary students

Questions of the study

The current study aimed to answer the following main question:

What is the effectiveness of CLIL based curriculum in developing ESP reading and writing skills for secondary students?

The current study aimed to address the following sub-questions to tackle the main question of the study outlined above:

1) What is the effectiveness of CLIL based curriculum in developing ESP reading skills for secondary students?

2) What is the effectiveness of CLIL based curriculum in developing ESP writing skills for secondary students?

3) What is the effectiveness of CLIL based curriculum in developing ESP integrated skills for secondary students?

Hypotheses of the Study

1) There are statistically significant differences between the students' mean scores on the pre-post **ESP reading subskills** at (0.05) level in favor of the post-test.

2) There are statistically significant differences between the students' mean scores on the pre-post **ESP writing subskills** at (0.05) level in favor of the post-test.

3) There are statistically significant differences between the students' mean scores on the pre-post **ESP integrated reading and writing subskills** at (0.05) level in favor of the post-test.

4) There are statistically significant differences between the students' mean scores on the pre-post **ESP overall integrated skills test** at (0.05) level in favor of the post-test.

Significance of the study

At a theoretical level, the importance of this research lies in addressing a crucial and practical issue: the inadequate readiness of high school students to engage in ESP at the university level. This study's significance stems from ESP being an inevitable reality that students encounter across different disciplines during their university education. Consequently, this study holds substantial relevance for:

To the students; The study could potentially improve the proficiency of high school students in applying content aligned with CLIL. It is suggested that this could benefit their ability to develop English language reading and writing skills for specific purposes, an important aspect for students pursuing different areas of study at university.

To teachers & staff members; The study could provide valuable guidance for educators and school administrators on implementing the CLIL approach and determining the necessary content for incoming high school students transitioning to university. Additionally, it may capture the interest of English language instructors seeking to incorporate the CLIL approach through curriculum integration or supplemental resources. By embracing the CLIL approach, educators can emphasize understanding and meeting students' needs and interests in order to facilitate effective and impactful learning experiences.

To the Syllabus and curriculum planers; The study's final report is anticipated to offer curriculum planners and designers with authentic insights into how students effectively acquire reading and writing skills within ESP. The findings could potentially highlight the importance of implementing the CLIL approach in high school education, particularly for university-bound students.

Delimitations of the study

This study is limited to:

1) First-year male and female students in two public secondary schools in Alexandria.

2) Teaching a single whole module, which consists of three units from a curriculum based on CLIL approach (Module 2: units four, five, and six), to a random sample of thirty 1st secondary students in Alexandria.

3) Enhancing ESP writing subskills such as organization of ideas and examples, communicative quality, sentence structure vocabulary; and ESP reading subskills including global comprehension, understanding text structures, making predictions and informed guesses, inferring word meanings from context clues, skimming and scanning.

Definition of terms

English for specific purposes (ESP)

According to the definition of Evans (2000, p 24), ESP is "The way English teaching develops procedures appropriate to learners whose main purpose is learning English for a purpose other than just learning the language system. That purpose may be educational or maybe professional.

Betyna, (2018, p 32) has defined ESP as "An approach to language teaching in which all decisions as to content and method are based on the learner's reason for

learning".

Operationally: ESP in the current study is defined as the competencies that secondary school students need to acquire in reading and writing within EFL settings can be accomplished through a content-based approach such as CLIL.

ESP integrated skills

Balaei and Ahour (2018) refer to ESP integrated skills as "The ability to effectively comprehend and produce written texts in a specific discipline or professional context. These skills involve the integration of reading and writing strategies, allowing individuals to efficiently understand and convey information, ideas, and concepts related to their field of study or work" (p. 22).

According to Zivkovi (2015, p 14) By honing their ESP reading and writing integrated skills "individuals can develop a deeper understanding of their subject matter and effectively communicate their expertise to others within their field. Additionally, these skills also assist in developing critical thinking abilities, problem-solving skills, and the ability to analyze and synthesize complex information".

Operationally: ESP integrated skills in the current study are defined as the procedures that often overlap, with an individual functioning simultaneously as both a reader constructing meaning from a text and a writer constructing meaning for a text. These competencies can be fostered through the implementation of CLIL approach within EFL curriculum.

Content and Language Integrated Learning (CLIL) Approach

Marsh (2001) defined CLIL as "An approach where students learn a subject and a second language at the same time. A science course, for example, can be taught to students in English and they will not only learn about science, but they will also gain relevant vocabulary and language skills" (p. 210).

De Smet (2018) highlighted CLIL as "The umbrella term describing both learning another (content) subject such as physics or geography through the medium of a foreign language and learning a foreign language by studying a content-based subject" (p. 18).

According to Coyle's 4Cs curriculum (1999), and as mentioned by San Isidro (2019) a successful CLIL content should include the following four elements:

1) **Content**: Progression in knowledge, skills and understanding related to

specific elements of a defined curriculum

2) **Communication**: Using language to learn whilst learning to use language

3) **Cognition**: Developing thinking skills which link concept formation (abstract and concrete), understanding and language

4) **Culture**: Exposure to alternative perspectives and shared understandings, which deepen awareness of otherness and self.

Operationally: CLIL in the current study is defined as the approach aims to enhance both content and language in teaching English as a foreign language and should be integrated into the secondary stage EFL curriculum.

Literature Review

CLIL Based Curriculum

Although CLIL may be seen as an elitist approach, the spread of CLIL, in terms of innovativeness and versatility, in a myriad of educational settings, continues to grow through different models. CLIL is adapted to meet opportunities, affordances, and needs in consonance with educational and socio-economic imperatives. According to Banegas, & Tavella, (2021) CLIL models can be understood along a continuum with two ends.

Accordingly, Sánchez (2022) explored the integration of CLIL and the IB curriculum in international schools through a didactic approach. The study aimed to offer fresh perspectives on education by proposing a new didactic framework that incorporates both approaches. The author's CLIL suggestions seek to meet the growing demands for bilingual education, emphasizing the significance of language learning as well as providing students with increased opportunities for future employment and global citizenship preparation. While CLIL and IB share common objectives, implementing the latter involves a comprehensive curriculum structure that is widely adopted in numerous schools worldwide.

CLIL - despite being viewed as an elitist method - is increasingly expanding in various educational environments through diverse models that cater to different opportunities and needs. Banegas and Tavella suggest that CLIL can be conceptualized within a spectrum with varying approaches at both ends Banegas, & Tavella, (2021).

ESP Integrated Skills

English for Specific Purposes (ESP) is concerned with the teaching and learning of English as a second or foreign language to learn and use it in a particular academic or professional domain. As Paltridge and Starfield (2013) discussed, the key feature of an ESP course is that the content and aims of the course are oriented to the specific needs of the learners. ESP courses, then, focus on the language, skills, and genres appropriate to the specific activities the learners need to carry out in English. According to Kavaliauskienė (2009) in ESP, students face demanding tasks of learning subject-matter through English. The cornerstone of ESP is unfamiliar lexis and subject-matter concepts. To succeed, students need to develop proficiency in reading and writing.

Integrated Reading and Writing ESP skills

Hirvela (2004) maintains that reading and writing are best drawn together through acts of composing where they are used to make meaning by utilizing the constructive process writers use when creating text. This happens by "establishing links to supplies of input, such as source texts, and negotiating new or extended meanings for that input in relationship to other ideas or input in the text being written" (p. 182). Hirvela's point is that we start to understand a text better once we have revisited or rearranged it by writing about it or by placing that text in the context of other texts. We compose a work of writing by integrating the knowledge created from one's interpretation of the texts with the use of elements of the writing process itself. According to Armstrong, Williams, & Stahl (2018) reading and writing processes tend to blur and a person is in two roles concurrently. A reader building meaning from a text and a writer building meaning for a text. Reading and writing, therefore, are now commonly accepted as parallel processes.

While interest in integrating reading and writing pedagogies has increased recently due to statewide and institutional mandates to accelerate students through developmental education (Holschuh & Paulson, 2013; Xu, 2016), some EFL schools have been using integration pedagogies for years. Although empirical research on the outcomes of integrated reading and writing instruction is limited, there are indications that integrated instruction in either accelerated or regular course frameworks is benefiting students.

Embed ESP into CLIL Curriculum

According to Mukadimah, & Sahayu (2021) The main objective of CLIL, where it puts the context of the language used, could bring the improvement of qualifications or skills possessed by high school students. According to Yacoub (2022) The importance of learners' perspectives in developing the principle of ESP curriculum has also been noted by many experts. They argue that the learners' perspective mostly covers the area in which they will exercise their English skills in the future. Yang (2015) proposes that the implementation of CLIL in the teaching and learning process brings benefits both in linguistics skills and non-linguistics. CLIL learners have been found to enhance their speaking skills by producing more and longer utterances, developing constructive ability in the target language and displaying a higher language level than non-CLIL learners. While in the nonlinguistic area, CLIL boosts the learners' motivation to keep learners interested in foreign language learning, and it enhances the learners' mobility, employability, and intercultural communication, preparing them for future careers. Accordingly, Dalton-Puffer (2018) proposes four advantages of CLIL:

- It creates conditions for naturalistic language learning.

- It provides a purpose for language use in the classroom.

- It has a positive effect on language learning by emphasizing meaning rather than form.

- It drastically increases the amount of exposure to the target language.

In line with those advantages proposed by Rohmah (2019) offers the benefits of applying CLIL for learners, such as:

- Learners are motivated and developed their cognitive and communication skills that progress more due to meaningful communication.

- Learners receive a lot of language input and output.

- Learners develop intercultural awareness.

Lestari and Setiyawan (2020) highlighted CLIL which could allegedly help students to master both language knowledge and non-language subject content taught. The study examined the English vocabulary mastery and non-language subject matter knowledge and showed good results. This may be due to the meaningful learning provided by implementing CLIL since the vocabulary learning

provided is integrated with the lesson's content. This kind of implicit learning gives more exposure for the students and, at the same time, shows the context on how to use the vocabulary.

An adequate amount of English knowledge must support the success of CLIL implementation. Thus, it is necessary to give the students good provision before implementing the full English classroom. Mukadimah, & Sahayu (2021) conceptualized three stages of implementing ESP into CLIL curriculum. The following figure shows the stages of embedding ESP into CLIL curriculum.

Fig (1): Embed ESP into CLIL Curriculum Stages
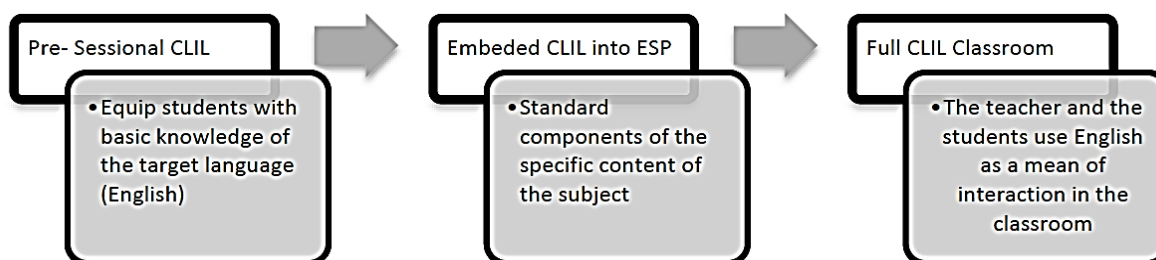
Source: Mukadimah & Sahayu (2021, p 210)

The pre-sessional CLIL can be incorporated by teaching basic English skills necessary for daily communication, such as greetings, seeking and providing information, and expressing opinions. In addition to this, students must also focus on building their vocabulary as a foundation for future learning. During the subsequent phase of integrating CLIL into the ESP curriculum, known as Embedded CLIL into ESP, emphasis should be placed on developing discipline-specific language skills tailored to the program's requirements. For example, students would learn subject-related terminology and how to create and deliver presentations while analyzing trends. This stage requires more practical application than theoretical instruction; therefore, teachers should act as facilitators rather than just imparting information. The final stage of incorporating CLIL into the ESP curriculum involves implementing a complete CLIL classroom, where both teachers and students extensively use English for teaching and learning. This entails creating an immersive environment in which both educators and learners engage with the subject matter using English.

Design of the study

The current study utilized a quasi-experimental design, specifically implementing a one-group pre-post-test design. The experimental procedures took place in the second term of the 2022/2023 academic year and involved randomly selecting a single experimental group from two Egyptian secondary schools using stratified random sampling.

Participants of the study

In the current study, thirty students around the age of 16-17 were included, comprising first-year secondary students from two Egyptian schools in Alexandra during the academic year 2022/2023. The experimental group consisted of eighteen males and twenty-two females who studied the EFL curriculum based on CLIL approach in their first semester. All participants showed strong motivation to collaborate in the learning process to support their ESP skills at The Scientific Academy for Translation and Training - Alexandria branch. Over an eight-week period, they underwent instruction twice a week for one hour each session.

Instruments of the study

1) ESP Integrative Skills Test

The researcher constructed and administered a pre-post ESP integrated skills test, which can be utilized prior to the curriculum implementation to ascertain the progress achieved by the experimental group would be thus unequivocally attributable to the implementation of the curriculum based on CLIL to develop integrative skills of ESP of this group.

A. Context of the test

The Pre-posttest aimed to measure first-secondary students' overall ESP reading and writing skills. The assessment of reading and writing, which are stated to be hardly performed without the presence of each other, has been dealt with in an integrated manner. The criteria that determine the selection of reading texts, both for teaching and assessment purposes, relied on two basic factors namely carrier and real content. Therefore, for the selection of ESP reading texts for assessment purposes, the same criteria had been considered. As for the assessment of writing, the knowledge of genre which involves an understanding of the expectations of the discourse community that reads the text was crucial.

B. Description of the Test:

The ESP integrated skills pre-posttest aimed to measure students' overall ESP-integrated skills and sub-skills through sixteen questions. The ESP reading subskills were assessed using seven multiple-choice questions, while the ESP writing subskills were evaluated with one essay writing question. In order to achieve integration, the test included eight open-ended questions, each designed to assess one ESP reading subskill and one ESP writing subskill. The sub-skills of ESP reading were global comprehension, understanding the plan of the text, making predictions and informed guesses, guessing the meanings of unfamiliar words, and skimming and scanning. The sub-skills of ESP writing were arrangement of ideas and examples (AIE), communicative quality (CQ), and sentence structure vocabulary (SSV). The following table shows the description of the ESP Integrated Skills Test for 1st secondary students.

Table (1) Description of the ESP Integrated Skills Test

ESP Skills & Subskills	Questions
ESP Reading Sub-skills:	**Q1 to Q7**
Global Comprehension.	Q4 - Q7
Understanding the Plan of the Text.	Q3
Making Predictions and Informed Guesses.	Q2
Guessing the meanings of Unfamiliar Words.	Q6
Skimming and Scanning.	Q1 - Q5
ESP Writing sub-skills:	**Q16**
Arrangement of Ideas and Examples (AIE)	Q16
Communicative Quality (CQ)	Q16
Sentence Structure Vocabulary (SSV)	Q16
ESP Integrated Reading & Writing:	**Q8 to Q15**
Guessing the meanings of Unfamiliar Words & SSV	Q8
Global Comprehension & AIE	Q9
Skimming and Scanning & CQ	Q10 - Q11

	Understanding the Plan of the Text & CQ	Q12 - Q14
	Making Predictions and Informed Guesses & SSV	Q13 - Q15
Total		**16 Questions**

All the questions in the ESP- Reading Skills section were of an **objective** nature, while those in the ESP- writing and ESP integrated reading & writing sections were **subjective**. The assessment comprised three parts focusing on ESP reading and writing, with a total possible score of (30) marks. For the reading subskills, there were seven multiple choice questions worth one mark each, amounting to a total of (7) marks. In contrast, for the writing subskills, there was one essay writing question worth (7) marks in total. Additionally, for ESP integrated reading & writing, eight open-ended questions were included at two marks per question totaling (16) marks. This test was developed by a researcher initially including seven multiple choice questions as well as eight open-ended questions and one essay writing. Following feedback from experts (jury), the final version maintained the same number but incorporated changes in format and structure based on their suggestions.

C. Validity of the ESP Integrated Skills Test

To establish the validity of the pre-post ESP integrated skills, it was submitted to several specialized jury members in the domain of curriculum and instruction to voice their opinions regarding the clarity of test instructions, the suitability of the topics to the level of the first-year secondary students, and the clarity of the questions. The jury members confirmed that the test proved to be valid (see Appendix E).

D. Reliability of the ESP Integrated Skills Test

The reliability of the test was statistically carried out by using the test re-test method. To determine the test reliability, the researcher used the test-retest method where (20) students answered the test twice. The test was repeated after two weeks. The researcher used the statistical Package of Social Sciences (SPSS) to calculate the correlation between the scores on the two administrations. The reliability coefficient obtained was (0.887) which proved to be high. and the table below illustrates the reliability coefficients.

Table (2) Results of Correlation Coefficients of the ESP Integrated Skills Test

Dimension	N of Qs	M	Correlation Coefficient	Sig.
Reading Sub-skills Questions:	Q1 to Q7 (Seven Marks)			
Global Comprehension.	2	2	0.820	0.001
Understanding the Plan of the Text.	1	1	0.871	0.006
Making Predictions and Informed Guesses.	1	1	0.775	0.001
Guessing the meanings of Unfamiliar Words.	1	1	0.912	0.001
Skimming and Scanning.	2	1	0.962	0.006
Total	**7**	**7**	**0.868**	**0.003**
Writing sub-skills:	Q16 (Seven Marks)			
Arrangement of Ideas and Examples	1	2	0.935	0.004
Communicative Quality (CQ)	1	2	0.875	0.001
Sentence Structure Vocabulary (SSV)	1	3	0.924	0.007
Total	**1**	**7**	**0.911**	**0.004**
ESP Integrated Reading & Writing:	Q8 to Q15 (Sixteen Marks)			
Guessing the meanings of unfamiliar words & SSV	1	2	0.763	0.002
Global Comprehension & AIE	1	2	0.924	0.011
Skimming and Scanning & CQ	2	4	0.978	0.004
Understanding the Plan of the Text & CQ	2	4	0.797	0.007

Making Predictions and Informed Guesses & SSV	2	4	0.948	0.001
Total	**8**	**16**	**0.882**	**0.005**
Test Total	**16**	**30**	**0.887**	**0.004**

Based on the data presented in the above table, it can be concluded that all dimensions of the test have high reliability coefficients. This indicates that the test is considered reliable for use in the current study. Based on the reliability of the test the researcher calculated the difficulty and facility index coefficient to make sure the test is suitable for application upon the study participants of 1st secondary students.

E. Difficulty & Facility Index of the ESP Integrated Skills Test

The facility index provides information about the difficulty of the question and is represented as the percentage of students answering the question correctly. the researcher used the following equation:

$$\text{(Facility index)} = \frac{\text{Correct answers}}{\text{Correct answers} + \text{Wrong answers}}$$

Difficulty index = 1 – facility index

To verify the facility and difficulty of the ESP Integrated Skills test, the researcher counted the number of students with correct and wrong answers and applied a formula. The results indicated a 0.62 coefficient for difficulty and 0.38 coefficient for facility. These coefficients fall within the standard range of 0.3 to 0.8 indicating appropriate levels of difficulty and facility in the test.

F. Discrimination Index of the ESP Integrated Skills Test

The researcher calculated the Discrimination index coefficient, this value is based on the top 27% and bottom 27% of the pilot sample on the exam. Computed by subtracting the number of successes by the low group on the item from the number of successes by the high group, and divide this difference by the size of the pilot sample, the researcher used the following equation:

$$\text{(Discrimination index)} = \frac{(H - L)}{27\% \text{ of Total}}$$

The Discrimination Index coefficient of 0.37 obtained in this study falls within the expected range for a valid assessment, as it exceeds the benchmark value of 0.2. H represents the number of correct answers from the top 27% of students and L

represents the number of correct answers from the bottom 27% of students, based on a pilot sample size of eight students out of thirty (27%).

G. Time of the test

The ESP Integrated Skills Test duration depends on standard deviations of key success metrics, desired confidence level, test size and performance separation among the test groups. The ESP Integrated Skills Test lasted for 45 minutes according to the following equation: The time taken by each student ÷ the Total number: **896 ÷ 20 = 45 minutes**

2) The ESP Integrated Skills Test Rubric

The researcher used an analytical scoring rubric based on the features of the ESP integrated skills that are adequate for first-secondary students taking into consideration that this rubric track improving reading and writing ESP skills. It contains accurate responses and marking criteria to multiple choice questions that assess reading sub-skills. In addition, it includes precise answers to the open-ended questions that evaluate ESP reading and writing abilities in an integrated comprehensive way. Each of the eight open-ended questions evaluates two combined ESP skills, one for reading and the other for writing. The essay question is primarily aimed at assessing ESP writing skills, with each skill score aligned with its performance on the rubric.

A. Validity of the Rubric

The Rubric was submitted to a jury member (N=5) for validation, and it has been approved.

B. Inter-rater reliability of the Rubric

Reliability in classroom assessment and rubric development often focuses on rater reliability, which concerns the consistency of scores assigned by independent raters (inter‑rater reliability) and by the same rater at different times (intra‑rater reliability). The literature commonly suggests two methods for inter‑rater reliability: consensus, evaluating if raters assign the same score, and consistency, measuring correlation between their scores (Jonsson & Svingby 2007).

Thus, it is demonstrated that rubrics enable instructors and students to assess performance reliably. To increase the reliability of scoring in the current study Rubric, two raters utilized analytical scoring to evaluate students' ESP-integrated

skills in the pre-posttest. The Pre-Posttest was corrected by the researcher and then blindly marked by a non-participating teacher for higher inter-rater reliability. The final score was determined as an average of both marks taken by the two inter‐rater.

Materials of the Study

1) The EFL Curriculum based on CLIL

The CLIL based curriculum includes four modules that cover both content and language. The modules are Geography & History, Science, Mathematics, and Environment. Each module is composed of three units. The provided table outlines the contents of the CLIL based curriculum.

Table (3) shows the modules and units of the CLIL based curriculum for 1ˢᵗ Secondary

Modules	Units
Geography & History	Unit (1): Countries in Africa
	Unit (2): Deserts and Rainforests
	Unit (3): The Middle Ages
Science	Unit (4): Health and Safety
	Unit (5): Nutrition
	Unit (6): Environmental Issues
Mathematics	Unit (7): Art and Drawing
	Unit (8): Sine and Cosine Graphs
	Unit (9): Pythagoras
Environment	Unit (10): Sustainable Energy
	Unit (11): Global Warming
	Unit (12): Water

The first captivating module delves into Geography & History with engaging topics such as Countries in Africa, Deserts and Rainforests and The Middle Ages. Moving on to the intriguing realm of Science in the second module where students are guided through thought-provoking subjects including Health and Safety, Nutrition and Environmental Issues. Delving further into intellectual exploration, the

third Mathematics module unfolds artfully crafted lessons surrounding Art and Drawing, Sine and Cosine Graphs, alongside Pythagoras.

Lastly comes an enriching fourth module focusing on the Environment which navigates pivotal themes such as Sustainable Energy, Global Warming and Water - all designed to spark curiosity among learners. Through this carefully structured curriculum that encompasses Skills Development Language Acquisition Life Values Awareness Social Issues within Courses Study providing a holistic learning experience for students at every stage of their educational journey. The following table illustrates the scope and sequence of the CLIL based EFL curriculum.

Data Analysis & Results

To answer the study questions, the researcher identified Four hypotheses concerning ESP reading subskills, ESP writing subskills, ESP integrated reading and writing subskills and ESP overall integrated skills. A pre and posttest were administered to one experimental group compromising (30) first secondary students to assess their ESP integrated skills. The researcher utilized the paired sample t-test design, an appropriate statistical method, to compare students' test scores before and after receiving instruction regarding a whole module of the curriculum based on CLIL approach for 1st secondary stage.

In accordance with Dodgson (1983), the researcher conducted tests of normality on the participants' results, which needed to be above (0.05). The following are the results of these tests.

Table (4) Results of Normality of the ESP integrated skills Test

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
ESP integrated skills Pre-Test	0.183	20	0.08	0.925	20	0.13
ESP integrated skills Post-Test	0.177	20	0.1	0.896	20	0.07
a. Lilliefors Significance Correction						

The data in table (4) reveals that the pretest significantly followed normal distribution, with a significance of (0.08) according to Kolmogorov-Smirnova and (0.13) according to Shapiro-Wilk. Similarly, the posttest also exhibited a high level of normality, as indicated by a significance of (0.1) according to Kolmogorov-

Smirnova and (0.07) according to Shapiro-Wilk. These findings confirm that the pre-post ESP integrated skills test had a remarkably normal distribution, allowing for the use of the paired sample t-test design.

> **Hypothesis One**

There are statistically significant differences between the students' mean scores on the pre-post ESP reading subskills at (0.05) level in favor of the post-test. To verify this hypothesis, a t-test design was used, the results of the ESP integrated skills Test regarding (ESP Reading Subskills) obtained from the Participants (N=30) are as follows:

Table (5) The paired sample t-test results for ESP reading subskills pre-posttest (N=30)

ESP reading subskills			Mean	Std. Deviation	Effect Size	Sig
1	Global Comprehension.	Pre	2.55	1.32	2.10	0.00
		Post	4.65	0.67		
2	Understanding the Plan of the Text.	Pre	3.1	1.37	0.50	0.00
		Post	3.60	1.05		
3	Making Predictions and Informed Guesses.	Pre	2.05	0.83	2.00	0.00
		Post	4.05	1.10		
4	Guessing the meanings of Unfamiliar Words.	Pre	2.25	1.16	1.65	0.00
		Post	3.90	0.91		
5	Skimming and Scanning.	Pre	2.2	0.83	1.40	0.00
		Post	3.60	1.31		
Total		**Pre**	**2.43**	**1.42**	**1.53**	**0.00**
		Post	**3.96**	**1.00**		

The data in table (5) indicates that there is a significant difference, at the (0.05) significance level, between the average scores of students' ESP reading subskills in the ESP integrated skills pre-posttest. The scores in favor of the posttest demonstrate a substantial effect size of (1.53). As a result, hypothesis one can be confirmed.

➢ **Hypothesis Two**

There are statistically significant differences between the students' mean scores on the pre-post ESP writing subskills at (0.05) level in favor of the post-test. To verify this hypothesis, a t-test design was used, the results of the ESP integrated skills Test regarding (ESP Writing Subskills) obtained from the Participants (N=30) are as follows:

Table (6) The paired sample t-test results for ESP writing subskills pre-posttest (N=30)

ESP writing subskills			Mean	Std. Deviation	Effect Size	Sig
1	Arrangement of Ideas and Examples	Pre	3	1.42	0.95	**0.02**
		Post	3.95	1.00		
2	Communicative Quality (CQ)	Pre	2.7	1.30	1.30	**0.01**
		Post	4.00	1.12		
3	Sentence Structure Vocabulary (SSV)	Pre	2.05	0.76	1.75	**0.00**
		Post	3.80	1.20		
Total		Pre	**2.58**	**1.16**	**1.33**	**0.01**
		Post	**3.91**	**1.10**		

The data in table (6) indicates that there is a significant difference, at the (0.05) significance level, between the average scores of students' ESP writing subskills in the ESP integrated skills pre-posttest. The scores in favor of the posttest demonstrate a substantial effect size of (1.33). As a result, hypothesis two can be confirmed.

➢ **Hypothesis Three**

There are statistically significant differences between the students' mean

scores on the pre-post ESP integrated reading and writing subskills at (0.05) level in favor of the post-test. To verify this hypothesis, a t-test design was used, the results of the ESP integrated skills Test regarding (ESP integrated reading and writing subskills) obtained from the Participants (N=30) are as follows:

Table (7) The paired sample t-test results for ESP integrated reading and writing subskills pre-posttest (N=30)

ESP integrated reading and writing subskills			Mean	Std. Deviation	Effect Size	Sig
1	Guessing the meanings of unfamiliar words & SSV	Pre	2.2	0.89	1.75	**0.00**
		Post	3.95	1.10		
2	Global Comprehension & AIE	Pre	2.1	1.25	1.65	**0.00**
		Post	3.75	1.25		
3	Skimming and Scanning & CQ	Pre	2	0.97	1.80	**0.00**
		Post	3.80	1.24		
4	Understanding the Plan of the Text & CQ	Pre	2.7	1.03	0.90	**0.02**
		Post	3.60	1.05		
5	Making Predictions and Informed Guesses & SSV	Pre	2.45	1.28	1.75	**0.00**
		Post	4.20	1.11		
Total		**Pre**	**2.29**	**1.08**	**1.57**	**0.04**
		Post	**3.86**	**1.15**		

The data in table (7) indicates that there is a significant difference, at the (0.05) significance level, between the average scores of students' ESP integrated reading and writing subskills in the ESP integrated skills pre-posttest. The scores in favor of the posttest demonstrate a substantial effect size of (1.57). As a result, hypothesis three can be confirmed.

In summary, the findings indicate that students exhibit a significant improvement in their integrated skills in ESP. The integrated reading and writing subskills demonstrated the highest effect size (1.57), followed by ESP reading subskills (1.53), and finally ESP writing subskills (1.33).

➢ **Hypothesis Four**

There are statistically significant differences between the students' mean scores on the pre-post ESP overall integrated skills test at (0.05) level in favor of the post-test.

To verify this Hypothesis, a t-test was used, the results of ESP overall integrated skills test regarding (The Whole Test) with means and std. deviation for every test to calculate the effect size of the CLIL based curriculum for 1st secondary stage based on CLIL approach obtained from Participants (N=30) are as follows:

Table (8) The Paired Sample t-test results for ESP integrated skills Pre-Post Test (N=30)

ESP integrated skills test	Mean	SD	Paired Differences			
			Mean	SD	Effect Size	t-Value
ESP integrated skills Pre-Test	2.43	1.22	3.17	1.15	1.47	0.01
ESP integrated skills Post-Test	3.91	1.08				

According to Table (8), the pre-test and post-test mean scores on the overall ESP integrated skills test for 1st secondary students exhibit a noteworthy significant difference at a significance level of (0.01). The scores for the post-test (3.91) surpass those of the pre-test (2.43), indicating a favorable outcome for the post-test. Additionally, the effect size is significant at (1.47), further supporting hypothesis four.

Furthermore, it can be asserted that the implementation of a CLIL-based curriculum for the 1st secondary stage significantly enhances the students' integrated

skills in English for Specific Purposes (ESP). This is evident from the positive outcomes observed in the test results, which were highly satisfactory. The mean scores of all students in the various subskills of ESP integrated skills demonstrate the remarkable impact of the CLIL based curriculum.

Conclusions

The results of the current study using a CLIL approach-based curriculum to develop ESP reading and writing for secondary stage students led to the following conclusions:

1) The increasing number of Egyptian high school graduates pursuing international studies, either within or outside Egypt, has made it imperative for curriculum designers to adapt CLIL based EFL curriculums for the secondary stage. This adaptation aims to equip students with the necessary skills to directly participate in these international academic pursuits.

2) The use of the CLIL approach in several advanced countries should encourage curriculum planners in Egypt to consider extending the benefits of this approach in developing the currently implemented EFL curriculums.

3) The curriculum based on the CLIL approach connects students to real-life situations, helping them acquire content related to various subjects, cultural awareness of language use, cognitive aspects, and communication skills. This allows them to integrate the foreign language into real-time scenarios.

4) The CLIL method supports EFL students in engaging with the world around them, enabling them to acquire a practical language for adaptation, interaction, and engagement.

5) Integrative competencies in ESP can be cultivated through the implementation of CLIL-based English language curricula.

Recommendations

Based on the findings of the current study, the following pedagogical implications are suggested:

1) English teachers at the secondary level need to recognize the importance of CLIL as an instructional approach for improving students' integrated ESP skills.

2) EFL curriculum designers need to be mindful of the CLIL approach and

its potential to improve a variety of skills related to content, culture, cognition, and communication, which can benefit secondary students in learning a foreign language.

3) The utilization of CLIL-based resources helps students develop favorable attitudes towards learning specific university subjects after completing secondary education.

4) English teachers at the secondary level need to be aware that their students are preparing for university studies and should focus on developing their ESP skills relevant to their chosen fields of study within university.

5) CLIL enables the retention of learning materials over an extended period, encompassing both content and functions for organizing and sustaining resources by students beyond secondary education.

6) Teachers of English language should emphasize the significance of fostering students' ESP abilities during secondary stage, in order to strengthen these skills for their university studies.

Suggestions for further research

The researcher presents the following for future studies:

1) Studying the effect of using teaching methods based on CLIL approach in developing students' EFL communication skills.

2) Studying the impact of using the CLIL approach in improving the teaching practices of EFL teachers in the general education stages

3) Studying the effectiveness of developing integrative skills in ESP through other approaches to curriculum development

4) Investigating the impact of CLIL curriculum on encouraging students to engage with international university subjects.

References

- Abdel-Mowla, S. (2011). Education And Women's Labor Market Outcomes. A Case Study Of Egypt. In ICERI2011 Proceedings. IATED.

- Armstrong, S. L., Williams, J. L., & Stahl, N. A. (2018). Reading and writing. In R. F. Flippo & T. W. Bean (Eds.), Handbook of college reading and study strategy research (pp. 143-167). Routledge.

- Balaei, P. and Ahour, T. (2018). Information technology students' language needs for their ESP course. International Journal of Applied Linguistics and English Literature, 7(2), 197.

- Banegas, D. L., & Tavella, G. (2021). Language-driven CLIL in primary education: An analysis of general English coursebooks in Argentina. In International Perspectives on CLIL (pp. 239-258). Cham: Springer International Publishing.

- Betyna, M. (2015) English for medical purposes. Needs and requirements of students and teachers. Linguistica Bidgostiana journal. Series Nova, vol (1), 12-184

- Bouabdallah- Haddam, M. F. (2015). A course design in ESP the case of master's students in the department of biology (Doctoral dissertation, Doktora tezi). University of Tlemcen).

- Coyle, D., Hood, P., & Marsh, D. (2010). CLIL: Content and language integrated learning. Cambridge: Cambridge University Press.

- Dalton-Puffer, C. (2016). Cognitive discourse functions: Specifying an integrative interdisciplinary construct. In T. Nikula, E. Dafouz, P. Moore, & U. Smit (Eds.), Conceptualising integration in CLIL and multilingual education (pp. 29–54). Bristol, UK: Multilingual Matters.

- De Smet, A., Mettewie, L., Galand, B., Hiligsmann, P., & Van Mensel, L. (2018). Classroom anxiety and enjoyment in CLIL and non-CLIL: Does the target language matter? Studies in Second Language Learning and Teaching, 8(1), 47-71.

- Dudley-Evans, T. (2000). Genre analysis: a key to a theory of ESP?. Ibérica, Revista de la Asociación Europea de Lenguas para Fines Específicos, (2), 3-11.

- Edgecomb, N., Jaggars, S. S., Xu, D., & Barragan, M. (2014). Accelerating the integrated instruction of developmental reading and writing at Chabot College. Columbia University, Teachers College, Community College Research Center.

- Graham, K. M., Choi, Y., Davoodi, A., Razmeh, S., & Dixon, L. Q. (2018). Language and Content Outcomes of CLIL and EMI: A Systematic Review. Latin American Journal of Content and Language Integrated Learning, 11(1), 19-37.
- Hemmi, C., & Banegas, D. L. (2021). CLIL: An overview. International perspectives on CLIL, 1-20.
- Hirvela, A. (2004). Connecting reading & writing in second language writing instruction. The University of Michigan Press.
- Hirvela, A. (2004). Connecting reading & writing in second language writing instruction. The University of Michigan Press.
- Holschuh, J. P., & Paulson, E. J. (2013). The terrain of college developmental reading. The College Reading Association
- Kavaliauskienė, G. (2009). Proficiency in reading, writing and translation skills: ESP aspect. Vertimo studijos, 2(2), 171-184.
- Lestari, S., & Setiyawan, R. (2020). Technology era, global English, CLIL: Influence and its impact on English teaching for young learners in Indonesia. IOP Conference Series: Earth and Environmental Science, 469(1), 12094.
- Marsh, D. (2001). CLIL (Content and Language Integrated Learning)-A framework for implementing plurilingual education originating from models of bilingual education. Living together in Europe in the 21st century: the challenge of plurilingual and multicultural communication and dialogue, 51.
- Marsh, D., Mehisto, P., Wolff, D., Aliaga, R., Asikainen, T., Frigols-Martin, M. J., & Langé, G. (2009). CLIL practice: Perspectives from the field. Rovaniemi, Finland/Jyväskylä, Finland: CLIL Cascade Network/University of Jyväskylä.
- Ministry of Education (2020) The National Curriculum Framework for English as a Foreign Language. MOE Press – Cairo
- Mukadimah, H., & Sahayu, W. (2021). Embedding Content and Language Integrated Learning (CLIL) into English for specific purposes curriculum for vocational high school. Journal Pendidikan Vokasi, 11(2), 204-212.
- Paltridge B., & Starfield, S. (2013). Introduction. In B. Paltridge, & S. Starfield (Eds.), The handbook of English for specific purposes (pp. 1-4). London: Wiley Blackwell.
- Pérez Cañado, M. L. (2018). CLIL and pedagogical innovation: Fact or fiction? International Journal of Applied Linguistics, 28(3), 369-390.
- Postnikova, E. V., & Dudovich, D. L. (2016). Modern English Language in

Professional Economic Training.

- Rohmah, I. I. T. (2019). The feasibility and effectiveness of integrating content knowledge and English competences for assessing English proficiency in CLIL. ETERNAL: English Teaching Journal

- Sánchez Navas, A. (2022). CLIL in international schools: Is it possible to link CLIL and the IB curriculum? A didactic proposal.

- Sullivan, P., Tinberg, H., & Blau, S. (2017). Deep reading: Teaching reading in the writing classroom. National Council of Teachers of English.

- Yacoub, Eslam Shehata Ahmed (2022) Needs Analysis of Teaching English for Specific Purposes for Secondary Students applying to Medical Faculties. International Journal of Curriculum & Technological Education. 9 (6), 1-32

- Yang, W. (2015). Content and language integrated learning next in Asia: Evidence of learners' achievement in CLIL education from a Taiwan tertiary degree programme. International Journal of Bilingual Education and Bilingualism, 18(4), 361–382.

- Zaki Ewiss, Mohamed A. (2021). Assessment of the Study Programs and Curricula for Pre-University Education in Egypt. Advance.

- Zivkovic, S. (2015). Language skills among students in the field of engineering. European Journal of Language and Literature, 3(1), 83.