

The Influence of COVID-19 on Campus Leaders' Curriculum Integration, Perceptions Towards, and Acquired Expertise in Technology

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Abstract

The purpose of this study was to examine the influence of COVID-19 on campus leaders' curriculum integration, perceptions towards the usage, and acquired experience in technology. A purposeful sample of 171 Texas K-12 campus administrators completed the *Principal's Computer Technology Survey*. Of those, 10 lead campus administrators participated in one-on-one semi-structured interviews. Findings indicated campus leaders' curriculum integration and perceptions towards technology were significantly influenced by COVID-19. Campus leaders admitted that COVID-19 had an impact on relying more on technology regarding communication, teachers requiring more in terms of emotional, behavioral, and technological support, and the use of technology as a replacement versus creation.

Key Words: curriculum integration of technology, use of technology, acquired expertise in technology, campus administrators, emotional support, behavioral support, technological support

Introduction

During spring 2020, educators, students, and parents around the world felt an extraordinary ripple effect on student learning when schools were closed amid a public health emergency (McCarthy, 2020). The coronavirus (COVID-19) is a disease caused by the virus SARS-CoV-2 discovered in 2019 (Centers for Disease Control and Prevention, 2019). COVID-19 quickly spread around the world and forced educators to replace in-person, classroom learning with a virtual model.

While higher education institutions had been increasing virtual learning opportunities even before the pandemic closed schools, K-12 schools had to quickly adapt to virtual learning (Govindarajan & Srivastava, 2020). Leaders scrambled to provide guidance in what became the new normal for instruction and learning. The role of campus leadership in supporting teachers during this time varied from school to school (Govindarajan & Srivastava, 2020).

The pandemic required an immediate response and further complicated the work of campus leaders (Gigliotti, 2020). There were new concerns related to enrollment, instruction delivery and quality, and the physical, mental, and emotional well-being of the teachers and students. During times like those of the pandemic, campus leaders were required to focus on addressing immediate needs while also making decisions that had long-term impact on their school.

The need for change provided an opportunity to revamp strategies and practices used in the classrooms that have positively affected student learning.

While once reserved for higher education, virtual instruction is becoming more prevalent in K-12 settings (Schroeder, 2019).

Virtual education was made more accessible with the invention of the World Wide Web in 1992 (Harasim, 2000). Harasim (2000) predicted technology would alter global civilization as educators and learners adopted and adapted virtual collaborative learning. The researchers stated virtual technology has increased access to education and the number of opportunities for students, such as full-time working parents, who need virtual learning options.

It is important to recognize the role of a campus leader in the different modes of instructional delivery for education and learning; a role that evolved as education changes and student learning transforms over time (Cruz-Gonzalez et al., 2021).

The world-wide pandemic caused a major interruption in students' learning and educators' teaching (Burgess & Sievertsen, 2020). As instruction was forced to move virtually, campus leaders were forced to revisit their roles and become virtual leaders.

To provide teachers with the support needed to deliver instruction virtually, there was a need for this study to examine effects of COVID-19 and the impact it has had on how campus leaders have changed in their curriculum integration, perceptions towards the usage, and acquired experience in technology.

Review of the Literature

The United Nations Educational, Scientific and Cultural Organization estimates that the pandemic disrupted over 290 million students' education worldwide (McCarthy, 2020). With educators being forced to deliver instruction virtually during the mandated timeframe, social distancing protocols were necessary to protect the health of citizens, while district and school leaders scrambled to provide guidance regarding the use of technology. These leaders

relied on their own attitudes and opinions towards technology to make decisions. Current research indicates there are many factors that can influence campus leaders' attitudes towards acquired experience in technology. These are curriculum integration, perceptions of technology, and acquired expertise in technology.

Research suggests that to have more effective technology integration, teachers should feel a closer presence of school leaders in the teachers' everyday pedagogical activities (Claro et al., 2017; Thompson, 2021). Principals accept technology and agree that technology is necessary and useful (Jiang et al., 2017; Masibo, 2017; Sterrett & Richardson, 2020; Thannimalai & Raman, 2018; Ugur & Koc, 2019).

When teachers are provided with more professional development related to technology, more technology is integrated into their classroom lessons (Thannimalai & Raman, 2018).

Furthermore, teachers feel more supported when campus leaders build teacher knowledge and exhibit the need to develop technology skills (Alward & Phelps, 2019; Christensen et al., 2018; Edwards, 2020; Sterrett & Richardson, 2020). Successful leaders believe that training and development helped those that they manage because they felt that they are better able to assist others, students, and teachers, during virtual learning. These researchers concluded that the role of campus leaders is to collaborate with teachers and support the growth of their teachers as technology leaders. Vyas (2020) extended the research into district leadership when he found that district leaders also play a role in improving technology integration into the curriculum.

Campus leaders' perceptions towards technology also greatly influences their ability to provide effective leadership in technology acceptance and integration (Beytekin & Arslan, 2018; Claro et al., 2017; Perkins-Jacobs, 2015). Research suggests that campus leaders need to get more involved in planning and demonstrate their support for the use of technology on their campuses. Beytekin and Arslan (2018) recommend prioritizing teacher development and support in technology integration for those campuses that want to increase technology in the classrooms.

Although most campus leaders agree that they need to stay up to date in technology, many admit that they only use technology for managerial tasks (Aziz et al., 2020). Leaders who create positive beliefs and perceptions among their employees or teachers see more technology usage in the workplace or classrooms (Aziz et al., 2020; Kapucu, 2021; Omar & Ismail, 2020).

Recent studies have depicted that campus leaders with acquired expertise in technology integration and those who use and receive training are more effective in motivating teachers in integrating technology in the classroom and in lessons (Garcia et al., 2019; Gumusoglu & Akay, 2017; Nam, 2019;). Campus leaders and teacher participants agreed that a training program improves a participant's competence and proficiency in technology. Campus leaders who are capable and confident in handling technology seem to positively affect the school, teachers, and students regarding success (Gerald, 2020; Hosnan, 2019; Taylor, 2019; Yost et al., 2019). Research shows a positive correlation between campus leaders' usage and the use of technology within the campus (Aziz et al., 2020). A lack of consistent technology leadership could potentially contribute to

inconsistent technology implementation within the campus (Ellis et al., 2021; Gerald, 2020; Sahoo & Panda, 2021). Research suggests that campus leaders' support and technology usage increases technology integration in their campuses. In a time, such as that of a pandemic like COVID-19, the challenges and barriers needed to be overcome as the delivery of virtual instruction was the only option for many schools and universities (Center for Disease Control and Prevention, 2020).

While responding to the challenges in their schools and the changes in their operations and structures, campus leaders also needed to take care of their teachers' and students' well-being (Harris & Jones, 2020).

Social distancing, providing extra space, and avoiding close contact with others, meant campus leaders had extra work and pressure to provide a balance between technology and pedagogy (Hargreaves & Fullan, 2020). There was a new need to transform campuses and the policies to focus on supporting students, parents, and teachers to maintain student learning and achievement.

When the Yale Center for Emotional Intelligence surveyed teachers in 2020, the five most-mentioned feelings among over 5,000 teachers were anxious, worried, fearful, sad, and overwhelmed (Cipriano & Brackett, 2020). The most common word was *anxiety*.

Teachers explained that they were frustrated and stressed with trying to meet the students' learning needs and still maintain a work-life balance. According to their research, Yale reported that 85% of teachers reported that the lack of work-life balance was greatly impacting their ability to teach. The research showed that campuses need more social emotional learning training and support, not just for students, but for teachers and staff. The

pandemic caused a shift in the role of campus leaders and the needs of their staff.

Theoretical Framework

The relationship between the generative processes of meaning and behavior in relation to a person and their environment can be defined within Bandura's social cognitive theory (Bandura, 1997).

The social cognitive theory was developed in 1986 by Albert Bandura. This theory establishes the belief that environmental factors impact how people view themselves, most specifically how an educator might view themselves as an engaged learner within their school. This would imply that an environmental factor, such as a pandemic, affects behavior both directly and indirectly.

Furthermore, campus leaders impact teachers in professional development and growth through the quality of their interaction. Campus leaders also influence actions people might choose to pursue, how much effort they put forth, and the outcomes they might expect from their efforts (Claro et al., 2017).

Environmental factors can also influence a person's ability to cope with difficult situations or environmental demands (Perkins-Jacobs, 2015). Teachers with supportive campus leaders are more likely to view taxing tasks, such as making the change from in-person learning to virtual learning, as something to be mastered, not to be avoided.

Research Purpose and Questions

The purpose of this study was to examine the influence of COVID-19 on campus leaders' curriculum integration, perceptions towards the usage, and acquired experience in technology. The study addressed the following research questions: (1) Is there a statistically significant mean difference between a campus leader's pre

and post COVID-19 integration of technology into the curriculum?, (2) Is there a statistically significant mean difference between a campus leader's pre and post COVID-19 perceptions towards technology?, (3) Is there a statistically significant mean difference between a campus leader's pre and post COVID-19 acquired expertise using technology?, and (4) What are campus leaders' perspectives on how COVID-19 has impacted instruction on their campuses?

Method

Participants

Participants for this study consisted of a purposeful sample of 171 K-12 campus administrators working in public school districts across the State of Texas. The campus leaders consisted of 38.0% male and 60.8% female.

The majority of the campus leaders were White/Caucasian (55.0%), with 26.3% Hispanic/Latino and 15.2% African American. The participants were split between the different school levels where they served as administrators with 36.8% working at the elementary level, 26.3% at the high school level, and 19.9% at the middle school/intermediate level. The campus leaders were distributed between the ages of 30 and over 70 years old, with the majority participants (42.7%) between 40 and 49 years. Teaching experience varied with 36.8% having 6-10 years of experience, 26.9% 11-15 years of experience, and 19.9% 3-5 years of experience. Administrative experience also varied with 32.8% reporting 6-10 years of experience, 21.6% with 3-5 years of experience, 16.4% with 11-15 years of experience, and 13.5% with 16-20 years of experience. A purposeful sample of 10 campus leaders participated in one-on-one interviews; 50.0% male, 50.0% female, 50.0% working at the primary/elementary level, 50.0% at the secondary level, and 50.0% working at Title 1 campuses.

Instrumentation

The *Principal's Computer Technology Survey* (PCTS) was first created by Hope and Brockmeier in 2002 and later modified by Brockmeier et al. (2005) to present further evidence of validity. The researchers examined the purpose statement, survey directions, and item clarity and decided to change the purpose statement to be more people-centered and rewrote to make the intent of the statements clearer to future respondents.

The survey consists of 40-items across five subscales; (a) curriculum integration, (b) perceptions, (c) acquired expertise, (d) needs assessment, and (e) professional development. Principals' responses to items within the subscales were measured using a 5-point Likert scale ranging from *Strongly Disagree* (1) to *Strongly Agree* (5). The internal consistency/reliability of the PCTS was measured using Cronbach's alphas: entire instrument ($\alpha = 0.94$), curriculum integration ($\alpha = 0.94$), perceptions ($\alpha = 0.94$), acquired expertise ($\alpha = 0.94$), needs assessment ($\alpha = 0.94$), and professional development ($\alpha = 0.94$). For the purposes of this study, only the first three subscales (a-c) were utilized.

Data collection procedures

Prior to data collection, the researcher obtained IRB approval. Next, the participating campus leaders were contacted via email with information regarding the purpose of the study, voluntary participation, the timeframe for completing the survey, as well as ethical and confidentiality considerations. The researcher disseminated an email with the Qualtrics link containing the *Principal's Computer Technology Survey* (PCTS). Participants were asked to reflect back prior to (pre) COVID-19 and then think about what was happening in terms of technology present day (post) when responding to the survey items. Participants were also solicited to participate in a 30-minute, semi-structured interview, which was

audio-taped and transcribed. Pseudonyms were used to protect the identity of the interviewees.

Data analysis

Following the data collection, the data were downloaded from Qualtrics, using Microsoft Excel, into IBM SPSS for further analysis. To answer questions one through three, examining the mean differences between pre- and post-COVID-19 curriculum integration of technology, perceptions towards technology, and acquired expertise in using technology, data were analyzed using a two-tailed paired t-test. Effect size was calculated using Cohen's and coefficient of determination (r^2). To assess for any statistically significant mean differences from pre- to post-survey items, a Wilcoxon signed rank test was conducted. A significance value of .05 was used for this study.

The qualitative analysis process includes validation by using a triangulation of the responses from each of the participants. As a part of member checking, participants were provided a transcript of their interview to ensure the validity of the dialogue gathered. Following the transcription process of the recorded interviews, the qualitative data were analyzed using thematic analysis. The transcripts were coded to identify patterns and themes.

The researcher looked for commonalities in all the responses, looked for commonalities in elementary campus leaders' responses, and finally looked for commonalities in secondary campus leaders' responses. Once commonalities emerged, the researcher re-coded the transcripts and reanalyzed the codes to refine the overarching themes. The emergent themes were used to describe how campus leaders feel instruction has changed because of COVID-19. Once themes were established, the researcher began

to collect quotes from the interviews that would support the themes.

Findings

Curriculum integration

The curriculum integration subscale of the PCTS was designed to identify the amount of technology integration into the curriculum that a campus leader supports within their campus.

The results of the paired t-test indicated there was a statistically significant mean difference between pre- and post-COVID-19 curriculum integration of technology, $t(170) = 4.28, p < .001, d = .70$ (large effect size), $r^2 = .25$. The average curriculum integration increased 45.6% from prior ($M = 14.9$) to post-COVID-19 ($M = 21.7$) indicating that the integration of technology into the curriculum increased. COVID-19 had a large effect on the integration of technology into the curriculum and 25.0% of the variance in their integration of technology can be attributable to the COVID-19 pandemic.

Additionally, the results of the Wilcoxon signed rank test indicated that statistically significant mean differences ($p < .001$) existed between all nine pre/post items.

The greatest increases in agreement from pre- to post-COVID-19 were in *I allocated a significant amount of time to assist teachers in integrating computer technology into their instruction* (36.3%) and *Facilitating computer technology integration into the teaching and learning process was one of my important instructional tasks* (38.0%). This suggested that campus leaders have increased the amount of time and effort that they have given to teachers in supporting and training their teachers in integrating computer technology into their instruction. The smallest increase in percentages between the pre- and post-COVID-19 responses was for the

statement *I encouraged teachers' use of computer technology to meet learners' individual needs* (8.2%) indicating that campus leaders were already encouraging teachers to integrate technology in their classrooms pre-COVID-19.

Perceptions of technology

The perceptions of technology subscale of the PCTS was designed to identify the attitudes a campus leader holds regarding technology. Results of the paired t-test indicated there was a statistically significant mean difference between pre- and post-COVID-19 perceptions of technology, $t(170) = 7.26, p < .001, d = .53$ (large effect size), $r^2 = .43$.

The average perception of technology increased 106.1% from prior ($M = 9.8$) to post-COVID-19 ($M = 20.2$) indicating that the perception of how useful technology was increased. COVID-19 had a large effect on curriculum integration and 43.0% of the variance in their perception of technology can be attributable to the pandemic.

Additionally, the results of the Wilcoxon signed rank test indicated that statistically significant mean differences ($p < .05$) existed between all eight of the pre- to post-COVID-19 items.

The greatest increases in agreement from pre- to post-COVID-19 were in *Principals' professional development to use computer technology was a focus of the district's efforts to infuse computer technology into schools* (24.6%) and *My computer technology expertise contributed to me being viewed as a technology leader in the school* (21.7%) indicating that campus leaders viewed districts' efforts as more focused on integrating technology within curriculum and more awareness and emphasis for campus leaders to assume the role as technology leaders on their campus.

Acquired expertise

The acquired expertise subscale of the PCTS was designed to identify the acquired expertise campus leaders hold regarding technology. Results of the paired t-test indicated there was no statistically significant mean difference between pre- and post-COVID-19 in terms of acquired expertise in technology, $t(170) = 0.63, p = .528$.

The average acquired expertise reported by the campus leaders was similar prior to and post-COVID-19 indicating COVID-19 did not have an influence on the frequency of technology usage. The acquired expertise, or use of technology, by campus leaders did not change significantly when comparing prior to COVID-19 and present day.

Campus leaders' perceptions

Interview participants were asked questions regarding the impact of COVID-19 on instruction on their campuses. The qualitative inductive coding process identified three major themes across the campus leaders: (a) Communication, (b) Support, and (c) Replacement versus Creation.

Communication

All administrators, regardless of whether they were non-Title 1 or Title-1 leaders, elementary and secondary school leaders, felt that technology should be used for communication. All the interviewees talked about how they were already using technology for things like weekly newsletters and building connections through social media.

Just as in a study by Akbaba-Altun in 2001, these campus administrators accept technology and agree that technology is necessary and useful, but then hesitate to use it. There were some differences between the different ways technology was being used at each of the different school levels. While administrators at the junior high and high

school were already using some sort of learning platform or school messenger to communicate school-wide with parents, during the pandemic, the teachers began to rely heavily on technology to communicate classroom needs and information.

Jacob, a junior high assistant principal, explained, “Teachers are seeing the benefits of using [Learning Platform] to effectively communicate with parents. They are able to build rapport virtually.”

Administrators at the elementary level felt like the pandemic brought more of a focus on using technology to communicate school and district information to the parents and communicating from the district to teachers to parents.

Stan, an assistant principal of a K-5 school explained, “I have become primarily the means of communication. Communicating from the district to the staff to the parents.”

Different from the secondary level, administrators at an elementary campus also felt like technology helped but came second to phone calls and paper mailings. This was especially true in those that work at a Title-1 campus.

Shauna said the following:

I think that [Learning Platform] is great for certain populations, but it’s not the best option for us in communicating to our parents. We try to be diligent and send them information electronically. Some of our parents check their email, some of them don’t. Nothing beats calling a parent.

Roy agreed:

My campus sends out everything through [school messenger], but when we need something completed or communicated, I

have the teachers send home fliers and then follow up with parents that have not responded. Most of the time they tell us that they didn’t see the email or didn’t have time to respond when they read it.

These statements would imply that although administrators agree that technology helps with communication, those in elementary feel that more effort is needed to reach parents.

Support

In terms of the support necessary to meet the needs of the teachers, campus leaders spoke on three types of supports they provided: emotional, behavioral, and technology.

Teachers were having to work harder and come up with ways to engage students virtually and at times their efforts were met with failure. Once students were allowed back on campuses, teachers seemed to struggle with being able to balance their workload with in-person and virtual students and everything that comes from having blended classrooms.

Melissa, a junior high principal, explained: I support my teachers a lot. Sometimes I have to remind them that they need to find balance in their lives. I value them being at their doors, greeting their students more than having them stress over how great their course page looks. Does it have everything the students need to learn and be successful, then who cares if it’s cute?

Craig, the elementary principal, also shared, “I feel like a counselor. I have teachers crying in my office worried that they are doing what’s best for kids.” The role of this principal seems to have shifted towards a supportive role implying teachers need more support during challenging times, such as during the pandemic. This supportive role goes beyond providing teachers with instructional guidance.

The campus administrators stated that both teacher and students were overwhelmed with the changes.

Stan, an elementary assistant principal at a Title 1 campus, spoke of becoming a support for his teachers, but in a different way. He said, *“I spend my time helping teachers find resources because they seem stressed about tools. I make sure they are clear with our virtual look-fors, so that we can take that stress off of them.”*

Another Title 1 elementary principal, Shauna, described how she was helping students behaviorally below:

Attendance and engagement [are] where I spend most of my time. Lack of engagement when they are on camera or not showing up for virtual class is a really big issue. I spend a lot of time calling and checking on students. I am constantly emailing parents letting them know how their students are doing virtually- many of them seem surprised to hear that their student is struggling.

While teachers provided students and parents guidance with the curriculum and content required, the elementary administrators felt that they were also worried about making sure students were provided with behavior support such as routines and structures while they were at home. Stan and Shauna both spoke of example schedules that they provided to teachers and to parents to follow during virtual learning.

Administrators were split in terms of supporting their teachers with technology. Elementary administrators focused more on implementation of strategies and delivery of curriculum, while secondary administrators were providing more technology support

around a learning platform, more to parents and less to teachers. There was no major difference between the school administrators based on campus economic designation.

Craig explained, “Delivery of curriculum. While we were off campus, helping teachers with how to instruct online was my sole role. I was helping them with that learning curve.”

Elementary teachers seemed to struggle with trying to recreate their classrooms while online learning was required. Many of their teaching techniques were no longer safe or possible, so they needed help with finding new tools or ways to engage with their students to teach them foundational skills.

On the other hand, secondary teachers were most used to and able to transition into online learning. Students and parents were struggling to keep up and learn the different platforms.

Prithvi described his experience as a junior high school principal during school shutdowns below:

I tasked my admin team in trying to take student technology problems or issues off of the teachers’ plates. [The assistant principals] were in charge of calling students and zooming with them and making sure they were familiar or able to access [Learning Platform]. They were responsible for showing students how to submit work, how to log into meetings, and how to communicate with their teachers if they had questions.

Although schools were expected to provide students with their technology devices for virtual learning, the administrators interviewed also spoke of providing families technology support. The administrators explained that

although teachers provided their students with passwords and communication, they also felt that families needed more than what the teachers had time to do for each student. As stated in the quote above, campus administrators took on this task to help alleviate some of the stress from teachers.

Replacement versus creation

Very much like in terms of technology support, administrators were split in how to use technology during online learning. In elementary schools, administrators felt that their teachers were using technology more for replacement, since in person was not available.

Erica, an elementary assistant principal, explained, *“Technology used to be more for reinforcement. Now, it is more for trying to do what we used to do in the classroom, virtually.”*

Another elementary assistant principal, Roy, expanded:

My teachers were more concerned with finding tools, like a sketchpad that they could use like a chalkboard. [Technology] was not about creating or doing new things, just for substituting what they could not do in person. They seemed to be grasping for straws in finding ways to mimic what they did during in-person learning.

Campus administrators at the secondary level felt that teachers were using technology for creation and more project-based learning. Both assistant principals from Title 1 campuses and non-Title 1 campuses seemed to agree that technology was getting more students involved in their learning.

Theresa, a junior high assistant principal at a Title 1 campus described what technology looked like in a social studies classroom:

Students are able to cater their experience to their own interests. If they are working with non-fiction or historical fiction, they can do research on their projects. They have more options of things to choose from: their own articles, authors... They take more ownership of their learning and create products.

Elementary and secondary administrators felt there was a big difference in the ways technology was being used. One could venture out and say it is because those at the secondary level, grades 6-12, could work more independently using their devices. In elementary, the teachers were simply trying to recreate the experiences from their classroom in a virtual setting, while the secondary teachers were trying to extend students' experiences while at home.

Discussion

Campus leaders have the opportunity to impact student learning through their influence on teachers (Bush, 2018). Principals and assistant principals are trained in educational strategies and best practices that can maximize this student learning through effective teaching (Meyer & Rowan, 2006).

Campus leaders must be better prepared to be efficient in supporting teachers in their classrooms, both in-person and virtually (Gigliotti, 2020). To provide teachers with the support needed to deliver instruction virtually, there is a need for this study to examine effects of COVID-19 and the influence it has had on how campus leaders have changed in their integration, perception, and expertise in technology.

The first three research questions addressed campus leaders' curriculum integration, perceptions of technology, and their acquired expertise in technology.

Findings indicated there was a statistically significant mean difference in curriculum integration and perceptions of technology between the pre- and post-COVID-19 responses, but not a statistically significant mean difference in campus leaders' acquired expertise technology pre- and post-COVID-19. Given that over the years the use of technology in schools has dramatically changed, the items on the PCTS may require some revisions to ensure alignment with current practices.

The interview responses indicated campus leaders find great benefit to technology in its use for communication and meeting the needs of the students on their campus. Although there were differences in the roles and how technology was perceived, campus leaders generally accepted technology and acknowledged its integration as a necessary part of education, especially when delivering instruction virtually.

The study revealed that all campus leaders believed technology to be a great tool to communicate with the parents and community but differed in their opinions as how their teachers should be using it within their classrooms to provide instruction.

The campus leaders agreed that at the beginning of the COVID-19 pandemic, teachers and students were overwhelmed with the change from in-person to virtual instruction. At both the elementary and secondary level, campus leaders felt their roles transformed into those of a support for their teachers as they learned how to balance their workload with in-person and virtual students.

The campus leaders were split in how teachers should use technology as elementary leaders felt that their teachers were using technology more for replacement. Secondary campus leaders felt their teachers should integrate more technology into curriculum as a

means for creation, such as project-based projects.

Implications

As a result of this study's examination of the influence COVID-19 had on campus leaders and the integration, perceptions, and use of technology on their campuses, implications for all stakeholders involved with staff professional development emerged. Previous research and the findings of this study implicate that policy makers, principal preparation programs, and district administrators are charged with preparing campus leaders for their roles as instructional technology leaders because of their direct influence on the success of their teachers in technology integration and usage.

Policy makers

This study has found that campus leaders play a critical role when trying to increase technology integration and usage within a campus. Policy makers, such as the Texas Education Agency (TEA), may want to consider an in-depth analysis of the specific criteria for hiring campus assistant principals and principals and considerations for required training and coursework to provide guidance to school districts and principal preparation programs.

Texas Education Agency's current guidance in principal preparation programs includes several focus areas related to curriculum, behavioral, and relational skills that individuals must obtain to be successful as building leaders. In addition to the current coursework required, it would be in the best interest of students and teachers to certify that these future leaders are skilled in ways that technology and technology integration can increase student engagement and success.

Within these recommendations, it is important to highlight the positive correlation between campus leaders' perceptions or attitudes towards technology and technology

integration within a campus (Dogan, 2018). An increase in campus leaders' technology usage indicates a more effective use of technology within their campus (Hosnan, 2019). Making sure future campus administrators can support teachers in education specific platforms or applications would seem beneficial.

The key would be to make sure these leaders understand that they do not necessarily need to be experts in educational or instructional technology, but they need to provide the resources that will create an environment where teachers are comfortable learning and expanding their knowledge in ways to integrate technology into their classrooms. This would help administrators be able to support their teachers in new initiatives and ensure that they are feeling successful as they grow as learners and teachers. Perhaps including instructional technology as a larger piece of the principal's certification test would be a small step in the right direction.

Higher education/principal preparation programs

A significant amount of time and professional development is spent by colleges, universities, and principal preparation programs in training future campus leaders. Coursework and training required for principal certification should be evaluated to ensure campus leaders understand the benefits and importance of integrating technology within the classrooms.

Campus leaders should receive professional development in supporting their teachers during unforeseen changes and acknowledge that the professional growth of teachers and student achievement result from their leadership. Principal certification programs should consider training campus leaders in examining their roles as instructional and digital leaders. Aligning campus leaders with the world's prominence of using technology in the workplace could expand the

possibilities of growth in technology usage and expertise in their teachers' classrooms (Ellis et al., 2021).

As mentioned under the section, *Policy Makers*, the intent is not to make all future campus leaders technology experts. Preparation programs should focus on teaching campus leaders how to support their teachers as they learn and explore new initiatives and strategies. This study revealed the need for administrators to support their teachers behaviorally and emotionally.

The shift in leadership skills that focus on staff morale and community building is becoming more prevalent as more and more teachers leave the profession (Ryan et al., 2017). In their study, which directly relates to the need for more support, teachers claimed that stress and lack of support were the main contributors to teacher attrition. Making sure future campus administrators know how to support their teachers should be a priority in principal preparation programs, as maintaining teachers in classrooms continues to be a challenge.

District administrators

District administrators need to understand their role in affecting campuses and campus leaders' influence on teachers in their buildings. A significant investment in time and training should be invested by district administrators to provide professional development on all levels regarding technology integration.

Research shows that campus administrators are more likely to assist their teachers if they have a general awareness of the technology standards and how to better support their campuses and teachers in digital learning (Ellis et al., 2021). If districts are going to mandate professional development for teachers, they should also provide professional development for their campus leaders in how to

support their teachers. The cost to replace a teacher costs a district anywhere from \$9k to \$21k depending on the years of experience and training the teacher received while working for the district (Learning Policy Institute, 2021).

Especially during a time, such as the pandemic, when staff is limited and shortages are prevalent in almost all job industries, districts should invest in creating an awareness within their campus administrators. This awareness would include the need to support their teachers and improve their working conditions. District administrators should understand the need to develop their campus leaders by providing them with learning opportunities that support their ability to create efficient and productive work settings that are needed to prevent teacher attrition.

Many campus instructional teachers and paraprofessionals cite lack of support from the district and their principals as the top reason for leaving the profession. They also share that they feel limited in the input in decision-making and time to collaborate with colleagues. Possibly making collaboration between educators and providing paid time for staff to share and work together should be a goal for all districts. The tradeoff of having to pay staff to train and work together would be less than having to retrain campus leaders and staff.

Recommendations for Future Research

Despite the limitations of this study, the results yield insights into the effect COVID-19 has had on instruction and technology integration and usage within public school classrooms. One future research opportunity would be to consider a study in terms of student perceptions when comparing in-person and virtual learning. Replicating this study but using students in K-12 schools would provide additional data to further develop the contributions of this work and how COVID-19 impacted instruction.

Although teachers were at the front line of the pandemic and its effects on their classrooms, students can also provide valuable insight as to how their learning changed when instruction was only offered virtually. Adding this component could provide some insight as to how students felt their teachers kept them engaged and learning during the pandemic. In addition, some understanding of how students felt they learned best could provide more strategies to teachers and campus leaders on how to better support students.

A second recommendation for how this study could be used in future studies would be to continue improving principal preparation programs. As programs continue to change and provide training and professional development to campus leaders, a longitudinal study would allow researchers to establish best practices and strategies on how to better support teachers through unexpected changes.

The findings of this study could provide more coaching to campus leaders in behavior or mental health support that principals and assistant principals are having to provide to their teachers. Principal preparation programs need to prepare campus leaders in being more than just instructional leaders. More and more, the role of campus leaders is evolving and becoming more of a support role as teachers are becoming more efficient in engaging learners and building problem solvers, with a lesser focus on curriculum.

A final recommendation would be to explore the perceptions of businesses and community partners and the effectiveness of public schools in preparing students for jobs and careers. Research in this area could include investigating the needs of the community and how schools are preparing students beyond academics. Gaining this insight into the needs of the workplace could guide instruction and curriculum in ways that

teachers can prepare students with skills they can use beyond the classroom. Campus leaders would need to assess the modifications to the curriculum and prioritize the type of learning

and experiences their staff are providing to their students based on how to better prepare students for their futures

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