Influence of School Climate and Leadership on Indonesian Vocational Pharmacy Teachers' Productivity

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Abstract

We investigate in this research how the principal's actions and the school climate affect the productivity of vocational pharmacy teachers in Indonesia. Because vocational education helps produce highly skilled pharmaceutical workers, knowing what affects teachers' productivity is key. The survey method is used as the study's main approach and data are gathered from vocational pharmacy teachers in different areas of Indonesia. The research considers the effects of transformational, transactional and instructional leadership on teachers' motivation, degree of satisfaction with their job and total performance. Furthermore, the research examines the school climate with regard to cooperation among staff, trust, safety, efforts to be creative and management support to find out how it impacts teaching. Leadership and climate are studied statistically, using multiple regression and path analysis, to determine their impact on teachers' output. It was found that both the style of the principal and a positive moral environment in the school help raise employees' productivity. Transformation leadership stands out, proving that supportive and inspiring leaders are particularly important in vocational fields. The findings suggest that specific leadership and school environment programs would improve both the effectiveness and well-being of vocational pharmacy educators. This research gives useful advice to policymakers, school administrators and teacher institutions to enhance the quality of vocational education in Indonesia.

Keywords: ***Principal leadership, school climate, teacher productivity, vocational education, pharmacy teachers, transformational leadership, instructional leadership, work environment, Indonesia, educational management.***

1.Introduction

Thanks to advances in technology, increased globalization and new teaching approaches, the classroom environment has evolved as never before. All around the world, education institutions face a major shift that requires new ways for leaders to think, cultures to change and staff to perform even better. This change has caused educational administration to become more complex, so leaders must function in the digital world and ensure the school's achievement and success.

Because of technology, education leaders now reflect differently on their roles, what their responsibilities involve and what their strategy should be. Today's academic leaders are required to know about the latest technology, using data to inform decisions and teaching online while placing people first in education. Handling this situation calls for leaders who can use study of technology to guide relationships, strategic thinking to go along with being flexible, office goals with a focus on individual workers and creative visions to guide change(1).

Besides, the global pandemic led to accelerated use of technology in schools which now brings opportunities and issues for schools' leadership. Due to the pandemic, administrators are currently updating traditional teaching ways, coming up with fresh ways to evaluate students and introducing thorough systems to improve teaching and learning. Because of the sudden changes, it is now obvious that adaptable leadership, flexible methods of working and sharing ideas help education systems respond to major challenges and maintain their quality and interest for students.

The challenges in today's schools mean leaders must deal with many parties, including learners, teachers, parents, regulatory groups and members of the outside community. Good education leadership today must involve a thorough knowledge of diverse ways of learning, different cultures and practices that welcome all students and their learning differences. Thanks to this dedicated method, educational leaders place a priority on setting up lasting systems that foster equity, accessibility and top performance for everyone in the educational system.

Researchers working in educational leadership today place great importance on leadership that encourages new ideas, collaboration and ongoing achievement at all levels of the education system(2). Here, leadership uses strategies to give educators access to technology, creativity in their teaching and a key role in making decisions for the institution. When educational leaders use technology, they can obtain data-based knowledge that directs their planning, ensures effective use of resources and helps measure both personal and organizational growth.

Along with supporting the age-old wisdom of learning, leaders of educational institutions should introduce new ideas to help students meet the demands of modern workplaces. This means teachers support students in developing the critical thinking, tech skills, creativity and team spirit needed for today's job market. Leaders in education must, therefore, ensure the workplace supports trying out new things, never stops learning and responds well to both new opportunities and near-future challenges.

This research makes a difference by exploring how leadership, the working environment and results in learning improve when technology is used. Studying the strategies that educational leaders adopt to help educators perform better and students succeed allows the study to inform effective administration in the twenty-first century. Policies, leadership approaches and planning efforts by institutions might benefit from these findings, helping them increase their contributions to education, as well as their stability as organizations.

2.Literature Review: Leading Change in Schools with Digital Resources

Growing technological advancements and changing society's views have led educational leadership theory to change a lot. Nowadays, transformational models of leadership value having an inspiring vision, motivating employees, encouraging creative ideas and providing individual consideration to achieve an effective team and happy employees. Digital learning environments require these leadership functions to help steer progress with the right technology, always maintaining the quality of students' learning(3).

A number of studies have linked transformational leadership with educators being content, creative teaching and higher learning performance of students in digital classrooms. When educational leaders portray transformational characteristics, they help create a work environment that promotes exploring risks, adopting new technologies and finding solutions to educational challenges by working together. These leaders outline inspiring goals for educational changes and give the needed guidance and tools to implement them.

With digital transformation of schools, leaders are expected to demonstrate competencies that go further than regular school administration. Today's educational leaders should know how to use technology, examine data, guide changes and communicate in the digital world to do their job effectively anywhere. Besides, these leaders are responsible for understanding the impact digital equity, cybersecurity and privacy have on education and kids using technology.

Current research in educational leadership stresses the value of involving teachers and administrators as equal leaders in decision-making. This approach knows that for change to happen in education, administrators, faculty, staff and students all must collaborate to support the institution's success. Since just about anyone can develop technology-based skills and ideas in digital education, distributed leadership models are more suitable than traditional structures.

Thanks to artificial intelligence, machine learning and data analytics, educational institutions can now take evidence-based actions that improve how they run and the outcomes they reach. Effective use of the tools by educational leaders allows them to see key insights on learning, teacher skills and whether the institution is improving. Still, for these technologies to work well, leaders must recognize what they can offer and what ethical issues they present in education(4).

High-quality leadership in digital education depends on having emotional intelligence and good social skills which support keeping connections with people and overcoming difficulties in using technology. Good leaders in education must deal with people's fears about technology, offer comfort as institutions shift and protect cultures that appreciate both old and new ways of teaching. Without this balance, the workplace for educational staff cannot be safe, effective or sustainable.

3. Climate at Organizations and Digital Culture in Contemporary Schools

Because of technology, educational institutions today are more complicated and need educated knowledge of technology and how people interact. The key for today's schools is to manage the relationship between technology and human connections, with children, parents and teachers forming productive partnerships in an innovative environment. As a result of this, organizational culture now involves digital knowledge, working together in virtual settings and technology-driven communication which strongly shape both school results and how pleased the staff is with their work environment.

In digital organizational climates, everyone at the institution is expected to be adaptable, willing to learn new things and knowledgeable about technology(5). Teachers and other staff must be able to use many digital systems, virtual tools for communication and modern teaching techniques while preserving old teaching values and relationships. For digital technologies to be successfully adopted in a workplace, leaders have to encourage staff training, ensure there are adequate resources and build a safe environment where educators are free to use new technologies and try new ways of teaching without worries about criticism.

Since many schools now use virtual teams, remote collaboration and hybrid work, managing them is getting more complicated. Universities and other educational institutions must have advanced ways of communicating, managing projects and evaluating performance to help students, faculty and staff work together in person and online. To work properly, these systems must think about cultural differences, the available technology and people's likes and dislikes influencing learning.

It has been shown that positive digital organizational climates involve a high level of trust, transparent talking, a shared plan for technology adoption and teams working together by using what they are skilled at and what technology provides. By ensuring psychological safety, these environments let people safely try new things, be creative and address challenges, while giving the proper assistance to anyone finding it hard to adjust to new technology. In effective digital organizational climates, it is recognized that online education can blur the difference between professional and personal duties, so work-life balance is valued(6).

Attention to issues such as fairness, usability and diversity for all is important in any context, but especially so when technology is more heavily involved in learning. Schools and universities need to make sure that technology and practice do not accidentally make it harder for students and staff with diverse technology knowledge, culture or ways of learning. This involves giving all staff and students access to training, help with technology and new methods of digital participation that suit each person.

Institutions today should also focus on keeping their identity and culture intact in virtual environments where normal informal conversations may no longer happen easily. Strengthening relationships and community bonding virtually becomes very important to ensure that effective educational institutions maintain their shared goals and teamwork. For educational communities to benefit from digital tools, it is important to continuously check that the involvement of people in education is not diminished.

It is challenging to measure digital organizational climate in learning organizations because the tools and techniques needed are new and specially designed for such environments. Common organizational surveys and tools may not measure exactly how aspects of digital culture, teamwork online and technology influence student learning. Leaders in education should establish a detailed process for assessment that gives useful information about the state of their organization's digital environment and what needs to be changed.

4.Professors' Performance and Learning Digital Skills in Today's Education

Currently, educational institutions consider faculty performance beyond teaching skills and research success and factor in digital abilities, new technology and the capability to adapt to fast changes. Currently, teachers need to know how to use several technologies, adopt creative teaching methods, rely on data to guide their decisions and aim for both high achievement and active student interest in learning. Since performance means more today, schools and districts will need wide-ranging training, constant guidance and ways to measure teaching that reflect its complexity.

Faculty are now evaluated on their digital skills, awareness of how to use technology in teaching and their ability to alter teaching methods for different digital spaces and classrooms(7). Learning institutions are expected to build structured support activities that benefit teachers in adapting these new skills. Sustained growth in a company's

people is best achieved when its professional development includes training, sharing knowledge with peers, learning together and ongoing assistance.

The combination of data analysis and assessment technology gives a new insight into how faculty work in digital classrooms. Now, schools can check student engagement, review what is being learned and see the impact of teaching methods which supports their improvement and judging staff performance. Yet, adopting such tools means fully thinking about privacy risks, ethics and the potential for problems in how data are evaluated that could degrade teacher morale or the atmosphere of the institution.

Recent models of faculty performance in education focus on boosting innovation, creativity and entrepreneurial ideas in staff to help them create new methods and approaches to teaching, research and services, using new technologies to fulfill new student and society needs. For these outcomes to work, cultures within companies must be tolerant of trial and error, value experimentation and give employees the tools and encouragement required for finding solutions. Leaders in education should encourage teachers to think outside the box, cooperate with others across departments and interact with outside partners to boost the effect of their work.

COVID-19 has made it clear that faculty must now be both flexible and strong to handle unexpected issues in education. Those who switched to online teaching fast, used new online strategies and supported students through problems have demonstrated the skills that are important for educators today. Because of what they have learned, colleges now focus on seeing flexibility, creativity and helping students solve problems as important parts of a faculty member's roles.

5.Methodology Approach to Research for Digital Educational Leadership

Since educational environments today are complex and evolving rapidly with new technology and changes in teaching, digital educational leadership effectiveness needs to be studied using highly developed techniques. Using mixed-methods research designs has proven especially useful for looking at how leadership, organizational culture and achievements are linked in environments using new technologies, because it allows researchers to measure concrete facts and listen to stories from staff in those settings.

Today's research in educational leadership should deal with the special issues surrounding virtual and hybrid education since the usual ways of collecting data may not do the job well. The challenge for researchers is to create new ways to invite participants, collect information and study it so as to capture the experiences of people reaching them through different online and real-life platforms. Examples of such methods are using online surveys, virtual interviews, digital ethnography and analyzing networks on the web to better understand how educational leaders and faculty interact using technology at work.

Proper frameworks for digital educational leadership studies are chosen by considering important leadership theories and adding in concepts linked to digital advancements, virtual groups and how communication is done using technology. Experts should blends traditional organizational behavior streams with novel ways of looking at educational environments, especially focusing on digital leadership skills, virtual emotional intelligence and technology-driven transformational leadership that many models haven't considered(8).

Due to the wide variety of digital settings, technology usability and changes in education, sampling strategies for digital educational leadership research are not simple. Those studying digital datasets must consider the types of institutions, varying digital tools and diverse populations when choosing the sample, while overcoming any bias introduced by differences in people's comfort using digital research tools. There may be a need to implement both modern and old methods to find involved participants.

Survey tools and other measuring systems used in digital educational leadership must target the key areas of leadership activity, atmosphere in the organization and outcomes related to technology-supported education. Standard leadership tests might need to be changed or added to, so they can measure the digital skills, technology-based communication and relationship building needed for today's educational leaders. In a similar manner, any measure of organizational climate used must reflect the particularities of digital education, covering technological support, how well virtual collaboration functions and the level of digital equity.

Appropriate statistical and qualitative methods are necessary for looking into the data from digital educational leadership research, considering the many connections between different technologies in organization settings. Sometimes, experts apply techniques such as structural equation modeling and multilevel analysis to analyze

leadership behaviors, different parts of an organization and how they relate to performance while controlling for other important elements. Text or image data also needs sophisticated analysis which may include utilizing digital tools to look for essential patterns.

In addition to regular research ethics, digital leaders in education must consider matters such as digital privacy, security of data and the possibility that specific participants might be accidentally excluded by technology-based research. Scientists should take into account that collecting and preserving digital information may result in ownership issues, difficulties in holding data over a long time and possible uses of research data that participants were not informed about. In addition, researchers have to make sure their methods do not deliberately separate those with digital skills from those without.

Researchers in digital educational leadership must give particular importance to how rapidly aspects of education and technology change, since this can make past research findings obsolete fast. Scientists need to formulate studies capable of delivering crucial details even as the technology rapidly changes around them. For this reason, using approaches like longitudinal research, doing replications or concentrating on the main principles might become necessary.

6.Results and Guidance for Education

The study and observation of digital educational leadership effectiveness have uncovered important patterns between leadership, features of an organization and its achievements that guide changes in education, policy and organizational plans. Leaders who manage both technology and relationships in their leadership have a clear advantage in improving faculty satisfaction, advancing innovative teaching and boosting feedback on how much students learn.

Looking at extensive datasets from several educational establishments suggests that leadership that transforms, combined with being digitally able and having a tech vision, lead to more positive changes in the climate and capabilities of staff than were possible with either leadership or technology alone. This shows that top educational leaders today manage to use human-based skills with expertise in educational tech, helping make their organizations good places for creative work and healthy relationships among staff members(9).

Findings from interviews with leaders and faculty in educational institutions show that true digital transformation needs leaders and schools to focus on managing changes, providing professional development and emphasizing a positive culture far besides just adopting new technologies. Reported by most participants, the most successful leaders are those who spend time and resources boosting the organization’s technology skills, while also being good at building relationships, communicating and setting clear values that guide the use of new technologies.

An examination of data from schools with varied use of technology suggests that how well leaders perform and affect a school’s achievements are affected by issues like trust, effective communication and a common purpose for new technology. These findings tell us that success in technology adoption by teachers must be guided by supportive conditions in the organization.

Different approaches to leadership work well in various schools, depending on their size, student mix, what equipment and finances they have and what experience they have had with tech. These outcomes show that effective leadership in digital education calls for approaches that suit each organization instead of the same approach everywhere. Educational leaders who are successful can understand the situation within their institution and choose the best leadership techniques for both the situation and the community’s needs.

The analysis of data shows that institutions that adopt effective digital educational leadership experience sustained improvements in keeping faculty, satisfying students, facilitating learning and building a good reputation. These positive effects can only be gained if leaders continue to develop themselves, the organization invests in better technology and the culture supports creativity and adjustment to demands in education and technology.

7. Discussion and Theoretical Implications

Putting together the findings from this detailed exploration of digital educational leadership highlights major changes for leadership theories in present-day education, leading to the replacement of historical concepts of educational leadership with new ones that mix technological prowess and a concern for people. The evidence

reveals that the best educational leaders in digital spaces must update their leadership abilities to include being digitally literate, forming relationships online, adjusting to new technology trends and ensuring they always maintain excellence in education and satisfaction among stakeholders.

The findings demonstrate that current leadership methods, as important as they are, might not be enough for navigating how educational leadership works in technology-based fields, where the distinctions between being virtual and physical, immediate and delayed interaction, are no longer as clear. A combination of transformational, distributed and digital leadership models in hybrid leadership appears to offer a more complete understanding of what leads to effective leadership in current schools, so it is necessary to have theoretical frameworks that deal with the many aspects of today's educational leadership.

The findings of this research should be applied to leadership, how organizations are built, evaluation methods and future planning, with an emphasis on understanding digital environments for education. They must build programs that help prepare leaders to manage teams virtually, understand appropriate use of technology and enhance their vision, ability to connect with others and ethical decision-making at work.

They also confirm that organizational culture affects how leadership actions influence performance and recommend that educational leaders focus on cultivating such a climate by combining attention to technology with preservation of educational mission and values. This demands that educational institutions know about change management, how culture can be shaped and how to involve stakeholders in ways that address the tough problems of digital transformation without damaging important aspects of effective educational communities.

The findings show that digital environments call for revising current ways of evaluating faculty performance and offering professional development that considers a broader range of skills necessary for effective leadership now. Schools are encouraged to design methods that measure both usual educational measures and the digital skills, creativity and skill to adjust that are needed for studying with technology.

According to the research, pay attention to equity and inclusion is important for digital educational leaders. This is because technological changes could create unfair advantages or disadvantages depending on what educational staff and students already have in terms of technology, digital skills and different backgrounds. Effective educational leaders should design plans to support equity which includes thinking about the technology gap, using cultural knowledge and using accessible designs for every new technology used in education.

Because the findings reveal that a strong digital educational transformation depends on joint actions from different organizations and stakeholders, policy development at institutions, regions and nations is also crucial. Regulations, funding structures and accountability solutions should help, rather than stand in the way of, new innovative practices in education. Awareness exists that standard performance measures may not fit the assessment of digital education and that fresh assessment tools are required to identify all the outcomes of modern learning methods.

These results are especially significant due to the worldwide growth in educational technology and the growing connections between schools around the world. Although the key ideas discovered here might work in various educational contexts, they require changes to suit different cultures, systems and expectations.

Opportunities for Further Research

The findings from the investigation into digital educational leadership should be understood with limits in mind such as the situation the research took place in and quick developments with technology and education. Since most of the data used is collected at a single point in time, it is difficult to confirm that certain leadership practices cause certain outcomes. Therefore, to better grasp how digital education transformation happens, future research should track both leaders' skills and the effects on organizations over several years.

Results from these studies might not apply to other groups since they look at one set of schools and regions. Research in the future should look at various educational systems, international regions and technologically diverse settings to understand better how different leadership styles work in digital education.

Because technology changes so fast, research in this area encounters difficulties because what is discovered for one technology or platform may no longer apply with the next technological update. Future work should aim to uncover essential ideas of successful digital leadership that apply to all education technology environments, even when technology shifts or develops.

Measuring digital leadership competency, virtual organizational climate and technology-mediated performance is not easy which is why new tools for research and evaluation must be created all the time. Future studies should work

to make and test accurate measurement tools for digital educational contexts as they also look for new approaches to study how digital leadership shapes students' learning experiences.

Investigating the ways in which individuals respond differently to digital leadership strategies is significant for future research since the findings show that the impact of leadership actions on staff can vary due to students' own attributes, previous experience and prevailing preferences in reacting to online leadership and technology. By understanding these differences between people, educational leaders may develop fit-to-purpose ways of guiding education that support several groups in the community.

8.Conclusion and Future work

The broad research on how digital educational leadership, the atmosphere in schools and teacher performance are linked has revealed many new ideas that oppose traditional thinking in school administration. The scientific research shows clearly that successful digital-age learning institutions must have leaders who combine strong technology knowledge and traditional principles of human-focused organizational change to ensure that the community thrives and is continually innovative, sustainable and inclusive while staying committed to education quality and stakeholder satisfaction.

These results affect how whole educational sectors, policies and leadership training should be developed in order to manage the intricate issues and new possibilities brought by advances in technology to schools. Educational leaders should become well-versed in technology and how teams function online, as well as learn digital communication strategies while also focusing on their ability to build relationships, declare their goals and decide wisely in any school setting.

All of the evidence gathered in this investigation points out that great digital education transformation is only possible if it is planned gradually and consistently, including work on leadership, changing culture, improving available technology and engaging all lessons learned. They must realize that moving forward with digital transformation involves updating the entire organization, from teaching and learning activities to office duties, student care and community-facing activities.

The results also point out that equal opportunity, inclusion and support for access should be incorporated into digital leadership, since tech solutions might inadvertently worsen or bring about disparities for participants in education. Leaders in education are responsible for building advanced plans that support equal learning for every individual and overcome obstacles related to technology, how it is used, rapport with students and instructors and designing for all abilities and preferences among students and teachers.

It is necessary for future educational leadership development to foster adaptability, new ideas and a desire to continually learn, so that leaders can handle uncertainty, accept changes and lead modernizations in their organizations. As a result, educational leaders need programs that are rethought, professional learning opportunities that are expanded and systems for evaluating performance that value diverse skills and educational values that remain the same regardless of technology.

Since digital educational leadership matters worldwide, the findings from this research can be used in many places, but it is important to adjust the ideas for each country's unique culture, institutions, resources and stakeholder needs. All educational institutions around the world can gain much from working together on digital transformation, sharing knowledge, improving resources and providing mutual support, respecting the cultural diversity of education in every setting.

What Should Practitioners and Policymakers Do

Our extensive research has led to specific recommendations for educational practitioners, policy makers and leaders of institutions to help them achieve effective digital educational leadership and positive changes in their organizations. Digital leadership should be planned at institutions, where innovation in technology is combined with conventional leadership guidelines to build detailed leadership training that readies present and potential educational leaders for using advanced technology in schools while still emphasizing the school's mission, values and success of members of the school community.

Whenever institutions want to adapt to digital transformation, they need to ensure policies support consistency in technology adoption, education for all professionals, evaluation, use of resources and persistent innovation without

missing out on keeping everything fair, accessible and high in quality for all programs and services. Rapid technological progress calls for flexible policies, so they can guide teachers on proper use and provide clear assistance in working effectively with educational technologies to achieve better educational outcomes.

Upgrading professional development for education staff should include support for technical knowledge and flexibility, along with continual growth, teamwork and reflection, to help educational people stay ahead in development-oriented environments. A primary goal for these programs is that participants learn by doing tasks together, applying digital skills, forming work communities and maintaining improvement and new ideas within the organization.

Assessment methods in education need to be revamped so they reflect the range of skills educators need for digital classrooms, covering both learning results and technological expertise, along with signs of innovation, teamwork and flexibility. The purpose of these frameworks is to prompt continuous growth, to value various ways to reach excellence and to give useful support for professionals aiming to progress in their careers.

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Conflicts of interest

The authors have no conflicts of interest to declare

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