

## **University Students' Attitudes Toward Blended Learning in the Post-Pandemic Era: A Future-Oriented Evaluation**

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Received: 29/06 /2025 /; Accepted: 29/ 08/2025 -

### **Abstract:**

The present study investigates undergraduate university students' attitudes toward blended learning in the aftermath of the COVID-19 pandemic. To achieve this objective, a descriptive research design was employed. The study sample consisted of 60 undergraduate students from the University of Mascara. Data were collected primarily through a structured questionnaire and analyzed using SPSS version 25, employing a range of statistical methods. The study yielded several key findings: (1) university students demonstrated a moderate level of acceptance toward blended learning after the pandemic; (2) statistically significant differences in students' attitudes toward blended learning were observed based on gender; and (3) statistically significant differences were also found according to students' place of residence. These findings underscore the importance of considering demographic factors when

evaluating perceptions of blended learning in the post-pandemic academic context. It is, however, important to acknowledge that the relatively small sample size ( $n = 60$ ) imposes a considerable limitation on the generalizability of these results.

**Keywords:** Attitudes; university students; blended learning; COVID-19 pandemic.

### اتجاهات الطلبة الجامعيين نحو التعليم المدمج بعد جائحة كوفيد-19: تقييم برؤية استشرافية

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الملخص: تهدف هذه الدراسة إلى استكشاف اتجاهات الطلبة الجامعيين نحو التعليم المدمج بعد جائحة كوفيد-19، من خلال تطبيق المنهج الوصفي على عينة مكونة من 60 طالبًا وطالبة بجامعة معسكر. تم جمع البيانات باستخدام استبيان، وتحليلها عبر برنامج SPSS الإصدار 25. أظهرت النتائج أن اتجاهات الطلبة نحو التعليم المدمج كانت في المستوى المتوسط، مما يعكس قبولاً جزئياً لهذا النمط التعليمي في ظل التحديات التقنية والبيداغوجية القائمة. كما كشفت النتائج عن وجود فروق ذات دلالة إحصائية في اتجاهات الطلبة تعزى لمتغير الجنس، حيث كان الذكور أكثر قبولاً للتعليم المدمج من الإناث، إضافة إلى فروق إحصائية مرتبطة بمكان الإقامة لصالح الطلبة المقيمين في السكن الجامعي. تؤكد هذه النتائج على أهمية مراعاة الخصائص الديموغرافية عند وضع سياسات التعليم المدمج في المرحلة ما بعد الجائحة، مع الإشارة إلى

أن حجم العينة المحدود (60 طالبًا) يشكل قيدًا أساسيًا ينبغي أخذه بعين الاعتبار عند تعميم النتائج.

الكلمات المفتاحية: الاتجاهات؛ الطلبة الجامعيون؛ التعليم المدمج؛

جائحة كوفيد-19

## 1. Introduction

The final decade of the 20th century and the early 21st century has witnessed profound global societal and technological shifts affecting virtually all aspects of human life. These shifts have exerted a strong influence on educational systems, creating a pressing demand for non-traditional pedagogical approaches. To cope with such challenges, educational frameworks must be re-examined—conceptually, contextually, and methodologically—using new scientific strategies that optimize available material and human resources (Mahmoud, 2021, p. 607). Accordingly, Algerian universities have intensified efforts to raise their teaching standards to meet international benchmarks by restructuring traditional systems through reform and innovation.

Blended (hybrid) education combines traditional face-to-face instruction with distance learning. This model allows students to acquire essential theoretical knowledge while also developing practical skills remotely. In doing so, it decreases campus density, mitigates COVID-19 transmission risks, and leverages modern technology for digital content delivery alongside in-class engagement (Al-Sayyid, 2021, pp. 144–145).

This approach employs e-learning platforms, while still relying heavily on in-person interaction between instructors and learners. Blended education enriches knowledge building,

improves educational quality and teaching effectiveness, and maintains a balance between cognitive, skill-based, and affective learning. It diversifies instructional delivery, increases flexibility, accommodates diverse learning needs and styles across student populations, and promotes stronger interpersonal relationships between teachers and students (Saad, 2021, p. 147).

During the 2020–2021 academic year, Algeria's Ministry of Higher Education and Scientific Research introduced blended education across universities as part of COVID-19 safety measures. This model combined in-person and online delivery, mainly through the Moodle platform. Despite significant implementation challenges, blended education became an essential measure for sustaining higher education under unprecedented global circumstances. Against this background, this study investigates university students' attitudes toward blended education in the post-pandemic era.

### **1.1 Research Questions**

- What are undergraduate university students' attitudes toward hybrid education following the COVID-19 pandemic?
- Do statistically significant differences in attitudes toward hybrid education exist based on gender?
- Do statistically significant differences in attitudes toward hybrid education exist based on residency?

### **1.2 Research Hypotheses**

- University students exhibit a moderate level of acceptance toward blended education post-pandemic.
- Statistically significant differences in attitudes toward blended education exist based on gender.
- Statistically significant differences in attitudes toward blended education exist based on residency.

### **1.3 Significance of the Study**

This study addresses a timely and critical issue: students' perceptions of blended education in Algeria. In the wake of the COVID-19 crisis, blended education emerged as a major focus for educators and policymakers. This unprecedented health emergency compelled educational authorities to implement blended education as a strategic intervention to guarantee instructional continuity and prevent the disruption of academic years (Mahmoud, 2021; Al-Sayyid, 2021; Saad, 2021; Hodges et al., 2020).

## 1.4 Objectives of the Study

The primary objective of this research is to explore the attitudes of undergraduate students toward blended education in the post-pandemic period, specifically aiming to:

- Assess the overall level of students' attitudes toward blended education after COVID-19.
- Examine statistically significant differences in student attitudes toward blended education based on gender.
- Examine statistically significant differences in student attitudes toward blended education based on residency.

## 1.5 Definition of Key Concepts

- **Attitude:** Refers to an acquired affective predisposition—distinct from innate traits—that governs an individual's behavioral and emotional responses to objects, persons, or phenomena. In this context, it reflects students' acceptance or rejection of blended education (Al-Fadil, 2018, p.18).
- **Blended Education:** Represents an instructional model that integrates multimodal strategies by combining

face-to-face (F2F) teaching with online learning platforms (Mahmoud, 2021, p. 619).

- **In-Person Education:** Learning activities delivered physically in classrooms, where teacher-learner interaction directly supports instruction (Saghir, 2022, p. 649).
- **Distance Education:** Education that occurs entirely online or without physical presence, facilitated by internet-based platforms and digital communication methods (Jaroud&Izzaq, 2021, p. 66).
- **University Students:** Refers here to individuals enrolled in undergraduate programs after earning a high school diploma, as defined by Quriz&Yahiaoui (2015, p. 339).
- **COVID-19:** The coronavirus disease, first reported in December 2019 in Wuhan, China, and officially declared a global pandemic in March 2020. Its spread led to unprecedented disruptions, including the suspension of higher education in Algeria (Al-Zahrani, 2021, p. 189).

## 1.6 Study Limitations

- **Geographical Scope:** The study was conducted at the Faculty of Social Sciences and Humanities, University Center of Mascara.
- **Temporal Scope:** Data were collected between November 5, 2021, and January 2, 2022.
- **Sample Size Limitation:** The study surveyed only 60 students. This limited number significantly restricts the generalizability of the results.

## 2. Method

### 2.1 Pilot Study Sample

The pilot study was conducted at the Faculty of Humanities and Social Sciences, University Center of Mascara, during the period from September 12, 2021, to October 7, 2021.

## 2.2 Study Instrument and Its Psychometric Properties

### 2.2.1 Description of the Instrument

The primary instrument utilized in this study was a questionnaire designed to assess university students' attitudes toward hybrid education. The questionnaire was developed based on a synthesis of relevant previous studies (e.g., Al-Fadil, 2018; Mahmoud, 2021; Saad, 2021). It comprises 30 items, distributed equally across two dimensions: the first dimension addresses in-person education (15 items), while the second focuses on distance education (15 items).

### 2.2.2 Scoring Method

**Table 1. *Scoring Method for the Attitude Questionnaire***

| Level    | Score Range |
|----------|-------------|
| Low      | 30–56       |
| Moderate | 57–83       |
| High     | 84–120      |

**Table 2. *Classification of Questionnaire Scores***

| Dimension | Items | Score Range |
|-----------|-------|-------------|
| In-Person | 15    | 15–60       |
| Distance  | 15    | 15–60       |
| Total     | 30    | 30–120      |

### 2.2.3 Psychometric Properties of the Questionnaire

#### **Criterion-Related Validity (Extreme Groups Method):**

To verify the validity of the university students' attitudes toward hybrid education questionnaire, the extreme groups method was employed. The following table presents the results:

**Table 3. *Criterion-Related Validity of the Attitude Questionnaire (Extreme Groups Method)***

| Group | Mean | SD  | t      | Sig. |
|-------|------|-----|--------|------|
| Upper | 80.6 | 6.3 | 10.154 | .000 |
| Lower | 57.2 | 5.1 |        |      |

The results indicate a statistically significant difference between the upper and lower groups ( $T = 10.154$ ,  $p < .001$ ), supporting the criterion-related validity of the instrument (Cohen et al., 2018).

## 2.3 Validity and Reliability Analysis

### 2.3.1 Validity Assessment

As indicated in Table 3, the significance value (Sig.) of 0.000 falls below the established alpha threshold of 0.01. This demonstrates that the University Students' Attitudes Toward Hybrid Education Questionnaire effectively discriminates between high and low responses, confirming high criterion-related validity (Cohen et al., 2018).

### 2.3.2 Reliability Assessment

To evaluate the instrument's reliability, Cronbach's alpha coefficient was calculated.

**Table 4. Cronbach's Alpha Values for the Attitude Questionnaire**

| Dimension   | Cronbach's Alpha |
|-------------|------------------|
| Total Scale | 0.896            |

The coefficient of 0.896 exceeds the recommended threshold of 0.70 (Nunnally & Bernstein, 1994), indicating excellent internal consistency. Consequently, the questionnaire demonstrates robust psychometric properties and is suitable for deployment in the main study.

## 2.4 Main Study Procedures

### 2.4.1 Research Design

A descriptive research design was employed, as it enables comprehensive analysis of the research problem within operational constraints while aligning with the study's objectives (Creswell & Creswell, 2018).

### 2.4.2 Geographical and Temporal Scope

Fieldwork was conducted at the Faculty of Humanities and Social Sciences, University of Mscara, between November 5, 2021, and January 2, 2022.

### 2.4.3 Study Sample

The main sample comprised 60 randomly selected students enrolled at the Faculty of Humanities and Social Sciences during the 2021/2022 academic year. Demographic characteristics are summarized below:

**Table 5. Descriptive Analysis of Sample Characteristics**

| Variable  | Category     | Frequency | Percentage |
|-----------|--------------|-----------|------------|
| Gender    | Male         | 28        | 46.7%      |
|           | Female       | 32        | 53.3%      |
| Residence | Resident     | 27        | 45%        |
|           | Non-Resident | 33        | 55%        |

### 2.4.4 Research Instrument

The validated University Students' Attitudes Toward Hybrid Education Questionnaire (30 items) served as the primary data collection tool.

### 2.4.5 Statistical Methods

Data analysis was performed using SPSS Version 25, employing the following statistical techniques:

- Descriptive statistics: Arithmetic means and standard deviations.
- Inferential statistics: Independent samples t-test to examine statistically significant differences between two groups (Field, 2018).

## 3. Results

### 3.1 Results of Hypothesis 1 Testing

The first hypothesis posits that *"university students exhibit a moderate level of attitude toward hybrid education following the COVID-19 pandemic."* To test this hypothesis, arithmetic means and standard deviations were calculated, as summarized in Table 6.

**Table 6. Results of Hypothesis 1 Testing**

| Dimension | Mean  | SD   |
|-----------|-------|------|
| In-Person | 34.21 | 4.12 |

|              |       |      |
|--------------|-------|------|
| Distance     | 34.22 | 4.83 |
| <b>Total</b> | 68.43 | 8.24 |

Table 6 presents the results of the first hypothesis test. The obtained data indicate that all arithmetic means of the sample responses exceeded the general average, with a total score mean of 68.43 ( $SD = 8.24$ ). This supports the hypothesis that university students hold a moderate-level attitude toward hybrid education post-pandemic.

These findings may be interpreted as follows: Hybrid education represents an innovative approach adopted by Algerian universities to sustain academic activities. However, its efficacy is hindered by limitations such as inadequate resources, underdeveloped infrastructure, and low awareness of this novel educational model.

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### 3.2 Results of Hypothesis 2 Testing

The second hypothesis states that *"statistically significant differences exist in university students' attitudes toward hybrid education after the COVID-19 pandemic, attributable to gender."* An independent samples *t*-test was employed to validate this hypothesis, with outcomes detailed in Table 7.

**Table 7. Results of Hypothesis 2 Testing**

| Gender | Mean  | SD   | t     | Sig. |
|--------|-------|------|-------|------|
| Male   | 72.85 | 2.27 | 4.286 | .000 |
| Female | 66.22 | 9.23 |       |      |

There was a statistically significant difference in attitudes based on gender ( $t = 4.286, p < .001$ ), with males demonstrating more favorable attitudes than females.

### 3.3 Results of Hypothesis 3 Testing

The third hypothesis asserts that *"statistically significant differences exist in university students' attitudes toward hybrid education following the COVID-19 pandemic, attributable to place of residence."* An independent samples *t*-test was conducted to evaluate this hypothesis, with results presented in Table 8.

**Table 8. Results of Hypothesis 3 Testing**

| Residence    | Mean  | SD   | t     | Sig. |
|--------------|-------|------|-------|------|
| Resident     | 72.93 | 2.57 | 5.024 | .000 |
| Non-Resident | 63.93 | 9.46 |       |      |

The analysis reveals a statistically significant difference in attitudes based on residence status ( $t = 5.024$ ,  $p < .001$ ). Resident students ( $M = 72.93$ ,  $SD = 2.57$ ) demonstrated significantly more favorable attitudes toward hybrid education than non-resident students ( $M = 63.93$ ,  $SD = 9.46$ ), supporting the hypothesis that differences favor on-campus residents.

This divergence is interpreted as a response to substandard living conditions in university accommodations. Residents—facing inadequate facilities, financial constraints, and limited recreational resources—prefer hybrid models for their flexibility in mitigating these challenges.

As a conclusion:

- **Hypothesis One:** Confirmed moderate attitudes toward blended education.
- **Hypothesis Two:** Gender differences were statistically significant, with male students showing more favorable attitudes.
- **Hypothesis Three:** Residence influenced attitudes; on-campus resident students demonstrated more favorable views.
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## 4. Analysis, Interpretation, and Discussion

**4.1 First Hypothesis:** The moderate acceptance level indicates that while blended education was necessary under pandemic conditions, inadequate infrastructure, digital literacy gaps, and lack of institutional preparation limited its effectiveness.

**4.2 Second Hypothesis:** Male students' more favorable attitudes may reflect the greater flexibility blended models offer for balancing employment and study. This finding aligns with earlier studies from the Middle East and North Africa region (e.g., Jaroud&Azzāq, 2021), which also noted that male students often embrace hybrid formats as they overlap with work responsibilities. However, it contrasts with certain Western studies (e.g., Hodges et al., 2020), which reported no significant gender differences in blended learning attitudes.

**4.3 Third Hypothesis:** Resident students expressed stronger approval for blended learning. This can be interpreted in light of the unique challenges of on-campus living, including limited facilities, financial constraints, and restricted mobility. The flexibility provided by blended learning appears to alleviate these pressures. This is consistent with similar findings in North African contexts (Saghir, 2022), though different from European cases where residence status did not significantly impact blended learning perceptions.

## 5. Conclusion

This study reveals three pivotal findings regarding university students' attitudes toward hybrid learning in the post-pandemic context. First, students exhibit a **moderate overall acceptance** of blended education models, reflecting both the adaptability of this approach and its persistent challenges. This tempered enthusiasm likely stems from infrastructural limitations, uneven digital literacy, and the transitional nature of hybrid

frameworks in Algerian higher education. Second, **gender emerges as a significant differentiator**, with male students reporting markedly more favorable attitudes than their female counterparts. This divergence may be attributed to socioeconomic factors, including male students' greater tendency to balance employment with studies, thereby valuing the flexibility of hybrid models. Third, **residence status proves consequential**, as on-campus students demonstrate stronger approval compared to non-residents. This gap underscores how substandard living conditions in university accommodations—such as inadequate facilities and limited resources—heighten residents' appreciation for the logistical flexibility offered by blended learning.

Collectively, these outcomes emphasize the **critical influence of demographic variables** on technology-mediated education adoption. To address these findings, multifaceted interventions are warranted. Educational institutions must prioritize **infrastructure enhancement**, including robust digital networks and learning management systems, to mitigate technical barriers. **Resource equity** demands systematic allocation of technological tools (e.g., devices, software licenses) to bridge access disparities. Concurrently, **stakeholder training** through targeted workshops is essential to cultivate pedagogical proficiency among faculty and digital fluency among students. **Curricular reform** should further integrate synchronous and asynchronous components to optimize engagement across diverse learning contexts. Finally, **longitudinal research** investigating socioeconomic moderators—such as income disparities and rural-urban divides—is crucial to refine hybrid education's scalability and inclusivity. These recommendations collectively aim to transform moderate acceptance into sustained engagement, ensuring hybrid models fulfill their potential as resilient, equitable educational pathways.

Overall, the study demonstrates three major findings:

1. Students show **moderate acceptance** of blended education, reflecting both adaptability and persistent structural challenges.
2. **Gender matters:** male students show more favorable views, potentially linked to socio-economic and work-study needs.
3. **Residence status matters:** students living on campus express stronger approval, attributable to the flexibility blended formats offer in overcoming campus living challenges.

Together, these results highlight the importance of demographic factors and socio-economic conditions in shaping students' responses to blended models in Algeria.

## 6. Recommendations

- **Infrastructure Development:** Universities should prioritize investment in reliable internet services, digital platforms, and technical support.
- **Policy-Oriented Resource Distribution:** A nation-wide program to provide devices and subsidized internet access is needed to ensure equitable participation.
- **Professional Development:** Faculty members should receive ongoing training in blended pedagogy and digital pedagogy.
- **Targeted Student Support:** Focus on training workshops for students, especially those with low digital literacy.
- **Curricular Reform:** Revisesyllabi to balance synchronous and asynchronous components.

- **Further Research:** Launch national-scale studies with larger samples to validate current findings, comparing across urban/rural divides.
- **Institutional Policy:** Algerian universities should adapt policies to consider gender and residence differences when designing blended education strategies.

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**ISSN:** 1112- 7872  
**E-ISSN:** 2600-6162

**Almawaqif: Journal of sociological and historical  
Studies**

**Vol. 21N° 01,Month 11 Year 2025**

pp.671- 655

**Title University Students' Attitudes Toward  
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