Educational Technology and Impact on Teaching Practices Survey

Louisiana Tech University Report

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Executive Summary

We conducted a survey of instructional faculty at three institutions --- Louisiana Tech University, Texas A&M University, and Lubbock Christian University --- during the 2021-2022 academic year. The survey asked respondents about their experience using educational technology with a particular emphasis on new technology adopted at the start of the COVID-19 pandemic, whether faculty have continued to use these technologies, and if these technologies altered their teaching practices. The survey is part of a research project on educational technology adoption and use throughout the COVID-19 pandemic. In addition, we informed respondents that we would share survey results with administrators in order to improve faculty support on campus. The findings presented here are limited to the 78 responses to the Louisiana Tech University survey conducted in December 2021.

Tech respondents indicated that they used a significant number of new educational technology tools at the start of the COVID-19 pandemic, and many respondents stated that they have continued using these tools. There was little consensus on exactly which tools were the best or most appropriate for any given task, with respondents using a wide variety of tools to accomplish the same pedagogical objectives. Respondents also began and have continued using new teaching techniques, particularly those surrounding formative and summative assessment strategies. While respondents reported increased comfort using educational technology tools compared to before the pandemic, there were widespread calls for increased staff support both in learning how to use educational technology tools and discussing pedagogical strategies for improving student learning.

Conclusions Based on Survey Data

We present the following conclusions based on the survey data:

1. Large Number of Educational Technologies in Use: Respondents utilized many educational technology tools. The tools respondents used to perform a given task were not always standardized. This means that students are being asked to learn many educational technology tools that may accomplish similar tasks. Technology support may be more effective if educational technology tools were centralized and standardized.

2. Desire for Educational Development Opportunities: Respondents asked for opportunities for educational development training both directly and indirectly. Respondents who reported adopting new assessment techniques and continuing to use those techniques present an opportunity for broader pedagogical discussions on active learning, grading, and course design that could lead to increased teaching innovations. Concerns about academic integrity offer a similar opportunity for educational development training and programs.

3. Asking for Additional Support: Respondents asked for additional support for their use of educational technology tools and pedagogical development in key areas:
    a. Additional professional staff knowledgeable about both educational technology and pedagogical development.
    b. Additional training on and centralization of educational technology tools.
    c. Improved hardware with the same features and operation across classrooms.

Educational Technology Tool Use

We asked respondents what educational technology tools they used *During* the pandemic, which of those tools they used for the *FirstTime* during the pandemic, and which of those tools they have *Continued* using during Winter 2022.

Sixty-one respondents listed at least one educational technology tool used *During* the pandemic. Of those 61 responses, 50 respondents used at least one new educational technology tool for the *FirstTime* during the pandemic (82%). Forty of forty-eight respondents (83%) said that they *Continued* using at least one educational technology tool during Winter 2022.

Unsurprisingly, Table 1 shows that educational technology closely related to online teaching was most utilized, and it was the first time that many faculty had used such technology.

Table 1: Educational Technology Tool Use Grouped By Category

Category	During	FirstTime	Continued
Zoom	55	44	30
Hardware	42	1	7
Moodle	39	1	12
Productivity	29	7	10
Video Lectures	26	12	11
Collaboration	25	13	7
Communication	12	3	6
Produce Content	8	5	3
Exams	4	4	2
Gradescope	4	4	4
Other	4	1	1
Lab	3	2	1
Art	2	1	0
Music	2	0	0
Tech-Specific	2	0	2
MATLAB	1	0	0
TurnItIn	1	0	0

Focusing on technology that faculty have *Continued* to use, Zoom remains the most used technology. Faculty reported using Zoom for office hours and meetings as well as sometimes recording class sessions or holding hybrid class meetings. In terms of productivity software, faculty reported using Microsoft and Google's suite of applications with some mentions of specific tools like Office Online or Google Forms that were particularly appropriate for online teaching. Tools to record video lectures remained popular, as many faculty continued to incorporate recorded video into their classrooms. Finally, faculty continued using collaboration and communication tools like PollEverywhere, Kahoot, and GroupMe.

Of note are the sheer number of tools mentioned (79 in total), particularly the number of tools that are designed to perform similar functions. For example, faculty used Jamboard, Padlet, Stormboard, and Mural as online whiteboard tools. This could be a result of the fact that Louisiana Tech has not standardized educational technology tools in some categories like online whiteboards, meaning that faculty choose what is appropriate for their individual courses and the amount of money they are willing to pay to use the technology.

We specifically asked respondents why they considered the tools they have continued to use to be valuable. Four reasons were common:

1. Flexibility (24 responses): Faculty appreciated how educational technology tools gave both students and them flexibility to attend class virtually, catch up on material, or interact in new ways.
2. Communication (19 responses): Many educational technology tools help to facilitate increased or more productive communication between faculty and students.
3. Pedagogical Value (13 responses): Some educational technology tools improve student learning.
4. Saves Time (10 responses): Faculty found that some educational technology tools save both faculty and student time.

Finally, we asked respondents who stopped using a particular educational technology tool why they did so.

1. Don't Need (16 responses): Most respondents reported discontinuing using a tool because it was not necessary after returning to in-person instruction.
2. Tech Difficulties (5 responses): Some respondents reported discontinuing using a tool because it was too difficult to use. It is possible that these tools would have continued to be used if faculty had additional training in their use.
3. Use Different Tool (4 responses): Some respondents reported discontinuing using a tool because they found a better alternative to serve the same purpose.
4. Cheating (1 response): One respondent stopped using a tool because they felt that cheating was more difficult to detect when using that tool.

Teaching Techniques and Strategies

We asked respondents if they tried a teaching technique, classroom management, or assessment strategy for the first time between Spring 2020 and Spring 2021. Forty-two respondents (71%) stated that they had tried a new strategy, while 17 said that they had not tried a new strategy.

We coded strategies into four categories:

1. Formative Assessment (11 responses): Many respondents discussed new techniques for conducting formative assessments including increasing frequency.

2. Summative Assessment (7 responses): Most responses about summative assessments described techniques for implementing exams online.

3. Synchronous (4 responses): Some respondents described strategies they developed for teaching synchronous courses online.

4. Other (11 responses): This included respondents who used new techniques to teach laboratory sections, who adopted non-traditional summative assessment techniques, who implemented a flipped classroom, who used asynchronous or hybrid modalities, and who used breakout rooms.

Respondents stated four types of reasons why they felt that these strategies were valuable:

1. Learning (9 responses): The teaching strategy enhanced student learning. These strategies were mostly related to formative assessment or active learning techniques.

2. Engagement (8 responses): The teaching technique kept students engaged in learning. These strategies were mostly related to active learning techniques.

3. Fairness (6 responses): Some strategies for conducting assessments were helpful in reducing cheating.

4. Efficient (5 responses): Conducting assessments online was more efficient for the faculty member and/or the student.

Nineteen respondents (51%) who reported using a new strategy said that they have continued to use it in Winter 2022. These strategies were a mix of formative and summative assessment techniques and continued use of synchronous online meetings. There are potential opportunities for educational development training on innovative formative and summative assessment techniques based on the popularity of adopting new assessment strategies.

We asked the 18 respondents who reported not continuing to use the strategy why they stopped using it. Twelve respondents reported that the strategy was no longer relevant because they were teaching in-person again. The remaining six respondents reported that in-person assessments were better than online assessments (mostly in terms of their ability to prevent cheating). The number of responses indicating that a tool either helped in preventing or caused issues with monitoring potential cheating suggests a potential educational development opportunity surrounding academic integrity and course design.

Comfort with and Support of Using Educational Technology Tools

Comfort with Educational Technology

We asked respondents how comfortable they were using educational technology before the pandemic and at the time of the survey (Winter 2022). Table 2 presents the results.

Table 2: Comfort with Educational Technology

	Pre-Pandemic	Winter 2022
Extremely comfortable	22 (38%)	32 (56%)
Somewhat comfortable	23 (40%)	22 (39%)
Neither comfortable nor uncomfortable	4 (7%)	2 (4%)
Somewhat uncomfortable	7 (12%)	0 (0%)
Extremely uncomfortable	2 (3%)	1 (2%)

In terms of movement over time, 21 respondents' comfort level increased, 3 respondents' comfort level decreased, and the rest stayed the same. Respondents' high comfort level presents an opportunity for more advanced training in the use of and pedagogical purposes of educational technology tools.

Educational Technology Support

We concluded this section of the survey by asking "What resources or support could be provided to help you use new educational technology tools more effectively in your teaching?"

Responses covered eight categories:

1. Training (22 responses): Respondents asked for more, new, and different training opportunities. In particular, respondents requested recorded training that is always available online, short training videos as opposed to lengthy workshops, and training to help respondents determine which technologies might be most appropriate for their particular situation. This includes training in different modalities (recorded online and face-to-face) as well as educational development training describing evidence-based teaching practices.

2. Technology Needs (9 responses): Respondents listed numerous technology needs. Most of these needs reflected the functionality of core technology services like more stable Internet connections, fully functioning classroom video cameras, smart classrooms that work consistently, and equity in classroom technologies across buildings and colleges.

3. Staff (7 responses): Respondents were thankful for staff support that is available, but noted the limitations of that support. Some respondents noted that staff are needed that are educational technology specialists in order to help faculty design courses more effectively with technology. Existing support from student workers is focused on maintaining IT systems. In addition, several respondents mentioned the need for educational developers embedded in each college, as the needs of colleges are different.

4. Unified Services (5 responses): Respondents mentioned that they wanted a central place to learn about and access all available technological tools and a unified support structure so that all tools were available to everyone and support staff were trained to use all tools.

5. Funding (4 responses): Some respondents mentioned that they purchased technology without getting reimbursed or that additional funding was needed to purchase appropriate technology. These responses complemented the Technology Needs responses.

6. Time (2 responses): Two respondents stated that they did not have sufficient time to learn about educational technology tools.

7. Modality Choice (1 response): This response asked about faculty ability to offer courses in different modalities according to student preferences.

8. Compliance (1 response): This response mentioned support for ADA compliance in online course settings.

In addition, some respondents added their desire for additional technology support and modality choice in the "other comments" section at the end of the survey.

Survey Details and Demographics

Survey Details

This survey was e-mailed to the Louisiana Tech University faculty and staff e-mail list on December 7, 2021 with a requested response by December 21, 2021. Seventy-eight respondents began the survey with 58 completed responses and 4 partial responses. Other respondents exited the survey without answering any questions.

This was an opt-in, non-representative survey, and the results should not be taken as generalizable to the entire Louisiana Tech University faculty. Due to limitations on the use of the faculty and staff e-mail list, the survey invitation was sent once. Further, many potential respondents may not have had the time or interest in completing the survey, particularly because no direct compensation was offered. Survey respondents were told that anonymized, aggregate results from the survey would be distributed to university leadership --- hence this report.

The survey was approved by the Louisiana Tech University Human Use Committee (HUC 22-027), Texas A&M University Institutional Review Board (IRB2021-1211), and Lubbock Christian University (dated October 18, 2021).

Demographics

As of Fall 2020, Louisiana Tech employed 124 faculty in a "primarily instructional" role and 254 faculty in a "primarily instructional/research/public service" role.[1] The 58 completed responses represent a response rate of approximately 15%.

Table 3 describes demographic items included in the survey. The relatively low number of complete responses means that subgroup analysis is not possible, but the demographics can provide some idea of the degree to which respondents represent the average faculty member.

Louisiana Tech holds most classes in a traditional classroom, and this fact is represented in the respondent demographics. Nevertheless, a non-trivial number of respondents had prior online teaching experience, and online teaching has occurred consistently for many years. This means that a Tech faculty member is relatively more prepared to teach fully online than faculty members at many universities with only traditional classroom instruction.

Tech faculty are mostly tenured/tenure-track or full time non-tenure track with few adjunct positions. A large number of respondents were in primarily administrative roles. COLA recorded by far the most responses, and respondents were very experienced teachers. The typical respondent was female and white, non-Hispanic.

[1] https://oierp.latech.edu/fact-book/

Table 3: Breakdown of Demographic Responses

Item	Response Options	# (%)
Primary Pre-Pandemic Teaching Mode	Traditional Classroom	46 (79%)
	Hybrid/Blended	10 (17%)
	Fully Online	1 (2%)
Appointment	Administration	8 (14%)
	Tenured/Tenure Track	33 (57%)
	Full Time Non-Tenure Track	13 (22%)
	Adjunct	3 (5%)
College	CANS	11 (19%)
	COB	5 (9%)
	COE	10 (17%)
	COES	9 (16%)
	COLA	21 (36%)
Teaching Experience (years)	1-3	2 (3%)
	4-5	7 (12%)
	6-10	12 (21%
	11-20	18 (31%)
	21-24	6 (10%)
	25+	12 (21%)
Gender	Female	31 (53%)
	Male	21 (36%)
	Non-Binary	1 (2%)
	Prefer not to say	4 (7%)
Race/Ethnicity	White, Non-Hispanic	47 (81%)
	Other Race or Ethnicity	4 (7%)
	Prefer not to say	6 (10%)