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Do the Number of Contact Hours Matter? Revisiting the Effectiveness of Online Remedial English Course during the Pandemic in the Kingdom of Bahrain

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Abstract: The present study aims to assess the effectiveness of remedial English courses in improving students' English skills in terms of grammar, vocabulary, listening, and speaking. The study also aimed to identify the optimal number of contact hours spent in remedial courses to improve students' post-test scores. The study utilized the pre and post-test scores of 37 students enrolled in the English remedial Programme at the University of Technology Bahrain during the second and third trimesters of the Academic Year 2020-2021. Using a non-parametric Wilcoxon Signed Ranked Test and Receiver Operating Characteristic curve, the study derived the following conclusions: Remedial courses significantly increased the post-test scores of the students for both grammar and vocabulary and speaking and listening. This would suggest that the conduct of remedial courses effectively improves the overall English-speaking skills of the students who completed the remedial course despite being fully delivered online. Contact hours spent in remedial courses, both in ENGL301 for Speaking and Listening and ENGL302 for Grammar and Vocabulary, can significantly determine the students' success in passing the post-test. The effect of the number of contact hours in the remedial course on passing post-tests, both for Grammar and Vocabulary and Speaking and Listening, is not linear. The optimum numbers of hours to be spent per trimester on directed learning to improve students' post-test scores in grammar and vocabulary, and speaking and listening are 86.25 and 88.5 hours, respectively. This threshold maximizes the chance of predicting the students who passed at the level of sensitivity and specificity.

Keywords: English Remedial Course, Grammar and Vocabulary, Speaking and Listening, ROC-curve.

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Introduction

College completion has emerged as a critical factor in promoting a nation's economic development and global competitiveness. However, suppose half of the college students are unprepared for college work and thus unlikely to complete their degrees despite their desire to do so. In that case, serious consideration should be given to what can be done to improve their chances of success. Professors in the language teaching profession have proposed numerous hypotheses on the benefits of remedial courses in improving students' English language skills as preparation for entering college and university-level academic work.

When it comes to strengthening students' abilities in learning English as a first or second language (EFL/ESL), some people believe that remedial courses are a waste of time. However, others argue that the teaching technique is the key to achieving positive outcomes in remedial pupils. In fact, in a study conducted by Hickey, Robinson, Fiorini, and Feng (2020), it was discovered that spending approximately 30 hours on $30 intelligent tutoring systems (ITS) was equally effective in terms of final grades as spending hundreds of hours and thousands of dollars on a three- or five-credit remedial course. This observation poses the question of the role of universities in remedial courses and the possibility of the remote or online environment as an appropriate setup for remedial courses to be practical.

Through a comprehensive exploration of the information from various researchers, Al Othman and Shuqair (2013) have presented those researchers' findings on the issue of the effectiveness of remedial courses in English. The research findings indicate that remedial courses in Arab universities have been ineffective in increasing students' English language skills learning EFL/ESL. Alternatives include supplemental instruction and intelligent tutoring systems (ITSs).

In addition, Nasser and Goff-Kfouri (2008) state that many remedial placements prevented students from enrolling in the university's English Remedial program at a private institution in Lebanon. It was also discovered that remedial courses were ineffective in improving overall academic performance. Therefore, some colleges and states are instituting policies allowing students to take college-level courses without first taking remedial courses. This notion is supported by the result of the study of Logue, Watanabe-Rose, and Douglas (2016), which found that most of the students who enrolled directly in college-level courses passed than those assigned to take remedial courses. Therefore, policies allowing students to take college-level instead of quantitative remedial courses can increase student success.

However, this disagreement did not deter the Middle East from pursuing remedial courses. For example, *the Handbook of Human Resource Management in the Middle East* says "Strategy 2010-2020", with a statistic indicating that 94 percent of students entering one of the country's national universities require at least one remedial course (Budhwar & Mellahi, 2016).

Blake (2016) noted that faculty, staff, and administration from the Gulf Cooperation Council (GCC) are committed to developing a developmental education model that integrates needed skill development into college-level courses. GCC achieves remediation by incorporating extra contact hours into first-year courses to help students improve their reading, writing, and quantitative skills. This method permits developmental students to receive the same credits as other students during their first year.

Remedial Courses During the Pandemic

The recent COVID-19, however, has wreaked havoc on the already challenging situation of English language learners (EFL), especially in tertiary education. Mahyoob (2020) raised this observation and surveyed to assess the hurdles and obstacles faced by English language learners (EFL) in Saudi Arabia when moving to online learning in the second semester of 2020. According to the findings, the key issues that influence and affect online EFL learning during COVID-19 are connected to technological, academic, and communication concerns. In addition, the survey findings demonstrate that the majority of EFL students are dissatisfied with their online learning since they are not making the expected progress in language learning.

Nonetheless, Hazaymeh (2021) found that English as a foreign language (EFL) students had a positive attitude toward online distance learning. According to the data, this attitude enabled students to achieve high scores in creativity and innovation, communication and collaboration, research and information fluency, critical thinking, problem-solving, decision-making, and digital citizenship. In addition, most respondents successfully achieved language competency through online distance learning, indicating a flexible and appropriate learning environment. However, due to technical issues and the lack of connections, the data revealed a few disadvantages of online distance learning.

Almost the same findings resonate in Alodwan's (2021) work about distance learning during the pandemic in Jordan. The study found that E-learning saves time, money, and effort. It is used in some humanities departments but not in science departments. It encourages students to self-learn by allowing them to listen to recorded lectures multiple times. However, it was noted that E-learning causes social isolation among students, cheating on exams, and experiencing

technical difficulties while using online learning. Furthermore, Rizzo (2021) asserted that the effectiveness of digital mediation in countermanding math-induced drop-out phenomenon in STEM in the long-distance remedial summer course in Calculus, English remedial courses may have many disadvantages than advantages.

With the conflicting results, the question remains in two folds. First, are remedial English effective in improving the English competency of the students to make them fit for college/university? Moreover, will an online environment fit the characteristic of a remedial course like English as a foreign language? Thus, this study explores the effectiveness of English Remedial Courses delivered online during the pandemic. The contribution of this study focuses on two relevant points. First, very few studies have explored a quantitative approach in analyzing the effect of online remedial classes to determine the optimum number of hours to be spent. Second, empirical evidence in GCC adds to our understanding of the effect of remedial English courses on students' grammar and vocabulary, and speaking and listening online where critical thinking and pedagogical process pose new viewpoints and actions to emerge.

Review of the Literature

The Handbook of Human Resource Management in the Middle East says "Strategy 2010-2020", with a statistic indicating that 94 percent of students entering one of the country's national universities require at least one remedial course (Budhwar & Mellahi, 2016). In view of the foregoing points, this study believes that the reason why remedial courses are being required for students' entry into the country's national universities is to verify the macro skills of students' learning. Grammar, vocabulary, listening, and speaking are tools for learning. Anyone who has difficulty in any of these skills hardly progresses in other subjects in the university curriculum. However, anyone who has acquired these skills may learn the other subjects through self-direction. As knowledge expands at a tremendous rate, societies demand that every citizen becomes successful through the acquired skills which are crucial not only to academic and professional success but also to a productive social and civic life.

Underprepared college students enroll in zero-credit courses, extending their stay and adding to their education debt, potentially leading to a turnover. In his Affordability Proposal, President Obama mentioned a "college cost issue" caused by "failure to employ technology to its maximum extent" (Kelly & Carey, 2013). Community colleges alone spend $1.4 billion per year on remedial courses for recent high school graduates, according to the non-profit Alliance for Excellence in Education in 2006 (Smydo, 2008). This only means that much effort is extended by

the government to community colleges to align its strategic description in attaining the expected results articulated in a unified effort. A well-framed aim provides a sense of purpose and establishes parameters that focus on effort and resources.

Van Orden and Maryland Higher Education Commission (2020) investigate the influence of college-level remediation on students' postsecondary performance. The study found that students who enrolled and completed remedial courses are more persistent and have greater success in completing their first-year courses. Such a sequence of remedial approaches will improve students' learning.

On the other hand, Lin, Guo, and Lin (2016) developed a fuzzy inference system to track remedial learning. The proposed approach incorporates two of the course's learning concepts: number systems and combinational logic. The experimental results show that the pupils showed significant progress after studying the remedial learning resources. Students who were high achievers and poor achievers both made substantial gains. Furthermore, all three groups of pupils achieved significant gains.

These segments define the aim statement sets forth by the purpose of remedial courses and help clarify the course goals and thrusts. Therefore, it is important that the existing course aims are congruent with the university missions. It is one of the concerns of the study, to find out how the UTB's English courses respond to students' needs as the usual coverage of its mission and vision. It is through the application of well-defined aims of the course that one can claim a significant contribution to one's learning outcomes.

The qualitative findings suggested that first-year college students who were obliged to take remedial courses were concerned about financial restrictions and felt personally disappointed. However, academically, remedial/developmental courses positively impacted students' ability to complete regular credit-bearing courses and support academic requirements. In addition, students said they were encouraged by the university and given opportunities to succeed. Finally, due to the higher tuition demand for classes that do not count toward graduation, students claimed that being compelled to attend remedial/developmental courses imposed substantial financial restraints (Choate, 2017). The discovered deficiency should be determined so that encountered problems produce insignificant effects and the aim to improve learning will be possible. The process of a good course outline and the proper selection of instructional materials can help to minimize financial costs which can be accomplished through a concerted effort in accord with the policy which deals with the concept by doing.

Limbrick, Wheldall, and Madelaine (2012) researched if effective remedial reading instruction works equally well for boys and girls. Both boys and girls made significant growth, with covariance studies revealing that their rates of progress were nearly identical. It was found that if both boys and girls receive excellent systematic remedial reading teaching, they do not require distinct types of reading instruction. The criteria for effective remedial program implementation irrespective of social class, gender, ethnic group, or socio-economic status rely on the indicators of commitment, participants' attendance, continuity, and frequency of participation. The present study has no question regarding the students' gender because its main concern is on the capacity of the implementers to embark on the program and to face a formidable challenge in bringing about change. It is in this case that commitment and willingness are needed to adapt and perceive quickly and effectively emerging issues.

Colleges deal with students who lack the academic preparation needed to succeed in college-level courses by providing remedial (also known as developmental) education. Remediation is standard, with roughly one-third of new first-year students enrolling in remedial courses, which cost at least $1 billion per year. However, Martorell and McFarlin Jr (2011) asserted that remedial courses are either a help or a hindrance despite their widespread use. Using longitudinal administrative data from Texas and a regression discontinuity research design, they find little evidence that remediation improves academic, job performance, or labor market outcomes. The effectiveness of the course is not only based on the number of services rendered to the recipients but also on its timelessness and relevance to the impending concerns and problems at hand. The opportunities provided by the course must be highly adaptable to the changing conditions of times. What was cited above will inspire the present study to work diligently in order to bring the remedial program to fruition to be useful.

Obeidat's (2020) research at Jordan's Hashemite University found that a remedial English course for first-year students benefited pupils more in terms of grammatical and structural components of language. The findings were beneficial for EFL curriculum developers, syllabus designers, and administrators to understand students' demands better and consider their perspectives. This teaching and learning on grammatical and structural components tell us what is important in a course. It provides a sort of reflection on the values, strategies, approaches, and performance expectations. Implementers who facilitate the attainment of these components tend to encourage interactive participation for they aim to accomplish work tasks. The present study included this to determine the range of how the intended learning outcomes are met and how the skills of the students are enhanced consistently during the implementation of the course.

Method

Research Design

The study utilized a Quasi-experimental research design with pre- and post-test treatment. The design allowed the directionality of the research. Moreover, the structure allowed the assessment of the participants' levels of grammar and vocabulary, and speaking and listening using the Oxford Online Placement Test (OOPT) before and after the conduct of the remedial course. With this, associations between interventions and outcomes were generated.

Participants

The study participants were the 37 students enrolled in the English Remedial Programme during the second and third trimesters of the Academic Year 2020-2021 of the University of Technology Bahrain. These students were identified by the university's admission criteria to need a remedial course in English.

Procedure and Analysis of Data

The OOPT scores of the students admitted to the university's remedial program were used as each participant's pre-test scores. According to the policy used by the university, candidates who have a pre-intermediate score below 55 in the OOPT will have to enroll in remedial courses, ENGL301 for Speaking and Listening and ENGL302 for Grammar and Vocabulary. Upon enrollment, the remedial course was fully delivered online for 120 contact hours for the next three months. Students' attendance was monitored, and a post-test exam was administered at the end of the course. To ensure standardized results, Oxford Online Placement Test was administered for both pre-test and post-test.

The OOPT is divided into two parts: The use of English and listening. The use of English (ca. 30 questions) tests the students' knowledge of English grammar and vocabulary; for example, how well they know tenses, or which word would be correct in a sentence. It also tests how well the students understand what someone means when he/she is talking to anyone. This understanding is very important in language learning. They are all multiple-choice apart from the last task, which is a gapped text where students must type in the missing words themselves. However, the Listening part (ca. 15 questions) tests the literal and implicit meaning of language. All tasks are in multiple-choice format.

To test its validity, the Oxford Placement Test was developed to take the worry out of students' placement. Piloted on thousands of learners across the globe, the test is continually

validated to ensure it delivers results everyone can trust. For reliability, the results show its correlation to the Common European Framework of Reference, CEFR scale ranging from A1 (basic level) to C2 (upper advanced level) or the CEFR level including its correlation to the International English Language Testing System (IELTS).

The pre-test and post-test scores were compared using a non-parametric Wilcoxon Signed Ranked Test to assess the effectiveness of the remedial course that was delivered online. This method was done since the non-normality of the data distribution was observed. The sample size was also considered to use the non-parametric test. Furthermore, a Receiver Operating Characteristic curve was used to determine an evidenced-based cut-off point regarding directed hours spent in English courses that effectively and efficiently deliver desired results. This step is done to identify the optimal number of contact hours that should be spent to improve students' post-test scores in English both in grammar and vocabulary, and in speaking and listening.

Results

Descriptive Statistics

Table 1. *Descriptive Statistics*

	N	Minimum	Maximum	Mean	Std. Deviation	Skewness		Kurtosis	
	Statistic	*Statistic*	*Statistic*	*Statistic*	*Statistic*	*Statistic*	*Std. Error*	*Statistic*	*Std. Error*
Grammar and Vocabulary (Pre-test)	37	.0	63.0	29.625	25.6683	.033	.441	-1.806	.858
Grammar and Vocabulary (Post-test)	37	0	119	66.93	33.633	-.496	.441	-.477	.858
Speaking and Listening (Pre-test)	37	0	78	24.61	23.702	.627	.441	-.466	.858
Speaking and Listening (Post-tests)	37	0	119	55.39	33.914	-.125	.441	-.561	.858
Grammar and Vocabulary (Contact hours)	37	31.5	102.0	85.125	16.6314	-1.725	.441	3.099	.858
Speaking and Listening (Contact in hours)	37	30.0	108.0	86.304	20.1845	-1.720	.441	2.573	.858

Table 1 shows the descriptive statistics of the data utilized in the study. As can be seen, of the 37 samples, the mean scores for grammar and vocabulary are 29.625 and 66.93 for the pre-test and post-test, respectively. On the other hand, the mean scores for speaking and listening are 55.39 and 85.125 for the pre-test and post-test. In terms of the number of contact hours, the data show that the means of contact hours are 85.125 for grammar and vocabulary and 86.304 for speaking and listening.

Almost all variables are fairly symmetrical with the exemption of the number of contact hours for both grammar and vocabulary, and speaking and listening, which is highly skewed, and pre-test scores for Speaking and Listening, which are moderately skewed. Finally, in terms of data symmetry, the numbers of contact hours are peaked while pre and post-test scores are relatively flat exhibiting non-normality.

Wilcoxon Signed Ranked Test of Grammar and Vocabulary, and Speaking and Listening

Considering that the samples exhibited non-normal distribution, a non-parametric test was conducted to assess if the English remedial program has caused a significant difference in the students' pre-test and post-test scores in grammar and vocabulary, and speaking and listening. In addition, a paired samples Wilcoxon test was used to create a comparison of the means of the matched samples.

Table 2. *Comparative Statistics of Pre and Post Test for Grammar and Vocabulary, and Speaking and Listening*

	N	Mean	Std. Deviation	Minimum	Maximum
Grammar and Vocabulary (Pre-test)	37	29.625	25.6683	.0	63.0
Speaking and Listening (Post-tests)	37	24.61	23.702	0	78
Grammar and Vocabulary (Post-test)	37	66.93	33.633	0	119
Speaking and Listening (Post-tests)	37	55.39	33.914	0	119

Table 2 shows the comparative statistics of grammar and vocabulary, and speaking and listening tests. As the table shows, the mean scores for both grammar and vocabulary, and speaking and listening are relatively higher during post-tests than pre-tests, suggesting that the remedial course effectively improves the students' overall literacy in English. The following tables will assess the statistical significance of the observed difference.

Table 3. *Paired Wilcoxon Signed Ranked Test*

		N	Mean Rank	Sum of Ranks
Grammar and Vocabulary Post - Pre	Negative Ranks	7[a]	8.50	51.00
	Positive Ranks	30[b]	16.14	355.00
	Ties	0[c]		
	Total	37		
Speaking and Listening Post - Pre	Negative Ranks	4[d]	7.25	29.00
	Positive Ranks	29[e]	13.55	271.00
	Ties	4[f]		
	Total	37		

a. GVPost < GVPre ; b. GVPost > GVPre ; c. GVPost = GVPre ; d. SLPost < SLPre ; e. SLPost > SLPre ; f. SLPost = SLPre

Table 3 presents the number of observations that resulted in higher or lower post-test scores and instances where there is no change (post and pre-tests are equal) for grammar and vocabulary, and speaking and listening. For example, in terms of grammar and vocabulary, there were 30 observations with post-test scores higher than the pre-test scores, while only seven observations were noted otherwise. On the other hand, there were 29 instances where the sample post-test scores were more significant than the pre-test scores in speaking and listening. At the same time, there were only four observations, with either the pre-test being higher than the post-test or no difference at all. This similar observation tested the significance of the scores, as presented in Table 4.

Table 4. *Test Statistics* [a]

	Grammar and Vocabulary Post - Pre	Speaking and Listening Post - Pre
Z	-3.462[b]	-3.458b
Asymp. Sig. (2-tailed)	.001	.001

a. Wilcoxon Signed Ranks Test

b.. Based on negative ranks.

The Wilcoxon signed-rank test statistics provided in Table 4 show a significant difference in the students' pre- and post-test scores in grammar and vocabulary (z= -3.462, p=001), and speaking and listening (z= -3.458, p=001) with p values lower than 0.05. The

values would suggest that the remedial course effectively improves the students' overall literacy in English as far as the tests conducted are concerned.

While the effect of the remedial English course on the post-test scores of the students is already established, another important factor that this study intends to investigate is the time spent by the students in directed learning. Unfortunately, as discussed in the earlier sections of this study, the number of studies that attempt to identify the most efficient number of contact hours spent in remedial English courses is still much desired.

With this, the researchers intend to identify an evidenced-based cut-off point in terms of directed hours spent in English courses that effectively and efficiently deliver desired results. In addition, a receiver operating characteristic curve (ROC) was developed to identify the optimal number of contact hours that should be spent to improve students' post-test scores in English both in grammar and vocabulary, and speaking and listening.

ROC and AUC for Grammar and Vocabulary, and Speaking and Listening

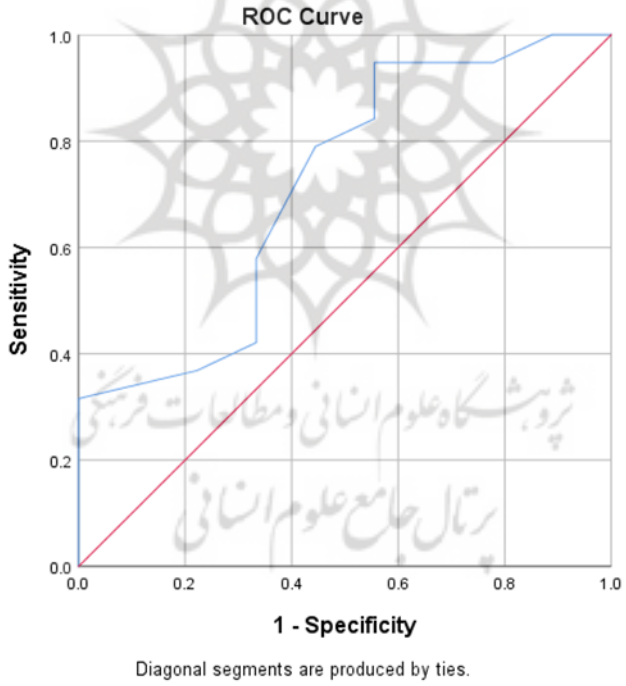

Figure 1. *The ROC Curve for Grammar and Vocabulary*

Figure 1 shows the number of hours spent in directed learning to accurately determine the student's success in passing the post-test exam conducted after completing the remedial course in grammar and vocabulary. This step plots a point on the ROC curve to represent a sensitivity/specificity pair corresponding to a particular decision threshold. The area under

the ROC curve (AUC) measures how well a particular level of time spent in directed learning can result in a student passing the post-test exam. Looking at the same figure, the blue line represents the true positive rate against the false-positive rate.

Table 5. *Area Under the Curve Grammar and Vocabulary*

Test Result Variable(s): Grammar and Vocabulary (Attendance in hours)				
Area	Std. Error[a]	Asymptotic Sig.[b]	Asymptotic 95% Confidence Interval	
			Lower Bound	*Upper Bound*
.716	.107	.069	.507	.926

The test result variable(s): Grammar and Vocabulary (Attendance in hours) has at least one tie between the positive and negative actual state groups. Statistics may be biased.

a. Under the nonparametric assumption

b. Null hypothesis: true area = 0.5

Table 5 shows the probability p-value if the observed sample area under the ROC curve is significant. For example, the computed area is 0.716 with a p-value of 0.069, suggesting that contact hours in the remedial course for grammar and vocabulary can significantly predict the student's success in passing the post-test at a 10% significance level.

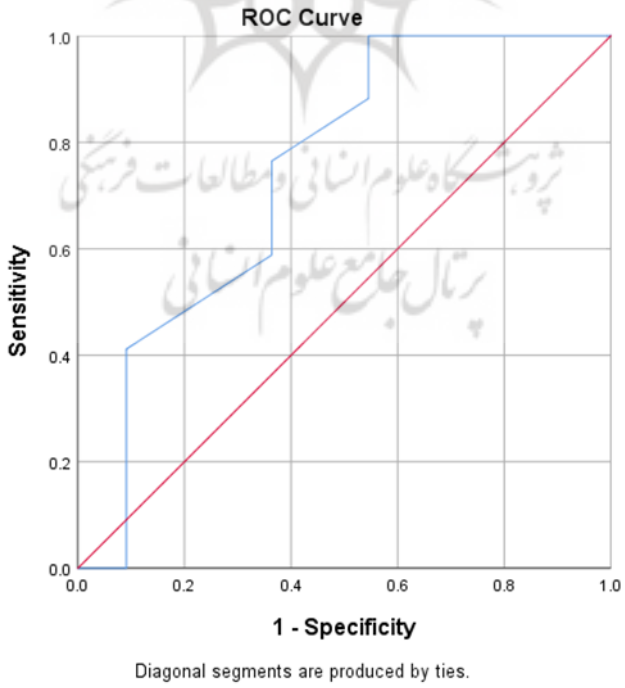

Figure 2. *The ROC Curve for Speaking and Listening*

Figure 2 shows the ROC curve for speaking and listening. Similar to the previous graph, the area under the ROC curve (AUC) will measure how the number of contact hours in speaking and listening courses can result in a student passing the post-test exam.

Table 6. *Area Under the Curve Speaking and Language*

Test Result Variable(s): Speaking and Listening (Attendance in hours)				
Area	Std. Error[a]	Asymptotic Sig.[b]	Asymptotic 95% Confidence Interval	
			Lower Bound	*Upper Bound*
.741	.105	.034	.535	.946

The test result variable(s): Speaking and Listening (Attendance in hours) has at least one tie between the positive actual state group and the negative actual state group. Statistics may be biased.

a. Under the nonparametric assumption

b. Null hypothesis: true area = 0.5

As shown in Table 6, the computed p-value is 0.034 is lesser than 5% suggesting that the area under the curve (0.741) supports the hypothesis that the number of contact hours in the remedial course for speaking and listening can significantly predict the success of the student in passing the post-test at 5% level of significance.

Table 7. *Coordinates of the Curve Cut-off Analysis*

Panel A: Test Result Variable(s): Grammar and Vocabulary (Attendance in hours)			*Panel B: Test Result Variable(s): Speaking and Listening (Attendance in hours)*		
Positive if Greater Than or Equal To[a]	Sensitivity	1 - Specificity	Positive if Greater Than or Equal To[a]	Sensitivity	1 - Specificity
30.500	1.000	1.000	29.000	1.000	1.000
42.750	1.000	.889	30.750	1.000	.909
60.750	.947	.778	42.750	1.000	.818
68.250	.947	.667	58.500	1.000	.727
72.750	.947	.556	65.250	1.000	.636
77.250	.895	.556	72.000	1.000	.545
81.750	.842	.556	78.750	.941	.545
86.250	.789	.444	83.250	.882	.545
88.500	.579	.333	86.250	.824	.455
92.250	.421	.333	88.500	.765	.364
95.250	.368	.222	91.500	.706	.364
97.500	.316	.000	93.750	.588	.364
100.500	.105	.000	95.250	.529	.273
103.000	.000	.000	97.500	.412	.091
			100.500	.235	.091
			103.500	.118	.091
			106.500	.000	.091
			109.000	.000	.000

The test result variable(s): Grammar and Vocabulary (Attendance in hours) and Speaking and Listening (Attendance in hours) have at least one tie between the positive actual state group and the negative actual state group.

a. The smallest cut-off value is the minimum observed test value minus 1, and the largest cut-off value is the maximum observed test value plus 1. All the other cut-off values are the averages of two consecutive ordered observed test values.

Considering that both AUCs are significant, identifying the cut-off point to arrive at the optimal number of contact hours to improve students' post-test scores in English both in grammar and vocabulary, and speaking and listening can now commence. Looking at Table 7, the trade-off between sensitivity (number of observations whose outcome, passed or failed

in the post-test, was correctly predicted by hours spent) and specificity (number of observations incorrectly predicted by hours spent) can be observed at varying numbers of hours. These results are presented in Panel A for grammar and vocabulary, and Panel B for speaking and listening.

Choosing a cut-off score will depend on the ratio between sensitivity and specificity for this study. The optimal number of hours is the cut-off point where the sensitivity is maximized given the lowest specificity. Thus, the optimum numbers of contact hours per trimester to improve students' post-test scores in grammar and vocabulary, and speaking and listening are 86.25 (sensitivity = 0.789; 1-specificity = 0.444), and 88.5 hours (sensitivity = 0.765; 1-specificity = 0.364), respectively.

Discussion

As discussed, the study contributes to the literature by focusing on two significant issues. First, very few studies have explored a quantitative approach in analyzing the effect of online remedial classes to determine the optimum number of hours to be spent. Second, empirical evidence in GCC adds to our understanding of the effect of remedial English courses on students' grammar and vocabulary, and speaking and listening in an online setting.

The results showed that using a quasi-experimental research design, the post-test scores of the students after taking the remedial course were significantly higher than their pre-test scores. The findings strongly support the argument that English remedial courses, even if delivered online, significantly affect the student's level of English proficiency in grammar and vocabulary, and speaking and listening. This result agrees with Luoch's (2014) findings, who conducted a similar quasi-experimental design showing that a remedial course significantly improves students' English proficiency. Furthermore, Huang (2010) emphasized that English remedial instruction can even work for low-achieving students. A well-designed course, together with teachers' encouragement and assistance, may help students improve their English competence to survive in a college learning environment and be prepared for future social issues once they graduate. This is true even though the remedial course was fully delivered online. The results also demonstrate the importance of early intervention (Eno, 2019) in helping students be more successful in their higher education endeavors.

The empirical results also showed that the number of hours spent in directed learning matters in determining the success of the student in the remedial program. Therefore, the number of contact hours in the remedial course for speaking and listening can significantly

predict students' success in passing the post-test. According to the results, the optimum numbers of contact hours per trimester to improve students' post-test scores in grammar and vocabulary, and speaking and listening are 86.25 and 88.5 hours, respectively. The rest of the hours may be spent by students learning independently or informally. Independent language learning is an essential complement to classroom-based language learning, both for efficiency and to increase student autonomy (Reinders & Cotterall, 2001). When students can take advantage of possibilities outside of the classroom, they recognize the necessity of connecting language used to self-directed learning.

Conclusion and Implications

This study demonstrated empirically that the OOPT scores of the students are significantly improved using a remedial course delivered online. Furthermore, the findings suggest that online delivery of remedial English courses significantly affects students' English competency in grammar and vocabulary, and speaking and listening.

The study also found that the number of hours spent in directed learning matters in determining the success of the student in the remedial program. However, the ROC curve analysis showed that the relationship is non-linear. The relationship between time spent in directed learning is not linearly related to improving post-test scores. The study found that the optimum numbers of contact hours per trimester to improve students' post-test scores in grammar and vocabulary and speaking and listening are 86.25 and 88.5 hours, respectively. The identified numbers of hours are the optimal numbers in which the sensitivity is maximized given the lowest 1-specificity (false positives).

This study has several implications for the study of foreign language learning. First, the debate on whether or not remedial courses are a waste of time is dispelled. Remedial courses in English allow students to master the language that is pervasive in higher education learning. Second, despite its skepticism, online delivery of remedial courses effectively improves the English competency of the students. Caution, however, should be observed when it comes to the number of contact hours required. While some teachers use the entire course hours for directed learning, the students may be better off learning English as a secondary language independently. Finally, learners' ability to excel in a foreign language may significantly improve if there is a better link between class-based learning and independent learning. Students must understand and appreciate the rationale behind the linkage between class-based learning and independent learning. They will have a positive

attitude towards it and be encouraged to practice English, or any foreign language, outside the classroom independently. Although most of the included items attained high results on the scale, still there are weak areas, and therefore further revision should be made to come up with more effective strategies for addressing problems. It is highly recommended to develop a follow-up study regarding the impact of the remedial program on the beneficiaries.

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