THE EFFECT OF PERFORMANCE ASSESSMENT APPROACH ON THE DEVELOPMENT OF READING COMPREHENSION SKILLS IN ENGLISH FOR SPECIFIC PURPOSES CONTEXT

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Abstract:

Reading comprehension is a crucial component of academic development for students engaged in English for Specific Purposes (ESP). This study investigates the efficacy of alternative assessment methods, specifically performance assessment, in enhancing reading comprehension skills within the ESP context. Given that reading comprehension is a fundamental input skill, deficiencies in this area can significantly impede academic progress. The research employed a pre-test and post-test experimental design with a control group to evaluate the impact of performance assessment on reading comprehension. Participants, after a proficiency test, were randomly assigned to either a control group or an experimental group, each of comparable proficiency levels. The experimental group received continuous assessment and immediate, relevant feedback during the training, while the control group did not receive such assessment or feedback. The experimental group's assessment was facilitated through a detailed assessment grid. Data were collected through pre-tests and post-tests administered to both groups and analyzed using SPSS (2018). Statistical analyses, including paired samples t-tests and independent samples t-tests, were conducted to measure intra-group progress and inter-group differences. Findings indicate that both groups showed significant improvement in reading comprehension; however, the experimental group exhibited superior performance across all comprehension categories compared to the control group. The results underscore the effectiveness of performance assessment in fostering both higher-order and lower-order reading comprehension skills, suggesting a pronounced advantage over traditional assessment methods. The study affirms the value of

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performance assessment in ESP contexts while also acknowledging the continued relevance of traditional assessment techniques.

Keywords: reading comprehension, English for specific purposes, traditional assessment, performance assessment

1. Introduction

Reading comprehension is a significant academic skill for learners' development in ESP contexts, as it enables them to access, understand, and effectively use domain-specific information and materials in their professional or academic settings (Swales, 2011). It is a major input skill, and any failure to develop it adequately puts their careers at stake. Therefore, a mission which a successful educational system must undertake is to effectively develop reading comprehension skills in ESP learners. Cheng (2012) notes that students are deprived of an essential opportunity to pursue their studies when they fail to develop their reading comprehension skills. One of the basic components in developing reading comprehension skills is assessment, which plays a pivotal role in this process due to its multifaceted merits in measuring and improving a learner's proficiency. By virtue of frequent assessment, educators can track learners' progress, pinpoint areas of weakness, and offer suitable instructions to handle specific needs with the aim of improving their reading comprehension abilities (Sweet, 2003). In this paper, we aim to explore the impact of assessment, specifically performance assessment, on the development of reading comprehension skills in the context of English for specific purposes.

2. Background

2.1 The Importance of Reading Comprehension in English for Specific Purposes (ESP)

English for specific purposes refers to the "*English needed by a particular group of learners*" (Hutchinson & Waters, 1987, p.8). Hyland (2022) refers to it as teaching with the goal of helping learners study or do research in the particular variety of English they may need. Accordingly, ESP is the English language required for specific fields, academic disciplines, or professions where learners have specific needs and objectives related to their domain of study.

Reading comprehension is of paramount importance to ESP learners. Learners in ESP are required to comprehend specialized texts such as academic papers, legal documents, scientific papers and technical manuals (Belcher, 2009). Proficient ESP readers are allowed to gather relevant information, interpret complex concepts, and communicate effectively within their domain. In addition, reading comprehension contributes massively to enhancing learners' professional skills. It allows them to stay up to date in relation to their specific domains (Dudley-Evans & Saint John, 2003). Furthermore, it helps ESP learners to be critical thinkers and successful problem-solvers

as reading comprehension involves analyzing, synthesizing, and evaluating information (Hyland, 2006). ESP learners belong to the globalized world, they are required to be involved in international communication (Hutchinson & Waters, 2008). Reading comprehension allows them to understand and appreciate cultural nuances, avoiding misunderstandings and misinterpretations (Kramsch, 1993). Good reading comprehension allows learners to do research and reach academic success. It helps them to grasp the content, cite relevant sources, and produce well-informed academic work. Last but not least, effective reading comprehension opens up opportunities for professional growth and advancement, as it enables readers to access specialized knowledge, collaborate with experts, and engage in professional networks (Belcher, 2009).

Developing reading comprehension skills in ESP contexts can yield multiple intricacies for learners due to the distinctiveness of ESP in terms of content and language. One of the primary difficulties lies in the complex and domain-specific vocabulary inherent to ESP, which often extends beyond the scope of general English instruction. This specialized lexicon can be daunting for learners to acquire and understand (Dudley-Evans & Saint John, 2003). Additionally, ESP texts frequently contain cultural references that may not be familiar to learners from diverse socio-cultural backgrounds, potentially hindering their comprehension (Hutchinson & Waters, 1987). The variety of text types encountered in ESP, such as reports, manuals, and research papers, often adhere to distinct discourse structures typical of professional and academic domains. The unfamiliarity with these structures can pose a challenge for learners in extracting intended meanings (Basturkmen, 2010). Furthermore, ESP readings are typically characterized by their authenticity, density, and length, which can be overwhelming for learners. This necessitates the development of specific reading strategies tailored to the objectives and nature of ESP texts (N. J. Anderson, 1999). Lastly, effective engagement with ESP readings requires learners to apply critical thinking skills to analyze and interpret the material thoroughly (Flowerdew & Peacock, 2001).

2.2 Critical Reading Comprehension Skills

Critical reading is a set of higher-level reading processes that involve complex cognitive operations. This endeavor always goes beyond the basic-level reading, which is focused on literal comprehension of the text. There has been an approach which suggests that critical reading is not a receptive, but a productive, procedure. Bean *et al.* (2002) propose that critical reading, like writing, is an active process of composing. This attitude is echoed in Schwegler's (2005) suggestion that critical reading is an active process inasmuch as it involves some activity on the reader's part. An implication of this approach is that the critical reader is an active participant in the process of meaning construction.

The concept suggested to conceptualize critical reading in this study links this concept to the suggested concept of critical thinking. As such, critical reading is a complex endeavor that involves *Inferential reading comprehension (IRC), analytical reading*

comprehension (ARC), and *evaluative reading comprehension (ERC).* To designate the sub-skills pertaining to each of the suggested levels of reading comprehension, Bloom's revised taxonomy (L. W. Anderson *et al.*, 2000) was used, particularly the taxonomy's concepts of *understanding*, *analyzing* and *evaluating*, which were respectively matched to IRC, ARC and *ERC.*

As illustrated in the figure below, the model suggests IRC as a basis of critical reading. Even though inferential reading can be ranked lower than analytical or evaluative readings on the scale of complexity, it is obviously more cognitively complex than literal comprehension. Barrett and Smith (1974) suggest that while literal comprehension focuses on ideas and information which are explicitly given in the reading material, inferential comprehension occurs when the student uses the ideas and information explicitly stated in the text, their intuition and their personal experience as a basis for formulating conjectures and hypotheses.
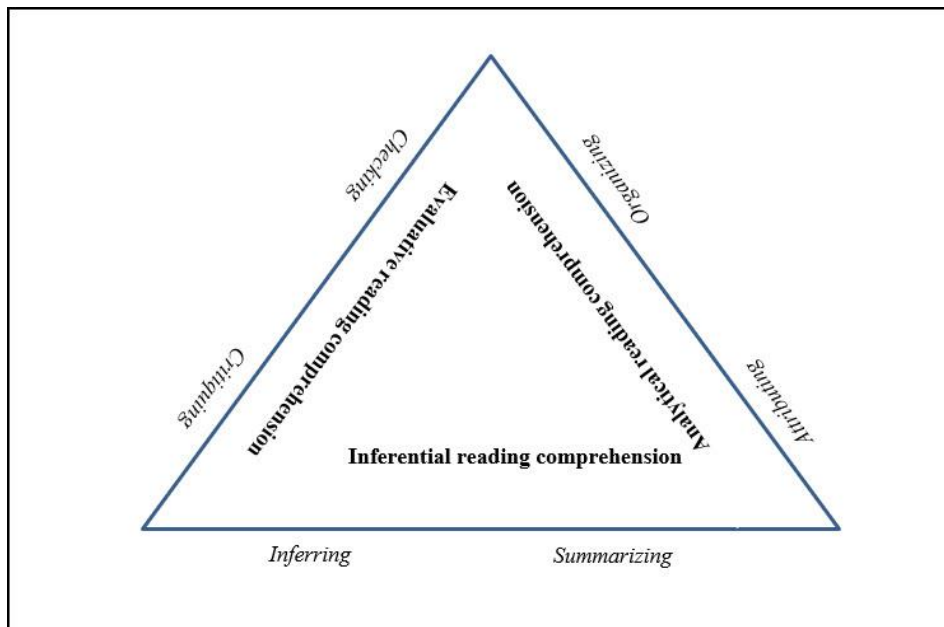

Figure 1: A proposed model of critical reading comprehension

Setting to conceptualize this layer of reading (i.e., IRC), the model suggests two cognitive sub-skills as delineated in Bloom's revised taxonomy (Anderson, *et al.*, 2001), which are *inferring* and *summarizing*. Inferring in reading comprehension, according to this model, occurs when the student uses clues explicitly given to draw inferences about word-meaning, word-reference, main ideas and such relationships between ideas as order, causality, and main ideas vs details. This model suggests *summarizing* as a sub-skill pertaining to IRC because the main task this sub-skill involves is to draw conclusions about main ideas and to sift them out from supporting details. Barrett's taxonomy of reading comprehension (Barrett & Smith, 1974) suggests eight subskills which enable the student to successfully perform IRC. These subskills are inferring the main idea, inferring supporting details, inferring sequence, inferring comparisons, inferring cause-and-effect

relationships, inferring character traits, predicting outcomes and inferring figurative language.

The next level of reading comprehension in this proposed model is ARC. This level is the cornerstone of critical reading. Sometimes analytical reading is used interchangeably with critical reading. Eilers (1996) defines analytical reading skills as "*the ability to read critically to distinguish between sufficient, insufficient, relevant, and irrelevant information*" (p. 6). However, in this study, ARC is defined as the process of breaking the information in a reading comprehension material into its constituent parts to be better positioned to evaluate it. As such, the concept of analytical reading in this study overlaps with that of Long (2013), who defines analytical reading skills as "*an active process that teaches students to analyze a problem, mentally organize information, make decisions based on the text, and bring thoughts and opinions to what they read*" (p. 11). The concept of analyzing as delineated in Bloom's revised taxonomy (Anderson, *et al.,* 2001) was used to operationalize ARC. Hence, this procedure is used in this study to refer to a cognitive category which involves two sub-skills, attributing and organizing. The former sub-skill refers to the reader's ability to determine a point of view, bias, values, or intent underlying the text. The latter is used to refer to the reader's ability to determine how elements (e.g. ideas, information, arguments) presented in a reading material fit or function within a text as a structure.

The third level of critical reading, as proposed in this model, is ERC, which indicates the reader's ability to form judgments about what they read. In point of fact, for some scholars, the ultimate objective of critical reading is to teach students to make judgments about the reading text based on critical reasoning rather than subjective preferences (e. g. Lewis, 1983). Being built on Bloom's revised taxonomy (Anderson, *et al.*, 2001), the modal suggested for this study distinguishes between two subskills in ERC, which are checking and critiquing. According to this framework, checking involves making judgments about the argument's internal consistency (Anderson, *et al.*, 2001). For instance, after analyzing an argument and determining whether it is inductive or deductive, critical readers are asked to determine if the conclusions follow logically from the driven premises. In the terminology of critical thinking, this means they must make judgments about inductive arguments' cogency, or deductive arguments validity. By critiquing, the framework refers to making judgments about the arguments' external validity (Anderson, *et al.*, 2001). Not all valid deductive arguments or all cogent inductive arguments, for instance, are healthy. Critical readers, therefore, need to critique the arguments by investigating the truthfulness of their premises, and the extent to which they are suitable to endorse the writer's claims. In other words, *critiquing* involves making judgments about deductive arguments' soundness, and inductive arguments' strength.

2.3 Performance Assessment in Reading Comprehension

Multiple approaches of alternative assessment have been suggested. Examples of these approaches are self-assessment, peer assessment, authentic assessment, project assessment, performance assessment, portfolio assessment, cognitive assessment, etc.

(Gipps & Stobart, 2003; Hamayan, 1995; Libman, 2010; Reeves, 2000). But, in the literature, researchers have agreed upon three main approaches: cognitive assessment, performance assessment, and portfolio assessment, as they incorporate the other approaches. For instance, an authentic assessment is treated as a performance assessment carried out in an authentic context. This is because it is produced in the classroom as part of normal work rather than as a specific task for assessment (Gipps & Stobart, 2003). Another example is project assessment, which can be embraced by performance assessment. Project assessment requires the use of previously acquired knowledge in solving novel problems or completing specific tasks. It also requires learners to demonstrate their capabilities directly by creating some product or engaging in some activity. These requirements of project assessment match well with the definition of performance assessment. Stiggins & Bridgeford (1986, p.1) define performance assessment as *"a systematic attempt to measure a learner's ability to use previously acquired knowledge in solving novel problems or completing specific tasks."* Additionally, assessment performance measurements demand examinees to demonstrate their capabilities directly, by creating some product or engaging in some activity. Cognitive assessment, and the other two approaches, also incorporate self- and peer-assessment. Cognitive assessment is used to measure students' higher order thinking abilities, attitudes, and communication skills (Reeves, 2000). The ability to evaluate oneself and others is a higher-order thinking skill, according to Bloom's taxonomy (Bloom, 1956). Thus, we can safely claim that cognitive assessment subsumes self- and peer-assessment. In general, three main alternative assessment approaches are of paramount importance; namely cognitive assessment, portfolio assessment, and performance assessment. As cognitive assessment and portfolio assessment fall out of the scope of this study, we will address performance assessment in the coming paragraphs, as it is the adopted approach in this study.

Performance-based assessments of reading comprehension are designed to measure a student's ability to comprehend and apply what they have read in authentic and real-world contexts. The existing literature showcases that the most widely used modes of performance-based assessment of reading comprehension are as follows:

1) **Reading response journal**: Students keep a journal in which they record their thoughts, questions, and reflections on what they have read. Teachers can use these journals to assess students' understanding of the text, as well as their ability to analyze and evaluate what they have read (Lee, 2013; Padmadewi *et al.*, 2020; Reynolds & Pickett, 1989; Simpson, 1986). Simpson (1986) found that a benefit of this mode of assessment was that it provided the participants with a good model of successful writing techniques. According to the scholar, reading response journals enhanced critical thinking in the participants. Along a similar vein, Lee's (2013) study revealed that, first of all, the treatment positively affected the participants' engagement in the learning process. Secondly, the participants showed substantial pre-test-to-post-test improvement in their writing scores. These findings find support in Padmadewi *et al.* (2020) study, which revealed that

the integration of reading response journals in novels is useful for promoting English literacy and learning autonomy.

2) **Book talks**: Students give a presentation to the class about a book they have read, summarizing the plot, discussing the characters, and sharing their personal reactions to the book. Teachers can use book talks to assess students' comprehension of the text, as well as their ability to communicate their ideas effectively (Hudson, 2016; Fischbaugh, 2004; Fisher & Frey, 2018; Nishizawa *et al*., 2018; Schmidt, 2020). Research tells us that book talks yielded significant results in the development of EFL learners' reading comprehension skills. In this respect, Nishizawa *et al*. (2018) revealed that the participants' motivation was boosted because of their shared interest in books written in English. The scholars also reported that the participants found book talks easier than other conversational activities, thanks to the use of pictures and sentences in the book for support. In addition, the authors noticed that book talks boosted the learners' fluent speaking skills, as they were able to talk about the books without L1 translation. According to the same study, the learners were more motivated to engage in reading easier-to-read books with higher comprehension than in reading harder-to-read books with lower comprehension.

3) **Literature circles**: Students read a book and participate in small-group discussions to analyze the text, share their insights, and explore different perspectives. Teachers can use literature circles to assess students' comprehension of the text, as well as their ability to collaborate and communicate with others. Research recommends this method for cultivating a set of linguistic and cognitive skills in learners. A case in point is Yueqiao's (2014) study which maintains that reading circles, or literature circles, can be effective for nurturing students' critical thinking skills, as well as developing their reading and speaking abilities. The scholar adds that this performance-based assessment can boost team spirit and enhance cross-cultural awareness. Along a similar vein, Avci and Yuksel's (2011) study points in the same direction by maintaining that the literature circles method is a useful method to improve reading comprehension skills in low-achieving students. The study reveals that the activity was an enjoyable endeavor for students who liked cooperating with their peers. The study adds that this approach helped the learners retain the information they read for a long time.

4) **Performance tasks or project work**: Students complete a task or project that requires them to apply what they have read to a real-world scenario. For example, they may write a letter to a city council member about a social issue discussed in a text or create a visual representation of a historical event. Teachers can use performance tasks to assess students' ability to apply what they have read to a new context. Like literature circles, research reveals that performance tasks with corrective feedback on a common rubric may be useful in many fields (Cargas, Williams, & Rosenberg, 2017). According to this approach, if used regularly,

performance tasks in a problem-based learning environment are likely to enable learners to transfer critical thinking skills and dispositions.

5) **Socratic seminars**: Students engage in a structured discussion in which they explore a text in depth, analyze different perspectives, and challenge each other's ideas. Teachers can use Socratic seminars to assess student's ability to comprehend and analyze a text, as well as their ability to think critically and engage in respectful dialogue with others. Empirical research acclaims this mode of performance assessment as an effective method to nurture critical thinking in learners. For instance, Robinson's (2022) study suggests that Socratic seminars can improve learners' confidence and engagement. According to the same approach, this type of activity can promote higher-order thinking.

3. Method

This study aimed to investigate the impact of the implementation of performance assessment on the development of reading comprehension skills, namely *inferential reading comprehension* (IRC), *analytical reading comprehension* (ARC), and *evaluative reading comprehension* (ERC) skills. The study uses an experimental design to answer the following research question:

- What is the effect of performance assessment on the development of higher-education students' critical reading skills in an ESP context?

3.1 Participants
The target population of this study consisted of Moroccan learners of English for specific purposes in higher education. The study was conducted at the Institute of Sports Sciences (I2S) at Hassan I University in Settat, Morocco. The participants were second-year students majoring in Sports and Management who had a two-hour English class every week for three months. Based on the proficiency level test, which was administered to 48 participants, 28 subjects with the same proficiency level (elementary) were selected to participate in the study. These subjects were randomly divided into two groups: an experimental group and a control group, with each group consisting of fourteen subjects. Both groups took a pre- and post-test after a course of reading comprehension that focused on teaching students low and high order thinking skills in reading comprehension. The only difference between the experimental and control groups was that subjects of the former were assessed in every task using an evaluation grid and were given immediate feedback in accordance with the performance assessment approach, whereas the subjects of the control group were not assessed and did not receive any feedback.

3.2 Instruments
To recruit subjects for the study, a proficiency test was administered to classify students, ensuring all participants in the experimental and control groups had the same proficiency

level. The Outcome Placement Test by the Educational Testing Service (ETS) was used, with 48 participants tested. The results were as follows: 28 elementary (below 25 points), 19 intermediate (25-40 points), and 1 advanced (42 points). Only the 28 elementary participants were selected for the study to control the level variable's impact on the results.

Two instruments were employed to collect data. The first was a pre-test administered before training to establish a baseline for reading comprehension skills. Participants wrote a three-paragraph essay after reading a text, with each paragraph assessing specific skills: inferential (low-order thinking), analytical (high-order thinking), and evaluative (high-order thinking).

The second instrument was a post-test, administered after the training to measure changes due to the intervention. The post-test content was identical to the pre-test, but instructions varied between groups. The experimental group wrote a journal article response, while the control group wrote a three-paragraph essay. The different tasks aimed to simulate a real-world assignment for the experimental group and a mid-term exam for the control group.

Participants' performances in both tests were assessed using a five-point grading scale evaluating three lower-order thinking skills (inferencing, paraphrasing, explaining) and three higher-order thinking skills (analyzing, evaluating, taking a stand).

3.3 Reliability

Three raters were recruited to assign each of the fifteen questions to the cognitive skill it aims to assess. Cronbach's alpha came to 0.906, which indicates a high level of consistency for the instrument.

3.4 The Treatment

A comprehensive training kit, designed to enhance the reading comprehension skills targeted in this study, encompassed six distinct courses. Each course focused on developing a particular reading comprehension skill. The primary aim of the first three courses was to cultivate lower-order reading skills: inferencing, paraphrasing, and explaining. Specifically, the first course centered on inferencing, the second on paraphrasing, and the third on explaining. The subsequent three courses were dedicated to fostering higher-order reading skills: analyzing, evaluating, and taking a stand. The fourth course concentrated on analytical skills, the fifth on evaluative skills, and the sixth on developing the ability to take a stand.

Each of these courses consisted of four phases. In the first phase, the instructor scaffolded the target skill by providing a comparative organizer, examples, and other resources. In the second phase, the learners were guided through the steps of identifying the targeted skill in a written text, with the relationship between old and new learning made explicit. In the third phase, students read a text and responded to comprehension tasks, which included questions similar to those they were already familiar with, as well as tasks that required them to implement the new skill. This promoted integrative

reconciliation. The reading tasks were primarily derived from journal articles, enabling learners to stay connected with real-world content instead of abstract reading texts. In the fourth phase, the instructor provided students with useful phrases for writing about the targeted skill and assigned tasks for implementing the learned expressions. Throughout the course, only the experimental group participants were assessed using an evaluation grid, and immediate feedback was provided, while the control group participants were not assessed or given any feedback at this stage of the study.

3.5 The Procedure of Data Collection

After selecting the subjects to recruit in the study based on the proficiency test, two instruments were used to collect the data: a pre-test and a post-test. The pre-test was administered to 28 participants who were selected for the experimental study, and their ability to communicate their understanding of the text in written form was evaluated using an evaluation grid. The post-test was given to the same participants who had taken the pre-test, and their ability to communicate their understanding of the text in written form was evaluated using an evaluation grid, as was done in the pre-test.

4. Results

The data were analyzed using the SPSS software program. The statistical techniques used were independent samples t-test and paired samples t-tests to assess the difference between the control and the experimental groups, and the magnitude of progress within each group, and independent samples t-tests to compare scores between the control and experimental groups.

4.1 Independent Sample t-test Results

To compare between the two groups, an independent sample t-test was run to analyze their scores:

Table 1: Independent samples t-test

Group		Mean	SD	T	df	Sig. (2-tailed)
Pre_IRC	Control	3.64	1.151	-.520	26	.608
	Experimental	3.86	1.027			
Post_IRC	Control	4.00	1.109	-6.395	26	.000
	Experimental	6.57	1.016			
Pre_ARC	Control	1.29	.469	-.391	26	.699
	Experimental	1.36	.497			
Post_ARC	Control	2.00	.679	-3.484	26	.002
	Experimental	2.93	.730			
Pre_ERC	Control	2.57	.646	-.924	26	.364
	Experimental	2.79	.579			
Post_ERC	Control	3.29	.994	-5.936	26	.000
	Experimental	5.21	.699			

The results, as presented in Table 1, indicate no significant difference in the pre-test IRC scores (Control: M = 3.64, SD = 1.151; Experimental: M = 3.86, SD = 1.027; t (26) = -0.519, p = .607). However, A significant difference emerged in the posttest scores, with the experimental group outperforming the control group (Control: M = 4.00, SD = 1.109; Experimental: M = 6.57, SD = 1.016; t(26) = -6.395, p = .000).

Similarly, no significant difference was observed in the two groups' ARC pretest scores (Control: M = 1.29, SD = 0.469; Experimental: M = 1.36, SD = 0.497; t(26) = -0.391, p = .699). Yet, a significant difference emerged in posttest scores (Control: M = 2.00, SD = 0.679; Experimental: M = 2.93, SD = 0.730; t (26) = -3.484, p = .002).

In ERC, no significant difference was found in the pretest scores (Control: M = 2.57, SD = 0.646; Experimental: M = 2.79, SD = 0.579; t(26) = -0.924, p = .364). However, the posttest scores showed a significant difference (Control: M = 3.29, SD = 0.994; Experimental: M = 5.21, SD = 0.699; t (26) = -5.936, p < .001).

In summary, for all three levels of reading comprehension, both groups started at similar levels, but the experimental group significantly outperformed the control group in the posttest.

4.2 Paired Samples t-test Results

To assess the magnitude of progress within each group, paired samples t-tests were conducted.

Table 2: Paired sample t-test

		Mean	SD	t	df	Sig. (2-tailed)
Pair 1	Pre_IRC_Ctrl	3.64	1.151	-2.687	13	.019
	Post_IRC_ Ctrl	4.00	1.109			
Pair 2	Pre_ARC_ Ctrl	1.29	.469	-4.372	13	.001
	Post_ARC_ Ctrl	2.00	.679			
Pair 3	Pre_ERC_ Ctrl	2.57	.646	-2.347	13	.035
	Post_ERC_ Ctrl	3.29	.994			
Pair 4	Pre_IRC_Exp	3.86	1.027	-11.113	13	.000
	Post_IRC_Exp	6.57	1.016			
Pair 5	Pre_ARC_Exp	1.36	.497	-7.778	13	.000
	Post_ARC_Exp	2.93	.730			
Pair 6	Pre_ERC_Exp	2.79	.579	-14.062	13	.000
	Post_ERC_Exp	5.21	.699			

Table 2 presents the paired samples statistics for the control group's IRC scores, showing significant progress from pretest (M = 3.64, SD = 1.151) to posttest (M = 4.00, SD = 1.109), t(13) = -2.687, p = .019. Significant development was also observed in the control group's ARC scores, progressing from pretest (M = 1.29, SD = 0.469) to posttest (M = 2.00, SD = 0.679), t (13) = -4.372, p = .001. Similarly, the control group exhibited statistically significant improvement in ERC scores, advancing from pretest (M = 2.57, SD = 0.646) to posttest (M = 3.29, SD = 0.994), t (13) = -2.347, p = .035.

Parallel significant gains were observed in the experimental group across all reading comprehension categories. The experimental group demonstrated substantial progress in IRC from pretest (M = 3.86, SD = 1.027) to posttest (M = 6.57, SD = 1.016), t (13) = -11.113, p < .001. Significant improvements were also noted in the experimental group's ARC scores, moving from pretest (M = 1.36, SD = 0.497) to posttest (M = 2.93, SD = 0.730), t (13) = -7.778, p < .001. The experimental group showed marked progress in ERC scores, increasing from pretest (M = 2.79, SD = 0.579) to posttest (M = 5.21, SD = 0.699), t (13) = -14.061, p < .001.

The results indicate that both control and experimental groups made significant improvements across all levels of reading comprehension. Notably, the experimental group exhibited more substantial progress compared to the control group.

5. Discussion

The study's findings indicate that both the experimental and control groups showed significant improvement in their higher-order reading comprehension skills from pre-test to post-test. However, the experimental group, which was exposed to performance-based assessments (PBA), outperformed the control group, which relied on traditional pencil-and-paper quizzes.

First of all, the significant improvement in both groups suggests that the critical reading skills course was effective. The substantial improvement in the two groups' higher-level reading skills can be attributed to the explicit, systematic instruction of these skills. This aligns with research support that higher-level thinking skills are best developed through purposeful and explicit instruction rather than as incidental outcomes of general teaching practices (Halpern, 2014).

Results also showed that the experimental significantly outperformed their control peers in the three levels of critical reading. These findings align with existing literature that underscores the effectiveness of performance assessments in fostering higher-order thinking skills and promoting deeper learning. Performance assessments, which often involve complex, real-world tasks, require students to engage in critical thinking, problem-solving, and reflective analysis, all of which contribute to improved higher-order reading comprehension skills. Brown & Abeywickrama (2019) highlight that performance assessments encourage learners to engage more critically with texts, enhancing their ability to analyze, synthesize, and evaluate information. This deeper engagement leads to better comprehension and retention of material, as students are not merely recalling facts but also understanding underlying concepts and arguments.

Garrison and Ehringhaus (2007) further emphasize the role of performance assessments in developing critical analytical skills. By requiring students to tackle real-world problems and reflect on their thought processes, these assessments promote a deeper understanding of texts. Students learn to make inferences, draw conclusions, and critically evaluate the information presented, which are essential skills for academic success and beyond. Additionally, these assessments help students to develop

metacognitive skills, enabling them to monitor and regulate their comprehension and learning strategies effectively.

The impact of performance assessment on higher-order reading comprehension skills is also supported by other researchers, such as Gulikers, Bastiaens, and Kirschner (2004), who argue that authentic assessment tasks, like those found in performance assessments, provide students with opportunities to apply their knowledge in meaningful contexts. This application not only reinforces their understanding but also enhances their ability to think critically and creatively. Our findings also reported that performance assessment, through its emphasis on real-world tasks such as writing an article for a journal in ESP which requires analyzing, evaluating and arguing, helps students to develop critical analytical skills, which are crucial for academic success.

In addition, the findings go hand in hand with existing literature that highlights the effectiveness of performance assessment in enhancing lower-order reading comprehension skills. Researchers such as Shepard (2000), Stiggins (2002), and Black & Wiliam (1998) have extensively studied and advocated for the use of performance assessments in educational settings. Shepard (2000) emphasizes that performance assessments provide authentic learning experiences that promote deeper understanding and the development of essential skills such as identifying main ideas and understanding explicit details. Stiggins (2002) supports this view by highlighting that performance assessments offer detailed feedback, enabling students to refine their comprehension strategies and improve their mastery of fundamental reading skills. Black & Wiliam (1998) also argue that formative assessment practices, including performance assessments, are crucial for developing basic comprehension skills, as they involve active student participation and critical reflection. In the same vein, our findings argue that these assessments encourage students to actively engage with the material in ESP, thereby improving their ability to recall, understand, and summarize textual information. Furthermore, the positive impact of performance assessment on both LOTS and HOTS is consistent with findings by Brookhart & Nitko (2014), who argued that Performance Assessment provides a more comprehensive assessment of students' abilities, capturing not only factual recall but also the application, analysis, and synthesis of knowledge. This aligns with the results of the present study, which showed significant gains in both basic and complex comprehension skills among the experimental group.

In addition, these results corroborate Heydarnejad *et al.* (2022) study, which found that performance-based assessment significantly contributed to reading comprehension achievement, academic motivation, and students' self-efficacy. According to the same study, this type of assessment did not have any significant effect on EFL learners' foreign language anxiety.

However, some studies present opposing views regarding the effectiveness of performance assessment. For example, Madaus and O'Dwyer (1999) argued that performance assessment could be challenging to implement consistently due to variability in task difficulty and scoring criteria, potentially leading to issues of reliability and validity. Additionally, some researchers, such as Shepard (2000), have raised

concerns about the potential for performance assessment to increase student anxiety, particularly when high-stakes outcomes are attached to the assessments. This anxiety could negatively impact performance and thus obscure the true measurement of student abilities. However, these findings contradict Heydarnejad *et al.* (2022) study, which found that there is no significant effect of performance-based assessment on learners' foreign language anxiety.

Despite these concerns, the majority of research supports the integration of performance assessment in educational settings, particularly for its role in promoting critical thinking and deeper understanding (Black & Wiliam, 1998; Wiggins, 1993). The present study contributes to this body of evidence by demonstrating the significant advantages of Performance Assessment over traditional assessment methods in an ESP context.

Another important point to highlight in this study is the role of immediate feedback as a useful tool in performance assessment to foster both higher and lower-order reading comprehension skills in the ESP context. Immediate feedback, an integral component of performance assessment, plays a crucial role in enhancing both lower and higher-order reading comprehension skills in ESP. This study's findings show that timely feedback provides students with specific and actionable insights into their performance, allowing them to identify strengths and areas for improvement. Consequently, it helps improve both higher- and lower-order reading comprehension skills, as proved by the statistics in this study. In the same vein, research has shown that immediate feedback helps students to correct misunderstandings and solidify their comprehension of basic textual information, thus enhancing lower-order skills such as recalling details, summarizing content, and identifying main ideas (Brookhart, 2017).

For higher-order reading comprehension skills, immediate feedback is equally beneficial. It encourages students to engage more deeply with the text, promoting critical thinking and analytical skills. According to Hattie & Timperley (2007), feedback is most effective when it is timely, specific, and constructive, enabling students to refine their analytical and evaluative skills. This is particularly important in higher-order tasks such as making inferences, synthesizing information, and evaluating arguments. Nicol & Macfarlane-Dick (2006) further assert that immediate feedback supports the development of self-regulated learning, as students become more aware of their cognitive processes and are better able to adjust their strategies for reading and comprehension.

Moreover, immediate feedback fosters a growth mindset by emphasizing the learning process over the final outcome. This helps students to view challenges as opportunities for growth rather than as obstacles, thus enhancing their motivation and engagement in reading tasks (Dweck, 2006). The iterative nature of receiving and applying feedback encourages a continuous cycle of learning and improvement, which is essential for mastering both lower and higher-order reading comprehension skills in ESP context.

The final point to discuss is the use of writing as a means to evaluate both higher-order and lower-order reading comprehension skills. In our study, we used writing to

evaluate the impact of performance assessment on the improvement of higher-order and lower-order reading comprehension skills. The participants were required to pronounce their ideas in a writing form. After the remedial phase, participants showed a significant improvement in the skills targeted in the study. But, the experimental group has outperformed the control group in all the targeted skills.

The use of writing as a method of evaluating higher and lower reading comprehension skills is well-supported in educational research. Graham & Perin (2007) argue that writing tasks provide a rich medium through which students can demonstrate their understanding and interpretation of texts. For lower-order comprehension skills, such as recalling details, summarizing, and identifying main ideas, writing assignments like summaries, paraphrases, and responses to specific questions allow students to articulate their basic understanding of the material. These tasks require students to accurately extract and organize key information from the text, which is fundamental to reading comprehension (Graham & Perin, 2007).

For higher-order comprehension skills, Applebee (1984) contends that writing tasks become more analytical and evaluative. They can include essays, analytical responses, and critiques, which require students to engage in critical thinking, synthesis, and evaluation. Through these assignments, students are asked to interpret themes, analyze arguments, draw inferences, and connect ideas within and across texts. Writing, in this context, serves as a tool for students to articulate their deeper understanding and insights, demonstrating not only their comprehension of the explicit content but also their ability to engage with the underlying concepts and implications (Applebee, 1984).

Moreover, writing assessments provide a clear window into students' cognitive processes, allowing educators to assess not just what students understand but how they think and process information. This is particularly useful for evaluating metacognitive skills, as students often reveal their thought processes, reasoning, and decision-making strategies in their writing (Scardamalia & Bereiter, 2014). This aspect of writing is crucial for assessing higher-order skills, as it provides evidence of students' ability to reflect on their own learning and adapt their strategies accordingly.

Writing also allows for more personalized and contextualized assessment, as students can incorporate their prior knowledge, perspectives, and experiences into their responses. This makes writing a versatile tool for assessing a wide range of comprehension skills, from basic to advanced levels. The flexibility of writing tasks, combined with their ability to provide detailed insights into student learning, makes them an invaluable component of comprehensive assessment strategies in education.

5.1 Implications for ESP Instruction

The findings of this study have significant implications for ESP instruction, highlighting the efficacy of performance assessment in enhancing reading comprehension skills. ESP learners often need to develop specialized language skills tailored to specific fields, such as business, medicine, or engineering. Therefore, the development of both lower-order

thinking skills (LOTS) and higher-order thinking skills (HOTS) is critical for their success in professional and academic contexts.

Performance assessment, as demonstrated in the study, provides a more holistic and authentic evaluation of students' reading comprehension abilities compared to traditional testing methods. In ESP settings, where the relevance and application of language skills are paramount, performance assessments allow educators to create real-world scenarios that mirror the tasks students will face in their specific domains. This practical approach not only engages students more deeply but also provides a more accurate measure of their ability to understand and utilize specialized texts. The enhanced reading comprehension skills observed in the experimental group underscore the potential of performance assessment to effectively develop both LOTS and HOTS.

Immediate feedback is a critical component of performance assessment, particularly in ESP contexts. The timely and specific feedback that students receive helps them to quickly identify and correct misunderstandings, thereby reinforcing their learning and comprehension of specialized vocabulary and concepts. According to Hattie and Timperley (2007), immediate feedback is crucial for fostering both basic and advanced skills, as it allows students to refine their understanding in real-time. In the context of ESP, where accurate comprehension of technical terms and concepts is essential, immediate feedback can significantly enhance students' learning outcomes.

The use of writing as a tool for evaluating reading comprehension skills is also particularly relevant in ESP instruction. Writing assignments, such as reports, summaries, and analytical essays, provide opportunities for students to demonstrate their understanding of specialized content. They also allow for the integration of both LOTS, such as identifying main ideas and summarizing key points, and HOTS, such as analyzing and synthesizing information from complex texts. Graham and Perin (2007) emphasize that writing tasks help students to articulate their comprehension and critical thinking processes, making them an effective assessment tool in ESP courses.

Moreover, writing in ESP contexts often involves specific genres and formats, such as technical reports, business correspondence, or academic papers. Performance assessment through writing allows students to practice and refine these genre-specific skills, preparing them for the types of writing they will encounter in their careers. The ability to express complex ideas clearly and accurately in writing is an essential skill for ESP students, and performance assessments provide a structured way to develop and assess these competencies.

In conclusion, the study's findings suggest that performance assessment, coupled with immediate feedback and writing tasks, is a highly effective pedagogical approach for developing both LOTS and HOTS in ESP instruction. Educators are encouraged to incorporate these methods into their curricula to better prepare students for the complex language demands of their professional and academic futures.

5.2 Limitations and Future Research Directions

While this study provides valuable insights into the benefits of Performance Assessment in enhancing reading comprehension skills, several limitations should be acknowledged. The research was conducted at a single institution with a relatively small sample size, limiting the generalizability of the findings. Additionally, the study only included one proficiency level within the ESP context, which may not represent the full spectrum of learner experiences.

The scope of the intervention was also limited in terms of the tasks used to assess comprehension skills. A broader range of tasks would provide a more comprehensive evaluation of performance assessment's impact on both LOTS and HOTS. Future research should consider larger, more diverse sample sizes, extend the duration of the intervention, and include a wider variety of tasks and educational settings. This would offer a more complete understanding of Performance Assessment's effectiveness across different language skills and contexts.

6. Conclusion

In conclusion, this study provides compelling evidence that performance assessment significantly enhances reading comprehension skills in ESP learners, particularly in developing both low-order and high-order thinking skills. These findings highlight the importance of adopting innovative assessment strategies in language education to facilitate deeper learning and critical thinking. Further research is needed to explore the full potential and limitations of Performance Assessment in various educational contexts. This study sought to evaluate the effectiveness of Performance Assessment in enhancing reading comprehension skills within an ESP context. The research specifically focused on the development of both LOTS and HOTS, examining three key categories of reading comprehension: IRC, ARC, and ERC.

The results demonstrated that Performance Assessment significantly improved both LOTS and HOTS among the experimental group compared to traditional assessment methods. Participants in the experimental group showed substantial gains in IRC, ARC, and ERC skills, indicating that Performance Assessment fosters a deeper engagement with texts and promotes critical thinking. The study's findings align with existing literature, which highlights the advantages of performance-based assessments in developing comprehensive reading skills through real-world, contextualized tasks.

Despite these positive outcomes, the study's limitations, including a small sample size and a single-institution context, suggest the need for further research. Future studies should explore the impact of Performance Assessment across a broader range of ESP settings and proficiency levels, and incorporate a variety of tasks to fully assess its effectiveness.

Overall, this research supports the integration of Performance Assessment in ESP instruction as a means to enhance reading comprehension skills, preparing students for complex language demands in their professional and academic futures. The findings

underscore the potential of Performance Assessment to cultivate critical analytical skills and promote lifelong learning among ESP learners.

Conflict of Interest Statement

The authors declare no conflicts of interest.

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