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Synching up on a Satisfaction: A Mixed Methods Study Exploring Synchronous Online Classroom Learning Satisfaction in the Corporate Training Environment

Andrew S. Burklund
andrew.burklund@capitalone.com

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Abstract

Despite rapid evolution and innovation, “online learning” is no longer a universal term. There is a need to expand the existing research base to include subsets of online classrooms and include more diverse populations of learners. The overarching question for this study focused on synchronous online classroom satisfaction in a corporate setting. The researcher analyzed four years of historical learner-satisfaction data from post-class Level-1 satisfaction surveys from a Fortune 100 company. In total, 15,577 learner responses were collected, analyzed, and converged with data collected from employee focus groups related to synchronous online classroom satisfaction. The statistical analysis of learning satisfaction survey data yielded a significant difference in the scores reported by learners, with in-person classes receiving a higher overall score than synchronous online classes. The focus group results yielded a similar discovery, with participants indicating a preference for in-person classroom experiences and providing recommendations for improvement in the synchronous online classroom. Although there was a preference by a majority of the participants to attend trainings in-person, the majority also noted that they tended to feel a similar level of satisfaction for both modalities.

Keywords

Synchronous online classrooms, online learning, learning satisfaction, adult learners, distance learning, corporate training, training and development, synchronous learning, satisfaction, face-to-face learning satisfaction, virtual learning, virtual classrooms.

Author Bio

Andrew Burklund, Ed.D., currently works at a Fortune 100 world-wide financial institution where he has worked on designing, delivering, and managing synchronous online classroom experiences. He is also an adjunct faculty member for Minnesota State University’s Educational Leadership program. He is an innovative learning and development leader with experience in K–12 classroom teaching, higher education student learning services, and corporate enterprise-wide learning technology management. He received his undergraduate degree in 5–12 Communication/Language Arts Teaching from St. John’s University, Collegeville, MN, and received his master’s degree in Educational Leadership – Higher Education Administration and his Ed.D. in Educational Leadership from Minnesota State University Moorhead. His research interests include online educator pedagogical practices, synchronous online learning satisfaction for adult learners, and distance learning technology management and administration.

Introduction

Perhaps at no point in the history of the world has online learning taken more of a front and center stage than in the wake of the COVID-19 pandemic of 2020. Learners of all ages from traditional and non-traditional institutions of learning are in the midst of converting traditional learning content in the hopes of delivering equitable and satisfactory learning experiences. While online learning is certainly not a new concept, in the wake of COVID-19, it is no longer simply seen as an alternative to traditional face-to-face learning experiences, rather, it has become a necessity. While asynchronous content largely remains the predominant way in which learners are learning, many institutions and educators are looking more closely at the synchronous online classroom to build connections with learners to deliver a more satisfactory and familiar experience. This publication uses data collected for and text revised from the researcher's Ed.D dissertation, *Syncing Up On Satisfaction: A Mixed Methods Study Exploring Synchronous Online Classroom Learning Satisfaction In The Corporate Training Environment* (Burklund, 2020). The researcher analyzed thousands of learner survey responses spanning the course of several years, compared rates of satisfaction between synchronous online and face-to-face classroom modalities, and completed a series of focus groups that provided context on factors impacting satisfaction in the synchronous online classroom.

The researcher's initial dissertation research was driven by the researcher's professional and personal curiosity with regard to synchronous online classroom experiences. As a former educator and corporate synchronous online training administrator, the researcher has been involved in many efforts to maximize the satisfaction of learners in several industries and provide pedagogical guidance for educators of all levels. To better understand

the synchronous online experience, the overarching question guiding this research was, "How does learning satisfaction in the synchronous online classroom compare with similar experiences facilitated in a physical classroom in the corporate training environment?" Four sub-questions were utilized to further explore learning satisfaction with a quantitative and qualitative lens:

RQ1: Does the synchronous online classroom modality have a higher, lower, or equal level of Level-1 survey composite scores compared to traditional in-person classrooms?

RQ2: How do the scores of the categorical Level-1 questions differ between the synchronous online and in-person classroom modalities?

RQ3: What attitudes and perceptions do corporate learners have about satisfaction in the synchronous online classroom compared to the in-person classroom modality?

RQ4: What recommendations do participants have for improving satisfaction in the synchronous online classroom modality?

Even prior to the COVID-19 pandemic, online classrooms were continually evolving and changing and attracting new learners at a rapid pace. Allen and Seaman (2013, 2017) found that online learning enrollments in higher education alone continued to grow year-over-year with the number of online learners topping well over six million students. With the removal of time and space barriers, online classrooms allow for unprecedented access to education and have truly changed the status quo and foundational bedrock of traditional education. However, a review of the literature for synchronous online learning yielded a peculiar revelation for the researcher. While a great number of best practices existed to

develop, deliver, and manage synchronous online classrooms, few academic studies had been conducted.

As the researcher delved deeper into the process of looking through the literature to guide this study, several key factors became relevant not only to the outcomes of this study, but also to other researchers beginning to explore in this same realm. From the literature review, the researcher was able to identify broad discrepancies in how online learning was defined and termed. While innovative and impactful beyond measure, the rapid evolution of the online classroom has created an academic vortex. Stated more plainly, *online learning* is a generic term that has come to represent such a vast variety of different virtual classrooms and teaching methodologies. In some ways, online learning is like the equivalence to saying "driving a car." For proper context, both the location of the driving and the type of vehicle actually used are vital to researching it in more detail. Of the 67 sources utilized by Smart and Cappel (2006), four used "satisfaction" in the title, three used "virtual," 16 used "online," and only one referenced "e-learning." Smart and Cappel (2006) summed it up best when they said, "Many writers refer to 'e-learning,' 'online learning,' and 'web-based learning' interchangeably…" (p. 202).

Use of broad terms to define online education becomes problematic because where one study might use a term to refer to video conferencing as online learning, another study might use the same term to refer to an asynchronous web-based classroom. *Distance education* was typically defined as courses delivered or instruction that occurs when students are not present in the same room, which could occur synchronously or asynchronously. There is a difference in time, location, or both" (McQuiggan, 2007, p. 2). Allen and Seaman (2013, 2017) acknowledged shifting terminology as an issue and set out to clearly define each type of

virtual learning medium so there would be no mistaking what they are and how they are measured. They encompassed four categories of classroom settings that can be broken down into traditional (i.e., no online classroom used), web-facilitated (i.e., face-to-face but delivered with technology in real-time), blended/hybrid (i.e., blends online and face-to-face delivery), and online (i.e., typically no face-to-face meeting).

Additionally, the researcher was able to identify that corporate populations of adult learners were severely under-represented as populations of study. Many studies, regardless of methodology, tended to focus on K–12 and higher education students for satisfaction studies (Allen & Seaman, 2013, 2017; Boton & Gregory, 2015; Deshpande, 2017; Fincham, 2017; Luo et al., 2017). While studies related to corporate learning environments were found, many lacked applicability as they were less focused on learning and more focused on communicating information. Studies like Kimiloglu et al. (2017) explored satisfaction regarding online learning in a corporate environment but they primarily centered their study around asynchronous e-learning. Buxton and De Muth (2012) specifically noted this idea when they called for additional corporate studies unique to the style of the industry: "Most of the literature and research has focused on class-type learning with sequenced sessions rather than a 'one-off' or conference type learning situation" (p. 13). While corporate learning and development operates on some similar principles to traditional educational settings, the environments and conditions of learning are not the same, and thus, the concepts of student satisfaction may be different, too. Kimiloglu et al. (2017) noted,

> Distance learning programs are flourishing immensely in various areas such as high school and university education….companies are expected to give serious thought and

> consideration regarding a technological reformation in the way they design and deliver training programs for their employees. (p. 339)

Since corporate training has a different intent and purpose compared to classes that take place in traditional educational settings, there is a strong need to more deeply explore corporate populations.

Seeing the gaps within the literature, and having firsthand knowledge that synchronous online learning is a unique experience from other forms of learning classrooms, defining synchronous online learning experiences and contrasting them from other types of online learning emerged as a key component to this study. While sources did provide clarification on the function and use of synchronous online, few provided a clear view of the importance of understanding the differences. Martin and Parker (2014) defined synchronous online with the following definition:

> Synchronous virtual classrooms….allow real time communications in which multiple users can simultaneously interact with each other via the Internet to conduct meetings and seminars, lead discussions, make presentations and demonstrations, and perform other functions. Virtual classrooms allow students and instructors to communicate synchronously using features such as audio, video, text chat, interactive whiteboard, application sharing, instant polling, emoticons, and breakout rooms. (p. 193)

Synchronous online classrooms create a different type of interaction model and there is opportunity to explore if that interaction has an impact on satisfaction. In order to better illustrate the differences in engagement between the different types of online classrooms Dennis et al. (2002) noted that timing, place, space, technology, and interaction differ across classroom-based traditional learning, hybrid, and asynchronous environments. Vernadakis et

al. (2012) completed a study comparing satisfaction of face-to-face students with hybrid courses (partially online and partially synchronous live). In their study, they determined that there was a "significant difference in class satisfaction between the blended learning section and the traditional sections, with blended learners reporting a higher level of class satisfaction" (p. 142). But while a great deal of the literature showed that synchronous components of online learning improved satisfaction, Olson and McCracken (2015) found that there was no real difference in satisfaction between blended and fully face-to-face learners. Since there is a lack of clear agreement on the impact of synchronous online satisfaction, additional opportunities for research are ripe.

Conceptual Frameworks

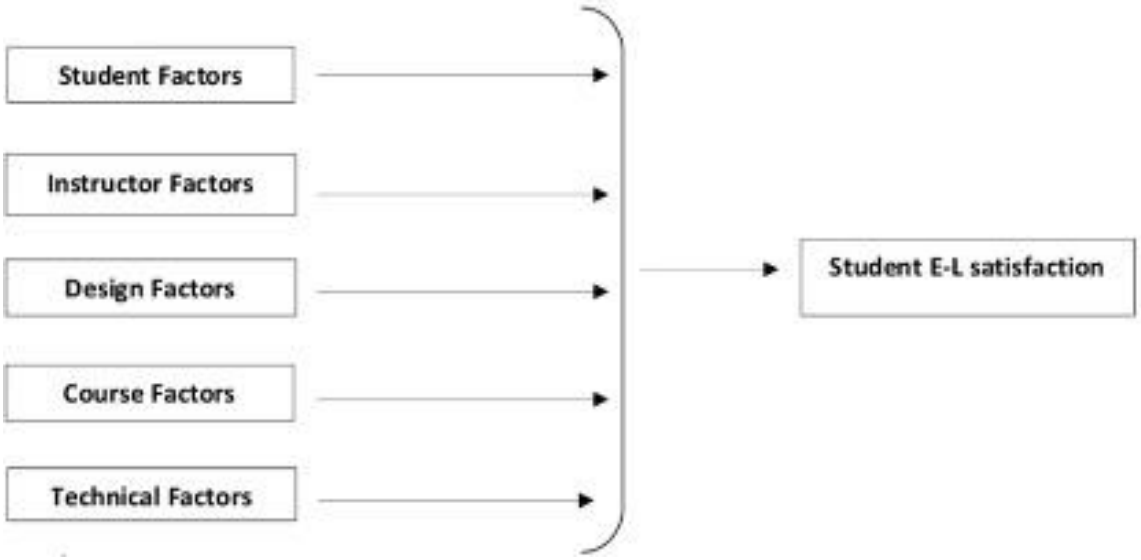
A number of frameworks exist to help provide guidance in exploring learning satisfaction in online environments. Piccoli et al. (2001) outlined the "Dimensions and Antecedents of VLE Effectiveness" framework (often shortened to Dimensions of Virtual Learning Effectiveness framework) which attempted to show how learning effectiveness is influenced by both the design and human dimensions. Effectiveness in this case refers to a blend of performance, self-efficacy, and satisfaction.

The model outlined by Piccoli et al. (2001) provided a strong foundation and framework to follow for effectiveness in a classroom, but the broad focus on overall effectiveness deviates slightly from the overall goal of this study, which was geared more toward factors influencing satisfaction. A similar yet simplified framework created by Malik (2010) was used by the researcher to serve as a guiding framework for this study. Malik (2010) noted that "…the main factor of E-L [e-learning] implementation failure is the student's satisfaction. There are so many factors that are affecting student's [sic] satisfaction

towards E-L. The main factors are students, instructor, interface of E-L environment and technical assistance" (p. 77). This simplified framework offered a suitable framework to guide the research questions and literature review.

Figure 1

The Malik Framework



Note. The Malik Framework outlines major constructs that specifically influence satisfaction with online learning environments. Adapted from "Factor [*sic*] Effecting Learner's Satisfaction Towards e-Learning: A Conceptual Framework," by M. W. Malik, 2010, *OIDA International Journal of Sustainable Development, 2*(3), p. 78.

Method

Since satisfaction is formed in a personal nature, many researchers focused on quantifying results for easier translation, relying on questionnaires, surveys, and Likert scales (Buxton & De Muth, 2012; Choi, 2016; Cole et al., 2014; Kimiloglu et al., 2017; Parahoo et al., 2016; Richardson et al., 2017; Smart & Cappel, 2006; Sun et al., 2008; Welch et al.,

2014). Others attempted to explore and define satisfaction through more qualitative means. Rodriguez and Armellini (2013) used structured interviews because they wanted to "clarify and fill the gaps identified through the survey findings" (p. 483). In another approach, "…using two focus groups….enabled detailed information to be obtained about individual and group feelings, perceptions, and opinions as well as seeking clarifications about the ideas expressed by the students" (Parahoo et al., 2016, p. 7).

To gather a balanced view from both methodologies, a mixed-methods convergent approach was selected as the best option to acquire the data needed to explore satisfaction fully. In total, 15,577 learner responses were collected from the company's learning management system (LMS), separated by modality, and analyzed in SPSS 26. The researcher utilized an independent-sample t-test to check for mean differences between scores. While this method provided a generalized comparison of how learners rated experiences, the Level-1 survey did not directly measure satisfaction between modalities. The researcher also organized two focus groups consisting of company employees who had previous experience with both synchronous online and face-to-face classroom experiences at the company. Together, this data helped to explore impact and perception for a more well-rounded understanding of satisfaction and opportunities for improvement of the synchronous online experience.

The Level-1 survey results that were pulled contained all learning classes that took place virtually (through Adobe Connect) and in-person in a physical classroom setting. The Level-1 did not ask learners to specify the modality, so data was manually filtered by the LMS administrator to segment out course offerings by physical and virtual classroom.

Once the results from the LMS were separated into even categories by modality, the independent variables were reviewed using SPSS. The Level-1 survey at this company utilized a five-point Likert scale (1-*strongly disagree*, 2-*disagree*, 3-*neutral*, 4-*agree*, 5-*strongly agree*) to allow learners to respond to learning events in the following topic areas:

1. The program held my interest.
2. Participants were well engaged during the session.
3. My learning was enhanced by the knowledge and experiences of the facilitator.
4. I was comfortable with the pace at which the facilitator presented the content.
5. I am clear about what is expected of me as a result of going through this training.
6. I intend to use what I have learned in my current role.
7. I am satisfied with my learning experience.
8. I am satisfied with the content received during the training session.
9. I would recommend this course to others.

It should be noted that responses to the Level-1 surveys were completely optional for leaners and all answers submitted were done so voluntarily. Additionally, learners had the option to submit partially complete surveys, and this was apparent in the fact that the majority of Level-1 surveys analyzed did not contain data in the free-form fields.

The researcher utilized a blend of criterion, purposive, and convenience sampling methods for the formation and collection of focus group data and selected a department of 72 total employees. It should be noted that the company that allowed this study to happen has over 45,000 total employees, but the researcher purposely selected this department due to restrictions set by the organization on the scope of the study which was limited to one

department. The researcher chose this department as it represented a variety of demographic variables that provided a mix of tenure, job level, geographic location, gender, and experience with online learning.

The researcher solicited all 72 members of the department via email for a two-week window. Additionally, the researcher posted a message in the department's Slack channel. In total, 19 individuals responded and volunteered for the focus groups. The researcher selected 12 individuals at random and verified that they had attended both modalities of training in the company's LMS. Once vetted and selected, the researcher sent informed consent forms and calendar invites to the participants to participate in one of two focus groups. In total, 11 participants participated as one individual was unable to attend at the last minute (one group of five and one group of six).

Results

Research Question 1 Findings

RQ1: Does the synchronous online classroom modality have a higher, lower, or equal level of Level-1 survey composite scores compared to traditional in-person classrooms?

Four years of survey results were utilized for this study (2014–2018). The researcher selected 39 courses for analysis from the four-year study window as these courses represented training offerings that were delivered both in-person and in a synchronous online classroom. From those 39 courses, 16,606 respondents completed the post-class survey with 14,726 responses correlated to in-classroom trainings and 1,880 correlated to synchronous online trainings. From this initial data, the researcher removed all surveys where a respondent did not fully complete the questionnaire, thus reducing the total number of surveys analyzed to

15,577 (13,807 correlated to in-classroom trainings and 1,770 correlated to synchronous online).

Since the analysis of the results were not run in a controlled manner and the results were recorded independently from one another, an independent t-test was utilized. This methodology was appropriate since

> The independent samples t-test is used to determine if a difference exists between the means of two independent groups on a continuous dependent variable. More specifically, it will let you determine whether the difference between these two groups is statistically significant. (Laerd Statistics, 2015)

The independent variable analyzed from the historical LMS data was classroom modality (synchronous online or in-person) and the dependent variable was the composite scores from the nine question Level-1 survey. Adding all nine of the survey question responses together for each respondent provided an overall total score ranging between nine and 45. To create a meaningful zero-point, and for ease of analysis, all individual scores were adjusted by -1 to create a range of zero to four for responses with an overall composite score between zero and 36.

The researcher utilized SPSS 26 to identify outliers but opted to keep the outliers as a part of the statistical analysis as no measurement or data entry errors were found to be present. Additionally, the data points were not normally distributed with composite scores for the in-person classrooms showing a skewness of -1.694 (*SE* = .021) and a kurtosis of 4.064 (*SE* = .042) and for synchronous online classrooms with a skewness of -1.375 (*SE* = .058) and a kurtosis of 2.942 (*SE* = .116). Assuming a significance level of .01, these results violated the allowable ±2.58 z-score. A Normal Q-Q Plot was used to visually assess the distribution of

data which revealed a negative skew (more favorable responses than unfavorable). According to Laerd Statistics (2015), "Indeed, if sample sizes are not small, even fairly skewed distributions—as long as the groups are similarly skewed—are not always problematic…non-normality does not affect Type I error rate substantially and the independent-samples t-test can be considered robust" (p. 12). To that end, the researcher proceeded with the analysis with the intent of verifying results through a Mann-Whitney nonparametric test.

The independent-samples t-test was run utilizing a 95% confidence interval. The SPSS descriptive statistics indicated the overall satisfaction was higher for the in-person classroom (M = 30.48, SD = 6.460) than for the synchronous online classroom (M = 29.36, SD = 6.428). After running the Levene's test for equality of variances, the researcher determined that there was homogeneity of variances for overall composite scores between in-person and synchronous online classrooms (p = .278), which was higher than the required 0.05 threshold. Given that the sample sizes of the two populations were substantially different, the researcher opted to utilize the Welch t-test (equal variances not assumed) instead of the Student t-test (equal variances assumed) to account for the unequal group sizes, as recommended by Howell (2010). Table 1 provides a comparison of the Welch t-test (bottom row) and the Student t-test (top row).

The Welch t-test was used to measure if there was significance between the differences in scores between the two modalities. The results indicated that the in-person classroom mean overall composite score was M = 1.121, 95% CI [.803 to 1.440] higher than the synchronous online classroom composite scores. The difference in means was statistically significant between the two modalities, $t(2251.871) = 6.906$, $p < .000$. Since there was a statistically significant difference between means ($p < .05$), the researcher was able to reject

the null hypothesis and accept the alternative hypothesis that in-person courses were rated higher overall than synchronous online classrooms. Although a statistically significant difference was found between the synchronous online and in-person classroom overall Level-1 scores, the researcher determined that this was of little practical importance. The results indicated that the scoring differences were not due to chance. However, the degree of difference between the composite scores did not indicate a drastic difference when one considers the scores were comprised of nine different realms of measurement.

Table 1

SPSS Independent-Samples T-Test Significance Indicator

Sum Score	Levene's Test for Equality of Variances		T-test for Equality of Means						
	F	*p*	*t*	*df*	*p* (2-tailed)	Differences		95% CI[a]	
						M	*SE*	*LL*[b]	*UL*[c]
Equal variances assumed	1.178	.278	6.879	15575	.000	1.121	.163	.802	1.441
Equal variances not assumed			6.906	2251.871	.000	1.121	.162	.803	1.440

Note.

[a] Confidence Interval

[b] Lower Limit

[c] Upper Limit

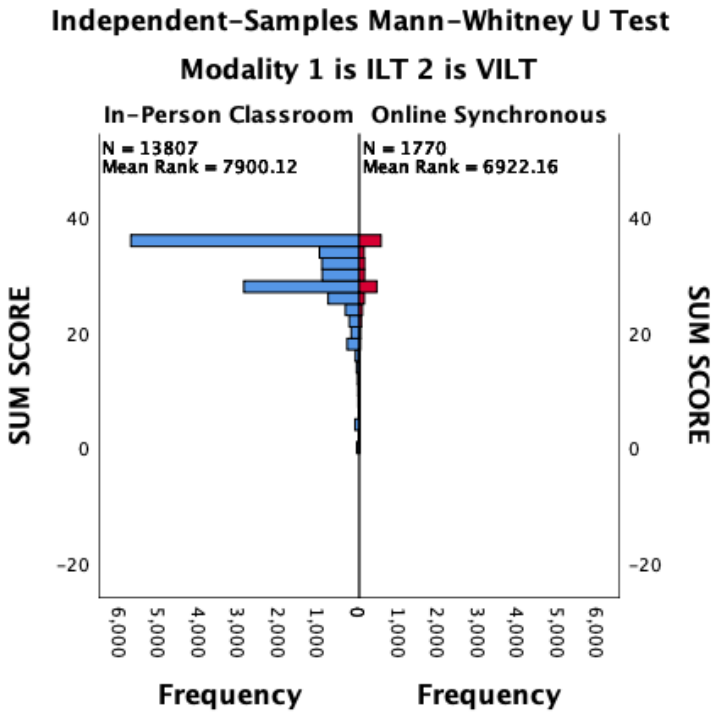
In order to verify the results of the independent-samples t-test, the researcher made the choice to analyze the data using a nonparametric test (Mann-Whitney U test). The researcher

took these actions to account for the violation of normality discovered during the initial analysis. According to Laerd Statistics (2015), The Mann-Whitney U test is appropriate to use when comparing two independent groups which are based on the same ordinal dependent variable. The Whitney-Mann U test was used to analyze distributions and differences between group medians through a method involving the graphing of the two distributions and comparing them for a similar shape. The null hypothesis for this test was: H_0: the distribution of the composite satisfaction scores is the same across the two categories of modality (in-person and synchronous online). Using SPSS 26, the distributions of the composite scores were graphed for frequency by modality. Figure 2 provides a copy of the graph used by the researcher to gauge a visual likeness of shape between the composite satisfaction score distributions of in-person and synchronous online classrooms. Due to the subjective nature involved in the analysis by the researcher, Figure 2 shows the shapes of composite score distributions. Despite the sizing difference of the two distributions, the general shape was deemed to be similar by the researcher.

A Mann-Whitney U test was run to determine if there were differences in engagement scores between the in-person and synchronous online classroom modalities. Distributions of composite satisfaction scores for the two groups were deemed similar based on a visual assessment by the researcher. The results of the Mann-Whitney U test revealed that the median composite satisfaction scores were significantly higher for the in-person classroom (*Mdn* = 32) as compared to synchronous online classroom (*Mdn* = 29), U = 10,684,893, z = -8.824, $p < .001$.

Figure 2

SPSS Distributions of Composite Scores for Mann-Whitney U Test



These results gave the researcher the ability to reject the null hypothesis and accept the alternate hypothesis that the group composite scores were indeed different. By identifying that the composite Level-1 scores differed between the two modalities, it became clear that the in-person modality tended to rate higher albeit not significantly. To better understand the breakdown of the scores, the researcher utilized Research Question 2 for a more detailed breakdown and to determine if the difference carried through to each individual question.

Research Question 2 Findings

RQ2: How do the scores of the categorical Level-1 questions differ between the synchronous online and in-person classroom modalities?

In order to address the second research question and measure the differences of each categorical question on the Level-1 survey, an independent-samples t-test was utilized to explore if the independent variable (modality) had an effect on the dependent variables (interest, engagement, expectations, experience, facilitator knowledge, learning content, applicability, pace, and net promotor score). According to Bishop and Herron (2015), there has been some controversy within the scientific community regarding the use of independent-samples t-tests to analyze ordinal-scale variables since one of the core assumptions for analysis of a parametric statistic is a continuous variable. The controversy comes into play as some researchers argue that independent-sample t-tests can be used to analyze ordinal variables. "It should be noted here that parametric tests are often carried out on variables that do not conform to the…conditions" (Briggs et al., 2012, p. 356). Since the t-test is traditionally utilized to explore continuous dependent variables, the researcher utilized Mann-Whitney U test as a secondary test to verify the difference between scores of the modalities. Breaking down each question of the Level-1 survey provided a more granular view of how total satisfaction was formed and helped to outline potential areas of additional exploration and/or improvement.

The same scores that were combined to form composite scores to answer Research Question 1 were utilized individually (not combined into a composite) for Question 2. All raw scores were again adjusted by -1 to create a continuous variable starting from zero. The original Likert scores from one to five (1-*strongly disagree*, 2-*disagree*, 3-*neutral*, 4-*agree*, 5-

strongly agree) were thus shifted to begin with zero up through four. The raw data scores were run through SPSS 26 to explore boxplots of the data points for both modalities. Since the distributions were skewed more heavily towards higher satisfaction for both modalities, SPSS identified lower ranking zeros and ones (strongly disagree and disagree) as outliers for all questions of the survey. A Mann-Whitney U test was utilized as a secondary form of analysis. The researcher opted to keep the outliers as a part of the statistical analysis as no measurement or data entry errors were present.

For each of the nine Level-1 questions, the researcher completed a visual inspection of Normal Q-Q Plots and determined that the scores were not normally distributed and had negative skewness for all questions in both modalities. Using a 99% CI, the researcher analyzed the skewness and kurtosis to check for ±2.58 as recommended by Laerd Statistics (2015). All Level-1 scores in both modalities were not normally distributed as they showed skewness and kurtosis well outside of the ±2.58 range for normal distribution.

In total, there were 13,807 completed surveys from in-person classes and 1,770 completed surveys from synchronous online classes. For all of questions on the Level-1, in-person classrooms rated higher than the scores reported for synchronous online classes (see Table 2).

Table 2

Comparison of Means by Modality for Level-1 Individual Questions

	Classroom Modality Level-1 Mean Scores			
	In-Person		Synchronous Online	
	M	*SD*	*M*	*SD*
Question 1	**3.40**	.811	3.23	.829
Question 2	**3.39**	.808	3.31	.795
Question 3	**3.40**	.807	3.25	.817
Question 4	**3.37**	.835	3.26	.840
Question 5	**3.36**	.797	3.24	.820
Question 6	**3.44**	.770	3.35	.775
Question 7	**3.36**	.836	3.20	.869
Question 8	**3.35**	.841	3.22	.862
Question 9	**3.41**	.851	3.29	.851
Composite	**30.48**	6.460	29.36	6.428

Note. All scores were adjusted by -1 to create a true 0 (ex. Participant reported 5, becomes 4).

There was homogeneity of variances for the above Level-1 scores for synchronous online and in-person classrooms, as assessed by Levene's test for equality of variances. However, Howell (2010) recommended using the Welch t-test when there is unequal group sizes within the samples. The results of the Welch t-test indicated that there was indeed a statistical difference in the mean score between in-person and synchronous online classes, with in-person classes scoring higher that synchronous online for all questions (See Table 3).

Table 3

Results of the Welch t-test

	M	*T*	*df*	95% CI[a]		*p*
				LL[b]	UL[c]	
Question 1	0.167	7.979	2226.201	0.126	0.207	< .001
Question 2	0.077	3.811	2262.993	0.037	0.116	< .001
Question 3	0.146	7.099	2234.483	0.106	0.187	< .001
Question 4	0.114	5.379	2240.821	0.072	0.156	< .001
Question 5	0.119	5.759	2218.996	0.078	0.159	< .001
Question 6	0.185	4.374	2240.856	0.047	0.123	< .001
Question 7	0.157	7.186	2209.068	0.114	0.200	< .001
Question 8	0.122	6.218	2223.387	0.092	0.178	< .001
Question 9	0.260	5.675	2246.731	0. 080	0.164	< .001

Note.

[a] Confidence Interval
[b] Lower Limit
[c] Upper Limit

Since there was a statistically significant difference between means ($p < .05$) the researcher rejected the null hypothesis and accepted the alternative hypothesis that the scores between modalities differed significantly.

In order to verify the results of the parametric independent t-test, a Mann-Whitney nonparametric test was utilized to determine if there were differences in scores between in-person and synchronous online classrooms. Distributions of the scores for both modalities were similar across all questions of the Level-1 survey, as assessed by visual inspection. The median scores were statistically significantly higher for in-person classes than in the

synchronous online classes for all questions. See Table 4 for a comparison of medians using a *p*-value of .05 for significance. According to Laerd Statistics (2015), since SPSS returned a value of .000, the *p*-value is not actually zero and is recorded as $p < 001$.

Table 4

Comparison of Medians by Modality for Level-1 Individual Questions

	In-Person Med.	Online Sync. Med.	U^a	Z^b	c^e
Question 1	4	3	10613607.50	-10.084	p < .001
Question 2	4	3	11391141.00	-5.193	p < .001
Question 3	4	3	10798082.50	-8.923	p < .001
Question 4	4	3	11108053.00	-6.946	p < .001
Question 5	4	3	11116975.50	-6.868	p < .001
Question 6	4	3	11340173.00	-5.570	p < .001
Question 7	4	3	10820237.50	-8.714	p < .001
Question 8	4	3	10971048.00	-7.773	p < .001
Question 9	4	3	11011045.50	-7.656	p < .001
Composite	32	29	10684893.00	-8.824	p < .001

Note. In-Person and Synchronous Online Adjusted Scores (0 = Strongly Disagree, 1 = Disagree, 2 = Neutral, 3 = Agree, 4 = Strongly Agree). Sig. (2-tailed test).

[a] Mann-Whitney U score

[b] Standardized Test Statistic

[c] Asymptotic

The results of both tests provided an opportunity to analyze where the scores between in-person and synchronous online classrooms differed. Of particular note, in consecutive order, questions one, three, and seven represented the top three largest gaps between scores. These three questions represented "program held my interest," "learning was enhanced by

knowledge and experiences of the facilitator," and "I am satisfied with my learning experience." Similar to the findings of the overall composite scores of the Level-1 survey results, there was a statistical difference between the individual scores for every question of the survey with the in-person classroom scoring higher than the synchronous online classroom.

Focus Group Results

Research Questions 3 & 4 Findings

RQ3: What attitudes and perceptions do corporate learners have about satisfaction in the synchronous online classroom compared to the in-person classroom modality?

RQ4: What recommendations do participants have for improving satisfaction in the synchronous online classroom modality?

The third and fourth research questions were answered exclusively through the focus group data collected by the researcher. The qualitative data obtained from this research question was vital to creating a well-rounded understanding of factors influencing classroom modality preference and satisfaction. The researcher utilized the Malik Framework as a way to help with the coding process, but also found participants deviated from several of the constructs to form new constructs.

Emergent Themes

The following major themes emerged from the focus groups regarding the learning experience between the synchronous online and in-person classroom modalities:

1. While preference between classroom modalities could be situational, there was a higher regard for the in-person classroom.

2. When discussing satisfaction between modalities, participants associated dissatisfaction with synchronous online classrooms more frequently than they did with in-person experiences.
3. The physical environment of the synchronous online learner was viewed as a detriment to a satisfactory experience. Examples of these include frustration for lack of rooms, distractions at desk, ability to multi-task, lack of personal connections, inability to 'see', and inability to move and touch.
4. Differentiating facilitation and content in the synchronous online modality could help improve engagement and satisfaction.
5. Based on the convergent style of design utilized by the researcher, focus group data was collected independently from the analysis of the Level-1 survey scores. Table 5 shows quotes aligned with themes.

Table 5

Respondent quotes aligned with major themes (Burklund, 2020)

Participant	Theme 1: Preference between classroom modalities Example quotes
Participant N:	"For myself, there's usually a lot of factors or a couple of factors that weigh in on if I prefer the virtual classroom or in person. Who's the audience? Who will be attending? What's the content? What's my schedule look like, for example, I'll get real clear. If this is content… I'm already pretty familiar with, I will go to the virtual versus spending time and energy into travel-time. If it is something that is new information or I think I can meet and network with different folks then I prefer to be in the classroom."
Participant M:	"…depends on the intention and what you're trying to get out of it. I think both serve their purpose. I think being in a classroom setting is really important depending on the material. And then I think Adobe Connect is important too. I, for one, really appreciate the virtual breakout groups and I appreciate being able to connect with people from other sites and I don't think we can accomplish that in a classroom setting unless we all go to the same place. The classroom really allows you to do some deep-dives on things by connecting with people but Adobe Connect offers you that broad perspective that allows you to connect with more resources and other viewpoints."
Participant L:	(In agreement with Participant M) "I would have to retweet. I really do value the other sites quite a bit…sometimes it's different things, sometimes the same. It kind of validates what's going on here or opens your eyes to what else is happening outside of here" (the phrase 'retweet' is corporate slang for agreement).
Participant Y:	"I think it depends on the subject for me. You know, a big, long course is much better in the classroom whereas like a one-hour class can be better in a virtual training."

Participant K:	(in reference to length of time for online synchronous) "few hours…for an all-day training…it's very hard not to get distracted with everyday things…."
Participant T:	"…as an introvert, I appreciate the classroom environment because it forces me to interact more than I may in Adobe Connect environment…it pushes me outside my introvert comfort zone…When you're in a classroom environment, you almost build a different kind of an atmosphere where people feel more comfortable to ask questions and speak up."
Participant D:	"It's just better in the classroom setting than the online…I would probably choose a classroom versus Adobe Connect and I think for me it's when I'm sitting at my desk taking the virtual trainings, I don't feel as though I'm able to completely disengage from what's around me…. I just feel much more engaged in the physical classroom."
Participant K:	(In reference to past experience) "I could go to [company location] for an eight-hour day in the classroom or a four-hour Adobe Connect session and I went for the in-person… it was more interactive."
	Theme 2: Satisfaction between modalities. Example quotes
Participant T:	(In reference to a synchronous online session) "My experience was actually [long hesitation searching for word] bad and it was due to the fact that I was having connectivity issues. I was getting repeatedly kicked out of my small group so I almost feel I didn't take anything away because I was in and out so often. I couldn't even hear what others were talking about… it kind of became a joke but at the same time I didn't get any of the content…so that was a little bit of a bummer."
Participant Y:	"What decreases satisfaction I think sometimes with like the Adobe, just the tech issues with it, the latency."
Participant L:	(Referring to the important of engagement and that being easier in a physical classroom): "I felt like kind of the first half of it, it was just kind of a retrain, which is tricky. Whenever I'm kind of really going over the information a second or third time, my engaged level is pretty low."
Participant Y:	"I think if they're not bought into the topic…they'd prefer the virtual classroom because then they can multitask, not pay attention, not be engaged, not participate."
Participant L:	(In reference to a physical classroom example) "…it was great because it was in person, it was structured, it was all laid out…it was nice to have a conversation. I liked it. We seldom get into a classroom as often as we used to."
Participant S:	(In reference to a physical classroom example) "The structure was incredibly good. The examples that they used were fantastic. The collaboration was good. When they broke you out into groups it wasn't always the same thing. It was a day long training in-person…when you do that in person, there's a lot more interaction. There's a lot more feeling of involvement from both the student perspective, but also for a lecturer teacher…I've always felt a little bit of unease when attending online trainings because I just haven't found them as beneficial or controlled as in-person."
Participant J:	"I agree it was great because it was in person, it was structured, it was all laid out…it was nice to have a conversation."
Participant M:	"Something that was the most memorable to me in kind of a negative way was the virtual meditation training…I don't know if it was because of the atmosphere I was in or the headspace I was in at the time the training came across, I didn't appreciate it." (The researcher clarified what Participant M meant by "atmosphere" to which he clarified that it was Adobe Connect).
Participant Y:	(Referencing a synchronous online training) "I agree with that one, too. It just wasn't really the right space to be able to meditate or get mindful."
	Theme 3: The physical environment of the synchronous online learner. Example quotes
Participant M:	"So I was trying to think of an example. I'm in a room with [Participant T] and [Participant I] right now and I kind of looked over and was like, when was the last classroom setting training that I did?"

Participant D:	**"**I can't vouch for other sites, but here, like our rooms and things are you know, it's such a premium being that we share the building with so many other lines of business that you don't get a chance to find a quiet location or somewhere you and a couple other people can, you know, kind of jump in and attend the training together. When there isn't space, I guess it's being taken right at your desk and that's like for me one of the most difficult things ever."
	"There's so much going around you and your team respects your privacy, obviously, you know, like if you tell them, but it's hard for me not to hear an associate over there struggling out of one good ear. I'm like, alright, let me go over and try to figure out what's going on over there or an associate will say, "I don't mean to interrupt, but…" and the next thing you know you step away for five minutes…and I come back to the virtual room and I'm like, huh? What's happening right now? And, you know, you're kind of lost."
Participant T:	"The one that I like the most about the classroom is the accountability piece. You're in a training…and that's keeping you in the room. You're there. If you're not really participating, that's going to get pretty easily noticed. Sometimes with virtual that gets a bit harder to manage."
Participant I:	"It's ok here for rooms and people generally have booked rooms in advance. Like right now, there's three of us in a room with headsets on. So that's kind of nice." She went on to say that her satisfaction between synchronous online and in-person can be the same: "…as long as I have the room booked."
Participant K:	"I didn't like sitting in a room with everyone that was in the (virtual) class because everyone would have side conversations and speak over you. When you're on mute the instructor doesn't know everyone's talking… It's a long time to just be sitting at your desk. I worried that I would get called on for something by the facilitator, and I'm like, I have no idea where we are. It's hard to remain focused… I have 30 screens. I can easily multitask… (trailed off)."
Participant H:	"Private facilities definitely are a make or break for the training to be a wow."
Participant L:	"As long as I have a room booked to attend in the virtual setting, I feel like satisfaction between the modalities is pretty similar."

	Theme 4: Differentiating facilitation and content. Example quotes
Participant T:	(Referencing a synchronous class that went well) **"**It was one that was just different media. We watched a video and then we had some conversation and then [facilitator name] did some presenting and then we broke up into small group discussion, then came back to a large group discussion.
Participant L:	"I agree on the memorable piece in regards to the virtual training where there's kind of those different facets of the room used like breakouts, the lecture, the video. That all made it very engaging."
Participant J:	(Referencing disappointment with synchronous online) "Thinking of virtual classes, you basically have two options: You either follow the lecture content as a larger group or break into breakout groups and either role play or discuss. At least when you're in a physical setting or in person, those breakout activities can just be so much more than having a conversation, whether it's getting up and moving around the room, writing on posters on the side of the walls or whatever it might be, there's just so much more to keep people engaged where the virtual learning seems to kind of follow the same structure every time…chat, breakout, chat, breakout…."
Participant G:	"[The physical classroom] got you up and moving around. When you're doing activities that involve working in groups and moving, it keeps you engaged. Not just sitting and listening to a screen the entire time…. When it's relatable like that, it's something that's going to be retrained."
Participant S:	"I don't want to throw anybody under the bus…sometimes I get the impression that some of the events, especially when you go into [virtual] breakout groups, they're not exactly the most well thought out activities. There's not been a training which I would define as terrible, but there have certainly been [virtual] trainings I've been a part of which have had terrible elements within…quite often I've been in these breakout groups and there is a comment by myself or other people, 'Does anybody know what we're supposed to be doing?' Quite frankly, I feel like I have to make something up to be a part of the conversation…I feel as an instructor, you grasp more of a command of the classroom environment."
Participant M:	(Referencing an instructor who has taught both synchronously online and in-person) "I think she does a fantastic job, but I appreciate [facilitator name] more in person versus virtual. In the classroom she commands the room and keeps everyone accountable. Eye contact, voice…she kind of surveys, walks back and forth and it's engaging… That's not to say she doesn't involve people virtually. I think she does a good job in both places."

Participant T:	"I think that there are some facilitators that have more ability to make virtual interactive even if folks or individuals aren't being interactive [Facilitator name] adapts things more in virtual than some others. She reads the room, even though it's not in-person. I think that does build a different kind of environment and I've had facilitators who have done that very well in the virtual space. … almost like a sixth sense. When they haven't done that in the past, I have been kind of at a loss."
Participant H:	"I like a facilitator that's able to balance all the complexities of virtual communication coming in and out while still trying to hit home on the messages they are trying to get across….demoing live for us versus staring at slides for a 5-20 minutes. Encourage video. Get on using the different tools! Sometimes we get into a virtual system and then it's just like, what's being presented and maybe chat. Use the virtual icons… I need to have movement on my screen to keep my attention here. I want to see people on my screen if I'm going to sit there that long."
Participant L:	(On virtual classroom management) "When it's virtual and if people aren't participating from the beginning, that just continues to roll downhill."
Participant L:	"I know it can be a little tough in the moment, but I actually really appreciate when you get a facilitator who will just call up people randomly within the room, pushing engagement, even when it's not necessarily voluntary."

Discussion

The synchronous online classroom did rate lower in satisfaction when compared to the in-person classroom modality, and the focus group participants cited factors influencing their satisfaction that aligned with the literature (technology issues, lack of personal connections, differentiated instruction, negative past experiences, self-efficacy, etc.). However, there were a number of interesting revelations that emerged from this study that offered glimpses into synchronous online satisfaction that appeared to be unique. The following details provide a convergent synthesis of both the quantitative and qualitative data blended together (and sometimes independently) to form a more robust view of satisfaction in the synchronous online classroom.

The statistical analysis of the learner satisfaction data revealed a statistical difference in the Level-1 composite scores between modalities. However, it is important to note that these results do not seem to be of much practical importance. When looking at just the means of individual questions, the differences were infinitesimal. Additionally, the mean composite scores differed by a few points, which when divided out, could equate to one or two categories scoring a few points lower. From a practical standpoint, instead of saying that the

scores are statistically significant it seems almost more apt to say that the scores are nearly equal.

When blending the idea of the statistics with the focus group results comparing in-person and synchronous online classrooms, there emerged a similar sentiment of statistically different, but nearly equal. While no participants definitely said that synchronous online was their preferred modality, many indicated that it can be equally as satisfying as in-person classrooms when conditions are right. Furthermore, participants also indicated that it can be situational in their decision. There were participants in both focus groups that said they preferred the in-person classroom modality, and this leads the researcher to believe that in-person classes seem to serve as the default modality by which everything else is compared. Participants mentioned that preference for synchronous online can be situational. One could infer that if the ability to choose a modality is not an option, satisfaction might be impacted. Learners may not mind having to attend an in-person classroom as that is what they are used to. However, if learners are forced into a synchronous online experience, the satisfaction may be impacted. Overall, the information comparing the satisfaction between modalities seems to show that there is a difference, but the gap may be circumstantial in some cases.

The focus group participants were quoted as saying that they felt the modalities have the ability to be equal when the conditions are right. What also became apparent is that, in most cases, the conditions for synchronous online classes is not right. Our societal understanding of education has formed over numerous generations and it may seem as though what has been done will always work. What emerged from this study is that synchronous online classrooms can be satisfying, but requires proper environmental conditions for learners, facilitators who know how to adapt their teaching, content, and approach to building trust.

While other factors such as technology are sometimes difficult to account for, there is room for improvement to bring the synchronous online experience into a more comparable frame of reference.

Another important convergent theme that emerged related to the synchronous online satisfaction being lower than in-person classes, is that there is no indication that synchronous online classes are "not satisfactory." In fact, when looking at the distributions of the scores for both modalities, trainings at this organization generally tend to skew towards the upper end of satisfaction. While there was a difference between the scores of the modalities, it is important to recognize that synchronous online classrooms were regarded as satisfactory, and in many cases, they provided a preferred experience for learners, as cited by members of the focus groups.

Recommendations for Action

The outcomes from this study suggest that there are still opportunities to further explore the impact of the synchronous online classroom in a tested manner. There are numerous educational resources available that offer methodologies for enhancing the synchronous online experience, but there are very few scientifically tested methods. Since synchronous online classrooms are on the rise in both the corporate and educational sectors, this study provides an opportunity for educators and administrators to begin laying the groundwork for change. While synchronous online does rate lower than in-person classroom experiences in terms of satisfaction, the results of this study reveal that it is not unsatisfactory and provides a fairly robust alternative to classrooms.

Checking out rooms and classrooms for larger groups of learners to congregate to attend the synchronous online classroom is counter-intuitive to the method for which it was

designed to deliver learning. While congregating in a room is not wrong per se, participants clearly demonstrated that it doesn't offer an ideal condition. Instead, the company should consider investing in quiet spaces that do not require participants to reserve and are clearly designated for synchronous online experiences. Alternatively, for longer trainings and for employees that have the ability to do so, logging in from home provides less distractions from the office.

Corporate facilitators also have an opportunity to learn from this study. While it may be assumed that participants are exclusively engaged with the learning environment, the results of the focus group indicate that it is far easier to multi-task when computers offer a gateway to so many other distractions, including other forms of social interaction. Facilitators have an opportunity to set stronger expectations for learners and to utilize strong classroom management tactics to reinforce positive behaviors and transcend the transactional distance.

There is also a need to build better training to prepare facilitators for the online experience. For any organization that utilizes synchronous online platforms, whether in part or in full, has an opportunity to align factors that increase satisfaction with specific strategies that are expected of facilitators. Deans, learning technologies, curriculum directors, corporate learning managers, and even higher education faculty have an opportunity to learn from this study to build a program or resource to support facilitator development. The company that was at the focus for this study does provide an in-depth certification process for facilitators who teach in the synchronous online modality. That particular certification teaches tactics for differentiating instruction and content and modifying classroom management to create an inclusive and engaging classroom experience. However, what becomes apparent is that there are still gaps. Participants talked about the monotony of synchronous online experiences

lowering their satisfaction, and that is the very thing facilitators in this organization are trained to avoid. There is a common belief within this organization that synchronous online trainings should offer a completely different experience from synchronous online meetings, and with some small changes, this philosophy can continue.

There is a great deal of literature that exists regarding the recommendation for differentiated instruction, but it's clear that differentiating style and reaffirming that style are important to create an experience that is on-par with the in-person classroom. If these recommendations can be implemented, there is an opportunity to begin shifting the way society views the classroom experience. In many cases, the recommendations from this study are not so far-fetched that they require a great amount of resources and design.

Implications for Social Change

The synchronous online environment should be treated as a classroom, not a meeting. Participant H even commented, "Zoom we use every day for many meetings and Adobe Connect pops in when there's a learning moment. Adobe Connect there's more various ways that L&D [Learning and Development] can do things to facilitate learning, which I like." Playing off of the theme of environments, the researcher was particularly struck by the resounding comments made by learners regarding their physical space causing them to disengage, and therefore become less satisfied with their experience. Participants cited that they tend to tune-out or disengage from a synchronous online class because their environment is distracting. This is an enlightening glimpse into what could be a more systemic problem. Additionally, while there are some references in the literature regarding environment, little has been suggested or tested. Better recommendations need to be established for learners on

how to attend synchronous online classroom experiences to be have a fully meaningful and satisfactory experience.

Just like in the classroom, virtual facilitators need to be the guide on the side, not the sage on the (virtual) stage. Instructors should adapt the way they engage participants and reaffirm strategies like the APPLE method that is prescribed during the company's Facilitator Certification Training. APPLE, which stands for "Ask, pause, pick, listen, evaluate," is a method by which a facilitator informs the class that a participant will be called on to answer a question. The question is framed, all participants are given time to think, the facilitator chooses a participant to answer, the answer is evaluated, and then the facilitator evaluates and provides meaningful feedback. This method is directly designed to avoid the dreaded question that is lobbed out for any participant to answer. As the participants pointed out in the focus groups, if comfort is not present, and facilitators do not have physical proximity to monitor body language, there might be a tendency to disengage, thus leaving the question hanging in the air, slowing down the pace, and further driving participants to disengage.

While facilitator training content is important, the way in which it is delivered and assessed is equally as important. The participants in the focus group called out the fact that good classroom facilitators do not always make good synchronous online facilitators. This tends to be from the simple fact that classroom facilitators are trained on the same principles and instructional practices as K–12 and higher education educators. The skills that they have learned have formed over lengthy periods of time. To create the same experience for the synchronous online space, facilitators need explicit training and assessment. The company's Facilitator Certification Training is 3 days in length and includes role-playing, virtual hands-on experience, and an assessed teach-back to demonstrate synchronous online facilitation

competencies. Those same competencies are listed in Appendix L. It is clear to the researcher that while training is making a difference, as called out by focus group participants, there is still room to further train facilitators and to reinforce the skills that make the synchronous online experience more satisfactory.

Recommendations Future Studies

There are a great number of future studies that the researcher envisions as next steps to this study. First and foremost, while the volume of survey responses for this study offered a robust opportunity to analyze satisfaction, the results were not collected under a controlled environment. One of the focus group participants noted that they tend to only fill out the surveys when they have something positive or negative to say about their experience. As such, the researcher would like to see a controlled study with participants randomly divided into groups to attend training in different modalities. A future study could include the development and deployment of a more detailed questionnaire specific to the study and specific to the constructs of synchronous online satisfaction.

Additionally, the researcher believes there could be great value in expanding the qualitative analysis for understanding satisfaction by reviewing the free-form fields submitted on the Level-1 surveys. The researcher had 147,315 individual comments that were pulled along with the four years' worth of survey results. These comments offer a robust opportunity to further explore satisfaction by modality.

Finally, the corporate and education worlds do differ in the types of learners and content that is delivered. However, at the core, there are a lot of opportunities that are synergistic. Many of the learners from traditional educational institutions move on to join workforces that incorporate various elements of learning and development within training. To

better gauge how the formulation of factors influencing satisfaction, a future study comparing synchronous online satisfaction between different populations of learners could indicate if the synergy should be closer or more contrasted between educational practices.

Researcher Reflection

The purpose of this research was to address significant gaps that exist within the literature related to online learning satisfaction. While studies exist to help understand satisfaction, most treat online learning as a generalized term and fail to account for drastic differences in types of modality. Additionally, satisfaction studies related to online learning primarily center on traditional institutions of learning (K–12 and higher education) and fail to account for other classroom experiences. Beyond academic institutions, many online classrooms exist in corporate and professional development settings. Without understanding these settings, it's difficult to generalize and apply practices and theories without testing. Finally, there is a notable absence of available training for online educators. Understanding factors that influence satisfaction are vital as a number of research studies have linked student satisfaction with retention (Johnson, 2014; Richardson et al., 2017; Sun et al., 2008). The purpose of the study was to fill a gap by better understanding a subset of online learning in a population that is often overlooked in order to provide recommendations for better teaching practices.

Satisfaction in online learning often lags behind traditional face-to-face experiences in studies related to learner satisfaction. From those studies, some which date back as far as the early 1990s, theories and frameworks have offered indicators as to why learning satisfaction is lagging in online. Moore (1993) introduced an early theory related to transactional distance. In that theory, he stated that technology and time create barriers between teachers and

students. This point strongly relates to many of the current studies of online learning satisfaction that have identified a number of variables that cause learners to form satisfaction. For example, Johnson (2014) noted that interaction is vital to satisfaction, but that it looked different in the online environment than in the physical classroom. While this concept remains true, the degree of interaction and how it is facilitated can vary greatly by the medium. A synchronous experience looks very different than an asynchronous experience. Separating these terms out is important to see if the practices on interaction for each modality are the same or different.

After completing this study, the researcher felt that there were a few surprises with the data collected. Having previously worked and educated in online classrooms and after doing an exhaustive literature review for this study, the researcher anticipated a few other themes to surface that remained somewhat muted. For instance, one of the biggest themes in the literature related to participants being dissatisfied with online learning due to issues and frustrations with technology. While the focus group participants did make a few references to technology problems, they did not surface overall as a major factor in influencing satisfaction.

Synchronous online classrooms offer an amazing opportunity to create a robust and social classroom environment beyond the confines of traditional buildings. From K12 classrooms to corporate training, the synchronous online modality is helping to diversify classroom perspectives, increase access to learning, and redefine the online learning experience. However, corporate learning and development departments need to continue differentiating the synchronous online experience from the classroom experience. Although the corporate world tends to adopt pedagogical best practices from K–12 and higher education, the synchronous online classroom is still mostly uncharted in terms of guiding and

grounded principles. Regardless of industry, with continued development focused on improving learning satisfaction in the synchronous online classroom environment, learners will continue to benefit from the evolution of the classroom. Sync or swim, synchronous online classrooms have truly changed the world of education by redefining and reimagining the traditional classroom experience.

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