# The Effect of Blended Learning on the Degree of Students' Acquisition of Geography Skills for the Eleventh Level at the Secondary Stage in Kuwait

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## Abstract

The present study aimed to investigate the effect of using a blended learning instructional strategy on the degree of acquisition of geography skills by eleventh-level students during the first semester of the 2021/2022 academic year. The study sample consisted of 65 eleventh grade students divided into two groups, an experimental group and a control group. For the purpose of this study, a six-week teaching program was designed to cover the main task and geography objective. Both groups completed a pre-test and post-test, which were analyzed statistically using the Statistical Package for the Social Sciences (SPSS) program. The result revealed the superiority of blended learning in terms of the high degree of learners' acquisition of geography skills in favor of the experimental group. In addition, the effect size of using blended learning was large. Furthermore, the findings showed that there were statistically significant differences between the mean post-test scores of the two groups in geography facts, concepts, and skills in favor of the experimental group. The study concludes with recommendations related to employing blended learning in geography teaching to increase student achievement.

*Keywords:* *Geography objectives, geography skills, traditional teaching method, blended learning, secondary education in Kuwait*

## Introduction

Geography is a part of the composite science of Human Society. Its purpose is to study the direct impact on many activities such as agriculture, marine navigation, humanity, and the phenomena of the Earth (Ambarwati et al., 2021). Geography presents a comprehensive picture of the Earth, the form of life, its characteristics, the changes that occur in it, and its relationship to the entire universe. It is concerned with studying the climatic conditions of the Earth and its layers (Mzinga & Onyango, 2021). Geography puts current events in perspective and helps us understand history (Lambert, 2011). Roberts (2013) states that geographical skills are part of teaching geographical content, concepts that enable geographical thinking, and geographical literacy. Tasks that use maps or GIS require students to have acquired specific skills. Therefore, students need to develop these skills in their livings, occupations, and future (Tarman & Erkan, 2021; Unlu, 2011).

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Geography lessons must be designed, planned, and structured according to the facts, concepts, and skills that allow learners to apply such knowledge to different economic activities within their locality to improve their lives (Hoque, 2016). Niyazi (2018) states that there are numerous obstacles in the way of geography teachers for providing a better geography education. An example of the problems encountered in geography education includes teaching methods based on explaining concepts instead of providing various learning aspects to achieve learning objectives (Tureniyazova, 2019; Utami, 2018). Hence, the failure to do proper planning in geography lessons prevents teaching activities from being implemented in a productive way (Ilhan & Gülersoy, 2019). Considering the above challenges, a blended strategy seems a viable means for overcoming the learning difficulties experienced by students and teachers in Kuwait.

It has been increasingly argued that blended learning is an instructional model that can support learning in many ways, enhance students' learning outcomes, improve students' motivation, and facilitate the learning process across the curriculum (e.g., Al-Madani, 2015; Isti'anah, 2017; Kiviniemi, 2014; Utami, 2018). A study of the blended learning approach compared to the traditional learning approach on fifth-grade students' achievement showed that using the blended approach is more effective than the conventional method in terms of achievement and the development of verbal creative thinking skills (Al-Madani, 2015). Similarly, another study examined the effects of a blended learning environment on middle school students' engagement and academic achievement. It has been concluded that blended learning is more effective than traditional face-to-face learning (Matarirano & Gqokonqana, 2021; Sturm & Quaynor, 2020).

With traditional teaching methods, educational materials are only available during classroom hours (Alsowat, 2016; Kalimullina et al., 2021). However, the blended learning strategy allows students to stay engaged with their studies in their own time, at their own pace. Grabinsk et al. (2015) observed that for blended learning to be successful in influencing learning outcomes, the learner must be independent with a high level of motivation. Alnesafi (2018) observed that teachers resisted blended learning due to inadequate training and insufficient IT skills to create content posted on the internet.

López-Pérez et al. (2011) defined blended learning as the integration of traditional classroom methods with online activities. Blended learning aims to combine the advantages of face-to-face and e-learning environments that foster face-to-face instruction and digital forms of teaching so that instruction occurs both in the classroom and online (Harahap et al., 2019). Because it combines

the two advantages of instructional models, blended learning positively impacts the learning process (Utami, 2018). It can improve pedagogy and easier access to information and facilitate an independent and collaborative learning experience (Dinh, 2019; Rafiola et al., 2020).

While blended learning is well-received in Western culture (Grabinsk et al., 2015), in Kuwait, where the researcher is conducting this study, few well-documented investigations in the literature show whether this pedagogical approach ensures the superiority of blended learning over the traditional education method in terms of the high degree of learners' acquisition of geography facts, concepts, and skills. Moreover, it has not previously been attempted in Kuwaiti education, especially in the context of implementing the blended learning approach to the geography facts, concepts, and skills for the eleventh level at the secondary stage. Given the very limited number of studies on the effectiveness of blended learning when implemented in education, this study aims to fill this informational gap by investigating the effect of blended learning among eleventh-level students at the secondary stage in Kuwait.

**Purpose of the Study**

Despite the widespread use of technology across educational disciplines in Kuwait and its positive impact on learners, the amount and quality of research on the effect of this blended learning approach to teaching and learning in the education system in Kuwait in general and for geography is still very poor compared with published literature in other disciplines. One of the main challenges geography teachers face in providing a more efficient geography education involves the solutions teachers come up with for these issues (Niyazi, 2018). Another challenge is the lack of teachers' skills, knowledge, and professional development and training in implementing blended learning technology (Aldhafiri, 2020; Alnesafi, 2018). Consequently, this situation leads to low proficiency in critical thinking and affects the high degree of learners' acquisition of geography skills. Therefore, the purpose of this study is to investigate the effect of blended learning instruction on the degree of acquisition of geography skills by eleventh-grade students in Kuwait.

**Study Questions**

The problem addressed in this study is represented in the following research questions:

1) Are there significant differences in the mean pre-test results for student achievement in geography skills between experimental and control students?

2) Are there significant differences between the mean achievement scores of students taught geography skills using traditional instruction compared to the scores of students taught using a blended learning teaching model?

**Null Hypothesis**

In regard to the research questions above, this study attempts to verify the following null hypotheses. These null hypotheses suggest no relationship or difference between blended learning strategy (independent variable X1) and student academic achievement (dependent variable Y).

$H0_1$: There are no significant differences at the level $\alpha \leq 0.05$ in the mean pre-test results for student academic achievement in geography skills between students in the experimental and control groups.

$H0_2$: There are no statistically significant indications at the level of $\alpha \leq 0.05$ between the mean achievement scores of students who are taught geography skills using traditional instruction compared to the scores of students who are taught using a blended learning model of instruction.

**Significance of the Study**

This study is significant because very little research has been conducted to investigate the effect of blended learning instruction on the degree of acquisition of geography skills by eleventh-grade students in Kuwait. Thus, the outcomes of this study are expected to provide deeper insight into the possible implementation of blended learning in the classrooms to equip students with better geography skills in a limited period.

## Literature Review

### Geography Objectives and Skills

Teaching geography revolves around knowing and understanding information, facts, concepts, and generalizations that help one understand the local environment. It allows learners to apply such knowledge to different economic activities within their locality that assist in improving lives (Hoque, 2016). Krause et al. (2021) emphasize that geography is oriented to specific facts and the development of skills in observation, recording, and using information collected to solve problems. The objectives of geography focus on helping the learners to:

1. Know the different cultures.

2. Knowing which professions and work duties require geographical competence.

3. Understanding how natural landscapes change and interpreting the structures and development using images, diagrams, photographs, and maps.

4. The ability to use geographical information system applications.

5. The ability to use communication technology in acquiring, analyzing, and presenting data.

6. Analyzing the positive demographic development and settlement in different world regions.

7. Considering potential solutions for economic problems and social inequality.

8. Analyzing geographical problems and suggesting possible solutions.

9. Understanding the meaning of human rights.

10. Understanding phenomena arise from the planetary nature of the globe.

11. Observing and describing natural and human phenomena related to the local and global environment. (Collins, 2018; Virranmäki et al., 2021)

Among the essential skills of geography are the following:

1. Remember geographic facts and concepts.

2. Recognize geographical symbols.

3. Describe geographical phenomena.

4. Interpretation of environment changes.

5. Explain the causes of social problems.

6. Give examples of environmental problems.

7. Summarize the data and present it in various forms.

8. Compare and classify geographical phenomena.

9. Propose solutions to environmental problems such as pollution, desertification, and global warming.

10. Criticize the local and global actions to confront climate change.

11. Employ geographical information and laws in innovative life situations.

12. Draw conclusions and judgments from given phenomena. (Ayas, 2015; Krause, 2021; Virranmäki et al., 2021)

According to Ridha et al. (2019), spatial thinking is critical in teaching geography. It helps students with spatial understanding, interpretation of geographical phenomena, spatial distribution, and determination of locations and directions.

**Blended Learning**

The traditional teaching method depends on face-to-face instruction and requires students to attend school. This method is no longer appropriate in this era and with the generation of technological developments. In contrast, the distance learning method depends on the use of the internet in the teaching process (Ma'arop & Embi, 2016; Saboowala et al., 2021). Such a method has many negatives as it weakens the development of skills such as interaction, participation, collaboration, and field training. Additionally, there is the difficulty of providing

internet access in many places and for all students (Powell et al., 2015; Saboowala et al., 2021). The blended learning method is a compromise between the traditional method and the distance learning method, where blended learning combines the advantages of the two methods and avoids the negatives of each (Alsarayreh, 2020; AlShahrani & Talaue, 2018; Bower et al., 2015; Diab & Elgahsh, 2020; Etom et al., 2021).

One of the advantages of blended learning is that it reduces the burden on teachers and gives them enough time to manage teaching situations, guide students, consider the individual differences between them, and respond to their needs in a better way (Suprabha & Subramonian, 2015). Blended learning is characterized by continuity, comprehensiveness, and flexibility. It balances student learning in the classroom and at home to solve homework and communicate with teachers and colleagues to implement projects and assignments. Many studies have found that learners prefer blended learning because it mixes traditional and online methods. It is also characterized by flexibility and access to content and activities at any time with the possibility of field training on performance and applied skills in the classroom or laboratories (Banditvilai, 2016; Evans-Amalu & Claravall, 2021; Tamim, 2018).

There are six models of blended learning mentioned by Ayob et al. (2020): face-to-face driver, online lab, flex, self-blend, rotation, and enriched virtual model. According to Martanto et al. (2021), blended learning proved highly effective in providing students with social studies skills such as critical thinking, communication, collaboration, problem-solving, and creativity. McLaughlin et al. (2015) stated that the increase in students' achievement from the blended learning method is because learners study the contents using the online form and using classroom activities that depend on student-centered learning.

There is a lack of agreement between the studies about the superiority of the blended learning method over the traditional method regarding students' acquisition of skills or increasing students' motivation to learn. In contrast, some studies confirmed the superiority of blended learning over the traditional method, such as the studies of Rao (2019), Kundu (2021), and Lapitan Jr. et al. (2021). However, some studies did not find any statistical differences between the two methods related to students' acquisition of teaching skills or academic achievement, such as the studies of Fuhrer (2021), Law et al. (2019), Saboowala et al. (2021).

## Method

### Research Design

This research aims to investigate the effect of blended learning instruction on the degree of acquisition of geography skills by eleventh-grade students in Kuwait for the academic year of 2021-2022. In addition, this study examines whether the blended learning approach can improve students' skills and determines whether the acquisition of geography facts, concepts, and skills presented in blended learning leads to more significant achievement gains than the traditional methods. To achieve reliability and validity of the research study, it was necessary to use an experimental design (Cook & Campbell, 1979; Creswell & Creswell, 2017).

This design had two randomly assigned groups, classified as (A) the "traditional" teaching approach and (B) the blended learning approach. A pre-test in higher-order skills was administered to both groups to measure the degree of acquisition of geography skills before the intervention. The same test was administered as a post-test to both groups at the end of the study to measure the differences between the study groups. The mean scores were calculated for the post-test scores to ensure interrater reliability, and the same procedure as pre-test administration was followed. The design of the research is presented in Table 1.

**Table 1**

*Experimental Design*

| Pre-test, Post-test | Study Groups | Type of Treatment |
|---|---|---|
| the degree of acquisition of geography skills | Experimental Group | Blended learning approach (6 Weeks) |
| the degree of acquisition of geography skills | Control Group | Traditional method |

**Participants and Sample**

The target population for this study was 65 students in the eleventh-grade level, randomly selected from the Sabah Al-Salem High School in Kuwait for the academic year 2021-2022. Both the experimental and control group students were homogenous and had similar educational backgrounds. The experimental group students (33) were required to join a blended learning approach, and students in the control group (32) studied using conventional methods. Before the intervention started, all participants signed a consent form that briefly described the study. The distribution of the sample is presented in Table 2.

**Table 2**

*Demographic Characteristics of Both Assigned Groups*

| Group | Experimental group | Control group | Total |
|---|---|---|---|
| No | (n=33) | (n=32) | 65 |

**Course Design and Procedure**

This section describes the implementation of the blended learning design before, during, and after class activities and assessments based on objectives using all levels of Bloom's taxonomy. The taxonomy can be simplified into its essential components for instructional design purposes based on what the task requires students to accomplish. The second chapter of the geography textbook for the eleventh grade and its title (Principles of Geography) was chosen. The title of this chapter is Planet Earth, and it contains three parts (Man and Universe - Solar System - General Characteristics of the Earth) (MOE, 2019). The researcher randomly selected two classes at the eleventh level at Sabah Al-Salem High School. The first class, 11A, consisted of 32 students, and it became the control group that used the traditional method. The second class, 11B, consists of 33 students, and it became the experimental group using blended learning.

A teacher with nine years of experience teaching geography and blended learning strategies was selected to lead the two classes (the control and experimental groups). The experiment was carried out at Sabah Al-Salem High School during the first semester of 2021. The control group students were taught in the usual traditional way, which requires students to attend school and learn in a face-to-face manner based on the printed textbook. Blended learning was used with the experimental group, where the students of this group attend a class at school, and the next class is online without attending school. The teacher used the face-to-face driver model with the

experimental group, where the content is delivered from the teacher to the student directly with the part of the material via the internet, which allowed students to study at home or in the class. In-school classes are devoted to practical skills and performing practices, while online classes are devoted to cognitive and theoretical skills. The total of the lessons studied by the students of the two groups amounted to 12 lessons for each group over a period of six weeks. The use of the Microsoft Teams application was relied upon by the experimental group in providing online lessons. The reason for choosing this application was due to the experience of students and teachers in using it, which they gained during the past two years when schools were forced to close due to the Coronavirus pandemic.

The researcher designed an achievement test to measure the degrees of students' acquisition of geography concepts, facts, and skills at the eleventh level. The achievement test was applied to the students of the two groups after six weeks (12 lessons). First, the researcher collected the data and entered it into the SPSS program. Then, one-way ANOVA, means, standard deviations, t-test, and the significance level (.05) were used to analyze the results statistically.

**Instrumentation**

The researcher developed and implemented the instrument used in this study using experimental design procedures based on an extensive review of related theory and research in the literature (Cook & Campbell, 1979; Creswell & Creswell, 2017). The researcher developed a written test to assess students' composition before and after the treatment. The test contained 30 multiple-choice questions. A post-test was used to determine the effect of the blended learning strategy on the development of the students' geography skills. To ensure the validity of the instrument, the instrument was drafted by the researcher and submitted to several content judges who were experts in the field of social studies, who reviewed and determined the face and content validity of the instrument. In the end, the researcher revised the test based on the reviewers' comments. The achievement test is attached in the Appendix.

**Content Validity**

An inter-item correlation test using KMO analysis was employed to validate the instrument's content by identifying the correlation between the score of each of the test questions and the total instrument score and each of the statements and the category to which it belongs. In addition, a correlation test was conducted among the scores of the three axes of the questionnaire and the total instrument score. Table 3 describes the inter-item correlations.

**Table 3**

*Achievement Test Inter-Item Correlations*

| Question | Index Correlation | Question | Index Correlation |
|---|---|---|---|
| 1 | 0.739* | 16 | 0.676* |
| 2 | 0.755* | 17 | 0.731* |
| 3 | 0.746* | 18 | 0.752* |
| 4 | 0.698* | 19 | 0.846* |
| 5 | 0.747* | 20 | 0.773* |
| 6 | 0.799* | 21 | 0.791* |
| 7 | 0.693* | 22 | 0.765* |
| 8 | 0.784* | 23 | 0.711* |
| 9 | 0.801* | 24 | 0.763* |
| 10 | 0.833* | 25 | 0.744* |
| 11 | 0.667* | 26 | 0.784* |
| 12 | 0.741* | 27 | 0.698* |
| 13 | 0.683* | 28 | 0.746* |
| 14 | 0.726* | 29 | 0.761* |
| 15 | 0.632* | 30 | 0.832* |

*\* significant at α=0.05*

The previous table shows a high correlation between the questions, the total instrument score, and the relevant category items. This means that the tool used in this study is internally valid in addition to face validity.

**Reliability Test**

The researcher verified the reliability of the achievement test by applying it to an exploratory sample of 22 students and reapplying it to the same group after two weeks. The correlation coefficient was calculated using Cronbach's coefficient.

A reliability test was conducted among the instruments and their categories using Cronbach's alpha measure with the sample of students. See Table 4 for reliability test results. Table 4 shows that reliability coefficients ranged from 0.788-0.846 for the two categories. Therefore, the result for the total questionnaire equals 0.779, which means the overall high reliability of scales used in the test.

**Table 4**

*Summary Statistics of Reliability Test*

| Question No. | Cronbach's alpha | Question No. | Cronbach's alpha | Question No. | Cronbach's alpha |
|---|---|---|---|---|---|
| 1 | .861 | 11 | .785 | 21 | .803 |
| 2 | .798 | 12 | .844 | 22 | .744 |
| 3 | .832 | 13 | .753 | 23 | .774 |
| 4 | .778 | 14 | .699 | 24 | .781 |
| 5 | .765 | 15 | .737 | 25 | .788 |
| 6 | .824 | 16 | .774 | 26 | .757 |
| 7 | .747 | 17 | .780 | 27 | .766 |
| 8 | .853 | 18 | .748 | 28 | .738 |
| 9 | .806 | 19 | .791 | 29 | .698 |
| 10 | .796 | 20 | .770 | 30 | .759 |
| | | Total | .779 | | |

**Data Collection**

This study's data were collected by applying a pre-test to the control and experimental group students before starting the experiment to ensure that the two groups were equal in acquiring geography skills for the eleventh grade. After six weeks, a post-test was also applied to the same two groups to compare the impact of blended learning and the traditional teaching method on the degrees of students' acquisition of geography facts, concepts, and skills. The total number of students in the control group was 32, while the number of students in the experimental group was 33.

**Data Analysis**

Data from the pre-test and the post-test assessments were collected and analyzed using a t-test to determine whether there was a significant difference in performance between the mean value of the pre-test scores of participants in the control group and participants in the experimental group. A one-way ANOVA on the post-test total scores with the pre-test total scores as variance was used to determine whether there were differences in the degrees of students' acquisition of geography

skills between the experimental and control groups before and after the intervention. The researcher analyzed the scores of students of the control and experimental groups in the achievement test (pre and post) using SSPS software version 29. Means, standard deviations, t-tests, and significance levels (.05) were used to ascertain if there were statistically significant differences between the scores of the students of the control and experimental groups in the achievement test.

## Results and Discussion

### Normality Test

Normality testing uses the Kolmogorov-Smirnov statistical test. It aims to test the Blended Learning (Experiment), Traditional Method (Control), and Students' Scores in the Achievement Tests. Table 5 shows the normality test scores.

**Table 5**

*Normality Test on Blended Learning, Traditional Method and Students' Scores in the Achievement Test Variables*

| No | Variable | Factors | Score |
|----|----------|---------|-------|
| 1 | Blended Learning (Experiment) | Kolmogorov-Smirnov Z value Probability | 1,783 0.15 |
| 2 | Traditional Method (Control) | Kolmogorov-Smirnov Z value Probability | 1,678 0.09 |
| 3 | Students' Scores in the Achievement Tests | Kolmogorov-Smirnov Z value Probability | 1,659 0.17 |

Table 5 indicates that the p-value = 0.15 > 0.05 shows that the Blended Learning (Experiment) variable data is normally distributed, and the p-value = 0.09>0.05 shows that the Traditional Method (Control) variable data meets the requirements of the normality test. Also, the table indicates that the Students' Scores in the Achievement Tests variable data p value = 0.17>0.05, which means that it is normally distributed.

### Linearity Test

The linearity test determines the relationship between the independent and linear dependent variables. The criteria for linearity testing are that if the calculated F value < F table has a significant level of 0.05, then the relationship between the independent and dependent variables is linear. The results of the linearity test are presented in Table 6.

**Table 6**

*Linearity Test*

| Variable | Df | F count | F table | Sig | Information |
|----------|-----|---------|---------|-------|-------------|
| X1 ⟶ Y | 63 | 0.798 | 3.92 | 0.701 | Linear |
| X2 ⟶ Y | 63 | 0.776 | 3.79 | 0.762 | Linear |

The linearity test results for variables X1 (Blended Learning (Experiment)) and Y (Students' Scores in the Achievement Tests) in Table 6 show that the calculated F value is 0.798, and the F table value is 3.92 with a significance value of 0.701. These results indicate that the computed F value is 0.05, which means that the relationship between X1 and Y is linear. The linearity test results for the variables X2 (Traditional Method (Control)) and Y (Students' Scores in the Achievement Tests) in Table 6 shows that the calculated F value is 0.776 and the F table value is 3.79 with a significance value of 0.762. These results indicate the calculated F value 0.05, which means that the relationship between X2 and Y is linear. Table 6 shows that the linearity test results show a straight line of the functional relationship equation between the variables so that these results can be used to test the hypothesis of this study.

**Homogeneity Test**

The variance homogeneity test of the Blended Learning (Experiment) (X1) variable, the Traditional Method (Control) (X2), and Students' Scores in the Achievement Tests (Y) were carried out using the F-test, provided that if F count > F table, the variance of the groups was homogeneous. Table 7 indicates the results of the homogeneous test.

**Table 7**

*Test of Homogeneity*

| Group | Levene Statistic | DF1 | DF2 | Sig. |
|-------|-----------------|-----|-----|------|
| Blended Learning (Experiment) | 2.996 | 31 | 63 | .000 |
| Traditional Method (Control) | 2.586 | 31 | 63 | .000 |

Table 7 shows that the elaborate phase's r-value in Blended Learning (Experiment) and Traditional Method (Control) variables are smaller than the levels used, namely, 0.000 <0.05. Thus, the scores on the Blended Learning (Experiment) and Traditional Method (Control) variables spread homogeneously.

**Descriptive Statistics**

Before the hypothesis testing is conducted, the following descriptive data are presented, showing achievement of the experimental and control groups in pre-test and post-test.

**Table 8**

*Descriptive Data of Pre-Test and Post-Test of the Experimental and Control Groups*

| No | Experimental Group, N= 33 | | | | | | Control Group, N= 32 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Pre-test | F | % | Post-test | F | % | Pre-test | F | % | Post-test | F | % |
| 1 | 90-100 | 8 | 24.2 | 90-100 | 16 | 48.5 | 90-100 | 6 | 18.8 | 90-100 | 10 | 31.3 |
| 2 | 76-89 | 12 | 33.4 | 76-89 | 14 | 42.4 | 76-89 | 10 | 31.3 | 76-89 | 12 | 37.5 |
| 3 | 66-75 | 10 | 30.3 | 66-75 | 3 | 9.1 | 66-75 | 8 | 25 | 66-75 | 6 | 18.8 |
| 4 | 60-66 | 3 | 9.1 | 60-66 | - | - | 60-66 | 5 | 15.6 | 60-66 | 4 | 12.5 |
| 5 | 40-99 | - | | 40-99 | - | - | 40-99 | 3 | 9.3 | 40-99 | - | - |
| 6 | Mean | | 76 | Mean | 82 | 100 | Mean | 74 | 100 | Mean | 78 | 100 |

As indicated in Table 8, the score achieved by the experimental group on pre-test and post-test are as follows: mean score on pre-test is 76 and post-test 82. The control group achieved lower mean scores: pre-test = 74 and post-test = 78. Simultaneously, the frequency of achievement in each category, A (90-100), B (76-89), C (66-75), D (60-66), also increases in pre-test and post-test both for the experimental group and the control group. An inferential statistic through hypothesis testing is delivered to see whether the mean score difference is statistically significant.

**Hypothesis Testing**

The study includes two null hypotheses, and the analysis of the following results is to verify the hypotheses.

**Hypothesis 1:**

There are no significant differences between students in the experimental and control groups at the level $\alpha \leq 0.05$ in the mean pre-test results for student academic achievement in geography skills. The first hypothesis proposed that there would be no significant differences at the level $\alpha \leq 0.05$ in the mean pre-test results for student academic achievement in geography skills between students in the experimental and control groups. Therefore, to test the first hypothesis, means and standard deviations of the scores of both groups in the pre-test were calculated. In addition, the statistical significance value and t-value were calculated. These results are listed in Table 9.

**Table 9**

*The Statistical Analysis Results for the Scores of Both Groups in the Pre-test*

| Test | Group | N | Mean | S/D | DF | t | Sig. (2 tailed) |
|------|-------|---|------|-----|----|----|-----------------|
| Pre-test | Control | 32 | 10.17 | 1.74 | 63 | 0.801 | 0.895 |
|  | Experiment | 33 | 9.89 | 1.82 |  |  |  |

*\* significant at α=0.05*

According to the data in Table 9, the control group's mean was 10.17, while the experimental group's mean was 9.89. The T-value equaled 0.801, and the statistical significance value was 0.895, which is greater than the statistical significance level a=0.05. These values indicate that there was no significant difference between the groups. This result shows that before the application, the prior knowledge of both the experimental and control groups was very close to each other; as a result, their prior knowledge and experience with geography skills seem to be similar. Thus, the control and experimental groups had similar academic abilities as measured by this test. Therefore, the hypothesis was considered valid due to this result. There were no significant differences between students in the experimental and control groups at the level $\alpha \leq$ 0.05 in the mean pre-test results for student academic achievement in geography skills.

**Hypothesis 2:**

There are no statistically significant indication at the level of $\alpha \leq 0.05$ between the mean achievement scores of students who are taught geography skills using traditional instruction compared to the scores of students who are taught using a blended learning model of instruction.

It was predicted that there would be no statistically significant indication at the level of $\alpha \leq 0.05$ between the mean achievement scores of students who are taught geography skills using traditional classroom instruction compared to the scores of students who are taught using a blended learning model of instruction. To determine whether there was any statistical significance related to the post-test scores of the experimental and control groups, the means and standard deviations of the scores of both groups on the post-test were calculated. In addition, the statistical significance value and t-value were calculated. The results are specified in Table 10.

**Table 10**

*The Statistical Analysis Results for the Scores of Both Groups in the Post-test*

| Test | Group | N | Mean | S/D | DF | t | Sig. (2 tailed) |
|------|-------|---|------|-----|----|----|-----------------|
| Post-test | Control | 32 | 20.21 | 1.83 | 63 | 8.474 | 0.001* |
|  | Experiment | 33 | 28.73 | 1.76 | | | |

*\* significant at α=0.05*

As shown in Table 10, there is a significant difference related to the post-test scores of the experimental and control groups. The experimental group shows a mean score of 28.73, whereas the control group shows a mean score of 20.21. The t-value is 8.474, and the statistical significance value (Sig.) is 0.0001, which indicates that the post-test scores of the experimental group are higher than those of the control group. These results indicate that the blended learning model of instruction would help improve students' geography skills. To verify this result, a one-way ANOVA was conducted, and the results are presented in Table 11.

**Table 11**

*Results of One-Way ANOVA*

| Source of Variance | Sum of Squares | DF | Mean Squares | F | Sig. |
|--------------------|----------------|----|--------------|----|------|
| Between Groups | 26.478 | 1 | 26,478 | 9.076 | 0.001* |
| Within Groups | 157.385 | 63 | 2.026 | | |
| Total | 183.863 | 64 | | | |

*\* significant at α=0.05*

The result of the one-way ANOVA indicated significant differences between the means of the different groups based on the teaching method variable, 0.001, which is less than the significance level a=0.05. This result can be attributed to the learning method in favor of the blended learning model. Accordingly, it can be concluded that using the blended learning model to learn geography skills had a significant effect on the increase in the level of achievements related to using the blended learning by the students in the experimental group. This can be demonstrated by the difference between the post-test means for the two groups, which were higher for the experimental group. To further explore and rule out which group performed better in the post-test, a Bonferroni test for post hoc comparisons was conducted to identify the differentiated effect of satisfaction of

enhanced capabilities, which was calculated by applying post hoc tests. The results of the Bonferroni test are presented in Table 12.

**Table 12**

*Results of Bonferroni Test for Post-test Hoc Comparisons for the Students' Achievement Level on the Post-test*

| Group | N | Pre-test | | Post-test | | DF | t | Sig. | η 2 | D |
|---|---|---|---|---|---|---|---|---|---|---|
| | 32 | Mean | S/D | Mean | S/D | | | | | |
| Experiment | 33 | 9.82 | 1.82 | 28.73 | 1.76 | 32 | 8.474 | 0.0197 | 0.795 | 4.386 |

As shown in Table 12, the results indicate that there is a statistically significant difference between the degree of acquisition of geography skills by eleventh-grade students in Kuwait of those who studied using the traditional method and those who used the blended learning strategy. These results highlight an adequate degree of acceptance of the use of the blended learning model among the eleventh-grade students. It is worth mentioning that the η2 score was 0.795 and the effect size was 4.386, which is a high value that indicates that there is a significant size effect in the use of the blended learning model to improve students' geography skills in the experimental group.

Previous studies (e.g., Al-Madani, 2015; Ilhan & Gülersoy, 2019; Isti'anah, 2017; Kiviniemi, 2014; Utami, 2018) have reported that using blended learning as an instructional method provides a dynamic, interactive learning environment, facilitates thinking skills, enhances students' learning outcomes, improves students' motivation, facilitates the learning process across the curriculum, and helps students learn and retain information better than traditional lectures. This study sought to investigate the effect of using a blended learning instructional strategy on acquiring geography skills among the eleventh-grade students in Kuwait. Of the two hypotheses, the second was significantly confirmed. The results obtained from the one-way ANOVA indicated a significant effect on students' geography skills learning class. This implies that the blended learning approach was more effective on students' achievements. Therefore, the second null hypothesis of the study was rejected. A possible explanation is a major difference between blended learning and traditional classrooms. Blended learning combines the advantages of the two methods and avoids the negatives of each (Alsarayreh, 2020; AlShahrani & Talaue, 2018). Another explanation is the advantage of blended learning, which reduces the burden on teachers and gives them enough time to manage teaching situations, guide students, consider the individual differences between them,

and respond to their needs in a better way (Suprabha & Subramonian, 2015). The findings of this study seem to support the findings of previous researchers. Al-Madani (2015), Rao (2019), Kundu (2021), and Lapitan Jr. et al. (2021) confirmed that the blended learning approach could be more effective than the traditional face-to-face learning approach. These findings can be attributed to the fact that using the blended learning strategy with the students in the experimental group raised their engagement, activity, and motivation to learn. In addition, the control group showed less interest during the learning process. These findings encourage teachers to apply blended learning in their teaching process to achieve the desired objectives.

## Conclusions and Recommendations

Based on the analysis of the data and the findings of this research, the following conclusions are drawn. First, the overall effectiveness of implementing the blended learning method as a teaching aid in secondary schools can effectively improve students' geography skills. Second, the positive effects of using the blended learning strategy became evident after the treatment. Third, based on the present study's findings, the following recommendations can be formulated. New methods of instruction should be implemented in Kuwait's educational process to embrace advances in technology in improving learners' acquisition of geography skills. Concerning the limitations of this study, future studies should investigate the effect of a blended learning model of instruction on other curricula, such as science, mathematics, Arabic, and English, in the context of secondary education.

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**Appendix**

**Achievement Test for the Principles of Geography
for the Eleventh Grade**

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**A. Complete the following statements:**

1. The figure in front of you represents one of the types of projections called…………...



2. The largest planet in the solar system is called.................................

3. The most powerful water movements affecting the coasts are called..........................
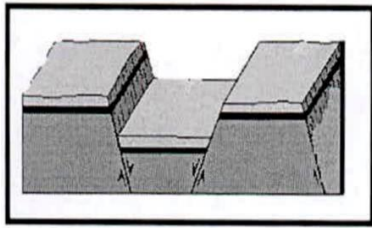
**B. Write down the concepts indicating the following expressions:**

| 4 | ……………….. | The science that deals with the study of the geographical distribution of natural and human phenomena on the surface of the Earth. |
|---|---|---|
| 5 | ……………….. | Rocky bodies revolving around the sun are concentrated between Mars and Jupiter. |

**C. Underline the correct option from among the options that follow each statement:**

6. The following figure represents one of the types of refractions:

a. Peaceful refraction

b. Reverse refraction

c. Groove refraction

d. Creeping refraction

**D. Complete the following sagittal diagram:**
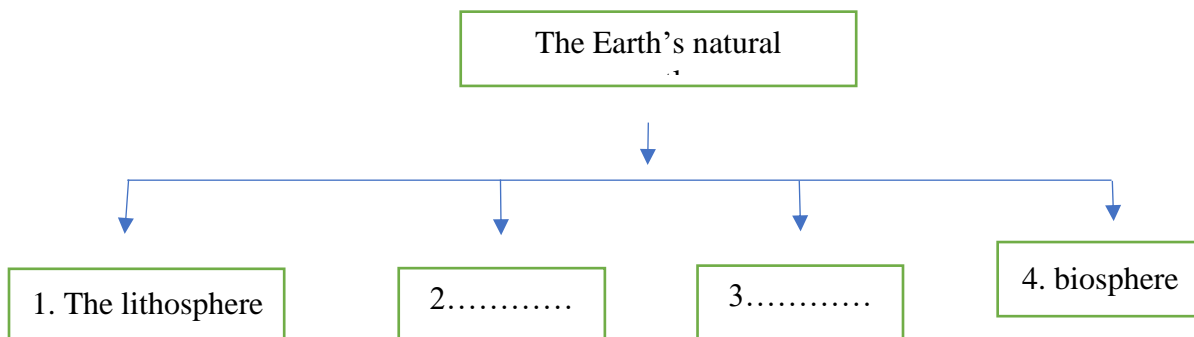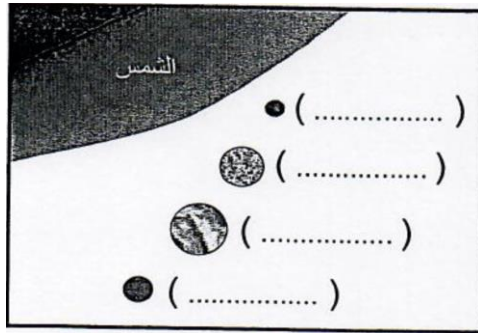
7.

Classification of Maps by

1. small

2.......................

3. Large

8.

The Earth's natural

1. The lithosphere

2.…………

3.…………

4. biosphere
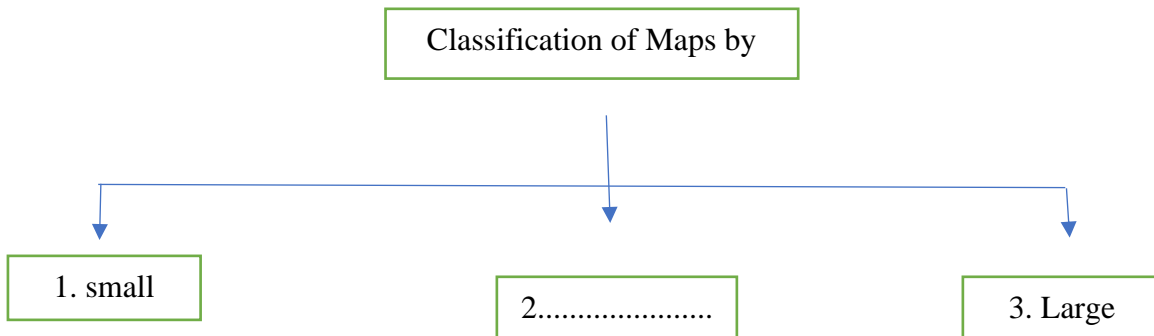
**E. Note the corresponding figure and then answer the following questions:**

9. Define the solar system.

………………………………………………………………….................................10. Write

the names of the inner rocky planets in order according to their proximity to the sun.

11. Write the types of solar radiation.

*…………………………………………………………………………………………

*…………………………………………………………………………………………

F. What are the consequences of:

12. The Earth's rotation around itself (axial)?

*……………………………………………………………………………………*……….

………………………………………………………………………………...

13. Disruptive effects resulting from earthquakes?

……………………………………………………………………………………………………

…………………………………………………………………………

**G. Calculate the time after reading the paragraph using the following steps:**

"If the hour in the city of Mecca, located on the meridian (40) east, is nine in the morning, what

is the hour in the Moroccan city of Fez, which is located on the meridian (5) west?"

14. Number Longitude between the two cities=...........

15. The time difference between them =..............

16. Since the city of Mecca precedes the city of Fez, the hour in the city of Fez =.........

**H. Name the following:**

17. The most important sources of information for researchers, especially geographers:

*………………………………………………………………………………………

*………………………………………………………………………………………

18. Elements of the river system:

*………………………………………………………………………………………

*………………………………………………………………………………………

19. Methods of transport by wind:

*………………………………………………………………………………………

*………………………………………………………………………………………

**I. Compare sedimentary rocks and igneous rocks**

20.

| Compare | Sedimentary rocks | Igneous rocks |
|---------|-------------------|---------------|
| Features | *………………………… *………………………… | *………………………… *………………………… |

**J. Reasons for the following:**

21. The importance of geography:

…………………………………………………………………………………………………………………………………

………………………………………………………………………………………

22. The importance of rocks:

…………………………………………………………………………………………………………………………………

………………………………………………………………………………………

**K. The number of manifestations resulting from the following:**

23. Sculpture by waves:

…………………………………………………………………………………………………
　　　　…………………………………………………………………………………

24. Deposition by wind:

…………………………………………………………………………………………………
　　　　…………………………………………………………………………………

**L. Define the following concepts:**

25. Galaxies: …………………………………………………………………………..

26. Greenwich line: …………………………………………………………………...

27. Sprains: …………………………………………………………………………....

**M. In front of you is the deaf map of the world. Write the number that indicates the following statements:**

28. The tribal wind is blowing over a country represented on the map by the number.......

29. Hot tropical forests are represented on the map by the number.......

30. The short temperate grass areas (steppes) are represented on the map by the number......