The new educational paradigm in the COVID-19 era: Can Blackboard replace physical teaching in EFL writing classrooms? [version 1; peer review: awaiting peer review]

Bandar Aljafen

Department of English and Translation, College of Arabic Language and Social Studies, Qassim University, Buraydah, Saudi Arabia

Abstract

Background: Many changes are evident in classrooms in the COVID-19 times, but the most drastic perhaps has been the scramble to find substitutes for physical classrooms, a truly solemn challenge for the foreign language learning paradigm. In the meantime, many customized learning apps came to the educationists’ rescue: Blackboard being one of them. This study endeavors to investigate the effectiveness of Blackboard as an alternative to face-to-face writing instruction during the COVID-19 crisis and in the following period of precautionary distancing and other norms.

Methods: The study used the final grades of Saudi male and female EFL undergraduates across two terms and with the Blackboard and face-to-face approaches in three compulsory English writing courses, and statistical tests were conducted on them.

Results: The findings showed that female students (M=83.24, Std=10.627) significantly outperform the male students (M=73.62, Std=16.011) in the final writing test (P=. 000). Furthermore, in face-to-face teaching (M=84.34, Std=10.752) was more statistically effective than when using Blackboard (M=75.65, Std=14.545) with the Sig value scored (P=. 000). Findings also showed that third level scored higher than the second and the first in writing (83.83, 78.17, 77.89) respectively. All the differences were significant (P=. 000).

Conclusion: The implications of the study have a major bearing on curriculum and pedagogy planning for the coming times which may see more comebacks of the COVID-19 variants and warrant innovative teaching-learning tools and methods.

Keywords
Blackboard, COVID-19, EFL classroom, educational paradigms, physical teacher, writing
Introduction
The COVID-19 crisis disturbed different aspects of life in nearly every country worldwide, including, but not limited to, the economy, education, and social life at all levels. The pandemic hit every country at its core. The education sector was thrown into disarray as students and their families became targets of the viral infection. Social isolation became a priority, and as a result, alternative online educational platforms emerged to take the place of face-to-face communication to allow students to receive education even though at a skeletal level. Although this flexibility was necessary during this disruption, its effects could not be fully predicted given the fact that the new system was one that had never been tried before: it could affect the quality of education either way, and there is a need for further investigation to evaluate such experiments in real life.

Closing down of educational institutions has had serious effects on the education, development, and well-being of the students: Apart from the deprivation of social contact with peers and teachers which are vital for promoting mental well-being, the new modes of learning were not authenticated to provide as much learning success as the conventional face-to-face method. The new dispensation also left behind the socially and/or economically disadvantaged students and students with different or heightened learning support needs. Emergency remote learning systems which have since been pressed into action, have struggles to minimize learning loss and increasing inequality in access to education. Among the educational institutions affected by the COVID-19 outbreak was the Department of English and Translation at Qassim University, Saudi Arabia, where, since the pandemic broke out, teaching has been carried out via Blackboard, and physical attendance has been limited to midterm and final exams subject to firm guidelines. To ensure the quality of online teaching and learning, this study sought to investigate the quality of writing instruction by examining students’ final English writing scores before (face-to-face) and after (Blackboard) the COVID-19 crisis and how this pandemic could affect the learning outcomes among Saudi male and female Saudi EFL students.

Qassim University, like most learning institutions not only in Saudi Arabia but across the world, rapidly transformed its learning system from in-class interaction to online learning due to the COVID-19 outbreak. This swift shift was not planned, although there is a Deanship of E-Learning that has been serving the university since 2013. The ultimate goal of the deanship from the day it was created until prior to the pandemic was to raise awareness of the use of Blackboard as an assistant tool alongside face-to-face learning, including by providing intensive courses to introduce Blackboard to faculty members and students explaining the features and benefits of E-learning that could change pedagogies and learning approaches. The sudden and unprecedented use of Blackboard as an alternative tool for teaching and learning before it was fully accepted by all faculty members and students raised vital concerns about the effectiveness of Blackboard in teaching. This paper sought to investigate the effectiveness of Blackboard and face-to-face teaching approaches in promoting writing proficiency among male and female Saudi students in the English Language and Translation department at Qassim University before and after the COVID-19 crisis.

Blackboard as a potential learning system has been examined widely by numerous educators whose findings have highlighted many benefits, including students’ preference for online over face-to-face communication,2 positive effectiveness of online communication,3 the sharing and construction of knowledge,4 facilitation of students’ learning increased student participation,5,6 support of learning autonomy,7 increased student motivation,8 open access to information at all times,9 and decreased student anxiety.10

For teachers, virtual instruction through Blackboard helps instructors to manage course activities, planning, and evaluation more easily.11 On the other hand, a study conducted in Ghana by Okantey and Addo adopted the technology acceptance model (TAM) to measure the effectiveness of Blackboard in education.12 The results showed that instructors found Blackboard useful but not easy to use. Other studies have shown less positive results for Blackboard. For example, a study conducted by Gregory and Lodge concluded that online learning may interrupt students’ learning cognition due to the lack of physical communication with their instructors.13 Another study showed that students were unready to deal with online learning platforms because of their lack of online technology experience, or they required one-to-one attention that was not available through electronic programs such as Blackboard.14 Moreover, Hosamo’s findings showed that students and teachers were not interested in the online learning experience in general.15 One possible reason for this lack of interest could be faculty resistance to adopting new online teaching pedagogy16 or lack of time.17 Another possible reason for the resistance to technology adoption among faculty is the lack of institutional support.18 A study by Ben Bakr emphasized the need to revisit online strategic plans before applying them in the classroom to ensure their effectiveness.19 Some research has also indicated some cautions to be considered when adopting online platforms and devises. First, the teacher should carefully design the course content to be appropriate for online display.20 Furthermore, course activities and evaluations should be thoroughly considered because planning an online course may differ from planning for a face-to-face classroom. Hazaea et al. emphasized the need to make online learning programs more user-friendly.21
EFL writing has only recently become a field of significant scholarly interest. The social learning approach has been adopted in teaching language skills, and more specifically writing, to engage students in a natural learning environment. The emergence of new technologies such as Blackboard has simplified social learning and promoted interaction and collaboration between students. Blackboard and many other online collaborative platforms exert a positive impact on the study of academic writing among EFL/ESL students. Many studies have highlighted the effect of Blackboard on writing outcomes, peer interaction, peer feedback and learning motivation. This study compared two learning strategies, traditional learning in a classroom and online learning via Blackboard, and examined students’ final scores to determine whether the different strategies were associated with differing results.

**Theoretical framework**

The world wide web (www) witnessed dramatic expansion in the period of the COVID-19 pandemic with universities scrambling to reinvent the learning environments not only to expand the digital net but also, to effectively complement learning relationships. Looking back, Web 1.0 had little influence on education due to the isolation between receiver and sender. In contrast, the emergence of Web 2.0 validates information interaction and the negotiation of meaning in different ways through the use of technology to construct knowledge. The virtual learning platform Blackboard is a Web 2.0 program that has been widely accepted among educational institutions to achieve the ultimate goal of collaboration and interaction between students to enhance learning development. Blackboard also serves the constructivist learning theory. According to Vygotsky, the father of social learning theory, cognitive learning only occurs when interaction takes place between more knowledgeable students and less knowledgeable students. Social theory also supports a student-centered environment in which the students are responsible for their own learning, and the teacher’s role is merely to guide and facilitate learning. In this sense, Blackboard supports social learning since it enables students’ knowledge construction and learning accountability.

**Methods**

This study investigates the effectiveness of Blackboard in promoting EFL students’ writing performance in the Department of English Language and Translation at Qassim University. The data were collected for two periods: before (spring 2019) and after (spring 2020) the spread of COVID-19 virus. The study analyzed the students’ final grades in three different levels of writing courses. The results were collected and analyzed across the two different teaching approaches (face-to-face and Blackboard) to evaluate the two learning experiences and to highlight suggestions for enhancing students’ and teachers’ experience in online learning in the future.

**Participants**

This study enlisted two groups of undergraduate male and female Saudi students who had applied for English language courses at Qassim University. Ethical approval was obtained (issued on, Sep. 25, 2020) from the ethics committee at the deanship of scientific affairs to the head of the departments. Verbal consent was obtained from the students (as the study did not involve interviews, observations or questionnaires, the ethics committee at the Qassim University approved verbal consent). Students were also assured that their information would be only used for the study and that they were not required to disclose their identity in any way. The ethical approval letter clearly stated: “This research meets the high ethical and scientific standards expected by society, and the participants have informed the Committee that they have no objection with the outcomes of the research work being published.”

The first group comprised students who took Writing 1, 2, and 3 prior to the pandemic, and the second group were those who took the same courses after the pandemic. The participants were assigned to take these three compulsory writing courses in the first three semesters after joining the program. The study sample thus included a total of 833 participants (287 males and 546 females). The students had prior experience with Blackboard as a learning tool. All freshman students, in traditional and pandemic times, are introduced to the most important features of Blackboard at the beginning of each semester. Additionally, three general courses were taught completely online during the first semester after students’ full enrolment in the program.

**Research instrument**

The current study was conducted to explore improvements, if any, in the writing proficiency of male and female Saudi EFL students who received instruction through two teaching approaches (face-to-face and Blackboard). The data were collected from the students’ final grades in three writing courses: Writing 1, Writing 2, and Writing 3 (henceforth referred to as level one, level two, and level three). The data were organized and analyzed through SPSS, (Version 26). Three main factors appeared in the study (gender, writing level, and teaching approaches). Three-way ANOVA was conducted to compare the means.
Data analysis
The data were analyzed in descriptive and inferential format. The descriptive analysis showed the total number of participants, the number in each group, the mean, and the standard deviation. Inferential analysis considers the $p$-value when comparing means to answer the research questions raised in this study. Data were considered statistically significant in the current study when the $p$-value was less than or equal to .05.

Results
Gender
The descriptive data for gender were collected for a total of 833 participants (546 females and 287 males). The means of the final scores of the female participants ($M = 83, SD = 11$) were 9 points higher than those of the male participants ($M = 74, SD = 16$) (Table 1).

Table 2 shows the sum of squares, degree of freedom, the mean square, the F-value, and the significance value between individual and among combined variables. To answer the first research question, whether the means of the male and female participants differed, the data showed that the main effect of gender on students’ writing scores was statistically significant ($F(1, 821) = 125.227, p = .000$), meaning that female students earned higher final grades in writing than the male students. These results are summarized in Table 2 below.

Interpreting the results of Table 2 above, seven correlations were sought to be established using the students’ data in three writing exercises at two different periods of time. Significance probability indicates the probability that we would find the sample regression coefficient we have actually found in our sample if the null hypothesis is true, i.e. if it is true that the value of the population regression coefficient is 0. If this value is smaller than the chosen significance level, it implies that the null hypothesis is refuted and that there is no linear association between the relevant independent variable and the dependent variable.

Table 1. Descriptive Analysis of the students’ scores classified according to gender.

<table>
<thead>
<tr>
<th>Gender</th>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>546</td>
<td>83.24</td>
<td>10.627</td>
<td>25</td>
<td>100</td>
</tr>
<tr>
<td>Male</td>
<td>287</td>
<td>73.62</td>
<td>16.011</td>
<td>10</td>
<td>100</td>
</tr>
<tr>
<td>Total</td>
<td>833</td>
<td>79.93</td>
<td>13.528</td>
<td>10</td>
<td>100</td>
</tr>
</tbody>
</table>

Table 2. The effect of gender and level on participants’ final English writing scores (Three-Way ANOVA).

<table>
<thead>
<tr>
<th>Source</th>
<th>Type III Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
<th>Partial Eta Squared</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corrected Model</td>
<td>45840.821*</td>
<td>11</td>
<td>4167.347</td>
<td>32.149</td>
<td>.000</td>
<td>.301</td>
</tr>
<tr>
<td>Intercept</td>
<td>4496110.659</td>
<td>1</td>
<td>4496110.659</td>
<td>34685.656</td>
<td>.000</td>
<td>.977</td>
</tr>
<tr>
<td>Gender</td>
<td>16232.524</td>
<td>1</td>
<td>16232.524</td>
<td>125.227</td>
<td>.000</td>
<td>.132</td>
</tr>
<tr>
<td>Level</td>
<td>1991.788</td>
<td>2</td>
<td>995.894</td>
<td>7.683</td>
<td>.000</td>
<td>.018</td>
</tr>
<tr>
<td>Learning approach</td>
<td>17189.714</td>
<td>1</td>
<td>17189.714</td>
<td>132.612</td>
<td>.000</td>
<td>.139</td>
</tr>
<tr>
<td>Gender * Level</td>
<td>5217.073</td>
<td>2</td>
<td>2608.536</td>
<td>20.124</td>
<td>.000</td>
<td>.047</td>
</tr>
<tr>
<td>Gender * Learning approach</td>
<td>1748.156</td>
<td>1</td>
<td>1748.156</td>
<td>13.486</td>
<td>.000</td>
<td>.016</td>
</tr>
<tr>
<td>Level * Learning approach</td>
<td>216.328</td>
<td>2</td>
<td>108.164</td>
<td>.834</td>
<td>.434</td>
<td>.002</td>
</tr>
<tr>
<td>Gender * Level * Learning approach</td>
<td>924.190</td>
<td>2</td>
<td>462.095</td>
<td>3.565</td>
<td>.029</td>
<td>.009</td>
</tr>
<tr>
<td>Error</td>
<td>106421.712</td>
<td>821</td>
<td>129.624</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>5473707.000</td>
<td>833</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Corrected Total</td>
<td>152262.533</td>
<td>832</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*R Squared = .301 (Adjusted R Squared = .292).
The computation shows that the Sig. value for the factors of gender, level, learning approach, interaction between gender and level, between gender and learning approach, level and learning is .000, where the study had set the significance at \( p \leq .05 \), implying that a significant relationship exists between the variables stated. In other words, gender, level, learning approach have a correlation with writing performance in the case of the participants in this study. It indicates strong evidence against the null hypothesis.

**English writing levels**
The descriptive data for the English writing levels displayed the number of all participants in each level. In this study, the total number of participants at level one was 249, at level two was 313, and at level three was 271. The mean of the third level was higher \((M = 84, SD = 13)\) than those of levels two \((M = 78, SD = 13)\) and one \((M = 78, SD = 14)\) (Table 4).

To answer the second research question, about whether the means of the three participant levels differed, the results in Table 3 indicate that the main effect of the three levels of the English writing courses on students’ final scores was significant \((F(2, 821) = 995.894, p = .000)\), indicating that the participants in the level-three English writing course scored higher than those in the first and the second levels. In other words, as the level of the writing course went higher, the writing performance also improved which goes to show that with time, students’ writing proficiency in the given sample tends to improve. This finding is borne out by the scores of the participants in all the three levels with each subsequent level reflecting a better output.

**Face-to-face and online via Blackboard**
The descriptive data for learning approach indicated that the mean in the face-to-face teaching approach was 9 points higher \((M = 84, SD = 11)\) than that of the online learning approach using Blackboard \((M = 76, SD = 15)\) (Table 4).

To answer the third research question, about the students’ final writing scores in face-to-face vs. online writing classes, the results in Table 3 showed that the main effect of the learning approaches on students’ final scores was statistically significant \((F(1, 821) = 132.612, p = .000)\), indicating that the students in the face-to-face classroom performed better than those engaging in online learning via Blackboard.

To answer the final research question, whether there is an interaction among the three independent variables (gender, English writing level, and learning approach), there was a significant interaction among the three variables \((F(2, 821) = 3.565, p = .000)\), indicating that at levels two and three, female students had higher final scores than male students for face-to-face instruction and for online instruction via Blackboard. At level one, however, gender had no effect.

**Testing simple main effect.** To determine whether the main effects of gender, writing course level, and learning approach on students’ final scores in writing are significant, a test of simple main effects is required (Table 3, pairwise comparisons). In Table 5, the test showed the following:

- At level one, male and female students scored similarly for the face-to-face learning classroom \((F(1,821 = 1.223, p = .269)\) and online learning platform (Blackboard) \((F(1,821 = 1.418, p = .234)\). In other words, gender had no effect on students’ writing performance across the learning approaches in level one.

### Table 3. Descriptive analysis of the students' scores in three levels of English writing courses.

<table>
<thead>
<tr>
<th>Level of the students</th>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level 1</td>
<td>249</td>
<td>77.89</td>
<td>13.813</td>
<td>10</td>
<td>100</td>
</tr>
<tr>
<td>Level 2</td>
<td>313</td>
<td>78.17</td>
<td>12.981</td>
<td>28</td>
<td>100</td>
</tr>
<tr>
<td>Level 3</td>
<td>271</td>
<td>83.83</td>
<td>13.084</td>
<td>30</td>
<td>100</td>
</tr>
<tr>
<td>Total</td>
<td>833</td>
<td>79.93</td>
<td>13.528</td>
<td>10</td>
<td>100</td>
</tr>
</tbody>
</table>

### Table 4. Descriptive analysis of the students' scores in two learning approaches.

<table>
<thead>
<tr>
<th>Learning approach</th>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Face-to-face</td>
<td>410</td>
<td>84.34</td>
<td>10.752</td>
<td>25</td>
<td>100</td>
</tr>
<tr>
<td>Blackboard</td>
<td>423</td>
<td>75.65</td>
<td>14.545</td>
<td>10</td>
<td>100</td>
</tr>
<tr>
<td>Total</td>
<td>833</td>
<td>79.93</td>
<td>13.528</td>
<td>10</td>
<td>100</td>
</tr>
</tbody>
</table>
At level two, female students scored 6 points higher than male students for the face-to-face learning approach ($F(1,821 = 9.097, p < 0.5)$) and 14 points higher for Blackboard ($F(1,821 = 52.545, p < 0.5)$). In other words, gender showed an effect on students' writing performance across the two learning approaches at level two.

At level three, female students’ mean was significantly higher (11 points) for the face-to-face classroom ($F(1,821 = 28.687, p < .001$) and was more than 21 points higher for Blackboard ($F(1,821 = 94.759, p < .001$). In other words, gender showed an effect on students’ writing performance across the two learning approaches at level three. These findings were displayed in Figure 1.

### Table 5. Test simple main effect.

<table>
<thead>
<tr>
<th>Level of students</th>
<th>Learning approaches</th>
<th>(I) Gender of students</th>
<th>(J) Gender of students</th>
<th>Mean Difference (I-J)</th>
<th>Std. Error</th>
<th>Sig. b</th>
<th>95% Confidence Interval for Difference b</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Lower bound</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Upper bound</td>
</tr>
<tr>
<td>Level 1</td>
<td>Face-to-face</td>
<td>Female</td>
<td>Male</td>
<td>2.593</td>
<td>2.344</td>
<td>.269</td>
<td>-2.009 7.194</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Male</td>
<td>Female</td>
<td>-2.593</td>
<td>2.344</td>
<td>.269</td>
<td>-7.194 2.009</td>
</tr>
<tr>
<td></td>
<td>Blackboard</td>
<td>Female</td>
<td>Male</td>
<td>2.391</td>
<td>2.008</td>
<td>.234</td>
<td>-1.550 6.332</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Male</td>
<td>Female</td>
<td>-2.391</td>
<td>2.008</td>
<td>.234</td>
<td>-6.332 1.550</td>
</tr>
<tr>
<td>Level 2</td>
<td>Face-to-face</td>
<td>Female</td>
<td>Male</td>
<td>5.750*</td>
<td>1.907</td>
<td>.003</td>
<td>2.008 9.493</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Male</td>
<td>Female</td>
<td>-5.750*</td>
<td>1.907</td>
<td>.003</td>
<td>-9.493 -2.008</td>
</tr>
<tr>
<td></td>
<td>Blackboard</td>
<td>Female</td>
<td>Male</td>
<td>13.680*</td>
<td>1.887</td>
<td>.000</td>
<td>9.976 17.384</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Male</td>
<td>Female</td>
<td>-13.680*</td>
<td>1.887</td>
<td>.000</td>
<td>-17.384 -9.976</td>
</tr>
<tr>
<td>Level 3</td>
<td>Face-to-face</td>
<td>Female</td>
<td>Male</td>
<td>10.666*</td>
<td>1.991</td>
<td>.000</td>
<td>6.757 14.575</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Male</td>
<td>Female</td>
<td>-10.666*</td>
<td>1.991</td>
<td>.000</td>
<td>-14.575 -6.757</td>
</tr>
<tr>
<td></td>
<td>Blackboard</td>
<td>Female</td>
<td>Male</td>
<td>21.509*</td>
<td>2.210</td>
<td>.000</td>
<td>17.172 25.846</td>
</tr>
</tbody>
</table>

Based on estimated marginal means

*The mean difference is significant at the .05 level.

bAdjustment for multiple comparisons: Bonferroni.

Figure 1. Students' writing performance based on gender, level, and learning approach.
Discussion

This study revolved around three queries as indicated in the research questions. Inquiry showed that female students outperformed male students in the writing tests. This finding can be explained by the fact that the interest and time that female students allocated for their study and practice the writing skills and performing the tasks and assignments that the instructors gave them to respond to as a part of the assessment procedures of the course outweighed that of their male counterparts. This finding is in line with Al-Saadi’s who found that Omani female students scored higher than the male students in the writing fluency test. 47

It also reported that third level students scored higher than first and second level students. This finding is natural because third year students are exposed longer to the language than their counterparts in the first and second level. However, Almekhlafy found that first level students got higher perceptions than the second level students regarding pursuing online learning. 11

Finally, students in face-to-face learning did better than they did in online mode. This finding may be interpreted and related to the interest that students have in learning mode. Almekhlafy found that Saudi EFL students have the tendency to learn better in conventional classes than they do though the Blackboard. 11 In contradiction, Hemdi reported that Saudi EFL postgraduate students preferred virtual learning than conventional methods during COVID-19 pandemic. 48

The results of this study align with those of Gregory and Lodge, who questioned the effectiveness of online learning as a means for learning cognition. 19 The students’ poorer performance online could be because Qassim University students were not prepared nor trained adequately to switch to online learning applications, drawbacks of online learning as also suggested by Almansour and Al-Ahdal, Allen and Seaman and Gregory and Lodge. 19,20,49 Scarcity of the desire, time, and technology needed to promote beneficial online teaching among teachers could be another reason for this low performance, as suggested by many previous studies. 20,21,22,23 This study’s conclusions support those of other studies that argue that the emergence of the shift from face-to-face to online instruction (e.g., through platforms such as Blackboard) requires that teachers consider that the course content may require modifications to be best applied in the online classroom. 24,25 In this case, teachers may need to alter their pedagogical approaches, class activities, and evaluations to be applicable in the online context. This study also highlights the need to prepare students along with teachers to be introduced to online learning environments through extensive training sessions in order to feel comfortable with the new environment, as suggested by Hazaea et al.27

In conclusion, online instruction was compulsion replacing face-to-face classroom teaching during the COVID-19 crisis to ensure continued learning. In this study, English writing performance was evaluated, and the results suggested that face-to-face teaching and learning was more effective than online (e.g., via Blackboard). This study raised suggestions to be considered when applying online technologies to future teaching.

Conclusion

This study aimed to discuss the effectiveness of instruction via Blackboard versus face-to-face approaches on the enhancement of writing proficiency among male and female Saudi students across three levels of English writing courses at Qassim University, Saudi Arabia. First, the results generally showed that the female participants outperformed male participants in their final scores in English writing courses and at all levels except the first. This means that as the levels progressed, female students outperformed their male counterparts. Second, students at level three scored higher than those at levels one and two in writing performance. Third, both groups (male and female students) performed better in the face-to-face classroom than online via Blackboard across all three required English writing courses. Combining the three variables, the results demonstrated that females outperformed male students at all levels across both learning approaches: face-to-face and online learning via Blackboard.

Based on the findings, the study has the following suggestions to make: Online learning apps should be carefully evaluated and assessed as learning tools before being imposed across board in the Saudi context. Greater weightage should be placed on the face-to-face learning approach till the Saudi university students are adequately prepared to be autonomous agencies in learning. When absolutely imperative to resort to online learning approaches such as Blackboard, teachers as much as students should be trained in effective use of the tools. Finally, periodic appraisals of fulfillment of learning objectives and student needs should be encouraged to ensure timely course correction, especially in the current special times. Any study has limitation, and the current study is not free from shortcomings. Quantitative studies help establish trends but as in the present case, they do not give a deeper understanding of the discerned phenomena. This was one limitation of the study, though the sample size was fairly large at 833 and one which could be ironed out by following mixed methods approaches.
Data availability

Underlying data

Figshare: Scores of the writing performance from the three writing courses (Traditional and Online) https://doi.org/10.6084/m9.figshare.20182226.v1.

This project contains the following underlying data:

- 1-a Traditional writing test- level 1
- 1-b Online writing test- level 1
- 2-a Traditional writing test- level 2
- 1-b Online writing test- level 2
- 3-a Traditional writing test- level 3
- 3-b Online writing test- level 3

Data are available under the terms of the Creative Commons Attribution 4.0 International license (CC-BY 4.0).

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