University Business Student Place Attachment during the Pandemic

Accepted
August 29, 2024

Citation
Clouse, S., Triche, J., & Firth, D. (2024). University business student place attachment during the pandemic. *Journal of Research in Business Education, 64*(1).

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Abstract

Knowing how business students are attached to universities, classes, and teachers helps develop student engagement strategies. This study examined three learning modalities utilized during the COVID-19 Pandemic (socially distanced face-to-face, fully remote on Zoom with the teacher and students not co-located, and hybrid with some students on-campus and some remote). All classes were delivered synchronously, and the remote and hybrid had Zoom recordings posted on the course management system. This research found a positive relationship between place attachment and learning intention and satisfaction for socially distanced face-to-face learners. It also found place attachment was mediated by technology issues for fully remote students. It is important to ensure the technology used to deliver instruction supports business student learning. Problems negatively impacts student learning intention and satisfaction. Place attachment impacts business student learning intention/satisfaction, but other factors like individual student differences, teaching methods, and curriculum are involved and need further study.

Keywords: *Place attachment, learning intention/satisfaction, technology issues mediation*

As soon as the COVID-19 Pandemic shut-down started in March 2020, universities and colleges hurriedly switched to remote delivery with video tools like Zoom and online classes (Boardman et al., 2021; Deng & Sun, 2022). Universities, students, and professors did their best to deliver learning outcomes during the pandemic. After finishing the Spring semester of 2020, the authors (MIS business instructors) informally asked students how the semester went considering the abrupt switch to online delivery. The overwhelming sentiment from those evaluations was that the place was important to business students. This sentiment from students led the authors to try to understand how place plays a role in several aspects of business student learning. Specifically, the purpose of this research was to examine how business student place attachment impacts their learning intention (willingness to take a class again in that learning modality) for the modalities of socially distanced face-to-face, remote, or hybrid and how the delivery modality and place attachment impacts student satisfaction.

Place attachment is a complex construct that accounts for a person's affective bonds to places (Holton, 2015; Scopelliti & Tiberio, 2010). A key aspect of place attachment is the role of emotion toward the environment (Low & Altman, 1992). Place attachment is a strong emotional connection between people and places (Spooner, 2019). Research has shown that place attachment increases with the more time that someone spends at a place (Kyle et al., 2005; Spooner, 2019; Zhang et al., 2018). Place attachment has been studied in neighborhoods, landscapes, communities, tourism, sport, and recreation, (Jorgensen & Stedman, 2001; Kyle et al., 2005; Lewicka, 2011; Low & Altman, 1992; Morgan, 2010; Ramkissoon, 2021; Ramkissoon et al., 2013; Scannell & Gifford, 2010; Williams & Vaske, 2003) and has most recently been studied in education (Bogdan et al., 2012; Holton, 2015; Huang et al., 2022; Moghisi et al., 2015; Scopelliti & Tiberio, 2010; Strait, 2012; Terrazas-Carrillo et al., 2014; Zhang et al., 2018).

Universities in the Fall semester of 2020 delivered courses in several different modalities including socially distanced face-to-face classes, remote synchronous classes using video tools, fully online asynchronous classes, or a hybrid delivery method with a mix of all of the learning methodologies. Hybrid learning includes both synchronous and asynchronous options and is inclusive of blended learning, flipped classroom, outcome-based, and student-centered learning (Li et al., 2021; Saichaie, 2020).

It is important to establish what relationship place attachment has to business education and learning in the literature. Dang and Weiss (2021, p. 15) did a review of the place attachment literature and stated "place attachment is a particularly relevant construct through which behavioral intentions can be studied." Spooner (2019) found that college and university students and alumni showed a strong sense of attachment to their colleges and universities. The COVID Pandemic put stress on higher education to maintain learning with different modalities (Wargadinata et al., 2020). Several articles in the place attachment literature stated more studies are needed to verify relationships between place attachment and how it impacts self, personality, and learning (Korpela, 2012; Lewicka, 2011). Jolley et al. (2018) studied place attachment and perceptions of learning of students on field trips. They found a direct link between student place attachment and students' perceptions of learning about landscapes. Fischer and Wentz (2021) studied place attachment and learning outcomes with tourist

volunteers at a U.S. National Park. They found that volunteers in their program increased their place attachment and learning outcomes. Semken et al. (2017) studied place attachment and learning outcomes in place-based education in geoscience education. They defined learning outcomes as factual knowledge, conceptual knowledge, skills and problem solving. Their case study outlined several examples for conducting place-based education in the geosciences, but they did not test the impact of place attachment on learning outcomes. Johnson et al. (2020) studied place-based learning communities and their ability to improve academic skills and behavior. They found that place-based learning communities improved students' belonging, academic performance, and persistence and also narrowed equity gaps.

Business educators need to understand how students are attached to their universities, classes, and teachers in order to help develop new ways for engaging students. This study adds to place attachment literature and its relationship to learning intention and satisfaction at a college or university. The contribution of this paper is to introduce a new model for learning that tests the effect of place attachment on business student learning intention (willingness to take a class again in that learning modality) as well as establish that place attachment has more than a tangential relationship to learning that has been found in other research.

Research Models and Hypotheses

This section examines the research on place attachment and learning which were used to develop research hypotheses that were tested. The research model included place attachment, the person dimension, learning intention and satisfaction, and technology issues that mediate the relationship between place attachment and learning intentions (the student's willingness to take a course again with that delivery modality).

Place Attachment Model

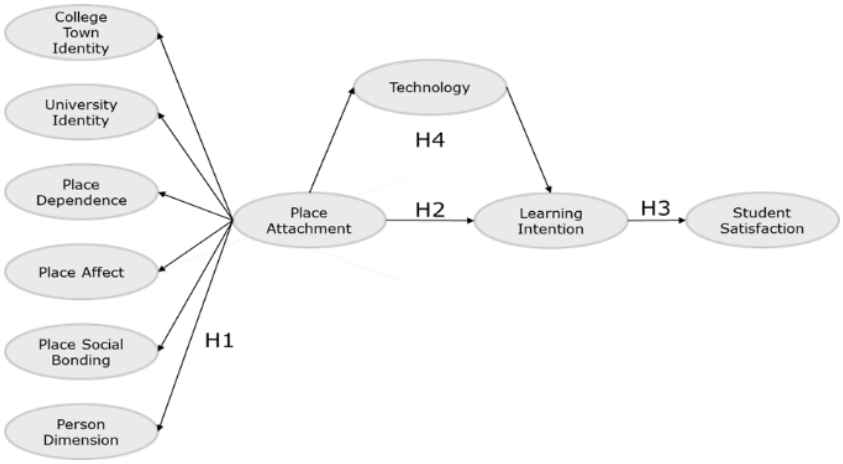
Place attachment includes affect and emotions, knowledge and beliefs, and behaviors and actions for the interactions between people and places (Bogdan et al., 2012; Jorgensen & Stedman, 2001; Kyle et al., 2005; Lewicka, 2011; Low & Altman, 1992; Morgan, 2010; Ramkissoon, 2021; Ramkissoon et al., 2013). Place attachment is comprised of place dependence, place identity, place affect and place social bonding (Jorgensen & Stedman, 2001; Kyle et al., 2005; Ramkissoon et al., 2013). Place dependence is a person's strength of association or functional attachment with a place (Jorgensen & Stedman, 2001). Place identity is how a person identifies with a place or their comfort level with the place (Jorgensen & Stedman, 2001; Kyle et al., 2005; Williams & Vaske, 2003). Place affect is grounded in the environmental and social experiences that helps individuals build sentiment about a place (Low & Altman, 1992; Ramkissoon, 2021; Ramkissoon et al., 2013). Place social bonding is the relationship that develops based on experiences with a place (Kyle et al., 2005; Ramkissoon, 2021; Ramkissoon et al., 2013). Place attachment is a second order factor of place dependence, identity, affect and social bonding (Ramkissoon et al., 2013).

Person Dimension

Another model associated with place attachment is the person, process, and place model (Scannell & Gifford, 2010; Spooner, 2019). Process and place from this model appear in place dependence, place identity, place affect, and place social bonding. The person dimension is the personal connection and attachment to a place (Hidalgo, 2013; Scannell & Gifford, 2010; Spooner, 2019). The person dimension also has a group component where meaning and attachment are based on shared experiences with the group. The person dimension adds the personal connection to a place to the Ramkissoon et al. (2013) model. This study adds the person dimension, and splits place identity for a university setting into college town identity and university identity as they were used by Zhang et al. (2018).

This research focuses on college town identity, university identity, place dependence, place affect, place social bonding, and the person dimension. The dependent variables are learning intentions (i.e., the student's preferred delivery modality) and student satisfaction. Figure 1 shows the place attachment research model for this study. The three learning modalities were face-to-face socially distanced classes, fully remote synchronous classes, and hybrid delivery classes.

Figure 1: *Place Attachment Research Model*



Confirming previous literature, the authors posit: H1: The person dimension will be another first-order factor that comprises the second-order construct place attachment in higher education.

Place Attachment and Learning Intention

Zhang et al. (2018) studied place attachment and how students become attached to universities and their communities. They defined two levels of place identity 1) college town identity and 2) university identity. College town identity is the emotional attachment to the community where

the university resides and university identity is the emotional attachment to the university itself (Zhang et al., 2018). Holton (2015) found that student place attachment with their universities and college towns are layered as they experience different parts of the university and college town experience. Terrazas et al. (2014) found that students show a sense of mastery as they experience the local community and the university campus. Moghisi et al. (2015) found that place attachment of the university is an emotional connection of the individual rooted in the individual's experiences.

Zhang et al. (2018) studied how place attachment impacts satisfaction of students and alumni by participating in a homecoming event. They found that university identity had a profound role of increasing student and alumni satisfaction. Since few studies have examined place attachment and learning, a contribution of this study is to establish the relationship that place attachment has on learning intention. Learning intention is measured in this study as a students' intention to take a future class in the same delivery modality.

Given that place attachment is the affect and emotions, knowledge and beliefs, and behaviors and actions for the interactions between people and places, the authors posit that the higher the place attachment for a student, the more likely the student will prefer delivery modes that contain face-to-face interactions between the students and professors. Therefore, H2: Place attachment will have a positive impact on business students learning intention for face-to-face, and hybrid learning.

Learning Intention and Student Satisfaction

In the context of this study, learning intention is the student's intention to take a course with the same delivery modality in the future as the one chosen during Covid. Student satisfaction is their satisfaction with the learning modality in that course. Strait (2012) found a positive relationship between place attachment and student satisfaction. Baber (2020) found that student intention to learn is a precursor to student satisfaction. Given that students can choose the delivery method that fits their needs, the authors predict that student learning intention (i.e., students' intention to take a future class in the same delivery modality) will have a positive effect on their satisfaction with the class. Therefore, H3: Business student learning intention will have a positive relationship with student satisfaction for face-to-face, remote, and hybrid learning.

Technology Mediation

Technology mediation is the impact of technology on the relationship between place attachment and learning intention. Pituch and Lee (2006) found that technology has a positive relationship with student learning intentions using the technology acceptance model (Davis & Venkatesh, 1996). Research has found that learner familiarity with technologies used for learning were important to user adoption of the system (Pituch & Lee, 2006). Deng and Sun (2022) found that technology was a significant barrier for transitioning to online classes and it related to lack of resources, slow Internet, lack of computing equipment and inadequate skills

about learning technologies. Baber (2020) noted that future research is needed to understand the role that technology plays in learning intentions and student satisfaction. The authors hypothesize that technology issues will be a mediator between place attachment and student learning intention and satisfaction. Therefore, H4: Place attachment on business student learning intention will be mediated by student comfort level with the technology issues they had with remote and hybrid learning.

Methodology

To test the research model, this quantitative study conducted a survey at a university in the Rocky Mountain West. The research question was, what impact does business student place attachment have on their intention to take a similar course in the future and their satisfaction with the current course delivery method? The sample was a convenience sample from seven different Management Information Systems (MIS) courses in a college of business. These courses were all taught by the three authors of this research. Students were emailed the survey after finals week and were included in a drawing for a gift certificate for dinner at a local restaurant as an incentive to participate. The remainder of this section will cover the delivery modalities, the sample, the measures used in the survey, the data analysis methods, data coding, and the descriptive statistics.

This research examined three different teaching delivery modalities during the COVID-19 Pandemic in the Fall Semester of 2020. The three methods used were socially distanced face-to-face in an on-campus classroom, fully remote synchronous using Zoom with the teacher and students not co-located, and hybrid where some students attended on-campus in a socially distanced face-to-face classroom and some attended remote via Zoom. All classes were delivered synchronously, and the remote and hybrid classes had Zoom recordings posted on the course management system. The Management Information Systems classes in the Business College were Introduction to Management Information Systems, Introduction to Programming, Introduction to Data Analytics, Introduction to Consulting, Enterprise Systems, Network Security, and Integrated Project Management. The authors used a survey instrument to measure the constructs. There were 93 business students that participated in the survey and 83.7% of them were juniors or seniors (see Table 1). The self-reported GPA averaged 3.42 on a 4.0 scale. Only 5% of the students in the sample lived on-campus in dorms. Given most of the students in the study were juniors and seniors; therefore, it is not surprising there was a low percentage that lived in dorms. At the time, most of the students were concerned about the Pandemic and catching COVID-19. Some of the students had multiple classes that were delivered in different formats. There were 44 students in the socially distanced face-to-face classes, 50 in the remote synchronous classes, and 45 that took the hybrid classes. There were three instructors in the study who taught seven classes (two face-to-face, two remote, and three hybrid). Each business instructor only taught one delivery modality.

Table 1: Descriptive Statistics

Description	Statistic	*n*	% Agree
GPA (self report)	*M* = 3.42	91	
	Live in Dorms		
Yes	5.38%	5	
No	94.62%	88	
Total	100.00%	93	
	Academic Level		
Sophomore	16.30%	15	
Junior	31.52%	29	
Senior	41.30%	38	
Graduate	10.87%	10	
Total	100.00%	92	
	Total Students by Delivery Method		
Face to Face Socially Distanced	47.83%	44	
Remote	54.35%	50	
Hybrid	48.91%	45	
Total	151.09%	139	
	Will Attachment Increase in 1 Year?		
Increase	22.58%	21	
Decrease	16.13%	15	
Stay the Same	61.29%	57	
Total	100.00%	93	
	COVID Questions		
Scared of Catching COVID 19	*M* = 4.26	93	56.99%
Scared of the COVID 19 Pandemic	*M* = 4.29	93	54.84%
How Strong is Your Attachment	*M* = 4.76	93	64.52%

The survey questions that were used to measure place attachment, technology issues, learning intentions and learning satisfaction can be found in Table 2. The place attachment and learning measures were used in prior literature (citations are included in Table 2). The technology issues construct was adopted from an Educause DIY Survey Kit (2020). The survey was delivered via an anonymous Qualtrics survey. All 93 submissions were used in the analysis and any missing data was coded with "-99" for analysis. The survey was administered after the Fall 2020 Semester ended and the students received two follow-up emails. There were 107 total responses and 14

were removed because they did not complete any of the place attachment questions. There were 87% usable submissions for the analysis.

The descriptive statistics were analyzed with SPSS. The research model was analyzed using partial least squares (PLS) as the structural equation modeling (SEM) technique with SmartPLS 4.0. This was used to test both the measurement and structural models. PLS-SEM was considered to be a more suitable method because of the low n in the sample (Chin, 1998; Chin et al., 2003).

Table 2: Place Attachment Measures Survey Instrument

Dimensions	Description of Concern	Major Literature References
College Town Identity (CTI)	• I really miss (College Town) and the (University Name) when I am away from it for too long. (1=strongly disagree; 7=strongly agree). • I feel attached to (College Town) and the (University Name). • (College Town) and the (University Name) means a lot to me.	Zhang et al. 2018
University Identity (UI)	• The (University Name) says a lot about who I am. (1=strongly disagree; 7=strongly agree). • I feel that I can really be myself at the (University Name). • I identify strongly with the (University Name).	Zhang et al. 2018
Place Dependence (PD)	• (College Town) and the (University Name) is the best place for doing the things that I enjoy most. (1=strongly disagree; 7=strongly agree). • I would not substitute any other university for the experiences I had here. • (University Name) is the best place for spending ones' student life.	Kyle et al. 2005 Zhang et al. 2018
Place Affect (PA)	• I am very attached to the (University Name). (1=strongly disagree; 7=strongly agree). • I feel a strong sense of belonging to the (University Name) and its settings/facilities. • The (University Name) means a lot to me.	Ramkissoon et al. 2013
Place Social Bonding (PSB)	• I have a lot of fond memories about the (University Name) (1=strongly disagree; 7=strongly agree).	Kyle et al. 2005 Ramkissoon et al. 2013

Dimensions	Description of Concern	Major Literature References
	• I have a special connection to the (University Name) and the people who are here. • I tell many people about the (University Name).	
Person Dimension (PerD)	• People like me are at the (University Name). (1=strongly disagree; 7=strongly agree). • The (University Name) Community reflects who I am. • Everything about the (University Name) is a reflection of me. • Self-report:	Scannell & Gifford 2010 Hidalgo 2013 Spooner 2019
Place Attachment (Place Attach)	• How strong is your level of attachment to the (University Name) at the present time. (1=very low; 7=very high). • One year from now, do you think your level of attachment to the University will? (1=increase, 2=decrease, 3=stay the same	Spooner 2019
Technology Issues (Tech Issues)	• Technological issues (slow in Internet, difficulty downloading material, etc.) negatively impacted the online course delivery experience for me (1=strongly disagree; 7=strongly agree). • My own discomfort or lack of familiarity with required technologies or applications. • My access to reliable communication software/tools (e.g., Zoom, Skype, Google) • My access to reliable internet/service. • My access to a reliable digital device (e.g., laptop, mobile device)	Educause DIY Survey Kit 2020
Satisfaction	• Rate your overall level of satisfaction with the learning experience this semester. (1=extremely dissatisfied; 7=extremely satisfied) • Rate your level of satisfaction with what you learned in class this semester. • Rate your level of satisfaction with knowledge you gained in class this semester. • Rate your level of satisfaction with the learning experience in class being remote/hybrid/socially distanced face-to-face learning compared to traditional face-to-face learning experiences.	Bashir (2019)

Dimensions	Description of Concern	Major Literature References
Learning Intention (Remote, Hybrid, Socially Distanced Face-to-Face)	• Remote only: Based on your class being remote/hybrid/socially distanced face-to-face, if you have the option of online vs. in-person courses in the future, you are (1=much more likely online; 7=much more likely in-person). • Hybrid only: Based on your class being hybrid, you are more likely to choose this format in the future (1=not likely; 7=much more likely). • SD Face-to-Face only: Based on your class being socially distanced face-to-face, if you have the option of online vs. in-person courses in the future, you are (1=much more likely online; 7=much more likely in-person). • Would you recommend learning with remote, hybrid/in-person socially distanced methods to others (1=strongly disagree; 7=strongly agree). • Specify the extent to which you intend to take another class with remote/hybrid/in-person socially distanced methods. • Specify the extent to which you are willing to take another class with remote/hybrid/in-person socially distanced methods.	Alharbi and Drew (2014) Bashir (2019) Park (2009)
Other Questions	• I was scared of catching Covid-19 during the Fall of 2020 (1=strongly disagree; 7=strongly agree). • I was scared of the Covid-19 pandemic during the Fall of 2020 • What is your current overall GPA? • Did you live in a dorm during majority of the Fall 2020 semester?	

Results

The first part of results will examine the measurement model, and the second part will address the structural model. The three modalities analyzed were socially distanced face-to-face, remote delivery, and hybrid delivery.

Measurement Model

The measurement model was examined for the reliability of items, the composite reliability of the constructs, and the average variance extracted (AVE) by the constructs. This examination of

reliability was done for the latent variables within the three research modalities. Loadings of 0.50 were considered adequate and those values lower than 0.50 were removed (Hair et al., 2011). This operationalization of the place attachment, intention, and satisfaction measures was consistent with past research that used these objective measures in the context of SEM analysis (Baber, 2020b; Ramkissoon et al., 2013; Zhang et al., 2018).

Reliability analysis was used to evaluate the internal consistency of the measurement instrument. Cronbach's alpha at or above 0.70 was the statistic used to evaluate reliability (Fornell & Larcker, 1981; Hair et al., 2011; Kline, 2005). The instrument provided high reliability for all the latent factors that were measured (see Tables 3, 4, & 5). This demonstrates that each item converged on the proper latent factor. Composite reliability was analyzed next on the items and all were above the threshold of 0.70 (Fornell & Larcker, 1981; Nunnally & Bernstein, 1994). Average variance extracted (AVE) was used to evaluate convergent validity and all were above 0.50. Discriminant validity was evaluated with all AVE above 0.50 and the square root of the AVEs being larger than all other cross-correlations. The tables for these three research modalities are Table 3 for socially distanced face-to-face, Table 4 for remote, and Table 5 for hybrid. Table 6 shows the factor loadings for the constructs for the three delivery modalities. These tables show that the models have construct and discriminant validity for all of the first order factors. To test discriminant validity for place attachment as a second order factor the latent value scores for college town identity (CTI), university identity (UI), place dependence (PD), place affect (PA), place social bonding (PSB) and person dimension (PerD) were loaded on place attachment (Fornell & Larcker, 1981; van Riel et al., 2017). The results in Table 7, 8, and 9 show that the correlations among the constructs are all lower than the square root of AVE. The results show that the study's measures were psychometrically adequate.

Table 3: Estimated Factor Correlation Matrix for Face-to-Face Measurement Model

	M	*SD*	CA	CR	AVE	CTI	UI	PD	PA	PSB	PerD	Place Attach	Learn Intent	Learn Sat
CTI	5.51	1.21	0.89	0.90	0.75	**0.87**								
UI	4.73	1.61	0.90	0.92	0.84	0.69	**0.91**							
PD	4.86	1.62	0.85	0.88	0.77	0.76	0.83	**0.88**						
PA	4.93	1.73	0.95	0.95	0.92	0.85	0.83	0.83	**0.96**					
PSB	5.21	1.59	0.92	0.93	0.87	0.79	0.80	0.80	0.92	**0.93**				
PerD	4.35	1.62	0.84	0.85	0.75	0.64	0.80	0.74	0.81	0.74	**0.87**			
Place Attach	4.93	1.57	0.97	0.98	0.67	0.88	0.90	0.91	0.97	0.93	0.86	**0.82**		
Intention	5.61	1.60	0.89	0.91	0.75	0.45	0.35	0.37	0.33	0.27	0.41	0.40	**0.87**	
Satisfaction	6.35	0.97	0.94	0.97	0.90	0.21	0.27	0.29	0.15	0.07	0.18	0.21	0.47	**0.95**

Note: Square Root of AVE is on the diagonal. Off-diagonal are correlations among constructs.

Table 4: Estimated Factor Correlation Matrix for Remote Measurement Model

	M	*SD*	CA	CR	AVE	CTI	UI	PD	PA	PSB	PerD	Place Attach	Tech Issues	Learn Intent	Learn Sat
CTI	5.08	1.44	0.90	0.91	0.76	**0.87**									
UI	4.57	1.67	0.84	0.86	0.76	0.67	**0.87**								
PD	4.68	1.62	0.82	0.84	0.74	0.79	0.79	**0.86**							
PA	4.83	1.68	0.94	0.94	0.89	0.83	0.82	0.83	**0.94**						
PSB	5.18	1.59	0.90	0.90	0.83	0.76	0.86	0.83	0.87	**0.91**					
PerD	4.34	1.63	0.87	0.88	0.80	0.71	0.88	0.80	0.85	0.85	**0.89**				
Place Attach	4.78	1.61	0.97	0.97	0.69	0.84	0.92	0.91	0.95	0.94	0.93	**0.83**			
Tech Issues	3.13	1.88	0.69	0.74	0.51	0.32	0.33	0.34	0.32	0.37	0.42	0.39	**0.72**		
Intention	5.10	1.65	0.93	0.95	0.87	-0.07	-0.04	-0.09	-0.07	-0.11	-0.12	-0.10	-0.62	**0.93**	
Satisfaction	6.30	0.78	0.82	0.95	0.61	-0.13	-0.11	0.00	-0.06	-0.14	-0.12	-0.10	-0.31	0.44	**0.78**

Note: Square Root of AVE is on the diagonal. Off-diagonal are correlations among constructs.

Table 5: Estimated Factor Correlation Matrix for Hybrid Measurement Model

	M	*SD*	CA	CR	AVE	CTI	UI	PD	PA	PSB	PerD	Place Attach	Tech Issues	Learn Intent	Learn Sat
CTI	5.22	1.22	0.80	0.81	0.63	**0.79**									
UI	4.59	1.65	0.87	0.88	0.79	0.53	**0.89**								
PD	4.87	1.53	0.68	0.79	0.62	0.67	0.80	**0.79**							
PA	4.93	1.55	0.91	0.91	0.85	0.73	0.77	0.81	**0.92**						
PSB	5.41	1.40	0.85	0.87	0.77	0.62	0.77	0.80	0.86	**0.88**					
PerD	4.37	1.54	0.85	0.86	0.76	0.58	0.87	0.85	0.76	0.70	**0.87**				
Place Attach	4.90	1.48	0.96	0.96	0.57	0.78	0.89	0.92	0.93	0.89	0.89	**0.75**			
Tech Issues	3.44	1.92	0.71	0.97	0.60	0.46	0.36	0.44	0.44	0.41	0.46	0.48	**0.77**		
Intention	4.47	1.97	0.96	0.97	0.90	-0.20	-0.01	-0.16	-0.11	-0.16	-0.04	-0.13	-0.32	**0.95**	
Satisfaction	5.35	1.45	0.91	0.99	0.77	0.10	0.24	0.20	0.19	0.11	0.27	0.21	-0.03	0.61	**0.88**

Note: Square Root of AVE is on the diagonal. Off-diagonal are correlations among constructs.

The person dimension factors have loadings above 0.50, Cronbach's alpha above 0.70 (0.84 for Face-to-Face, 0.87 for Remote, and 0.85 for Hybrid), Composite reliability above 0.70 (0.85 for Face-to-Face, 0.88 for Remote, and 0.86 for Hybrid) as well as AVE above 0.50 (0.75 for Face-to-Face, 0.80 for Remote, and 0.76 for Hybrid). Researchers have shown that place attachment is a multi-dimensional construct (Ramkissoon et al., 2013; Scannell & Gifford, 2010). The first-order constructs that comprise the second-order construct place attachment in this study are place dependence, place identity measured as college town identity and university identity, place affect, place social bonding, and person dimension. The measurement model shows that these six first-order factors reasonably represent the second-order factor place attachment.

Table 6: Outer Factor Loadings for the Latent Constructs

Factors <- Construct	F2F Loadings	Remote Loadings	Hybrid Loadings
CTI-1 <- CTI	0.760	0.821	0.741
CTI-2 <- CTI	0.942	0.921	0.875
CTI-3 <- CTI	0.896	0.907	0.817
CTI-4 <- CTI	0.853	0.843	0.719
UI-2 <- UI	0.922	0.889	0.856
UI-3 <- UI	0.857	0.787	0.866
UI-4 <- UI	0.963	0.940	0.947
PD-1 <- PD	0.783	0.946	0.504
PD-2 <- PD	0.924	0.923	0.856
PD-3 <- PD	0.923	0.958	0.938
PA-1 <- PA	0.964	0.768	0.923
PA-2 <- PA	0.938	0.893	0.894
PA-3 <- PA	0.968	0.904	0.942
PSB-1 <- PSB	0.942	0.931	0.948
PSB-2 <- PSB	0.968	0.937	0.920
PSB-3 <- PSB	0.884	0.867	0.749
PerD-1 <- PersonDim	0.841	0.898	0.885
PerD-2 <- PersonDim	0.920	0.949	0.905
PerD-3 <- PersonDim	0.842	0.830	0.830
RecmndF2F <- Intention	0.854		
RecmndHyb <- Intention			0.962
RecRmote <- Intention		0.906	
Willing <- Intention	0.921	0.929	0.964
Future <- Intention	0.775		0.928
Intend <- Intention	0.922	0.962	0.948
SatKnow <- Satisfaction	0.928	0.810	0.916
SatLearned <- Satisfaction	0.957	0.828	0.906
SatLrnExp <- Satisfaction	0.956	0.606	0.878
SatRemote <- Satisfaction		0.846	
SatHyb <- Satisfaction			0.811
TechIssues <- Tech Issues		0.832	0.920
ReliableInt <- Tech Issues		0.759	0.809
Discomfort <- Tech Issues		0.654	
ReliableSoft <- Tech Issues		0.597	
ReliableDev <- Tech Issues			0.537

Table 7: Face-to-Face Discriminant Validity Place Attachment 2nd Order Construct

	Place Attachment	Intention	Satisfaction
Place Attachment	**0.91**		
Intention	0.41	**0.87**	
Satisfaction	0.22	0.47	**0.95**

Note: Square Root of AVE is on the diagonal. Off-diagonal are correlations among constructs.

Table 8: Remote Discriminant Validity Place Attachment 2nd Order Construct

	Place Attachment	Tech Issues	Intention	Satisfaction
Place Attachment	**0.92**			
Tech Issues	0.38	**0.72**		
Intention	-0.09	-0.62	**0.93**	
Satisfaction	-0.10	-0.31	0.44	**0.78**

Note: Square Root of AVE is on the diagonal. Off-diagonal are correlations among constructs.

Table 9: Hybrid Discriminant Validity Place Attachment 2nd Order Construct

	Place Attachment	Tech Issues	Intention	Satisfaction
Place Attachment	**0.89**			
Tech Issues	0.49	**0.77**		
Intention	-0.132	-0.322	**0.95**	
Satisfaction	0.21	-0.032	0.61	**0.88**

Note: Square Root of AVE is on the diagonal. Off-diagonal are correlations among constructs.

Structural Model

The three structural models are in Figures 2, 3, and 4, and path coefficients and *p*-values are shown on the diagrams. Tables 10, 11, and 12 show the total effects for the socially distanced face-to-face, remote, and hybrid delivery modalities. The hypotheses were evaluated with path coefficients, R^2, F^2, and *p*-values (Chin, 2010; Chin et al., 2003). According to Cohen (1988b), F^2 values are measured as: 0.26 (substantial), 0.13 (moderate), and 0.02 (weak). The results indicate support of all of the four hypotheses as they relate to face-to-face socially distanced and remote learning. The hybrid learning modality was approaching statistical significance, but no inferences were made with this model.

Figure 2: F2F Socially Distanced Model

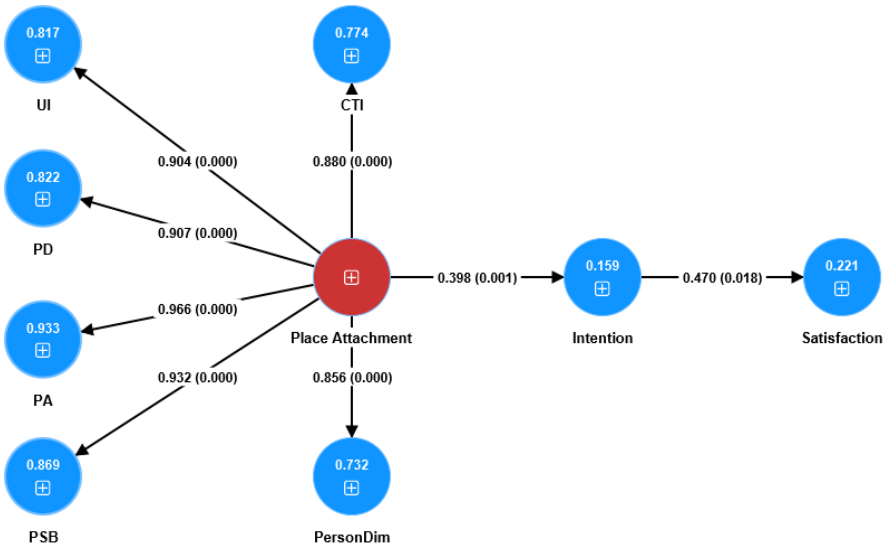


Figure 3: Remote Learning Model

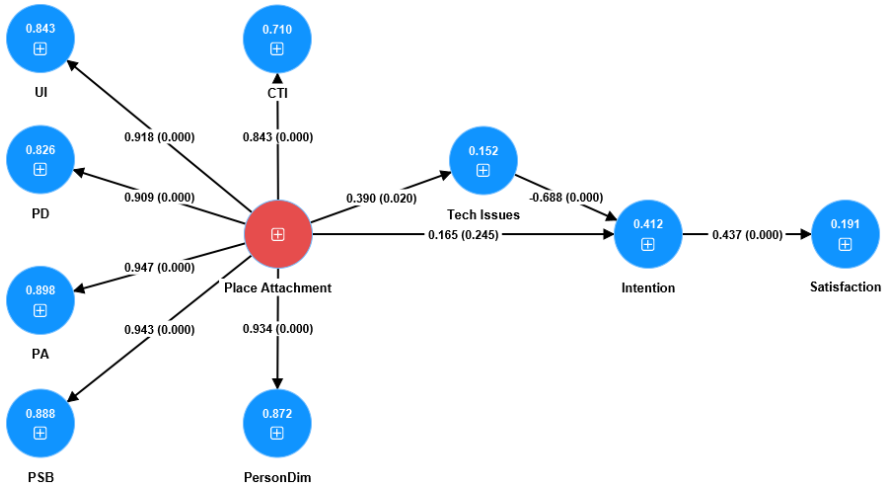
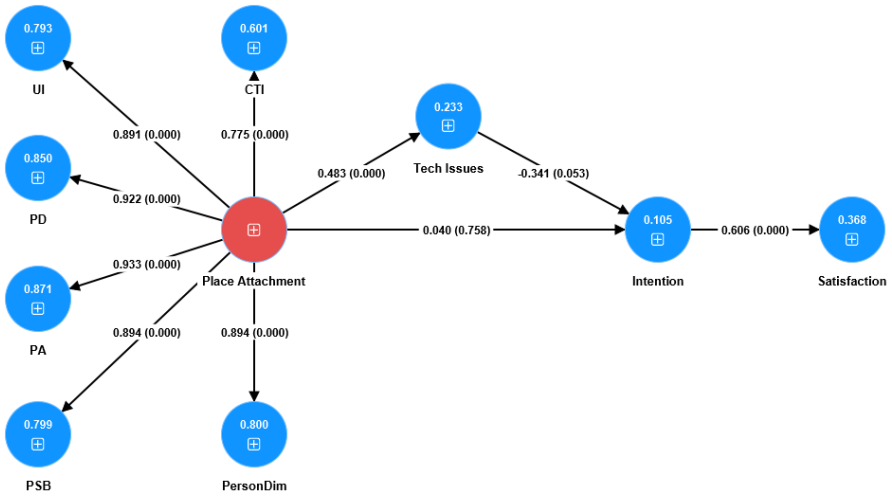


Figure 4: Hybrid Learning Model



Findings

This section discusses the findings of this research and reviews the four hypotheses. Ramkissoon et al. (2013) validated place attachment as a second-order reflective factor. This study tested the addition of the personal dimension (PerD) and splitting place identity into college town identity (CTI) and university identity (UI) the same way that Zhang et al. (2018) operationalized it in their research. The other first-order factors were place dependence (PD), place affect (PA), and place social bonding (PSB). The R^2 values (CTI = 0.77, UI = 0.82, PD = 0.82, PA = 0.93, PSB = 0.87, PerD = 0.73), path coefficients (CTI = 0.88, UI = 0.90, PD = 0.91, PA = 0.97, PSB = 0.93, PerD = 0.86), and F^2 values (CTI = 3.42, UI = 4.46, PD = 4.62, PA = 13.96, PSB = 6.63, PerD = 2.74) indicate that the model fits the data well and that the six dimensions accurately represent the second-order place attachment construct. H1 is confirmed and the person dimension is another first-order factor of place attachment. This finding is in line with what Ramkissoon et al. (2013) and Kyle et al. (2005) found in their research.

H2 stated that place attachment would have a positive impact on business students' learning intention. There is support for H2 only with the socially distanced face-to-face modality. This was evaluated with R^2 = 0.159 for learning intention and R^2 = 0.221 for satisfaction, path coefficients = 0.398 for learning intention and 0.470 for satisfaction, F^2 = 0.189 for learning intention and 0.283 for satisfaction, and *p*-values = 0.001 for learning intention and 0.018 for satisfaction. According to Cohen (1988b) these R^2 are moderate and the F^2 are large. Table 10 shows the total effects of place attachment on face-to-face learning intention, with a *t*-statistic of 3.389 and a *p*-value of 0.001. There is not support for H2 in the hybrid delivery modality. The remote delivery modality does not have a significant direct relationship between place attachment and student learning intention and satisfaction. However, this relationship is mediated by technology issues.

Table 10: Total Effects for Socially Distanced Face-to-Face Learning Structural Model

	Original sample	*M*	*SD*	*t*	*p*
Place Attachment -> UI	0.904	0.907	0.024	37.139	0.000
Place Attachment -> CTI	0.880	0.884	0.028	31.643	0.000
Place Attachment -> PD	0.907	0.908	0.024	38.275	0.000
Place Attachment -> PA	0.966	0.965	0.009	103.950	0.000
Place Attachment -> PSB	0.932	0.931	0.019	49.262	0.000
Place Attachment -> PersonDim	0.856	0.861	0.055	15.608	0.000
Place Attachment -> Intention	0.398	0.415	0.118	3.389	0.001
Place Attachment -> Satisfaction	0.187	0.189	0.103	1.809	0.071
Intention -> Satisfaction	0.470	0.450	0.198	2.371	0.018

H3 was business student learning intention will have a positive relationship with student satisfaction for socially distanced face-to-face, remote, and hybrid learning. This hypothesis is supported for all three learning modalities. This was evaluated with R^2 = 0.221 for face-to-face, R^2 = 0.191 for remote, and R^2 = 0.368 for hybrid; path coefficients = 0.470 for face-to-face, 0.437 for remote, and 0.606 for hybrid; F^2 = 0.283 for face-to-face, 0.236 for remote, and 0.581 for hybrid; and *p*-values = 0.018 for face-to-face, 0.000 for remote, and 0.000 for hybrid. The R^2 values are moderate to substantial, and the F^2 values are large (Cohen, 1988). Tables 10, 11, and 12 show the total effects for intention on satisfaction. The *t*-statistics and *p*-values are statistically significant for all three modalities (face-to-face: *t*-statistic = 2.371, *p*-value = 0.018; remote: *t*-statistic = 4.217, *p*-value = 0.000; and hybrid: *t*-statistic = 8.375, *p*-value = 0.000). Learning intention has a positive relationship with learning satisfaction in all delivery modalities in this study.

H4 stated that place attachment on business student learning outcomes would be mediated by technology issues for remote and hybrid learning modalities. This hypothesis is supported for the remote learning model. This was evaluated with R^2 = 0.152 for tech issues and R^2 = 0.412 for intention; path coefficients = 0.390 for tech issues and -0.688 for intention; F^2 = 0.179 for tech issues and 0.682 for intention; and *p*-values = 0.020 for tech issues and 0.000 for intention. Table 11 shows the total effects for the technology issues mediation (place attachment on tech issues: *t*-statistic = 2.328, *p*-value = 0.020; tech issues on intention: *t*-statistic = 9.166, *p*-value* <* .001). The test for significance of place attachment on intention yielded a *t*-statistic = 0.538 and a *p*-value = 0.590. Since this path is not statistically significant, place attachment is fully mediated by technology issues on learning intention. The mediation shows the importance of ensuring that course delivery technology does not negatively impact the course. The hybrid model is approaching significance for the mediation of place attachment with a *p*-value = 0.053, but since this is not statistically significant, the mediation is not supported in this learning modality (see Table 12).

Table 11: Total Effects for Remote Learning Structural Model

	Original sample	*M*	*SD*	*t*	*p*
Place Attachment -> CTI	0.843	0.842	0.048	17.668	0.000
Place Attachment -> UI	0.918	0.920	0.022	41.779	0.000
Place Attachment -> PD	0.909	0.909	0.024	37.321	0.000
Place Attachment -> PA	0.947	0.947	0.015	61.760	0.000
Place Attachment -> PSB	0.943	0.942	0.015	64.990	0.000
Place Attachment -> PersonDim	0.934	0.934	0.018	52.419	0.000
Place Attachment -> Tech	0.390	0.379	0.167	2.328	0.020
Place Attachment -> Intention	-0.103	-0.106	0.191	0.538	0.590
Place Attachment -> Satisfaction	-0.045	-0.057	0.101	0.446	0.656
Tech -> Intention	-0.688	-0.707	0.075	9.166	0.000
Tech -> Satisfaction	-0.301	-0.343	0.079	3.790	0.000
Intention -> Satisfaction	0.437	0.486	0.104	4.217	0.000

Table 12: Total Effects for Hybrid Learning Structural Model

	Original sample	*M*	*SD*	*t*	*p*
Place Attachment -> CTI	0.775	0.780	0.062	12.465	0.000
Place Attachment -> UI	0.891	0.891	0.041	21.659	0.000
Place Attachment -> PD	0.922	0.922	0.023	40.782	0.000
Place Attachment -> PA	0.933	0.932	0.024	39.111	0.000
Place Attachment -> PSB	0.894	0.894	0.030	30.086	0.000
Place Attachment -> PersonDim	0.894	0.892	0.036	24.844	0.000
Place Attachment -> Satisfaction	-0.076	-0.075	0.097	0.783	0.434
Place Attachment -> Intention	-0.125	-0.123	0.148	0.845	0.398
Place Attachment -> Tech	0.483	0.492	0.096	5.054	0.000
Tech -> Intention	-0.341	-0.357	0.177	1.933	0.053
Tech -> Satisfaction	-0.207	-0.223	0.113	1.836	0.066
Intention -> Satisfaction	0.606	0.631	0.072	8.375	0.000

Discussion and Conclusions

This section discusses the research implications, limitations, opportunities for further research, and conclusions. This section also addresses the contributions of the research and implications for institutions and instructors on the importance of place attachment for learning.

This paper adds to the body of research in several ways. First, it supports that place attachment is a second-order factor in the business higher education domain and has the first-order factors of college town identity, university identity, place dependence, place affect, place social bonding, and personal dimension. Second, place attachment has a positive impact on business student learning intention (willingness to take a class again in that learning modality) for socially distanced face-to-face course delivery. Third, business student learning intention has a positive impact on student satisfaction for all delivery methods. The fourth contribution is that technology issues mediate the relationship between place attachment and business student learning intentions for fully remote course delivery. The final contribution is this paper introduced a new model for place attachment and learning intention as well as establish that place attachment has more than a tangential relationship to learning.

Research has found that face-to-face classrooms and labs have a significant impact on student place attachment (Spooner, 2019). Student place attachment is low in their freshman year, develops more in the sophomore year and peaks in the junior year and is maintained at a high level through the senior year (Spooner, 2019). This study had mainly business juniors and seniors in the sample, and they demonstrated high place attachment with the university and the community. The COVID-19 Pandemic reinforced to students that they prefer to learn face-to-face after spending half of a semester learning completely remotely. The business students are willing to learn with other methods, but they have a strong preference for learning in a traditional on-campus classroom. This study found that place attachment has a strong positive impact on business students' learning intentions and their satisfaction with their learning experiences in a socially distanced face-to-face classroom.

Table 13 shows the means for place attachment measured as a second order factor and using the Spooner method (2019). It also shows the means for satisfaction, learning intention, and technology issues for the three learning methods. Finally, Table 14 shows the percentage of students that were concerned with catching COVID-19 and scared of the Pandemic.

The business students in socially distanced face-to-face classes had the highest place attachment in the study (M = 4.93). They also had the least fear of the pandemic of the three delivery modalities. They had the highest intention to take a similar class in the future (M = 5.61) and the highest satisfaction with the course (M = 6.35). This group did not evaluate technology issues because they weren't used in the class delivery. These highly place attached business students easily overcame their fear of the Pandemic and intended to take face-to-face classes in the future. They are highly satisfied with this learning modality.

Understanding place attachment and how business students are attached to their universities, classes, and teachers can help develop new ways for engaging students in face-to-face and technology delivery of classes. Business educators should know that place attachment can have a positive impact on students and their ability to be successful academically (Spooner, 2019; Strait, 2012). Bogdan et al. (2012) found that faculty had a significant role in helping students cope with their environment and place attachment. This study supports those findings especially in socially distanced face-to-face learning environments. The mediation found in a

remote class shows that technology issues have a negative effect between place attachment and business student learning intention. It is important to make sure that the technology used to deliver instruction supports student learning and when there are problems it has a negative impact on their learning intention and satisfaction. The technology issues with the most negative impact for business students were reliable internet and difficulty downloading materials. They were less concerned with discomfort with technology or reliable software and devices. Deng and Sun (2022) also found that universities need to invest in student technical proficiency as well as technology resources for learning.

Huang et al. (2022) found that student engagement and place attachment are important to understand for the post-COVID-19 learning in colleges and universities. Ramkisson (2021) noted the importance of understanding place attachment and its impact on education post-pandemic. It is important to understand how students interact with place and its impact on academic motivation (Moghisi et al., 2015). Wargadinata et al. (2020) recommended that other researchers uncover obstacles experienced by students while learning during the COVID-19 Pandemic. The fully remote business students had the lowest place attachment average (*M* = 4.78) and were the most concerned group with the pandemic (see Table 13). Technology issues fully mediated the relationship between place attachment and learning intention. The findings demonstrate how important it is for instructors to ameliorate technology issues for students in order for them to have a successful learning experience. Although the students in the remote class had average lower place attachment, technology can help alleviate the concerns with lower place attachment. For example, instructors can require students to have their cameras on during the entire class. Calling out students by name throughout the class helps keep the students engaged in the material, lecture, and discussions. The technology allows business students to feel like they are part of the classroom experience, therefore increasing student satisfaction although their placed attachment was low.

Table 13: Reported Means for Place attachment, pandemic, learning, and technology issues by modality

Item	F-to-F *M*	Remote *M*	Hybrid *M*
Place Attachment Spooner (M)	4.57	4.2	4.44
Place Attachment2nd Order Model (M)	4.93	4.78	4.9
Satisfaction (M)	6.35	6.30	5.35
Intention (M)	5.61	5.10	4.47
Tech Issues (M)		3.13	3.44
Discomfort (M)		2.95	2.83
Reliable Software (M)		2.67	2.44
Reliable Internet (M)		3.79	3.81
Reliable Device (M)		2.42	2.97

Table 14: COVID-19 responses by modality

Item	F-to-F	Remote	Hybrid
Scared of Catching Covid-19	47.80%	60.00%	55.50%
Scared of the Covid-19 Pandemic	40.90%	58.00%	55.60%

This research showed that there are problems with hybrid courses. The business students were highly place attached (*M* = 4.90) and moderately concerned with the pandemic (see Table 13). Their intention (*M* = 4.47) and satisfaction (*M* = 5.35) were the lowest in the study. Their main issue with technology was having reliable internet access. Having some students learning face-to-face while there are other students in their class that are at a distance distracts from the learning experience. The COVID-19 Pandemic required that universities had to be flexible and deliver classes in a hybrid modality to accommodate students that could not attend class because of exposure to COVID-19. This required flexibility by business faculty and the ability to manage face-to-face and remote classes simultaneously. It is very difficult for a faculty member to manage on their own and universities should make sure there is an operator present to monitor the remote students and let the faculty member know when there are questions in the chat, if students have their hands raised on the remote system, or if the instructor is not sharing the computer screen. The business faculty members in this study found it difficult to monitor the face-to-face students and the remote students at the same time.

Zhang et al. (2018) found that university identity had a profound impact on student and alumni satisfaction. Hasan and Bao (2020) found that college students suffered from psychological distress due to ineffective e-learning systems and fear of academic year loss during the Pandemic. Teachers must focus on student learning as they manage online and face-to-face classrooms (Purwanto, 2020). Those responsible for learning management systems and other technologies used to deliver synchronous and asynchronous learning instruction need to ensure the student technology issues are addressed so they do not have a negative impact on the student learning experience.

Baber (2020) noted that future research is needed to understand the role that technology plays in learning intentions and student satisfaction. They also found that student engagement is a strong determinant of student learning outcomes. This study found that technology issues mediate place attachment on business student learning intention and satisfaction and that technology issues have a negative impact. Future research should replicate this study with a larger n and randomization of students to learning modalities in order to use more robust structural equation modeling to test the impact that place attachment has on learning intention and satisfaction. This study used PLS to analyze the learning modalities because of the lower n. A limitation of this study is that there were three different instructors, each teaching in a different modality. It will be difficult, if not impossible, to hold the instructor constant for all learning modalities in order to get a larger n. Future research should examine how student place attachment is impacted by individual instructors and their teaching style. Future research should examine what aspects of the university experience adds the most to student place attachment. Place attachment does impact the learning intention (willingness to take a class

again in that learning modality) of business students, but there are other factors like individual student differences, teaching methods, and curriculum that are involved with student learning intention that need further study.

This study demonstrated the importance of place attachment in university learning environments and that technology issues mediate place attachment on learning outcomes. How business students learn with technology is a complex process and future studies need to explore how these technology issues impact the learning process. Business students are emotionally attached to their university and the community where it resides. Universities need to have programs and events that foster place attachment as students matriculate towards graduation. Knowing how attached students are to the university can help advising give recommendations on course delivery modalities that will be best for their learning. Highly place attached business students will do much better in a face-to-face class and lower place attached students will do better in remote and online courses. It is important to account for the technology mediation found in this study by training students and making sure that problems are minimized with the learning technology.

Universities need to highlight the uniqueness of the university experience to help students emotionally connect to their university and community. As more business students choose online and remote learning, universities need to develop strategies to increase online student place attachment to the university. Student attachment to their university helps them while they are participating in the college experience and that effect continues as they become alumni (Bogdan et al., 2012; Spooner, 2019; Strait, 2012; Zhang et al., 2018). Universities need to use comments by current students and alumni in their recruiting efforts to attract future students. These comments need to focus on the unique academic and social experiences that fostered their place attachment to the university and community.

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