STUDENTS’ ANXIETY IN FOREIGN LANGUAGE LEARNING ENVIRONMENTS: ONLINE VERSUS ON-SITE CLASSROOMS

Khadidja Mouffok 1*, Hafida Hamzaoui-Elachachi 2, and Fatima Zohra Imane Omari 3

1, 2, 3 ESPT Lab, Abou Bekr Belkaid University, Algeria
khadidja.mouffok@univ-tlemcen.dz1, hamzaouihafida@yahoo.fr2, and OMARIFZ@hotmail.com3
*correspondence: khadidja.mouffok@univ-tlemcen.dz

https://doi.org/10.24071/llt.v26i2.6401
received 16 May 2023; accepted 10 October 2023

Abstract
During the pandemic of COVID-19, the Algerian higher education institutions compelled teachers and students to shift to a blended teaching mode. Accordingly, third-year Licence chemistry students received online and on-site lectures among which English for Specific Purposes lectures. This sudden transition from face-to-face to online teaching affected university students namely at the emotional level which led this research to explore the impact of both modes of course delivery on students’ affective filter more precisely on anxiety. A correlational research design was used to understand the relationship between anxiety and the learning environment. Two anxiety tests on online and on-site learning were administered to 16 chemistry students receiving English for Specific Purposes courses. The current research findings revealed that there is no significant difference in the students’ level of anxiety whether learning online or in the traditional classroom. These findings call for future implications of applying practical techniques and strategies to reduce anxiety in both learning environments to create a suitable and supportive atmosphere that works for better comprehensible input for university students.

Keywords: affective filter, anxiety, blended learning, English for specific purposes, learning environment

Introduction
During the pandemic of Covid-19, Algerian educators, like their colleagues around the world, were working on new ways of teaching and learning in quarantine. Thus, educational institutions have opted for e-learning within its various ways of applications due to its benefits. It ensured students’ safety and learning. Teachers were encouraged to be “open-mindedness and increase their motivation to adapt to the new teaching setting that focuses on an online system, encouraging students’ positive attitude and learning motivation” (Tanjung, 2022, p. 360). Thereby, the Algerian universities have switched all courses and programs to be delivered first solely online, then through a blended mode of teaching. English for Specific Purposes (ESP) in the Department of Chemistry at
the University of Sidi-Bel-Abbes (Algeria) was no exception. Lorenzo (2005) described ESP students as being “adults who already have some knowledge of English and are studying the language to convey a range of technical skills and conduct basic job-related functions.” as cited in (Farahsani & Harmanto, 2022, p. 639). These students benefited from websites and platforms where e-courses were available. The ESP teacher, like other teachers, was compelled to deliver his/her lectures both online and on-site and to create a learning environment where students’ emotions, specifically anxiety, favor comprehensible input.

It is worth highlighting that (Krashen’s, 1982) affective filter hypothesis holds that when learners’ affective filter is low, the input is received. In other words, comprehensible input is insured by a low affective filter that consists of high motivation and self-confidence combined with low anxiety of learners. Once these aspects are met, students can easily understand the elements of a lecture (the input) with fewer psychological barriers.

Being aware of the importance of the affective filter for language learning, the present study focuses on one of its components: anxiety, and its relation with the learning environment. As the study was conducted in a blended learning mode, the focus is on the online and the on-site classes that were the center of interest of many studies to find out the effects of these classes on students’ anxiety. On the one hand, some studies were for the implementation of online teaching to reduce learner anxiety. On the other hand, other works claim that anxiety can be reduced in on-site classes such as (Young, 1991) research. Therefore, the purpose of the current research is to investigate the correlation between students’ anxiety and the learning environment in both online and on-site classes to find out the most convenient learning environment, that provides a more comprehensible input for ESP students. Furthermore, whether the class is on-site or online, the teaching techniques and strategies can make a difference in the students’ levels of anxiety. Accordingly, (Horwitz, 1986. P.131) suggested two main techniques that work for a less provoking foreign language learning environment “1) they can help them to cope with their existing anxiety-provoking situation, or 2) they can make the learning context less stressful”. Hence, the latter implication is the focus of the current paper applied by the teacher in both environments.

Literature Review

The concept of the affective filter dates back to (Dulay & Burt, 1977). They were the pioneers in this field who viewed that “many key factors of learners’ success in language learning should be associated to the student’s emotional condition.” as cited in (Lin & Lin, 2008, p. 115). In other words, when learners are dealing with the acquisition of a foreign language, their emotions, which are referred to as the affective filter, can influence their understanding and their grasping of that language.

A few years later, (Krashen,1982, p.31) dealt with the affective filter studies and formulated a hypothesis in which he stated “the relationship between affective variables and the process of second language acquisition by positing that acquirers vary concerning the strength or level of their Affective Filters”. Likewise, (Wang, 2020, p. 983) says “Learners’ affective factors should not be ignored and the affective factors also play an important part in the process of learning English”.

471
Hence, there is a common agreement on the impact of the learner’s affective filter on the success or failure of SLA.

The affective filter includes three main variables that are motivation, self-confidence, and anxiety. According to (Krashen’s, 1982) hypothesis, they influence SLA in the following way. Firstly, the more the learner is motivated, the better SLA occurs. Likewise, the more the learner is self-confident, i.e., the more he has a good self-image, the better he will acquire a second language. Finally, anxiety acts oppositely to the two previous factors, i.e., the lower the learner’s anxiety is, the better SLA occurs. On the other hand, demotivation, low self-esteem, and anxiety describe the high affective filter. (Krashen, 1982). It would lead to a mental block of the learner’s language process acquisition that consequently would threaten the comprehensibility of the input that will automatically block the learner from responding and interacting in the classroom. In the views of (Ahdab, 2016, p. 121) “The affective filter can be raised or reduced according to the environment that learners are in”. In other words, it is tightly related to the context where learners are being exposed to the target language. The present study is interested in the on-site and online learning environments namely as the latter became widely used during the COVID-19 pandemic which imposed remote networking in various domains among which education.

Learning has been implemented as a web-based learning accessible to many resources formats that are not limited to a particular place or time as explained by (Javed et. al. 2014, p. 448) “It can be an efficient way of delivering course materials and the resources can be made available from any location and at any time, potential for widening access”. However, it has been noticed by many researchers that online learning affects students’ emotions and consequently their affective filter such as the works of (Camacho-Zuñiga, 2021) and (Gallardo & Matts, 2021). The present study will focus on one of the factors of the affective filter, anxiety, which at a high level may constitute a major obstacle to second or foreign language learning.

Anxiety caught the interest of many researchers who examined it in the field of learning. For instance, (Zhneg, 2008, p. 8) reveals its reasons and results concerning second/foreign language learning. He believes “It is indeed a central emotional construct that is essential in influencing second/foreign language learning”. A similar work affirms that the fewer students are stressed the more understanding they receive (Esmaeeli, 2023). On the contrary, if those students are anxious, their input will be limited and insufficient.

Indeed, anxiety is an important factor in the language classroom. (Horwitz, Horwitz and Cope, 1991) define it as “a distinct complex of self-perceptions, beliefs, feelings, and behaviors related to classroom language learning arising from the uniqueness of the language learning process” as cited in (Zhneg, 2008, p. 2). In other words, it is a negative psychological state that takes place whenever the learner is exposed to a foreign language learning environment. According to (Nishar’s, 2018) investigation findings, the main causes behind the students’ anxiety in the classroom were their negative expectations about both their ability to comprehend the teacher and themselves if compared to their peers. Furthermore, (Alnuzaili & Uddin, 2020, p. 270) lists several reasons that may cause this emotional state:
The problem of anxiety of learners in an FL classroom can be due to many factors as previous studies concluded such as test anxiety, strict classroom environment, cultural background, interference of the mother tongue, fear of negative evaluation, perfectionist tendency, learners’ stylistic preferences, personality traits, and learners’ linguistic capacity.

If anxiety is linked to the learning environment, previous works have investigated the impact of online and on-site classes on students’ anxiety some studies were for implementing virtual classes for reduced anxiety (Russell’s, 2020, p.2) work, which suggested some practical strategies that would work for reducing students’ learning anxiety by “Helping online language learners feel less isolated, less anxious, and more connected to their teacher and to their peers”. Nonetheless, other research focused on “Creating a Low-Anxiety Classroom Environment: What Does Language Anxiety Research Suggest?” as investigated by (Young, 1991), which raised both the idea that anxiety exists in the on-site class and reliable strategies and techniques to reduce it.

Therefore, it would be interesting to see how both online and on-site learning environments affect students’ anxiety, consequently the affective filter, and the student’s ability to absorb comprehensible input.

Method
The present research was conducted at the Djillali Liabes University of Sidi-Bel-Abbes in the Department of Chemistry. The objective of the study was to investigate the correlation between anxiety and the learning environment with third-year chemistry students during ESP by examining the online and the on-site classes. This was done to answer the question: What is the least anxiety-provoking environment for chemistry students when learning ESP?

This study was based on a correlational research design. According to (Stangor, 2011) “Correlational research involves the measurement of two or more relevant variables and an assessment of the relationship between or among those variables….the goal of correlational research is to uncover variables that show systematic relationships with each other” as cited in (Crawford, 2014). Therefore, this research tried to examine the relationship between two variables: learners’ anxiety and the learning environment. The latter took two forms: online classes during the first semester, and on-site ones during the second semester. Thus, the purpose of the study was to measure students’ level of anxiety when learning online and on-site.

Sample population
The sample population was third-year Licensed chemistry students at Djillali Liabes University of Sidi-Bel-Abbes (Algeria). In the department of chemistry, there were two specialties: analytical and fundamental chemistry. The former group consisted of ten students and the latter of sixteen students. The larger group constituted the sample population of this study. Hence, convenience sampling, which was a type of non-probability sampling method, was used. “A convenience sample simply includes the individuals who happen to be most accessible to the researcher” (McCombes, 2022). The 16 participants were adults
between 20 and 23 years old whose field of study was chemistry. Their curriculum included ESP courses which were the concern of this study.

**Instruments**

Two anxiety tests were administered to the sample students to investigate the impact of the learning environment on learners’ anxiety. Both tests were adapted from Gardner’s Attitude/Motivation Test Battery (AMTB) model (2004). They consisted of 13 questions that were both open-ended and close-ended. The former type of questions was meant to elicit from students explanations about the stress-provoking aspects and relaxing ones, while the close-ended questions (based on a 6 points Likert-scale ranging from 1 strongly disagree to 6 strongly agree) tried to determine the student’s position, attitude, and reaction. The combination of both types of questions aimed at explaining, illustrating, and measuring all aspects of students’ anxiety. It should be noted that the two tests were similar except that the first one raised items and situations related to online teaching and the second one raised items and situations related to face-to-face teaching.

**First anxiety test**

Anxiety Test One (AT1) was administered to one group which included 16 students at the end of the first semester of the academic year 2021/2022, after a series of online teaching sessions. This test aimed to determine their anxiety in the online class.

**Second anxiety test**

Anxiety Test Two (AT2) was administered to the same sample after the on-site sessions at the end of the second semester. It aimed at measuring students’ anxiety levels in the traditional classroom.

**Research procedure**

This research was undertaken during the academic year 2021-2022. The ESP courses were delivered online to the sample students during the first semester and then on-site in the second semester. The online sessions relied on delivering lectures via a learning platform: Udemy. The online syllabus was designed according to the students’ Needs Analysis that was previously undertaken. It included three main units and each unit was composed of two lectures shaped in the form of two main videos, a theoretical and a practical part. These course videos were joined with the option of being downloadable and visual transcription content and being asynchronous characterized by flexibility. Other files were joined to each lecture as PDF files, YouTube links, and websites as extra sources of information. At the end of these online sessions students were administered the first Anxiety test AT 1.

Afterward, the on-site sessions, which were based on teaching face-to-face at the university classrooms and laboratories, took place during the second semester. Accordingly, the on-site syllabus was built in parallel to the online one in terms of unit numbers, timing, and structure. It was composed of three main units too. Besides, the six lectures were presented using handouts, whiteboard, and experiments. Thus, students were able to work in pairs, and groups and make
presentations using laboratory materials and chemical substances in English. According to the university timetable, one hour per week was devoted to the English course. Finally, AT 2 was administered to the same sample of students to measure their anxiety during these on-site sessions.

Findings and Discussion

This section is devoted to analyzing and discussing the findings to answer the following research question and test its corresponding hypotheses:

What is the least anxiety-provoking environment for chemistry students when learning ESP?

H1: the online learning environment is the least anxiety-provoking for students.

H0: There is no significant difference between online and on-site learning environments for students’ anxiety.

Accordingly, proving or rejecting the hypotheses requires a comparison of the Mean variable of both cases of the same sample. Besides, the statistical results rely on the student t-test unilaterally for the same sample, i.e., the student t-test associated with the two-paired sample as the most relevant test in this case to analyze the data gathered from both tests, (AT1) and (AT2).

These tests were based on a scale that included 13 items related to anxiety. Both of them were analyzed by counting the standard deviation and the Mean, which is the average of its constituent elements for each individual using the SPSS.V.25. (Özer, 2019) undertakes a similar way of analysis. The SPSS is defined by (Nagaiah & Ayyanar, 2016, p.1) as “A Windows program that can be used to perform data entry and analysis and to create tables and graphs. SPSS is capable of handling large amounts of data. SPSS is commonly used in the Social Sciences”.

Data analysis

The current research results are divided into two main sections: descriptive statistics and statistical test results. The former section allows the comparison of the Mean for both online and on-site classes within the same sample. The second section relies on the Wilcoxon test for each item of anxiety, which presents the results of the 13 items in detail and separately. Followed by the student t-test unilateral for the same sample that is preceded by its normality test as being its requirement. Both test findings are compared with the probability value, p-value, which indicates that if the calculated p-value is greater than 0.05 (5%) significant level, the null hypothesis is accepted.

Descriptive statistics

Although the anxiety scale was composed of 6 elements of ordinal measurement arrangement, the estimate of the measure as a whole, the overall Mean, gave a quantitative variable included within the interval measurement as shown in Table 01.
The descriptive statistics indicated that on the one hand, in the online semester, the Mean was described as ‘Slightly Agree’ which is 4.2. Thus, students were generally comfortable and less stressed. In addition to that, the majority of students (75%) were considered closer to ‘Moderately Agree’ as indicated by the third quartile (Q3 = 4.8). On the other hand, in the on-site semester, there was no significant difference in students' level of anxiety if compared to the online semester because the Mean was within ‘Slightly Agree’ (Mean = 3.9), and 75% of students were considered as ‘Slightly Agree’ (Q3 = 4.3). As a result, the difference between the two Means was 0.284, which did not seem to be a significant difference. Therefore, the difference would be checked through the t-test.

The result of the standard deviation was described as being a small value if compared with their Means, online = 4.2067 and on-site = 3.9231. It indicated that there is little discrepancy between the participants regarding their level of anxiety. Hence, the results in both classes referred to the uniformity and the homogeneity of the sample.

**Statistical tests results**

The statistical test results included the results of three tests. Before taking a t-test to compare the overall anxiety, the anxiety components of the two cases were compared using Wilcoxon test results for each item of the anxiety scale. Then, the normality test was applied through: the Kolmogorov-Smirnov test and the Shapiro-Wilk test as required by the student t-test.

**Tests for each item of the anxiety scale**

Since the components of the anxiety test were ordinal data ranging from 1 to 6, the most appropriate statistical test to compare students’ level of anxiety was the Wilcoxon signed-rank test for paired samples in which it analyzed each item of anxiety separately (Table 2).
As Table 02 indicates, there is no significant difference in students’ level of anxiety regarding elements: 1, 2, 5, 7, 8, 10, and 11, whilst for elements: 3, 4, 6, 9, 12, and 13 the results show that students are more comfortable and less anxious when learning virtually if compared to the classroom at a significance level of 5%. Indeed, this is confirmed by the open-ended question which searched for the aspects that made them calm including their ability to control most of their learning aspects: suitable timing for each one, any location, even in France for those who got a scholarship. Besides, the ability to control the speed of the course depends on each learner’s understanding abilities. Moreover, avoiding embarrassment using comments. Finally, students found it relaxing to study at home, which was described as calm, and secure. This made it a less stress-provoking environment. These findings are further supported by the last open-ended question in AT1 (see Appendix 01) which reveals that 81.25 % of them had a positive attitude toward being taught online in the future.

**Normality tests**

The t-test was a parametric test that required the normal distribution of the data subject. Since the size of the sample was fewer than 30, it was necessary to conduct normality tests such as the Kolmogorov-Smirnov test and Shapiro-Wilk test. The results of these tests are shown in Table 03.

<table>
<thead>
<tr>
<th>Item</th>
<th>Z-value</th>
<th>p-value</th>
<th>Online:</th>
<th>Online:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Item7</td>
<td>-0.669</td>
<td>0.2515</td>
<td>No difference</td>
<td></td>
</tr>
<tr>
<td>Item8</td>
<td>-0.933</td>
<td>0.1755</td>
<td>No difference</td>
<td></td>
</tr>
<tr>
<td>Item9</td>
<td>-2.374</td>
<td>0.009</td>
<td>Online</td>
<td></td>
</tr>
<tr>
<td>Item10</td>
<td>-0.464</td>
<td>0.3215</td>
<td>No difference</td>
<td></td>
</tr>
<tr>
<td>Item11</td>
<td>-0.221</td>
<td>0.4125</td>
<td>No difference</td>
<td></td>
</tr>
<tr>
<td>Item12</td>
<td>-2.349</td>
<td>0.0095</td>
<td>Online</td>
<td></td>
</tr>
<tr>
<td>Item13</td>
<td>-2.172</td>
<td>0.015</td>
<td>Online</td>
<td></td>
</tr>
</tbody>
</table>

Normality tests indicate that the p-value is greater than the 5% significant level in both tests, which means that anxiety is naturally distributed in both classes.
The latter results are also supported by the figure representation of the probability distribution (see Figure 01), which indicates a symmetrical distribution centered on their mean. In other words, the student’s anxiety in the online class corresponds to the level of anxiety in the on-site class.

**T-test results**

Approving the normal distribution requirement allowed the paired samples t-test to compare the Mean of the students’ anxiety in both semesters. The results are shown in table 4. As the results of the t-test indicate, the p-value probability value is greater than the 5% (0.05) significance level, which means that the null hypothesis is accepted and proved.

<table>
<thead>
<tr>
<th>Table 4. Paired T-test results</th>
<th>Mean</th>
<th>Std. dev</th>
<th>95% Confidence Interval</th>
<th>t-statistic</th>
<th>df</th>
<th>p-value (One-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean Difference</td>
<td>0.28365</td>
<td>0.88231</td>
<td>-0.1865</td>
<td>0.75381</td>
<td>1.286</td>
<td>15</td>
</tr>
</tbody>
</table>

Therefore, the difference between the two Means has no significant difference at the level of 5%. Consequently, the learning method does not affect the level of Anxiety either in the on-site class or in the online class. Moreover, the last open-ended question of (AT2), selecting the least anxiety-provoking environment, proves the same results in which the highest selection was, 31.25%, for those who believed that both classes are equally stress-provoking.
environments. However, 25% considered that none of them was stress-provoking. Besides, 25% of them selected the on-site class as the least anxiety-provoking. Whilst, 18.75% of them selected the online class over the on-site one.

**Findings and interpretation**

The two test results are derived from comparing the Mean of (AT1), anxiety in the online class, and (AT2), anxiety in the on-site class. The interpretation of these test findings led to extracting the students’ anxiety levels when learning in both environments relying on both the descriptive statistics and the statistical test results.

Descriptive statistics compared the Mean of each class where the online Mean is 4.2 and the Mean of the on-site class is found 3.9. Hence, this analysis shows that there is no significant difference in the students’ anxiety in both classes. Likewise, the student t-test results reveal that there is no significant difference in both ways of delivering ESP courses regarding the aspect of anxiety because the p-value (probability value) is higher than 5%, which is a significant level. This means that the null hypothesis is accepted. Besides, the Mean of anxiety in both cases can be described as ‘Slightly Agree’. Moreover, the last open-ended question of (AT2), see Appendix 02, indicates that more than half of the sample population (56.25%) believed that there is no significant difference between the two learning environments.

**Conclusion**

The shift to online and blended learning during the pandemic of COVID-19 raised the core interest of this study which is inquiring about the relationship between the learning environment and students’ affective filter precisely anxiety. The correlational research played a key role in providing an answer to the research question highlighting that some students were anxious in both ways of learning, while others were not stressed in either class. Thus, anxiety is a psychological factor that has been present in both foreign language learning classes equally and the students’ levels of anxiety in the online class did not differ from the on-site one. As the results suggest, both descriptive statistics and statistical test results reveal that the two learning environments, online and on-site classes, have the same impact on learner’s anxiety. Accordingly, what will affect the students’ anxiety positively whether online or on-site are the implemented classroom techniques and strategies. In the current research, the ESP teacher targeted the latter objective in an online class by providing the students with a large number of opportunities that work for their understanding abilities, easiness, and a better psychological state, which lowers anxiety in parallel. For the teacher’s classroom environment strategies, encouraging group work and pair work was effective. In addition, the teacher’s intentional motivational verbal and nonverbal communication joined with less direct and public criticism. The research concluded that these strategies and techniques influenced the current research results positively in both classes. Among the current paper's limitations, the research time frame that lasted six months was divided into three months for each semester. Also, there was a limited number of participants. The latter is drawn as a meaningful suggestion for future papers for the sake of expanding the sample size. Furthermore, other psychological aspects such as motivation and confidence
can be studied as being other important variables elaborated in Krashen’s affective filter hypothesis.

Acknowledgments
This research paper was published thanks to the continuous collaboration, efficient assistance, and supervision of both: Prof. Hafida HAMZAOUI and Dr. Imane OMARI. Special thanks go to Mr. Abdelbasset DOU, Dr. Meryem MOUFFOK, Dr. Kamel AKRICHE, and Mr. Khalil BENTHMANE for their precious guidance and professional academic support. Endless thankfulness to my respondents, third-year Fundamental chemistry students at Djillali Liabes University promotion of 2021-2022 and the department of chemistry especially Dr. Mustapha ZOUAOUI RABAH and Dr. Redouane CHADLI.

References


