Strategies to Enhance Reading Skills in Omani Students in University of Technology and Applied Sciences: From Challenges to Success

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Abstract

This study aims to explore effective reading strategies to enhance the reading skills of Omani students in UTAS, Shinas. It investigates the challenges faced by these students in acquiring reading proficiency and implementing effective strategies to achieve improved scores and comprehend the given tasks in reading skills. The researchers' experience, along with statistics from student assessments, indicates poor performance among foundation program students in reading, especially at the advanced level. The study focuses on identifying the challenges that hinder reading skills and developing the strategies to enhance the students' reading comprehension. Level 4 foundation program students were selected and taught various strategies by four researchers. The data of pre-test and post-test were analyzed to gauge the effectiveness of different strategies before and after intervention. The results indicate the effectiveness of the strategies, with notable gains observed, especially in the critical thinking (inference) questions. Additionally, the findings reveal a gender distinction among the Omani students: female students outperformed their male counterparts, and the lead is consistently maintained across different types of questions and in both pre- and post-tests.

Keywords: English language teaching, reading challenges, reading strategies, gender distinction, comprehension, reading proficiency

1. Introduction

Reading is a necessary skill that plays a crucial role not only in academic success but also in lifelong learning. In many educational contexts where English is taught as a second or foreign language, linguistic, socio-cultural and pedagogical factors create challenges for students in acquiring strong reading proficiency. Oman is not an exception to this, as students enter the classroom without the reading skills required to engage with the challenges of college-level academic texts. Within the Omani higher-education context, English functions as the medium of instruction across diverse academic fields. As a result, students are expected to demonstrate proficient reading comprehension, critical thinking, and creativity to meet academic expectations and later to become a suitable and impactful workforce to sustain in the job market. However, research has consistently indicated that learners struggle due to limited vocabulary, culturally complex texts, insufficient background knowledge and low motivation to read extensively. These difficulties hinder their academic progress and reduce their ability to perform confidently in English-medium environments. Although prescribed textbooks and level-specific outcomes exist, the researchers have observed a noticeable gap between instructional objectives and materials used to achieve them. The gap is reflected in students' performance: institutional statistics indicate that foundation-level students—particularly Level 4—demonstrate significantly weak reading abilities at the researchers' workplace. According to Rayner and Pollatsek (1989), "To understand the reader and the nature of the act of reading more clearly and comprehensively, one needs also to find out and describe the reader's strategies and reactions with regards to the reading tasks, and to see how the reader copes with the reading tasks and solves the problems" (p. 20). English has been greatly valued by the Omani government and is considered a tool for modernization and for Omanization (Al-Issa, 2020). The lack of English proficiency and knowledge in the specialization is considered by elite Omanis and the government to be a serious impediment to Omanization (Al-Issa, 2020). Policy makers view specialized knowledge and proficiency in English as essential for replacing skilled expatriate labor with qualified Omani citizens. The Education Council (2018) in its executive summary of the National Strategy for Education 2040 highlighted the low proficiency in the Arabic and English languages, as well as weaknesses in problem solving and critical thinking skills among school graduates. Additionally, Sivaraman, I., Al Balushi, A., & Rao, D. (2014) in a study concluded that a lack of proficiency in English language was a major barrier for students. Al-Bakri (2013) states that the use of English medium instruction created numerous obstacles and challenges for students to cope with the necessary strategies to employ English in their studies. Given these challenges, there is an urgent need to employ necessary, effective, and evidence-based strategies. To emphasize the need of various effective strategies, if teachers "are to provide ways for *all* students to learn and develop the ability to read, write, speak, listen, and spell, then instruction must be presented using *(different)* strategies that address students' dominant…" strengths and intelligences (Teele, 2004, p. 191). This study seeks to identify the effective strategies to enhance the reading skills of Omani students at the university level, addressing the gaps in the current educational practices and proposes tailored strategies to enhance reading skills. The

study proposes the following research questions: 1. What are students' reading challenges in UTAS? 2. Do effective reading strategies enhance the reading comprehension? 3. Do teaching strategies imply any changes in students' reading scores? 4. Is gender an influential factor in acquiring reading skills? This research aims to achieve the following objectives: To identify the current challenges faced by Omani students in developing reading skills. To explore evidence-based strategies that can enhance reading proficiency. The hypotheses that are scrutinized during the research are: 1-The current practices are insufficient to enhance reading skills among UTAS students. 2-Gender distinction doesn't play any role when effective strategies are implanted in their performances.

2. Literature Review

2.1 Global Perspectives on Reading Skill Development

Research on reading skill development highlights the importance of early interventions, parental involvement, and the use of engaging instructional methods. For instance, studies by Pressley (2006) emphasize the role of explicit phonics instruction in early grades, while Guthrie and Wigfield (2000) underline the importance of motivation in reading engagement.

2.2 Challenges in the Omani Context

Omani students face unique challenges, such as limited access to diverse reading materials and a lack of emphasis on reading for pleasure. Al-Issa and Al-Bulushi (2012) found that traditional teaching methods, such as rote memorization, dominate classrooms, leaving little room for interactive and student-centered approaches to reading. Additionally, the dual-language environment in Oman requires students to master reading skills in both Arabic and English, often leading to cognitive overload and lower proficiency in one or both languages. University students face several barriers to developing strong reading skills. Studies (e.g., Grabe & Stoller, 2019) show that lack of interest, limited prior exposure to academic reading, and inadequate foundational skills contribute to poor reading habits. Additionally, digital distractions and the prevalence of multimedia content can reduce students' focus on deep reading practices (Wolf, 2018).

2.3 Strategies and Motivation

Afflerbach, Pearson, and Paris (2008) described reading strategies as "deliberate, goal-directed attempts to control and modify the reader's efforts to decode text, understand words, and construct meanings of text" (p. 368). Self-motivation further enables learners to overcome encountered barriers. To develop intrinsic reading motivation, teachers need to provide challenging and meaningful reading tasks, such as reading competitions, retelling stories, personal presentations based on reading texts, and role-playing games. Students may actively participate in preferred reading tasks and gradually develop their interests in English reading. Besides, self-motivation, "…monitoring strategies were found to positively predict high achievers' reading comprehension, teachers should cultivate students' use of self-regulated metacognitive strategies in the reading process by means of explicit metacognitive reading strategy instruction" (Li & Gan, 2022). Research studies on strategies generally indicate that effective use of strategies has a positive role in the acquisition of language. For example, Phakiti (2003) investigated the association between test-takers' reading strategy use and reading test achievement and found that metacognitive and cognitive strategies were significantly and positively correlated with English reading test achievement, and that good readers used more metacognitive strategies compared with average readers, who used more metacognitive strategies compared with poor readers.

2.4 Effective Strategies for Enhancing Reading Skills

Effective strategies include the use of technology, differentiated instruction, and culturally relevant materials. For example, digital platforms like Raz-Kids and Reading A-Z have proven successful in other Middle Eastern contexts by providing leveled reading content. In addition to these digital platforms, SRA reading materials, Collaborative learning strategies, such as peer-assisted learning, have also been shown to improve reading comprehension and engagement. In another study by Akahsah, Azizun, Vijayan, Musa, Saleh, and Rahmat (2024), the quantitative research with the relationships of cognitive, metacognitive self-regulation, and resource management as components of learning strategies, indicate that "the three components of learning strategies positively correlate with one another. In addition, it is also found that metacognitive self-regulation positively influences learning by guiding them in supervising their learning process and resolving their confusion by referring back to their reading materials and seeking help from their peers" (p. 214). Further, they also point out that "There is a strong relationship between the use of different strategies." Their findings show "that the students used ways to comprehend information learned in the lessons, planned and monitored their learning and managed their learning environment" (p. 227).

3. Methodology

3.1 Method

The study adopted a quantitative method. To identify the challenges of the students, a survey has been conducted. A validated questionnaire has been distributed (online) among the population, and responses are recorded. Based on the responses, strategies have been developed, taught, and students are given practice exercises. Before teaching the strategies, a pre-test has been conducted and the data collected and analyzed with the post-test data.

3.1.1 Participants

A purposive sample comprised 215 Level 4 foundation program students at the University of Technology and Applied Sciences, Shinas. The pre-test and post-test drew 215 participants (115 experimental: 64 females, 51 males; 100 control: 55 females, 45 males). Each group

was stratified into four sections with balanced gender distribution (an average of 16 females and 14 males per section). Participation was voluntary with informed consent obtained in compliance with ethical standards.

3.1.2 Research Instruments

To diagnose reading difficulties, a rigorously validated questionnaire featuring 16 items was deployed online to capture challenges such as vocabulary issues, comprehension of question types, and concentration barriers. Analysis of the responses of the participants to the reading difficulties revealed an overall mean of 3.07 which corresponds to the neutral category on the five-point Likert continuum. Item-level means ranged from 2.62 to 3.57, indicating moderate to strongly endorsed challenges across the evaluated areas. The items with highest endorsement related to lexical challenges such as inferring word meaning from context and understanding vocabulary whereas lowest-rated items are concerning topic appropriateness and scanning skills. Based on the questionnaire outcomes, a set of evidence-based reading strategies was developed. The reading assessment included two passages, each accompanied by 25 comprehension questions encompassing a range of cognitive demands, true/false/not given, main, supporting ideas, vocabulary in context, inference, summary, multiple choice, specific details, and tabulated information. The reading content employed vocabulary calibrated at B1-B2 CEFR levels (Common European Framework of Reference for Languages), chosen for topical relevance to the student cohort.

3.1.3 Treatment (Intervention)

The intervention spanned 13 weeks during which the experimental group received focused instruction on strategic reading techniques crafted by a team of four experienced educators. The strategies incorporated a mix of cognitive and metacognitive elements, aimed at strengthening inference skills, vocabulary contextualization, summarization, and logical deduction from text. Teaching utilized self-designed strategic reading exercises tailored to the passage formats to foster active engagement with diverse question types. Each session included model demonstrations, guided practice, peer collaboration, and independent exercises that emphasized critical reading and time management strategies. The control group proceeded with standard curriculum-based instruction without exposure to these additional strategy sessions, serving as a baseline for comparative analysis.

3.1.4 Procedure

The study commenced with an online distribution of the challenges questionnaire to identify specific hurdles faced by students. Subsequently, a pre-test assessed baseline reading comprehension for both control and experimental groups. Following intervention, a post-test with comparable difficulty and structure was administered. Data collection strictly adhered to ethical protocols, maintaining confidentiality and anonymization of participant responses.

3.1.5 Data Analysis

Comprehensive statistical analyses were performed using SPSS to evaluate the efficacy of the intervention and to explore gender-related effects. Descriptive statistics outlined central tendencies and distributions of pre- and post-test scores. Paired-samples t-tests assessed intra-group improvements, determining if observed gains were statistically significant. Independent-samples t-tests compared post-test performance between experimental and control groups, with effect sizes calculated to quantify the magnitude of intervention impact. Additionally, analysis of variance (ANOVA) scrutinized differences across different experimental sections. Correlational analyses examined relationships between various reading challenge items and overall scores. Gender-wise subgroup analyses employed both descriptive and inferential statistics to illuminate differential responses to intervention, with p-values less than 0.05 deemed indicative of statistical significance. All analyses included checks for assumptions such as normality and homogeneity of variance to ensure validity.

4. Results and Discussion

4.1 Analysis and Correlation of Challenges

A survey of challenges with 16 statements on vocabulary and types of questions that are tested in their course and other issues like concentration, time factor etc., has been administered before the commencement of the project in order to have a clearer picture of the challenges faced by level 4 students in UTAS Shinas. A total of 215 students responded to the questionnaire, almost responding to each question item in the questionnaire. Based on the analysis, the researchers have found that the major challenges that level 4 students face are time pressure -- to complete the tasks within the limited time with a set of 8 different types of questions spread across in two passages and vocabulary questions. Table 1 and 2 show the analysis of the challenges and correlation.

Table 1. Co-relation and *r*-values

S.No.	Co-relation between	*r*-value	Description of strength
1	S1- I find difficulty in identifying Main ideas. S2- I find difficulty in identifying Supporting ideas.	0.72	Positive strong
2	S7- I find it difficult to guess the meaning of new words/vocabulary from the context S9- I find difficulty in the vocabulary and meanings of words	0.62	Positive strong
3	S8- I find it difficult to concentrate on the reading task for more than 30 minutes. S16- I cannot concentrate on the text while answering the questions.	0.52	Positive moderate

The students find it challenging to identify the main and support ideas. The table (see Table 1) shows the strong positive correlation coefficient with (*r*-value) 0.72. This interprets that there is struggle among Omani students in discerning the main ideas with support ideas. Another correlation reveals that students find it difficult in the vocabulary and their usage in the context with *r*-value of 0.65. This infers

poor vocabulary correlates with difficulty in guessing the meanings from the context. The statements 8 and 16 with an *r*-value of 0.52 show that student who cannot concentrate in their reading struggle to focus while answering the questions which stunts their performance. These findings confirm that vocabulary limitations, time constraints, and concentration difficulties constitute the primary barriers to reading comprehension, directly addressing Research Question 1.

Table 2. Gender-wise challenges and *p*-values

S. No.	Statement / Item	*p*-value	Significance
1	S8- I find it difficult to concentrate on the reading task for more than 30 minutes.	0.01	Major challenge in both the genders is struggling with concentration
2	S15- I find it difficult to read and understand the text within the given time	0.02	Both genders face greater time pressure.
3	S9- I find difficulty in the vocabulary and meanings of words	0.04	Females report more vocabulary related difficulties
4	S15- I find it difficult to read and understand the text within the given time	0.03	Compared to males, females struggle more with timed tasks.

Understanding the challenges with regard to gender analysis uncovers patterns, attitudes and learning strategies. Studies indicate that females often exhibit more positive attitudes towards reading than male students. The table (see Table 2) displays the analysis of the challenges gender wise with p-values and interpretation. All p-values are less than 0.05 which indicates statistically significant differences and the observed data provides strong evidence against the hypothesis that gender distinction doesn't play any role.

4.2 Performance Analysis

The intervention of experimental groups with focused instruction covered true, false, not given, main ideas, supporting ideas, vocabulary in context, inference, summarization, multiple choice, specific details and tabulated information in a span of 13 weeks focusing on 8 different types of questions.

The performance of the control groups and the experimental groups in the Pre-Test Vs Post-Test of 2 passages (a total of 25 questions with one hour duration) is analyzed using the below formulae. The formula used for sample standard deviation is $s = \sqrt{\frac{\sum(x_i - \bar{x})^2}{n-1}}$ where $\bar{x}$ – Sample Average, x_i – individual population value and n – total number of sample, while the formula for population standard deviation is $\sigma = \sqrt{\frac{\sum(x_i - \mu)^2}{n}}$ where μ - Population Average, x_i – individual population value and n – total number of population.

Table 3. Control Groups Performance Comparison of Pre-Test and Post-Test

S.No.	Metric / Question Type	Pre-Mean	Post-Mean	Pre-Median	Post-Median	Pre-SD	Post-SD
1	T-F-NG (/4)	1.7	2.1 (+24%)	2.0	2.0	1.0	0.9
2	M/S Ideas (/2)	1.1	1.3 (+22%)	1.0	1.0	0.6	0.6
3	Word Context (/2)	1.2	1.3 (+8%)	1.0	1.0	0.7	0.7
4	Inference (/2)	0.3	0.5 (+68%)	0.0	0.5	0.5	0.6
5	Summary (/5)	2.8	3.2 (+13%)	3.0	3.0	1.4	1.3
6	MCQs (/3)	2.3	2.1 (-10%)	2.0	2.0	0.8	0.8
7	Specific Info (/2)	1.0	1.3 (+30%)	1.0	1.0	0.7	0.7
8	Info Table (/5)	2.6	3.0 (+15%)	3.0	3.0	1.2	1.2

Table 4. Experimental Groups Performance Comparison of Pre-Test and Post-Test

S.No.	Metric / Question Type	Pre-Mean	Post-Mean	Pre-Median	Post-Median	Pre-SD	Post-SD
1	T-F-NG (/4)	2.1	3.1 (+48%)	2.0	3.0	0.9	0.8
2	M/S Ideas (/2)	1.3	1.6 (+23%)	1.0	2.0	0.6	0.5
3	Word Context (/2)	1.4	1.7 (+21%)	1.0	2.0	0.7	0.6
4	Inference (/2)	0.6	1.4 (+133%)	0.0	1.0	0.5	0.6
5	Summary (/5)	3.1	4.2 (+35%)	3.0	4.0	1.4	1.2
6	MCQs (/3)	2.3	2.5 (+9%)	2.0	3.0	0.8	0.7
7	Specific Info (/2)	1.1	1.5 (+36%)	1.0	2.0	0.7	0.6
8	Info Table (/5)	2.8	3.6 (+29%)	3.0	4.0	1.3	1.1

The results clearly demonstrate that the experimental groups have been benefitted significantly from the intervention. Though the control groups showed modest gains in the different categories of questions, the experimental groups consistently outperformed the control groups in the tests and in almost all categories of questions. The most substantial improvement was observed in inference skills, which increased by 133%, highlighting the effectiveness of strategy-based instruction in developing high-order thinking. In addition, in summary and true,

false, not given components the intervention is clearly evident and the experimental groups have outperformed the control groups. Besides, the vocabulary enhancing strategies adopted during the intervention resulted in clear thinking and comprehending the text and responding to questions accurately. The following figures (see Figures 1 and 2) give an understanding in gains in both experimental and control groups.

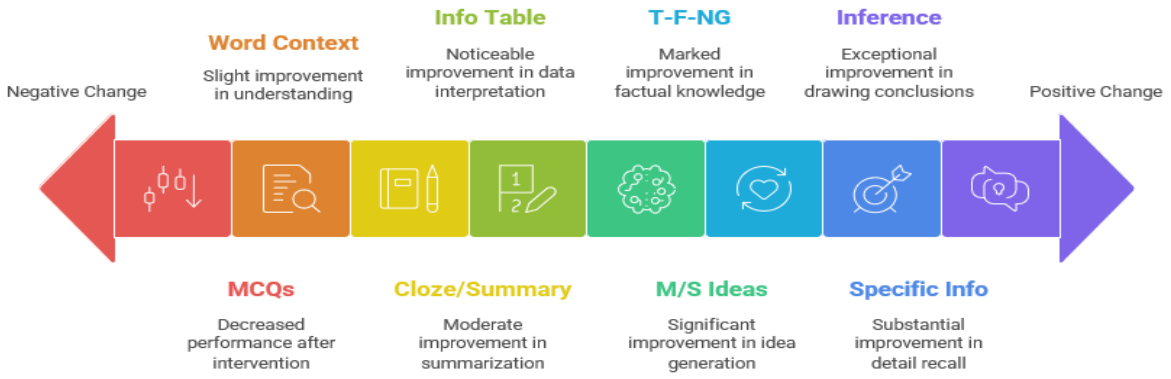

Figure 1. Understanding of the learning gains in the Control Groups without intervention

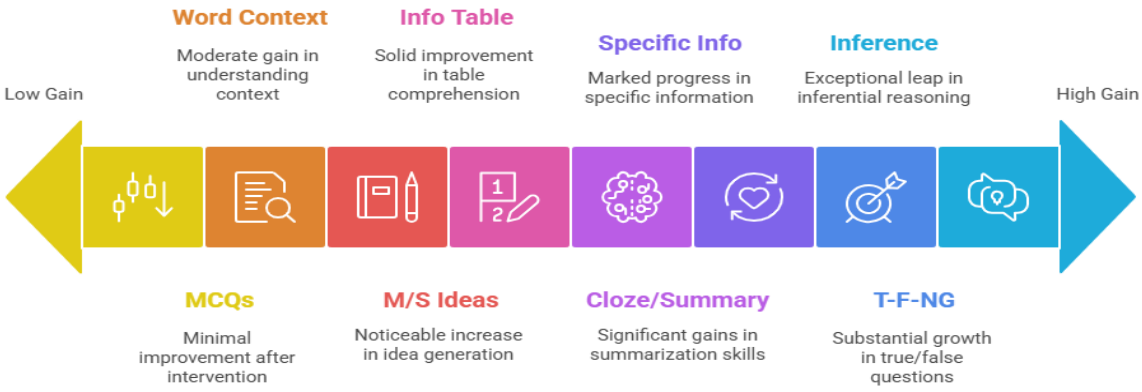

Figure 2. Understanding of the learning gains in the Experimental Groups after intervention

The comparison of pre-test and post-test results demonstrates that both control and experimental groups improved over time; however, the magnitude of improvement differed substantially. These findings answer Research Questions 2 and 3, and validate that strategy-based instruction remarkably enhances reading comprehension and test performance. Overall, the results demonstrate that structured and substantial intervention leads to measurable improvements in reading proficiency. Figures 1 and 2 provide visual evidence of these performance gains between the experimental and control groups.

4.2.1 Gender-wise Analysis

It is observed that gender plays a role in the enhancement of the reading skills and its strategies. In a study, Acar-Erdol and Akin-Arikan (2022) found that girls tend to use more effective metacognitive strategies like planning, monitoring, and evaluating their reading. Cui, Gu, and Zhang (2023) in their study found that boys are more likely to struggle with reading comprehension and spend less time on reading-related tasks. In this study, females outperformed males in different types questions across all the sections both in control and experimental groups.

Table 5. Gender-wise analysis of Control Groups performance in Pre-Test and Post-Test

S. No.	Control Groups	Pre-Test Performance			Post-Test Performance		
	Metric (Max. Mark)	Females (Mean ± SD)	Males (Mean ± SD)	Δ (F−M)	Females (Mean ± SD)	Males (Mean ± SD)	Δ (F−M)
1	T-F-NG (/4)	1.8 ± 0.92	1.6 ± 1.02	+0.2	2.2 ± 0.85	2.0 ± 0.91	+0.2
2	M/S Ideas (/2)	1.1 ± 0.67	1.0 ± 0.61	+0.0	1.4 ± 0.59	1.2 ± 0.63	+0.2
3	Word Context (/2)	1.3 ± 0.71	1.1 ± 0.73	+0.2	1.4 ± 0.63	1.2 ± 0.69	+0.2
4	Inference (/2)	0.3 ± 0.48	0.3 ± 0.46	+0.2	0.6 ± 0.61	0.4 ± 0.52	+0.2
5	Summary (/5)	3.3 ± 1.3	2.8 ± 1.5	+0.5	3.4 ± 1.28	3.0 ± 1.37	+0.4

6	MCQs (/3)	2.4 ±0.83	2.3 ±0.81	+0.1	2.2 ±0.77	2.0 ±0.81	+0.2
7	Specific Info (/2)	1.0 ±0.72	1.0 ±0.76	+0.0	1.4 ±0.66	1.2 ±0.73	+0.2
8	Info Table (/5)	2.7 ±1.25	2.5 ±1.17	+0.2	3.2 ±1.12	2.8 ±1.18	+0.4

Table 6. Gender-wise analysis of Experiment Groups performance in Pre-Test and Post-Test

S. No.	Experimental Groups	Pre-Test Performance			Post-Test Performance		
	Metric (Max. Mark)	Females (Mean ±SD)	Males (Mean ±SD)	Δ (F−M)	Females (Mean ± SD)	Males (Mean ± SD)	Δ (F−M)
1	T-F-NG (/4)	2.2 ±0.9	1.9 ±0.9	+0.3	3.3 ±0.7	2.9 ±0.9	+0.4
2	M/S Ideas (/2)	1.6 ±0.6	1.4 ±0.6	+0.2	1.6 ±0.6	1.4 ±0.6	+0.2
3	Word Context (/2)	1.5 ±0.7	1.4 ±0.7	+0.1	1.8 ±0.5	1.6 ±0.6	+0.2
4	Inference (/2)	0.7 ±0.5	0.5 ±0.5	+0.2	1.6 ±0.5	1.2 ±0.6	+0.4
5	Summary (/5)	3.3 ±1.3	2.8 ±1.5	+0.5	4.5 ±0.9	3.9 ±1.3	+0.6
6	MCQs (/3)	2.3 ±0.9	2.1 ±0.9	+0.2	2.5 ±0.7	2.3 ±0.8	+0.2
7	Specific Info (/2)	1.1 ±0.8	0.9 ±0.8	+0.2	1.5 ±0.7	1.3 ±0.8	+0.2
8	Info Table (/5)	3.0 ±1.2	2.5 ±1.4	+0.5	3.9 ±1.0	3.3 ±1.2	+0.6

In the control groups (see Table 5), though both genders showed improvement in their performances from pre- to post-tests, females scored higher than males in both tests. The gender gap existed even in the control groups with the scores ranging from +0.0 to +0.5. The largest gender gap is observed in summary $\Delta\,(F-M)$ is +0.5 and in tabulated information where $\Delta\,(F-M)$ is +0.4. In the experimental groups (see Table 6), the females maintained the lead, consistently scored higher than males, showing greater understanding of the reading across the different types of questions. However, it is noteworthy that males also showed improvement from pre-test to post-test which is attributed to the intervention. The difference between the performance or scores between females and male increased slightly in the post-test which indicates that the females got most benefitted from the intervention. The gender gaps are largely observed in summary, tabulated information where $\Delta\,(F-M)$ is +0.6 and a significant gap is observed in inference and true, false, not given type questions where the $\Delta\,(F-M)$ is +0.4. More balanced performance with less gender gap is observed in multiple choice questions, vocabulary in context, main, support ideas, and identifying specific information where $\Delta\,(F-M)$ is +0.2. This shows the hypothesis is not valid and there is a distinction between the gender in the enhancement of the reading skills. One of the reasons may be that the girls have to compete with their opposite gender in securing the better jobs and this intrinsic motivation makes them to standout in the competition. On the other hand, the intrinsic motivation may be lacking and complacency may be one of the reasons for the lagging performance of the boys.

4.2.2 Group-wise Analysis

A comprehensive analysis necessitates the comparison between the experimental groups for its completeness and critical depth. It can be observed that the impact of intervention is strongly felt in the three groups and moderately in another group. For the analysis of a paired t-test (comparing two related pre-test and post-test scores), the p-value is derived from t-statistics which is calculated with the formula $t = \frac{\bar{d}}{s/\sqrt{n}}$ where $\bar{d}$ is the mean of the differences between paired observations, s is standard deviation of the differences and n is the number of paired observations. Using t-distribution table p-value is calculated and the p-value is interpretation is done as follows: if $p < 0.05$ it is considered the statistically significance and (null hypothesis is rejected), if $p < 0.01$ or 0.001 it is considered highly significant and if $p \geq 0.05$ it is considered as not statistically significant. The following tables (see Table 6 and 7) show the data where the improvements are highly statistically significant in both control and experimental groups.

Table 7. Pre-test Vs Post-test performance of Control Groups

Group	Metric/Question	Pre-Mean	Post Mean	Difference	Pre STD	Post STD	Pre-Median	Post Median	*p*-value	Significance
CG-L4-G1	Total Score (/25)	11.1	12.5	+1.4	3.2	3.4	11.0	13	0.01	Yes
CG-L4-G5	Total Score (/25)	13.55	15.4	+1.85	4.2	3.7	14.0	17	0.006	Yes
CG-L4-G6	Total Score (/25)	14.0	11.5	-2.5	5.1	4.8	14.0	11	0.005	Yes
CG-L4-G7	Total Score (/25)	14.65	15.5	+0.85	4.3	4.5	16.0	17	0.06	No

Table 8. Pre-test Vs Post-test performance of Experimental Groups

Group	Metric / Question	Pre-Mean	Post-Mean	Difference	Pre-STD	Post-STD	Pre-Median	Post-Median	*p*-Value	Significance
EG-L4-G2	Total Score (/25)	17.2	19.2	+2.0	1.29	1.52	19.0	21.0	0.0001	Yes
EG-L4-G4	Total Score (/25)	14.8	17.0	+2.2	2.02	1.83	15.0	17.5	0.0001	Yes
EG-L4-G12	Total Score (/25)	15.8	21.4	+5.6	1.7	2.0	16.5	22.5	0.0001	Yes
EG-L4-G3	Total Score (/25)	11.2	14.9	+3.7	3.6	3.0	12.5	14.0	0.00001	Yes

The tables 7 and 8 compare the total scores of the control and experimental groups. Among the experimental groups, all groups have shown improvement after the intervention, out of the four groups, Group 12 stands out with highest post intervention scores across all metrics reflecting strong engagement and effective application of reading strategies. Group 3 students' performance has become consistent as per the standard deviation data that shows strong evidence of improvement. On the other hand, Group 5 of control groups has shown a minimal improvement. The following visual representation provides the impact of intervention on the experimental groups.

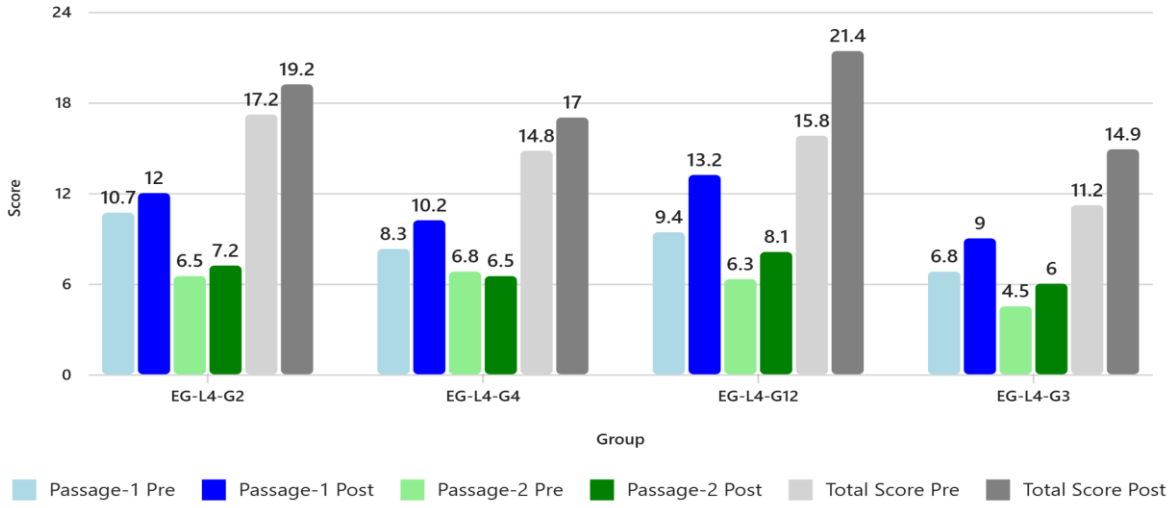

Figure 3. Visual Chart Comparing Experimental groups Pre and Post Intervention Score in Passages 1 and 2 and the Total Score

The visual representation gives the statistical comparison of passages 1 and 2 and the total scores of experimental groups. It can be clearly seen that there is significant impact of the strategies resulting in the improvement in all the sections after the intervention except in passage 2 of Group 4. The observed differences among groups suggest that variations in learner engagement, background knowledge, and motivation may influence the effectiveness of instructional strategies.

4.2.3 Parametric Inferential Analysis using Independent Samples t-Test

The following table (Table 9) shows comparison of the gains between experimental groups and control groups. Each group from EG and CG are randomly selected for Parametric Inferential Analysis Independent using Samples t-Test and obtained t-values and p-values.

Table 9. Group Pair Analysis

Group Pair	Metric / Question	Pre-Mean (EG)	Pre-Mean (CG)	Post-Mean (EG)	Post-Mean (CG)	Gain (EG)	Gain (CG)	Diff in Gain	Pre-STD (EG)	Post-STD (EG)	Pre-STD (CG)	Post-STD (CG)	t-stat (Gain)	p-value	Significance
EG-G2 vs CG-G1	Passage-1	10.68	6	12	7.17	1.32	1.17	0.15	3.76	4.12	2.59	3.87	0.14	0.892	NS
EG-G2 vs CG-G1	Passage-2	6.56	5.09	7.2	5.26	0.64	0.17	0.47	2.76	2.93	2.19	2.67	0.72	0.477	NS
EG-G2 vs CG-G1	Total Score (/25)	17.24	11.09	19.2	12.43	1.96	1.34	0.62	5	5.31	3.93	5.51	0.46	0.649	NS
EG-G4 vs CG-G5	Passage-1	8.34	7.25	10.16	9.14	1.82	1.89	-0.07	2.87	3.82	3.4	3.34	-0.07	0.943	NS
EG-G4 vs CG-G5	Passage-2	6.5	6.3	6.84	6.23	0.34	-0.07	0.41	2.34	2.67	2.18	2.15	0.67	0.507	NS
EG-G4 vs	Total	14.84	13.55	17	15.36	2.16	1.81	0.35	4.39	5.37	4.78	4.73	0.25	0.80	NS

CG-G5	Score (/25)													1	
EG-G12 vs CG-G7	Passage-1	9.43	8.22	13.29	8.7	3.86	0.48	3.38	3.26	2.97	3.35	4.23	3.53	0.001	Sig
EG-G12 vs CG-G7	Passage-2	6.36	6.43	8.11	6.83	1.75	0.4	1.35	2.32	1.99	2.13	2.78	2.13	0.041	Sig
EG-G12 vs CG-G7	Total Score (/25)	15.79	14.65	21.4	15.52	5.61	0.87	4.74	4.87	3.99	4.8	6.18	3.46	0.001	Sig
EG-G3 vs CG-G6	Passage-1	6.8	7.9	8.93	6.5	2.13	-1.4	3.53	3.15	4.4	3.27	3.68	4.79	<0.001	Sig
EG-G3 vs CG-G6	Passage-2	4.4	6.1	6	5	1.6	-1.1	2.7	2.4	3.42	2.67	2.83	4.12	<0.001	Sig
EG-G3 vs CG-G6	Total Score (/25)	11.2	14	14.93	11.5	3.73	-2.5	6.23	4.86	7.05	4.97	5.43	5.83	<0.001	Sig

The comparison shows the intervention has minimal impact on some experimental groups and has significant impact on other experimental groups when compared with randomly selected control groups. This cross-section analysis brings a clearer picture of the Gains made by the Experimental groups. Two groups have exceptionally gained the skill enhancement. The other two groups have marginally shown improvement, this may be because of their background and individual intrinsic motivation to excel in their academic career. All the groups have shown improvement after the intervention, out of the four groups, Group 12 stands out with highest post intervention scores across all metrics indicating highest engagement with major gains. Group 3 students' performance has become consistent as per the standard deviation data that shows strong evidence of improvement. It can also be observed that there is improvement in the scores of the passage 1 across all the groups, but when it comes to the second passage the performance is not very effective, this can be attributed to a fact that students find it difficulty in concentration for more than half an hour. All the *p*-values (all ≤ 0.0001) confirm that the improvements are because of the strategies adopted in the classrooms by the researchers but not due to chance, reinforcing the effectiveness of intervention.

Table 10. Comparison of impact of strategies after intervention

Group Pair	Metric	Gain (EG)	Gain (CG)	Difference
EG-G2 vs CG-G1	Total Score (/25)	1.96	1.34	+0.62
EG-G3 vs CG-G6	Total Score (/25)	3.73	-2.5	+6.23
EG-G4 vs CG-G5	Total Score (/25)	2.16	1.81	+0.35
EG-G12 vs CG-G7	Total Score (/25)	5.61	0.87	+4.74

The table (Table 10) shows clearly the experimental groups outperformed control groups. The comparison between groups 12 and 3 shows the most dramatic improvements over the control counterparts. Groups 2 and 4 show improvements it is minimal but not as pronounced.

Besides this, the ANOVA (Analysis of Variance) results also indicate statistically significant differences exist among the experimental groups which suggests that not all experimental groups responded equally to the intervention. In the analysis of Anova the F-statistic is 6.69 whereas p-value is 0.0003. On the other hand, the control groups F-statistic value 6.34 and p-value 0.0005 indicate the existence of statistically significant differences among the control groups. This also indicates the variation in baseline or in natural performance across control groups. ANOVA confirms that the group level differences are present in both experimental and control groups and the results reflect that there is differential effectiveness of intervention for experimental groups and it may point to natural variability in performance across different cohorts. Finally, the effect size of the result is as follows:

Table 11**.** Effect size statistic using Cohen's *d*

Group	Pre mean	Post mean	Pre SD	Post SD	Pooled SD	Cohen's *d*	Effect Size
Group 2	17.2	19.2	1.29	1.52	1.41	1.42	Large
Group 4	14.8	17.0	2.02	1.83	1.93	1.14	Large
Group 12	15.8	21.4	1.70	2.00	1.86	3.01	Very Large
Group 3	11.2	14.9	3.60	3.00	3.31	1.12	Large

For this (see Table 11), using the pooled standard deviation, Cohen's *d* is calculated and as it can be interpreted from the table, all groups show large effect sizes with the least *d* value of 1.12 and the highest *d* value of 3.01. The values suggest substantial gains from pre- to post-test across all groups and indicate that the intervention had a strong and meaningful impact on students' reading performance.

5. Conclusion

In the conclusion, the results clearly demonstrate that targeted reading interventions significantly impacted Omani Foundation course students reading comprehension. In each case, the female students performed better than the male students—a gender gap worthy of exploration. The intervention similarly demonstrated an important impact for critical thinking and inference, which are key components of

academic reading proficiency. Additionally, the targeted instruction took into consideration challenges students would face if the participants did not possess the vocabulary knowledge, sustained attention during reading, and response times when assessed under timed testing conditions. Continued engagement during lengthier reading tasks presents as a be ongoing challenge, and must be acknowledged in future exploratory research to ensure more individual, personalized and inclusive strategies are developed to support special learners' needs. The results confirm that the challenges initially identified—limited vocabulary, time pressure, and difficulties in sustained concentration, and other related factors—can be effectively addressed through explicit and systematic instructional strategies. The gains observed in the experimental groups, especially in critical thinking tasks, highlight the effectiveness of integrating cognitive and metacognitive techniques into reading instruction. Overall, this study supports the use of evidence-based, student-initiated reading strategies and gender differences to support improved learning outcomes and makes a valuable contribution to the localized literature on English language learning in Oman. Future research should investigate the duration of the intervention and provide participants the opportunity to integrate these strategies during the course of their studies, creating long-term impacts.

6. Limitations

This research is carried out by the writers covers only level 4 foundation program students and research may not be transferred to the general Oman student population or to different educational contexts entirely. The intervention with the strategies imparting completed within a 13-week duration in a semester, which limits the measurement of the reading strategies in terms of long-term effectiveness and sustainability. In addition, the study overall dependent on quantitative measures; qualitative factors would provide more details relating to the students' situations and concerns and research is required in this area too. Factors like individual variation in motivation, prior knowledge might have impacted the findings, indicating that future research studies should include longitudinal studies at different levels and with diverse student groups. The gender-based analysis raises certain relevant question about motivation and engagement differences between genders which can be another case study. Finally, while there was a positive effect of the intervention, the external validity of these techniques in regards to other courses or disciplines has not been established yet.

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Authors' contributions

Conceptualization, Dr. G.D.K.; methodology, Dr. G.D.K., Dr. Z.Z.; software, Dr. S.K.D.; literature review Dr. R.J.; formal analysis, Dr. G.D.K., Dr. S.K.D.; execution Dr. G.D.K., Dr. S.K.D., Dr. Z.Z., and Dr. R.J.; resources, Dr. S.K.D., Dr. R.J.; data curation, Dr. G.D.K.; writing—original draft preparation, Dr. G.D.K.; writing—review and editing, Dr. G.D.K., Dr. S.K.D.; visualization, Dr. S.K.D.; supervision, Dr. G.D.K.; project administration, Dr. G.D.K.; funding acquisition, Dr. G.D.K. All authors have read and agreed to the final version of the manuscript.

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References:

Acar-Erdol, T., & Akin-Arikan, Ç. (2022). Gender gap in reading achievement: The mediating role of metacognitive strategies and reading-related attitudes. *Social Psychology of Education, 25*(3), 537-566. https://doi.org/10.1007/s11218-022-09692-9

Afflerbach, P. P., Pearson, P. D., & Paris, S. G. (2008). Clarifying differences between reading skills and reading strategies. *The Reading Teacher, 61*(5), 364-373. https://doi.org/10.1598/RT.61.5.1

Akahsah, M. M., Azizun, N., Vijayan, B., Musa, H. I., Saleh, M. R., & Rahmat, N. H. (2024). An investigation of how foundation learners perceive their use of learning strategies. *Arab World English Journal, 15*(1), 214-232. https://doi.org/10.24093/awej/vol15no1.13

Al-Bakri, S. (2013). Problematizing English medium instruction in Oman. *International Journal of Bilingual and Multilingual Teachers of English, 1*(2), 55-69. https://doi.org/10.12785/ijbmte/010203

Al-Issa, A. (2020). The language planning situation in the Sultanate of Oman. *Current Issues in Language Planning, 21*(1), 1-68. https://doi.org/10.1080/14664208.2020.1764729

Al-Issa, A. S., & Al-Bulushi, A. H. (2012). English language teaching reform in the Sultanate of Oman: The case of theory and practice disparity. *Educational Research for Policy and Practice, 11*(2), 141-176. https://doi.org/10.1007/s10671-011-9110-0

Cui, Y., Gu, T., & Zhang, J. (2023). The effect of gender differences on high school students' English reading comprehension. *Lecture Notes in Education Psychology and Public Media, 5*, 450-455. https://doi.org/10.54254/2753-7048/5/20220663

Grabe, W., & Stoller, F. L. (2019). *Teaching and researching reading*. Routledge. https://doi.org/10.4324/9781315726274

Guthrie, J. T., & Wigfield, A. (2000). Engagement and motivation in reading. In M. L. Kamil, P. B. Mosenthal, P. D. Pearson, & R. Barr (Eds.), *Handbook of reading research* (Vol. 3, pp. 403-422). Lawrence Erlbaum Associates Publishers.

Li, H., & Gan, Z. (2022). Reading motivation, self-regulated reading strategies and English vocabulary knowledge: Which most predicted students' English reading comprehension? *Frontiers in Psychology, 13*, Article 1041870. https://doi.org/10.3389/fpsyg.2022.1041870

Phakiti, A. (2003). A close look at the relationship between cognitive and metacognitive strategy use and EFL reading achievement test performance. *Language Testing, 20*(1), 26-56. https://doi.org/10.1191/0265532203lt243oa

Pressley, M. (2006). *Reading instruction that works: The case for balanced teaching*. Guilford Press.

Rayner, K., & Pollatsek, A. (1989). *The psychology of reading*. Lawrence Erlbaum Associates. https://doi.org/10.7551/mitpress/3072.003.0012

Sivaraman, I., Al Balushi, A., & Rao, D. (2014). Understanding Omani students' university English language problems. *International Journal of Sciences: Basic and Applied Research, 13*(1), 28-35.

Teele, S. C. C. (2004). *Overcoming barricades to reading: A multiple intelligences approach*. Corwin Press.

The Education Council. (2018). *The national strategy for education 2040*. Retrieved from https://www.educouncil.gov.om/downloads/Ts775SPNmXDQ.pdf

Wolf, M. (2018). *Reader, come home: The reading brain in a digital world*. Harper.