

Research Article

Debunking Delusions That HBCU Students Cannot Learn Psychology Virtually: A Comparative Study of Online vs. In-person Learning

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Abstract

The exponential growth of online learning has drastically transformed the educational environment. Online learning platforms have allowed for more flexible, personalized, and accessible educational opportunities. However, traditional in-person classes are considered the standard academic format, especially in fields of study like psychology that focus on understanding interpersonal communication. The delusional belief that traditional classroom settings are the only format that facilitates the development of interpersonal skills and other learning objectives in a field like psychology hinders the growth and opportunities for students, academic institutions, and the overall field. This study aims to investigate learning outcome differences between online and in-person pedagogy for Historically Black College or University (HBCU) students studying psychology. Three different analysis tools were used to analyze four years of archival data, experimentation, and surveys collected from a private HBCU in New Orleans, Louisiana. The results indicated no significant difference in academic performance for students studying psychology in an online or in-person class. Research findings also suggest that subject matter interest, effective communication, instructor training on universal standards of practice in online learning, manageable class sizes, access to course resources, and technical support are contributing factors to overall programming success. The article also discussed current trends in teaching, advantages and barriers of online and in-person learning, limitations of the study, and recommendations for improving the educational experience.

Keywords

Online Learning, In-person Learning, Psychology, HBCU, Teaching Style, Pedagogies

1. Introduction

Advances in technology and changing student needs have drastically altered the educational landscape. Online learning has become one of the fastest-growing educational options for several students and academic institutions [11, 21]. In 2019, roughly 36% of undergraduate students reported taking an online class, but by 2021, 61% (9.4 million) were enrolled in

at least one online course, and 28% (4.4 million) took online classes exclusively [20]. Students enjoy the convenience and flexibility of online learning options, while educational programs enjoy the ability to attract a larger population of consumers. Online education options also allow students to continue learning in the event of an emergency that disrupts the

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academic school year. Global events like COVID-19 restrictions or local natural disasters like hurricanes shutting down schools, not only demonstrated this fact but also accelerated the rise of online learning. However, traditional in-person classes have been considered the standard educational format. Many educators also feel that the advantages of online learning come at a cost of academic rigor and standards, especially in fields of study like psychology that focus on understanding interpersonal communication. The belief that traditional classroom settings are the only format that facilitates social interaction, peer support, the development of interpersonal skills, and other learning objectives in a field like psychology may be a misbelief. The question of this research is whether there is a lower standard or difference between online and face-to-face teaching in psychology. The purpose of this study is to investigate learning outcome differences between online and in-person pedagogy for HBCU students studying psychology. Current literature appears to have limited information regarding African American students' experience with online learning. This study also aims to fill the literature gap in this area. Archival data, experimentation, and surveys were used to demonstrate that there is no difference in academic performance for students studying psychology in an online or in-person class. The study also explores current trends in teaching, analyzes the advantages and barriers of both online and in-person learning, and provides recommendations for improving the educational experience.

2. Online Learning Trends

Online learning in higher education has established itself as a key educational strategy transforming universities' teaching and learning process [24]. The growth of online learning is altering the academic environment, how education is perceived, and how it is delivered in this digital climate. The COVID-19 pandemic and rapid development of online learning platforms have allowed for more flexible, personalized, and accessible educational opportunities [6]. Before the pandemic, students took various online programs, but since then, there has been a significant surge in demand and options for virtual learning [4].

In discussing online learning trends, it is essential to note that it is complex and encompasses many forms, variations, and modifications [3, 6]. Even the terminology when referring to online learning has changed throughout its history. Online learning has been given many names. It is often referred to as e-learning, blended learning, digital learning, distance learning, flipped learning, and hybrid learning, to name a few [3]. Online learning has been well-defined as education being distributed or experienced in an online environment, either synchronously or asynchronously, using the Internet [3].

2.1. Open Educational Resources Trend

In today's new digital learning environment, learners can

now learn courses in various settings, such as on-campus in formal classroom settings, on-campus within informal out-of-class contexts, off-campus within formal in-class settings, and off-campus within informal beyond class contexts [3, 6]. Learners also have unique technologies to support them in the learning process. Although new policies may need to be created to support these technologies, they are here and will be employed by today's students. The crucial point is that learning through new online paths and platforms will continue to be a significant trend in online learning [3]. One new concept, which continues to play a role in shaping the future of online education, was coined by Brown (2021) as *Openness*. *Openness* is the use of Open Educational Resources (OER). Faculty who use one or more OER initiatives were found to be more likely to be open to teaching in an online environment [3]. Faculty education is central; however, it is one of the primary disadvantages of online learning. This is further discussed below in the disadvantages section.

2.2. Interactivity Learning Trend

Interactivity is another significant trend in online learning. Interactivity is collaboration involving learners. Three structural elements of interactivity include cognitive interaction, social interaction, and teacher presence. According to Brown (2021), cognitive presence describes academic content and engaging the mind in the online learning environment. Social presence is the ability of the individual learner to project themselves as a 'real' person in the online environment [3]. Teaching presence includes facilitating discourse, direct instruction, and course design [3, 27]. Educational knowledge and learning occur at the intersection of these presences, and rich forms of interactivity happen by design and require careful scaffolding and active facilitation by educators [3]. The overarching takeaway from Brown (2021) is that educators must be ready to consider new business models and teaching approaches rather than sit on the sidelines. There is a need for more impactful professional development opportunities that challenge teachers' pre-existing pedagogical beliefs and promote a greater understanding of new digital technologies in a broader social context-for better and worse [3].

2.3. AI Learning Trend

One trend is the diversification of digital tools and technologies. Tools such as Artificial Intelligence (AI) are revolutionizing modern education [25, 29]. AI is a subfield of computer science dedicated to understanding human thought processes and recreating their effects through information systems [29]. Both students and their professors are employing AI resources. Recent statistics show that 43% of college students in the U.S. use AI tools like ChatGPT, and half of instructors employ AI to develop their lessons [29]. There are also AI-powered learning management systems (LMS). Examples of these LMS programs are Absorb LMS and Docebo.

They deliver multiple AI capabilities to support teaching and learning activities, such as intelligent content creation, administrative task automation, and personalized learning [25, 29]. These technologies will continue to expand and advance the development of online learning environments by providing more immersive and interactive environments.

3. Benefits and Barriers

3.1. Benefits of Online Learning

One of the main advantages of online learning is that it is asynchronous. In other words, it allows students to access course materials, interact with faculty and classmates, and complete assignments at their own pace and from any location [4]. This type of flexibility and accessibility can allow students to work full-time, tend to family issues, and/or live in a remote environment while obtaining a higher education degree. Also, students can record and playback lectures and access learning materials anytime.

Online or e-learning, as it is referred to, affords advantages in the university context. Those include offering greater autonomy to students by allowing them to control their own time and space of study, and the ability to select the content of research and decide when and how to study using different devices [24]. Furthermore, online learning allows students from anywhere to access quality education regardless of their geographical location [6, 24]. Online learning also allows university professionals to reach a wider audience and educate students who cannot access traditional classrooms.

Contrary to common opinion, students and professors communicate extensively in online education [4]. Students in online classes can freely connect with their professors anytime and from any location. This connection can allow for lively debates and discussions. It also facilitates prompt and private responses from their professor. To capture students' interest, teachers can experiment with new learning methodologies because of the new advantages offered by online learning.

Another advantage of online learning is reduced financial costs [12]. Online education is more affordable than physical learning. Many students drop out of school due to their inability to pay tuition. Attending face-to-face classes involves many extra costs, such as housing, transportation, and meals. Also, staying at home can save the student money since the student does not have to pay for housing and food [4].

Online education can also promote student freedom, curiosity, collaboration, critical thinking, and self-directed learning [4, 13]. Online learning creates a space for students to be responsible for their learning, which can generate the drive to achieve success. A successful online student must be accountable and self-disciplined. As a result, they have a greater probability of landing a job [4].

3.2. Benefits of In-person Learning

Although online learning provides several advantages, in-person learning is still considered the best way to directly engage with peers and instructors. Direct high levels of student engagement improve understanding and retention of course material [18, 21]. In-person classes also allow students to ask questions immediately and receive real-time feedback. Face-to-face contact makes it easier for instructors to explain complex ideas and clarify questions as they arise [15, 17]. Research also indicated that in-person classes encourage greater active participation by incorporating hands-on learning experiences. Experiments, simulations, or case studies often enhance understanding of the course material [21]. Learners also develop a stronger sense of community while enrolled in face-to-face courses. Connecting with peers and faculty to establish study groups and mentorship opportunities is easily achieved [18].

In-person learning also aligns with the current standards of education for psychology majors. The *American Psychological Association Guidelines for the Undergraduate Psychology Major* provide national recommendations regarding the knowledge and skills psychology majors should acquire. The latest version, *GOAL 4 Communication, Psychological Literacy, and Technology Skills*, addresses students' ability to "build and maintain effective communication skills in processing and expressing information" [1]. In-person classes, students develop essential interpersonal communication skills. Developing the ability to distinguish appropriate and inappropriate communication strategies, develop interpersonal relationships, express and explain ideas with others, discuss psychological concepts, and provide persuasive scientific arguments are traditionally integrated into in-person psychology curricula. Developing interpersonal communication skills is a vital step in the education of psychology students, which may be missed in online learning formats.

Some research suggests that online learning results in lower academic performance. An article entitled "The Benefits of In-Person School vs Remote Learning" referred to a study showing that students' scores on standardized tests dropped three percentile points while virtual schooling options were utilized during the COVID-19 pandemic [14]. Poor academic performance and limited social interaction present significant challenges for the online learning environment.

3.3. Barriers to Online Learning

Several barriers to online learning can impede the students' academic growth and the faculty members' ability to teach. Students often report having issues managing time because of all the requirements of an online class [7, 23, 28]. Although online classes allow for self-paced learning, some students may not have a free schedule and fall into the "procrastination inclination" [4, 9]. Additionally, students may be more inclined to check their social media accounts or search the internet instead of completing assignments, subsequently falling

behind in their work. The self-discipline needed to read and study independently has been noted as a significant barrier for students in online classes [25].

Research also indicates that losing the social interaction components standard in face-to-face classes can reduce the students' motivation and engagement levels [17, 25]. The lack of face-to-face interaction is a significant drawback of online learning. Students and instructors typically enjoy the relationship developed through an in-person class. It plays an important role in the learning process. However, in an online class, it is difficult to foster the same type of instructor-student interaction [30]. Similarly, not all students may be agreeable to learn online and choose traditional classrooms. Online learning offers flexibility regarding reaction time but sacrifices the critical conversation of offline learning [26]. Instructors must learn new interactive ways to engage with students, assist, and meet ever-changing expectations of the online teaching experience.

However, the most significant barrier indicated is the lack of technology and support for online learning [28, 32]. Whether you are a student or instructor with years of experience in online education or a novice to this format, it is vital to have the technology and institutional support. Online learning demands that teachers have a basic understanding of using modern digital technology. However, this is not always the case. Often, teachers have a very elementary knowledge of technology. Sometimes, they do not have the necessary resources, training, and tools to conduct online classes. For many teachers, transitioning from traditional to virtual classrooms involves a momentous learning curve.

Mastering recent technologies and teaching methodologies demands time and adaptation, which can produce stress and affect their pedagogical efficacy [24]. Although difficult for some, this transition is important for online teaching and learning success. Technical difficulties are also a hindrance to online learning. However, if students cannot access the Internet, online learning in whatever format is problematic [3]. Many institutions offer online courses but may not have the infrastructure to support the growing number of students or the ability to properly train their faculty [21, 32].

3.4. Learning Style Difference or Preference

Learning styles have been a prevalent theory among teachers for many decades. Presuming that students tend to learn in a particular manner has caused teachers to alter their lesson plans, teaching materials, and even general teaching style. Although there are different theories, the most common categorization of learning styles is Visual, Auditory, Kinesthetic, and Reading/Writing [10]. Visual Learners are described as preferring to learn through seeing visual aids and images, while Auditory Learners enjoy listening to lectures and discussions [10, 16]. On the other hand, Kinesthetic Learners like hands-on activities and active participation in the learning process, and Reading/Writing Learners learn by

taking notes and writing summaries [10, 16].

Some researchers indicate that learning differences are a myth, but believe students may have preferences for how they process information [19, 27]. Even though these preferences may not affect learning outcomes, they may influence an individual's choice to learn online or in person. If students prefer visual aids to learn, they might flourish with online resources like videos and recorded demonstrations. In-person classes would need to offer presentations on whiteboards or PowerPoint to produce a similar experience for a visual learner. Auditory and Reading/Writing Learners may enjoy online and in-person lectures and writing assignments to understand complex concepts better. However, Kinesthetic Learners might find the online learning environment difficult. The lack of hands-on projects, In-person experiments, and interaction with the physical environment may not interest a kinesthetic learner.

Kinesthetic learners prefer to physically engage with material to understand it. Online environments traditionally do not offer tactile engagement [27, 31]. The lack of physical engagement may affect a kinesthetic learner's ability to maintain focus and attention in an online class. To ensure that students benefit from the learning experience regardless of preference, research suggests incorporating active learning strategies in a mixed-methods approach to both online and in-person courses [2, 31].

The teaching style may not be as crucial to the learning outcomes, but it is essential for the student's experience. Understanding an individual's learning style would assist the student in deciding which type of class, either online or in person, would be best for their education. Instructors should not use learning styles to develop rigid categories for teaching, but instead decide what type of options they would like to make available to enhance the student experience.

4. Methodology

The study used archival data, experimentation, and surveys to investigate learning outcomes differences between online and in-person pedagogy for HBCU students studying psychology. This mixed-methods approach allowed for the exploration of historical learning trends, current student behavior, and preferences. Data was analyzed using the Statistical Package for the Social Sciences (SPSS), which is an effective and widely used tool for analyzing quantitative data [22].

4.1. Participants

The sample (N=26) consisted of a majority of African American undergraduate college students between the ages of 18 and 25 were selected to participate in the experiment component of the study. Research participants were classified as sophomore (n=3), juniors (n=8), and seniors (n=15) from the various majors: psychology (n=13), criminal justice

(n=1), social work (n=1), marketing (n=1), computer science (n=1), biology (n=2), political science (n=1), mass communications (n=1), business (n=1), and nursing (n=1). Participants were recruited using a convenience sampling of four psychology courses offered during the summer semester at Dillard University. Students enrolled in the courses were incentivized to participate in the study with extra credit points. The purpose, procedure, confidentiality statement, voluntary involvement, and all other relevant research information were provided to the participants in the informed consent before the start of the study period. Archival data were collected from (N=222) students enrolled in either online (n=115) or in-person (n=107) Introduction to Psychology Spring courses from 2022 to 2025. Only the students' grades were reported in this study; no student identification information was collected.

4.2. Procedure(s)

4.2.1. Archival Data Collection

Archival data were collected from eight Introduction to Psychology courses from 222 students in psychology courses taking online (n=107) and in-person (n=115) in spring 2022 to 2025. Canvas Teaching and Learning Software was used to retrieve students' final grades. Student grades were used as a measurement of academic performance and learning outcomes. Data was analyzed using a SPSS one-way Analysis of Variance (ANOVA) to determine whether there were any statistically significant differences between the means of two unrelated independent groups. In addition, a simple linear regression analysis was used to determine where two predictor variables (online and in-person learning) predicted the outcomes (i.e., scores) for the two predictor variables. Data from students not in these eight psychology classes was not collected or used in this study. The students were taught by the same professor, given the same course material, and took the same examinations in each class. This was done to eliminate deception or infidelity in data analyses and reporting.

4.2.2. Experimental Design

Twenty-four (24) student participants were randomly assigned to online (n=12) or in-person (n=12) learning groups to take a psychology course from the Summer 2025 semester. The course instructor was selected based on their superior knowledge, training, credentials, and experience teaching online and in-person courses. The instructor has worked in online education for over 15 years and obtained a Master's and a PhD degree from an online program. She also has certifications from the Association of College and University (ACUE) in Effective Online Teaching Practices, Canvas Instructor Onboarding, Quality Matters Peer Reviewing (QM APPQMR), and an Online Faculty Certification (QM AOFC). The participants were taught about a specific psychological concept in both groups for three classes and tested on their

knowledge at the end of the experiment. The scores from the final exam were used to assess the impact of online and In-person teaching methods on student performance. T-test data was analyzed using SPSS to compare mean differences and to determine if there were statistically significant differences between the two independent groups. In addition, a simple linear regression analysis was used to determine whether two predictor variables (online and in-person learning) predicted the outcomes (i.e., scores) for the groups. Descriptive data, including the means and standard deviations were also obtained.

4.2.3. Survey Data Collection

Data was also gathered through a closed-ended survey given to 24 students taking in-person (n=12) and online (n=12) psychology courses from the Summer 2025 semester at the beginning of the experiment. The survey questions focused on student demographics, classification, grade point average (GPA), major, learning expectations, experiences with online and in-person learning, preferences, access to information, levels of engagement, and technological support (see Appendix B for survey). The data was analyzed using a t-test in SPSS. The groups were given SPSS labels and values: "In-person" = 1 and "Online" = 2. Their responses were given SPSS labels and values: "Sophomore" = 1, "Junior" = 2, and "Senior" = 3; GPAs were given SPSS values: 2.0-2.4 = 1, 2.5-2.9 = 2, 3.0-3.4 = 3, and 3.5 to 4.0 = 4. For the regression analysis, Likert-style questions were used to collect data about learning format preferences and assigned SPSS labels and values: "Fully In-person" = 1, "Fully Online" = 2, and "Hybrid (mix of in-person and online)" = 3. The data was analyzed in SPSS.

4.3. Material

Canvas Teaching and Learning Software was used to create course modules for each experimental and researched section of the Introduction to Psychology class. Canvas was also used to collect students' assessment scores and survey responses. The course assignments and exams were adapted from open educational resources. The instructor and co-investigators developed the written and virtual course content, syllabi, and instructions. The participants received an informed consent document describing the purpose, procedure, confidentiality, voluntary involvement, and all other relevant research information before participation. The university's institutional review board approved all study procedures. A closed-ended survey was given to the participants at the beginning of the experiment. The survey questions focused on student demographics, classification, GPA, major, learning expectations, experiences with online and in-person learning, preferences, access to information, levels of engagement, and technological support. The SPSS, IBM 30.0.0 version software, was used to analyze assessment scores, survey responses, and student data. The Dillard University

Office of Information Technology and Telecommunications (ITT) provided technical support, Canvas troubleshooting, and access to the Internet. Students were instructed to report any technical issues to the ITT help desk email for assistance.

5. Results

The purpose of this study was to quantitatively investigate learning outcome differences between online and in-person pedagogy for HBCU students in psychology courses. A one-way Analysis of Variance (ANOVA) was used to determine whether there were any statistically significant differences between the means of two unrelated independent groups. An independent samples *t*-test was used to compare the means of two independent groups to determine if the groups were significantly different from each other. In addition, a simple linear regression analysis was used to determine where two predictor variables (online and in-person learning) predicted the outcomes (i.e., scores) for the two predictor variables.

During data analysis, the nominal grouping/predictor variables were given values, in-person = 1 and online = 2. All the individual scores (outcome variables) from each Spring semester (2022-2025) were computed and analyzed. The semesters were not viewed as independent groups. Therefore, separate semester scores were not hypothesized, computed, or analyzed. Statistical significance was determined if *p* values were equal to or less than *p* .05. Also, Cohen's *d*, a measure of effect size, was used to compute measures. Approximate effect sizes of .20 indicate small/weak differences or relations, .50 indicates moderate relations, and effect size of .80 indicate large/strong relations between means [5].

5.1. Archival Data

The mean score and standard deviation across all semesters were computed (*n* =78.74, *SD* =18). The following table provides descriptive statistics (Teaching Delivery = grouping/predictor variables; Final grade averages all courses = outcome variable):

Table 1. Spring 2022-2025 Introduction to Psychology Descriptive Statistics.

	N	Minimum	Maximum	Mean	Std. Deviation
Teaching Delivery	222	1.00	2.00	1.5180	.50080
SPR2022INP	30	28	95	78.07	16.047
SPR2022ONL	27	2	97	72.32	23.526
SPR2023INP	28	64	94	83.44	7.513
SPR2023ONL	29	42	99	83.72	11.586
SPR2024INP	29	2	95	72.84	22.363
SPR2024ONL	31	0	95	79.61	21.905
SPR2025ONL	28	54	96	83.02	9.164
SPR2025INP	20	11	99	75.83	21.121
Final Grades Average of all courses	222	.00	98.81	78.7411	17.85608
Valid N (listwise)	20				

A one-way ANOVA was used to determine whether there were any statistically significant differences between the means of two unrelated independent groups (e.g., in-person and online). Results from ANOVA indicated that there were no statistically significant differences between group means, *F* (1, 220) =.784, *p* =.377. Moreover, the *F*-statistic (0.784) was low, indicating that the between-group variance is not substantially larger than the within-group variance. An independent samples *t*-test was used to compare the means of two independent groups to determine if the groups were significantly different from each other. The result from the *t*-test

analysis also showed no statistical significance (*p* = 0.377 > 0.05), indicating no difference or effect among the groups. Finally, a simple linear regression analysis was used to determine whether two predictor variables (online and in-person learning) predicted learning outcomes (i.e., scores) for students in online and in-person classes. Results indicated a small percentage of variance ($R^2 = 0.004$ or 0.4%) in the dependent variables. The low percentage in variance indicated that the predictors (i.e., online and in-person methods) will not sufficiently explain or predict learning outcomes. Moreover, given that the results revealed no statistical significance, *p* =

0.377, this suggests the model will not significantly improve prediction with the small sample size. A larger sample size may yield different results.

Table 2. Spring 2022-2025 Introduction to Psychology Grades.

Final Grade Average								
	N	Mean	Std. Deviation	Std. Error	Lower Bound Mean	Upper Bound Mean		
INPERSON	107	77.6407	17.68543	1.70972	74.2511	81.0304		
ONLINE	115	79.7650	18.03003	1.68131	76.4343	83.0956		
Total	222	78.7411	17.85608	1.19842	76.3793	81.1029		
Final Grade ANOVA								
	Sum of Squares	df	Mean Square	F	Sig.			
Between Groups	250.105	1	250.105	.784	.377			
Within Groups	70213.449	220	319.152					
Total	70463.555	221						
Final Grade Independent T-Test for Equality of Means								
	T	df	Significance One-Sided p	Two-Sided p	Mean Difference	Std. Error Difference	Lower	Upper
Equal variances assumed	-.885	220	.188	.377	-2.12421	2.39958	-6.8533	2.60489
Equal variances not assumed	-.886	219.380	.188	.377	-2.12421	2.39790	-6.8533	2.60489

5.2. Experiment Data

Table 3. Experimental Group Data.

Final Grade Average								
Learning Types	N	Mean	Std. Deviation	Std. Error Mean				
IN-PERSON	12	96.2125	4.68070	1.35120				
ONLINE	12	90.9092	15.01439	4.33428				
Independent T-Test for Equality of Means								
	T	df	One-Sided p	Two-Sided p	Mean Difference	Std. Error Difference	Lower	Upper
Equal variances assumed	1.168	22	.128	.255	5.303	4.540	-4.112	14.719
Equal variances not assumed	1.168	13.118	.132	.264	5.303	4.540	-4.496	15.102
Linear Regression								
R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change

Final Grade Average								
.465	.216	.141	10.38671	.216	2.892	2	21	.078

Descriptive data from the experimental groups shows that the average GPA ($n=2.69$) for all students and the average scores for in-person ($n=96$) and online ($n=91$) students. The average score for the Junior in the in-person group was 96. This was the highest score among the groups, followed by in-person Senior scores (95), online Junior (94), and online Senior (86). There were no correlations between classification, GPA, and learning outcomes (final scores). The independent samples t -test was used to compare the means of the two independent groups to determine if the groups were significantly different and to test the hypothesis that students enrolled in an online class would have similar learning outcomes, as measured by test scores, as students in in-person courses. Results from the t -test indicated no statistically significant differences between the groups, $t(22) = 1.17$, $p = .26$ (two-tailed), suggesting that different learning formats will not affect learning outcomes and, regardless of the learning format, students will have similar learning outcomes. The linear regression analysis determined whether two predictor variables (classification and GPA) predicted learning outcomes (i.e., scores) for students in online and in-person classes. Results also indicated no statistical significance, $F(2, 21) = 2.89$, $p = .078$, indicating the model will not significantly improve prediction with the small sample size. Moreover, results showed a small to moderate effect size ($R^2 = 0.216$ or 21%), indicating that

21% of the learning outcomes may be explained by the predictors. This low percentage indicated that the predictors will not sufficiently explain or predict learning outcomes. However, two facts are important to note. First, the model showed a positive small to moderate effect size and is consistent with Cohen's (1992) benchmarks for effect sizes (small $= .02$, medium $= .13$, large $= .26$) [5]. This indicates that students in online learning formats will have positive outcomes, similar to the students in in-person learning formats. Secondly, since $p = .078$ is close to approaching significance, it is plausible to hypothesize that a larger sample size may yield statistically significant results.

5.3. Student Survey Data: What Is Your Preferred Type of Learning

A simple linear regression analysis was used to determine whether the predictor variables (classification) predicted learning type preferences among all students. Results indicated no statistical significance, $F(2, 24) = .974$, $p = .333$, indicating the model will not significantly improve prediction with the small sample size. Moreover, results showed a small effect size ($R^2 = .039$ or 3.9%), indicating that 3.9% of the learning type preferences were explained by the students' classification. The students in the study did not prefer one learning style over the other.

Table 4. Student Survey Linear Regression.

R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change
.198	.039	-.001	.70638	.039	.974	1	24	.333

Although experimental results from the t -test, linear regression analysis, and ANOVA indicated no statistically significant differences between the variables, these results are important, given that the overarching research question and hypothesis stated that online courses would have the same/similar learning outcomes as students taking in-person courses. Moreover, results from the analyses indicated that larger sample sizes were needed to better understand the relations and predictabilities associated with learning formats and learning outcomes. The results were consistent across the three analysis tools: there were no significant effects of the grouping variables (i.e., online and in-person) on the dependent variable (i.e., learning outcomes). However, the moderate correlation between the

grouping variables and the learning outcomes is worth noting.

6. Discussion

The research findings show no statistically significant difference between the learning outcomes scores for students enrolled in a psychology online class and those in an in-person class across three data collection and analysis methods. This suggests that students received similar instruction and learned the same amount of content regardless of the teaching format. Data collected from other research indicated similar findings when certain variables were controlled [12]. Many experimental variables in this study were controlled by utilizing the

same instructor, course material, and learning outcome measurements. Keeping these variables consistent allowed for a clear identification of any cause-and-effect relationships between the instructional formats (e.g., online or in-person learning) and academic performance. Students were randomly assigned to one of the two groups, providing an equal distribution of factors like individual academic ability, classification, and other demographics.

6.1. Student Participation

Data was collected over four years at Dillard University, a private, historically black university in New Orleans, Louisiana [8]. The average enrollment is 1202 students per year [8]. The sample size of the archival data (N=222) accounted for roughly 18% of the student population. In the experimental pilot study, only 24 students agreed to participate, which equates to less than 2% of the university's population. The small sample size decreased the study's ability to generalize findings and increased the margin of error. However, the archival data collected over the four years were consistent with the findings of the experimental components of the study. The consistency between the research designs supports that instructional formats will not affect learning outcomes in this setting. The research also provides guidelines for replication studies in other majors and larger populations. The small sample is one of the significant limitations of the study. It is suggested that recruiting during the fall and/or semesters will bolster higher research participation. Collaboration and recruitment from other universities could increase the rate of participation and sample size, resulting in better statistical power. Student involvement in research could also be increased by including research participation as a requirement for graduation.

6.2. Student Engagement and Effective Communication

The course instructor noted that students appeared to enjoy the course content in both the online and in-person classes. The instructor suggested that Introduction to Psychology is a popular course, and students historically find it interesting to learn about the human mind and behavior. The interest in the subject matter may also be a contributing factor to students' participation level and overall success. The instructor also provided class activities and assignments that encouraged the students to engage with the material and each other. Research indicates that developing course activities that reinforce active discussion and class participation improve learning outcomes and overall student enjoyment. Findings also suggested that the instructor's hosting regular office hours, either in person or virtually, was critical in facilitating effective communication in the course. Although students can access all written course material, they may also need detailed verbal instructions or have questions that the in-

structor can answer during office hours or through e-mail.

6.3. Instructor Expertise and Training

Although university faculty are considered experts in their content areas or fields of study, they may not feel as prepared to instruct a course online. Online teaching requires knowledge of current technology, mastery of computer skills, and creative assignment development to produce a learning experience that mimics an in-person classroom. Research revealed that instructors may hesitate to teach online classes because they feel underprepared or lack institutional resources to meet these requirements. Providing training on universal standards of practice in online learning, regulating class sizes to a manageable number, and providing access to an electronic book and other resources would improve their teaching skills and their willingness to teach in this format.

6.4. Technical Support and Accessibility

Whether it is a student or an instructor trying to decide if online or in-person learning meets their needs, the first thing to consider is the accessibility and availability of the technology. Research findings suggested that students in the online and in-person classes struggled with accessing course material on the Internet, locating a functional computer, contacting technical support, and having the issues addressed promptly. These basic learning tools, resources, and services are essential to all academic environments. Academic institutions must invest resources and workforce to keep a standard of service for students and hold administrators accountable for any disruption in this vital service.

6.5. Limitations of the Study and Future Research Implications

6.5.1. Sample Size and Diversity

Although this study provided historical and quantifiable evidence to support the idea that there is no difference between online and in-person teaching as it relates to learning outcomes for psychology, the study has limitations that should be addressed. The first and largest limitation of the study is the sample size. The sample size of the data only accounted for roughly 20% of the university's population, which makes it difficult to generalize the findings. The research sample also lacked diversity of age, major, ethnic background, or other descriptive variables, further reducing the study's ability to generalize its findings. Current literature on this subject also appears to have limited information regarding African American students' experience with online learning. This study contributes to the growing field of online learning research by providing data on an underrepresented population. Recommendations to increase research participation include recruiting during the fall and/or spring semesters, collaborating with other universities, diversifying the partic-

ipation pool, and requiring research participation as a criterion for graduation.

6.5.2. Theory vs. Application Courses

The study only focused on psychology and one introductory course within the program. The introduction to psychology course offers a general understanding of theories and concepts related to the field. However, other more advanced courses within the program provide education in theory and the application of psychological concepts. This limits the study's ability to make references or connections to other courses, especially the application courses. Exploring other variables like different psychology courses, instructors, other fields of study, comparison between theory and application courses, fluctuating class size, and other variables are suggested as future avenues of study.

6.5.3. Technical Support

Another study limitation was the deficit in managing technical issues and contact with technical support. Students and the instructor reported several disruptions in either Internet service, e-mail, educational support resources, or other forms of communication managed by the institution's technical support team. The technical support team was contacted by email and phone several times to address reported concerns, with an average response time of 24 hours. Students reported increased anxiety and frustration due to the disruption of technical services and the lag in response time from technical support, which resulted in late assignment submissions. Technology and support issues are reported as a common problem in most academic settings and are not uniquely tied to this study or the university.

6.5.4. Funding Resources

The final noted limitation of the study was the lack of funding resources. Research projects require a workforce and time to construct, implement, analyze, and interpret various components of the study. Research investigators volunteered their time, expertise, and personal resources to develop and implement portions of this study to further the body of research on the subject. Financial support may incentivize university faculty to further their research efforts. It is suggested that university faculty and administrators locate and secure research funds to encourage further exploration of the study.

7. Conclusion

Online learning has drastically altered the academic landscape. The ever-changing technology offers flexibility, convenience, and access to every type of learner. In psychology, students are interested in learning about the mind and behavior of other human beings. Traditional in-person classes have supported these learning objectives, but with minor adaptations, online courses can meet the same standards. The

delusional belief system that traditional in-person learning has a different standard of academic rigor than online classes has been debunked. The research concluded that students would learn and perform on the same level in the correct settings. This article also contributed to the literature gap by exploring the online learning experience of African Americans. Barriers to online learning, such as poor student self-discipline, miscommunication, low levels of engagement, limited use of course resources, and inconsistent access to technology, are similar issues found in traditional in-person classes. It is recommended that in-person courses offer more of a blended approach where students can access resources online. Online courses can offer more opportunities for faculty and peer engagement through synchronous lectures and assignments. Students in both settings require access to the course material, an open line of communication with the instructor, consistent functional technology, trained and prepared instructors, and institutional resource support. Whether the course is online or in person, these standards of practice are universal in providing a highly functional learning experience.

Abbreviations

ACUE	Association of College and University
ANOVA	Analysis of Variance
APA	American Psychological Association
GPA	Grade Point Average
HBCU	Historically Black College or University
ITT	Dillard University Office of Information Technology and Telecommunications
QM AOFC	Quality Matters Online Faculty Certification
QM APPQMR	Quality Matters Peer Reviewing
SPSS	Statistical Package for the Social Sciences

Data Availability Statement

The data supporting the outcome of this research work have been reported in this manuscript.

Conflicts of Interest

The authors declare no conflicts of interest.

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