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The Difficulties that Face Principals in Leading Technological Change in Schools

Oraib Ata Waari

oraibtwaari@gmail.com
Researcher at Arab American University

Abstract

Today's teachers need to continuously improve their abilities via investigating the different learner types to be able to make a suitable plan and teach accordingly so that they create interactive courses. Since teachers play the role of a leader in the educational system, it is absolutely essential to focus on their knowledge bases to find out how ready they are for usage of technology. This study is conducted based on a qualitative primary data collection method, specifically using structured interview carried out in Jerusalem. According to the results, most respondents claimed that they have experienced technology leadership at access and teaching level.Similarly, the level of technology integration at schools is restricted to two levels of entry and adaption.Finally, on the budget limitation, resistance to change, and cultural problems are three most frequent problems reported by principals that face them on the way leading technology at schools.

Keywords: School Principals, Technology Leadership, Technology Difficulties

1.1 Introduction

In today's societies in which technology is the most dominant phenomenon and all needed contents can be provided online, the teachers' role has appeared more important than ever. Nowadays, teachers' first and foremost need is to reply to the question that relate not only to the way things are done but also the reasons they should beperformed. (Mcdonald, 2005). Due to the fact that teachers who are skilled and knowledgeable are in more demand,today's teachers need to continuously improve their abilitiesvia investigating the different learner types to be able to make a suitable plan and teach accordingly so that they create interactive courses. In this regard, the professional progress of teachersis named as continuous professional development (CPD)which begins with primarypreparation that a teacher gainas entering his/her career and it proceedsuntil retirement (Reimers, 2013). It is estimated that the teacher canacceleratestudents' progressthroughwarming up their brain muscles and motivate them to be an ever-developing teacher.

Education accounts for the skeleton of a countrybased on which a societycan be formed and advance in the future. It actually provides people with a map through which they can target their goals and monitor their progress. This progress could be possiblycorroboratedwith the help ofqualified, enthusiastic and eager teaching force(Hargreaves & Fullan, 2012; Poekert,2011). Whereas, the issue, especially across developing countries, is thatteaching career is notseen aswayfor preponderance(Halai, 2017).

Subsequently, starting to teach is mostly seen as a transitory part of an individual career than constant.As a result, the role a teacher plays in society and the importance of this career has not been seriously considered yet. (Peetsmaa, 2012).

The effort put by schools to reach effectiveness requires an authentic leadership which correspondwithideas, personal views, requirements, and willingness of local professionals who are most eligible people to be asked about the ways by which education system could be upgraded. Effective leaders are those who yield school effectiveness viacreating a specific discipline and structurefor the whole system. Societiesare undergoing continuous changes and these hugerevolutionsput forwardbasic questions for society and new framework regarding the roleof educational leaders (Bottery, 2005).

If people are willing to become successful in their career and everyday life, theyrequire pathways to achieve expertise and shapelogicalassociations with peers and mentors. This journey begins with the skills and abilitieswhich could be advanced and progressedoverlife. Fortunately, achievements in the area of academia have provided opportunities into the way to learn. In this regard, technology would be a useful tool to enhance learning experimentaccording todifferent people's insights. From historical pint of view, a person's educational chances have been restrictedto the science within the borders of a school. Technology, in fact,helpsstudents to find resources and knowledgeall over the world (Sergiovanni, 2020).

Technology potentiallyenables educators to cooperate with students so that they can establish new experiments for more preciseinvestigation of content. This can empower,designlearning experiment. These kinds of opportunities prepareways for a huge range of students for greater equity of access to high-quality learning materials, expertise, and specific knowledgeas well asways fordrawing an estimated plan for prospective students. These chances, moreover,couldyield toenhancedcapability for teachers to providestudents with multi-dimension learning opportunities, which can specify the time, place, and the way students finalizevariouselements of a learning experiment.Whereas, once it is precisely designed and carefully applied, technology also shows the possibility toimprove, and facilitate the influence of effective principles of learning. Since the procedure of learning cannot be seen, the research onlearning process usually needs models and criteria which may change over the time. The suggestionsin this regardare founded on contemporary theories of the wayindividuals learn either in direct form or even in the form of research, assistantship, and surveys.

Scientistscreated a direct proportional associationin which teacher learning stands on one side and student progress is placed on the other side (DiPaola & Hoy 2014). Previous studiesabout Technology Leadership have solely utilizedin accordance withInternational Society for Technology in Education (ISTE) standards in order to investigate the degree to which technology leaders are qualified in school (Alkrdem, 2014). Despitesome studies were carried outtoconnect ISTE (2014) with other components, specifically the validity and usage of SMS (Short Messaging System) from teachers' point of view in Malaysia (Wei, Piaw, Kannan &Moulod, 2016), not a lotresearchconcentrated onlinkage between the five elementsexisting in ISTE –Standards for Administrators (2017) with Technology Integration.

The current study intends tolook into high school administrators toanalyze their leaders' attitude towards applying technology within their schools and the difficulties that may face them while leading technological change in their schools.

1.2 Purpose of the Study

The current study seeks to uncover the extent to which teachers follow theschools' technology mission and vision throughexploring how they are organized, precise,and determined walking into the path to modernization. The literature of this studyspecifies how school leadership rolehas undergone fundamental changes since the appearance of technology in the area of education. The outcomes are required for furtherimprovement opportunities toinvolveteachersin how to use technology while teaching.In this study the researcher aims to examine the difficulties that may face principals while implementing technology in schools.

1.3Significance of the Study

Numerous former studies signify the improvement in utilization of technology for administrators and students (Thacker, 2017); these research, however, belong mostly to administrators and the related research about teachers is rare. What is more, since teachers play the role of a leader in the educational system, it is absolutely essential to focus on their knowledge bases to find out how ready they are for usage of technology in a way that it overlaps with schools' vision, mission, and planning. Therefore, further research is required, as my own study does, for administrators to guide a technology-rich educational environment.

The idea behind the current study is to establish a basic knowledge to help principals' guide efficient implementation of using technology in their schools. Background components for teachers in terms of age, experience, and access to technology are the qualities which were disregarded. Absence of deep study about school technology leadership signifies the requirement for the current research. It yields a basis for the current phenomenological research applied to school administrative technology. The current survey might aid to enrich and lead future research about technology leadership and educational leadership programs.

1.4 Research Objectives

Based on the discussion above, the research objectivesof this study are as follows:

- To find the level of principals' technology leadership at national schools.
- To findwhether the constructs of principals' technology leadership affects teachers' technology integration in national schools.
- To find what kinds of difficulties, if any, face principals in leading technological change in schools.

1.5 Research Questions

Based on the discussion above, the research questions of this study are as follows:

- What is the level of principals' technology leadership at national schools?
- Do the constructs of principals' technology leadership affects teachers' technology integration in national schools?
- What kinds of difficulties, if any, face principals in leading technological change in schools?

2.1 LITERATURE REVIEW

2.1.1 The Concept of School Leadership (SL)

School Leadership (SL) is a phenomenonidentified as main characteristic in teaching and student learning (DiPaola & Hoy, 2019). Sparks (2015), characterizedhis study on leadership with two words, "Leadership matters" (p.vi). It is crucial inmakingas informative learning atmosphereeither for teachersor students. The necessity of SL appearsespecially when it comes to supporting team of teachers once their goal is to develop and progress. Teachersare required to be readyforestimating the place and timewhich are needed in different forms such as technical resources and moral support. Therefore, SL possesseshigh development value, ideas, andperceptions. With regard to the literature, it is obvious that SL shows aconsiderable importance in teachers' enhancement and student achievement. Therefore,the concept of SL seems necessary to be discussed. In this regard, Leithwood, Jantzi and Steinbach (2019) argued thatthe characteristics of SL have remained untouched yet.

The idea of SL can, in this way, be summed up as a course of coordination towards accomplishing specific objectives in light of a dream which is shared and possessed by all partners.

2.1.2 Importance of Principal Leadership

The significance of school leadership in further developing students' learning has been reported in both quantitative and subjective exploration. Truth to be told, numerous examinations have affirmed that leadership is the second important issue to study among all school-related activities that can advance student learning (Schmidt-Davis and Bottoms 2011).

School directors and instructors should be ready to confront the Fourth Industrial Revolution and the difficulties which show up with it. Besides, they should likewise proceed to change and foster instructive associations and its understudies who are computerized local education (Battons, 2018). Battons (2018) saw the Internet practically in all parts of daily existence, and because of this current, headedan initiative, instructing and learning research on the classroomsthat needed to be advanced (Schwab, 2020). Hence, in a climate where innovation, online media and man-made consciousness should be the favored instruments, which are more applicable for staying aware of 21st Century homeroom instructional method, school directors need to

attempt impending perspective changes relating to their jobs that expect them to become technology pioneers so they can lead the embracing of the unavoidable and ever-transforming computerized period.

2.2 Challenges in Technology Leadership

Acquiring all important prerequisites of the technology does not ensure that the school executive can really lead the school for a superior technology use in academic areas. According to an alternate point of view, no models can predict the whole challenges that may happen along the way. It is fundamental that the difficulties that school chiefs face should be distinguished and related procedures should simplify such difficulties on a regular basis. For this reason, schools necessarily need an enormous collection of exploration on challenges likely to happen about technology; notwithstanding, just a numbers of studies have been led on this issue. The past explorations on challenges in technology leadership have demonstrated that school heads experience a huge range of difficulties in their practices. These difficulties can be summed up under five significant topics as technology training, resources, equipment, bureaucracy, and assets. Each subject contains various interrelated difficulties that have been found as a result of the study.

2.2.1 Lack of Training

Past studies revealed that the main challenges of school administrators appear once they lack enough course and training on how to use technology. Technology leadership preparation could be a determinant component with respect to school running (Wang, 2010). In this regard, Thomas and Kzenek unearthed that the need for introduction and teaching technology to the academic staff were continuously recognized as the crucial requirement for making innovation in real life. Besides, Flanagan and Jacobsen argued that insufficient staff training and not having trained leadership fall into the range of strong difficulties that stop teachers integrating technology into educational climate. Similarly, Schiller indicated that the degree to which school staff is able to use information and communication technology (ICT) skills can be crucial to understand their role in schools.

2.2.2 Resistance

One more difficulty under the name of resistance can be characterized as the obstruction from the school local area, particularly from educators (McLeod, 2011). It is not strange usual that instructors can show a level of rigidityfor changes in the style by which they teach as the course of technology combination expects educators to adjust how they have been doing years. However, it is as yet feasible for instructors to acknowledge the groundbreaking thoughts in case they feel the persistence and backing from the school head (Dawson and Rakes). One more problem in this subject is unwelcoming staff. In their review, Richardson and McLeod announced that six chiefs in nine schools reported difficulties because of unwelcoming staff. Whenever educators do not have the important abilities and interest in utilizing the technology, it would be a significant problem remaining in front of the teachers.

2.2.3 Resources

Absence of assets is viewed as one more significant difficulty for school directors in course of technology integration. The prior researchindicated that absence of technology as well as workforce were arisen as difficulties for school pioneers. However, in numerous schools lack of sufficient technological equipment makes a big difficultyin front of the school heads (Leonard and Leonard, 2006).

Identical difficulties were risen up out of Richardson and McLeod's (2011) study in which they have figured out that having poor physicalequipment and obsolete technology and software were the major difficulties in technology utilization. Moreover, Thomas and Kzenek (2016), arguedthe same difficulties. Concerning absence of workforce, it was figured out that in certain schools, school pioneers could notfindknowledgeable staff about technology coordination.

2.2.4 Equity and Bureaucracy

Many school directors found out that equity issues were counted as the difficulties in technology leadership. Flanagan and Jacobsen

(2003) demonstrated that technological school-based advances are not similarly disseminated among all schools. Although certain schools could attainneeded financing and assets, others were poor in a significant number of these. It should likewise be noticed that the poor schools are essentially situated in regions including individuals withlowincome and wellbeing. These individuals are isolated and do not have satisfactory access to the standard education due to the region they reside inand the background from which they come.

Technology skills can be regarded as the necessities for school administrators to establish a technology-rich educational environment. The first and foremost reason why principals lack technology improvement could be the abscence of endeavor to recognize the administrator knowledge according to modern technology and absence of technology management within the schools (Awalt& Jolly, 2019).

Gürfidan and Koç (2016), moreover, probed the linkage between the culture based on which a school is established, technology leadership is performed, and support services is accomplished. The outcomes indicated that a constructive school atmosphere could lead to positive leadership conducts and sufficient support as well as the enthusiasm to encourage the usage of technology.

2.1.3 Previous Studies

Over the last thirty years, past exploration has demonstrated that information and abilities in technology have been urgent in school administration. As per study by Senge (2017), school administrators should be innovative and bold to become innovation pioneers. Besides, just the school chief has the ability to settle on informative choices on innovation foundation and projects in school (Papa, 2011). Moreover, the existence of technology pioneers among school chief is urgent to build creative education and innovation integration in a classrooms (Chang, 2012).

Last examinations have likewise indicated that leadership is firmly connected to the adequacy of hierarchical organizations (Marzano, Waters and McNulty, 2005). Furthermore, Byrom and Bingham (2011) presumed that the absence of initiative and prepared directors are two of the principle explanations behind the inability to incorporate technology into schooling. Moreover, this review is corroborated by Ford (2000), Gibson (2015) who demonstrated that technology could be effectively carried out within class assuming the existence of a commitment from quality leadership.

Drawn closer in these terms, Brockmeier, Sermon and Hope (2005) distinguished that the job of the head as an technology leader in the coordination of technology at schools could impact the degree of innovation usage during the educating and learning process. Research on administration directors' innovation is deficient in existing education bases (Flora and Lewis, 2012). Along these lines, this review was led to show that directors' authority in schools has a positive relationship to the reconciliation of technology in schools.

Dias (2018) acknowledges school leaders, strategic and influential places truly should gain what the newest technology practices is providing.While directors might carry out technology, they need more specialized expertswhose job is to improve and assist them with moving to compelling technology integration. As major heads of the departments, chiefs who fail to see how to utilize technology will not be able to digest the utilization of it for guiding instructors and students for accomplishment. As technology develops, instructors' abilities should change to stay up-to-date (Jerald, 2009). Review have shown that managerial help is important to the execution of technology in schools. Research shows that school directors should assume a basic part in the fruitful incorporation of innovation in their schools (Zieger, 2016). Today, chiefs ought to have a reasonable vision of their part in effective use of technology and execution since it is a fundamental capacity of their obligations as educational pioneers. In any case, the issue is that directors may not comprehend their job in carrying out the innovation. As indicated by Townsend (2018), directors need to recover their jobs as instructive innovators in technology. Keeping a firm position of authority in line with brand new technology would assist chairmen with holding their schools alive (Jerald, 2009).

As per study by Gürfidan and Koç (2016) in which they examined the connection between

school culture,technology leadership and supporting administrations with instructors' technology literacy, the consequences of the review uncovered that a positive school environment could force administration to learn and even help other staff sufficiently for expanded utilization and digestion ofmodernist technology.

Standards of technology as far as they relate to school leaders connect with the principles made by the International Society for Technology and Education (ISTE, 2006). Technology Standards for School Administrators (TSSA) was executed in 2001 by the TSSA Collaborative. The ISTE is an association focused on advancing the instructive educational plan of technology to further develop learning and backing educating with innovation. ISTE composes norms and rules for chairmen, educators, and students in education. The ISTE principles are portrayals to illuminate instructive partners regarding what shows powerful school authority for thorough and successful utilization of technology in the schools (Twomey, et al., 2006). The 2009 ISTE hypothetical structure depends on the reason that our schooling system is endeavoring to stay up with the effect PCs that are making in the real world. These global principles are utilized to change school advance.

Over the time period of 21st century, chiefs' emphasis wason executing technologyin the school structures. A mainstream in the data collection is currentlygathering data by school leaders, and a visionary assessment to involve technology inclasses. However, administrators may not completely comprehend their jobs and the assumptions for effective reconciliation with new technology in their schools. Davis (2008) recommended that even though most schools nowadays have had preparedthemselves forusing new technology, many school directors are not happy with technology or proficient enough with regards to technology strategies. Although schoolleaders' preparation programs typically do notrely solely on the abilities regardingtechnology, managers are expected tointegrate their Professional improvement programs. Regulatory instructional classes are not showing school chiefs or office directors how to utilize technology.

Despres (2011) posed the question that how instruction and preparation for managers lack exact and precise guideline for instruction and technology utilization. He found out, based on his research's resultو that many schoolsdonot have forward-thinking courses that cover the extent of regulatory capacities to learn computer related programs.

Although the time being is named as modern technology age, there is little examination accessible on how secondary school chiefs use technology in their schools. Tweed (2013) embarked on a quantitative report that alludes to the execution of new technology in the classrooms. The concentration was on the age of the instructor, period of experience, quality of expert, and educator self-adequacy as characterized by Bandura (2020) to look at the way in which these elements connect with carrying out new advancements in the classes. Participants demonstrated that technology had at minimum affected the manner in which they instruct in their study halls and discoveries showed that the self-adequacy of an instructor is considerably and constructively connected with classroom technology utilization of educators.

Hughes and Zachariah (2001) directed a review to discover what leadership features influence the combination of technology to develop educating and learning. The exploration concentrated on the relationship between education and technologyas well as how it is impacted as jobs and obligations shift. According to the results, Facilitativeleadership by the chief was considered by educators to be the way to fruitful innovation execution (Hughes and Zachariah, 2011). Teachers who advance innovation as a medium for coordinated effort and feeling for credible growth opportunities can take into account far more noteworthy education accomplishment relative to those teachers who lack this ability.

Anderson and Dexter (2005) had a review of technology effect and is implementation on school instructors. The discoveries recommend that in spite of the fact that innovation framework is significant, technology leadership is essential for viable usage of technology in tutoring. For school managers to create a viable administration in their schools in the 21st century, they should have information and

comprehension of the issues and the capacities of technology. They should utilize technology properly in the satisfaction of their jobs and communicator of school projects (Richardson and McLeod, 2011).

Akbaba-Altun (2014) directed a review in a little city west of Turkey that investigated how primary school chiefs' jobs connected with information technology classes and how school administrators saw their jobs and what was generally anticipated in the school. This study ties back to technology leaders, execution, and foundational arranging in an instruction setting. The findings revealed that these two elements were in a close relation with each other.

McLeod (2012) led an investigation of instructive authority programs to make school teachers ready for improving the utilization of information technology. They found that it is significant to prepare educational programs during which prospective teachers get ready to perform as school heads and work with successful innovation coordination in their schools. School teachers regularly need fundamental information on technology patterns, issues, and abilities; thusly, the need for powerful heads of technology seems obvious. A Saskatchewan-based exploration project entitled Beyond the Mouse and Modem (Henderson, James, and Cannon, 2003) studied north of 2,000 Saskatchewan instructors regarding their insight and utilization of technology in the class. The study uncovered that educators coming up short on ability and information levels required for viable execution. To more readily upgrade learning results, educators expected to prepare fundamental advances towards high-yield technologies.

According to Smith's (2020) correlational examination, he concentrated on the employing technology in the classrooms and the educational technology leadership of the school head. The outcomes showed a connection existed among the factors for either directors or educators for informative technology abilities and backing activities of the head as well as powerful utilization of technology in the class. There was a positive relationship in the successful utilization of technology in the classrooms.

Bailey (2000) expressed the fundamental components for digesting the concept of technology usage and administration in the 21st century. Bailey expressed what technology pioneers require to understand regarding technology integration such as change, educational program, morals, foundation, wellbeing and security, staff improvement, instructing/learning, innovation arranging, specialized help, and technology leadership. The integration of educational plan and technology is essential in the sense that establishing a great instructing and learning climate seems the first and foremost needed component in today's education. In other words, the application of modern technology improvements into training should empower school study with the aim of using enhancing innovations as effectively as they study technological developments in books (Cakir and Yildirim, 2009). Analysts stress the significance of having an adequate number of computer instructors who welcome their career and discuss well with different educators, especially because they play a key part in the incorporation of technology in the schools (Seferoglu, 2009).

Daniel and Nance (2016) investigated the accuracy of the statement based on which lawmakers play an undeniable role in determining how teachers can use technology in transferring knowledge and increasing literacy level. While making regulations for the utilization of technology, legislators admitted failure to characterize a job for the teachers who are expected to accomplish it. Moreover, heads in their positions of leaderwere eventually considered respondent for the educating and learning process that happens in schools.

Ury's (2015) thesis review was attempted in the province of Missouri with the state school regions. This review was on the school administrators' PC utilization and adjustment to technology principles. The reason for the research was to perform a substantial study that could be utilized to specify school directors' degree of PC use. The outcomes of the study showed 94% confidence level. Ury (2003) focused on the skills relevant to computer and technology. The study's results proved that the technology standards will potentially determine the degree of school administrators in perceiving

importance of technology and utilizing computers in the area of education.

METHODOLOGY

The qualitative examination approach is usually preferred by the scientist as it leads to an in-depth analysis of a populace or issues in their contexts ignoring any standardization. Subsequently so as to comprehend Investigating deterrents to environmental quality of destination, in this exploration the qualitative methodology is selected. Also, with qualitative research, this exploration investigates what it thought to be a socially constructed dynamic reality through a structure which is adaptable (SPO, 2000).

In a qualitative exploration, a scientist has various choices to gather information, including perceptions, printed or visual examination (from books or recordings) and interviews with people or gatherings. Albeit, the most widely recognized techniques utilized are interviews (Ritchie, 2013).

This study is conducted based on primary data collection method, specifically using structured interview. In structured interview, the interviewer enter the interview with some predetermined questions and outlined sequence of question. The same questions will be asked of all interviewees although the interviewer may take lead of some of the answers of participant and ask a few specific and customized questions according to the interviewees' responses.

The demographic profile of the interviewees is presented in the following Table 4.1.Totally, 15interviewees (6 principals, 4 vice principals ,5 councilors). They were in the age range of 35 and 55 years old. The interviews were carried out in Jerusalem.

Table 4.1: The Demographic Profile of the Interviewees

Respondent	Age	Occupation Type	Gender
R1	45	Principal	Female
R2	35	Vice Principal	Male
R3	55	Councilor	Female
R4	43	Principal	Male
R5	36	Councilor	Male
R6	40	Vice Principal	Female
R7	42	Principal	Male
R8	47	Principal	Male
R9	50	Councilor	Male
R10	51	Vice Principal	Female
R11	51	Principal	Female
R12	38	Councilor	Male
R13	42	Vice Principal	Male
R14	39	Principal	Female
R15	52	Vice Principal	Female

4.2 Definitions

Percy, Kostere, Kostere (2015), consideredfour steps for analyzing data in qualitative research according to Table 4.2.

Table 4.2: Qualitative Data Analysis

Step	Definition
Coding	The process of identifying and labeling recurrent words or concepts.
Categorization	In which researchers seek to group patterns that they found in data into relevant categories.
Constant Comparison	A process in which gathered and coded data will be compared with existing findings and analyzed continuously in order to develop concepts.
Thematic Analysis	Researchers examine the data carefully in order to find common themes and ideas.

For this study, in-depth interviews were performed in order to obtain accurate findings. Data was evaluated by thoroughly and correctly reading all descriptions and then highlighting the appropriate details and bolding each section of the literature review with the associated information.All of the interviews took place in April 2022. They were around 15 minutes long.

Table 4.3: Coding Table

Item	Code
1	Accesslevel
2	Teachinglevel
3	Learning level
4	Entry level
5	Adaption level
6	Transformation level
7	Budget limitation
8	Lack of training
9	Poor network infrastructure
10	Resistance to change
11	Cultural problems

Table 4.4 Categorization Table

Category 1	Category 2	Category 3
Level of principals' technology leadership	**The effect of technology leadership on technology integration**	**Difficulties face principals in leading technological change**
Accesslevel	Entry level	Budget limitation
Teachinglevel	Adaption level	Lack of training
Learning level	Transformation level	Poor network infrastructure
		Resistance to change
		Cultural problems

CONCLUSION AND DISCUSSION

6.1 Evaluation of Responses

The first research question was*"What are the key characteristics of the change you have led? What are the most important aspects of the change according to your perception?"*

In an urban high school, leading change in the area of student well-being. Change to a present student advisory system that was not operating as an effective tool for students to feel empowered and connected.

One interviewee declared that:

"Leading change in an urban high school in the related to student well-being. Change to a current system of student advisory that was not working well as a mechanism for students to feel empowered and connected." (R4)

Another person claimed:

"One change I've led was creating a leadership development program for younger leaders." (R3)

Another respondent said:

''Post important aspects are the relationships – asking for thoughts, integrating feedback and ensuring follow-through. Also that it is a slow and steady process." (R2)

The second research question was *"What were the stages of operation of the change process?"*

The phases were an early stage of discussing with administration to ensure that we could approach things with a longer-view and a systemic perspective.

One interviewer answered like this:

''The stages were an initial stage of talking with administration to ensure that we could approach things with a longer-view and a systemic lens, not just the training they wanted me to do in other words but a longer term change." (R4)

Another participant explained:

"Starting with teachers, convincing them of the idea providing laptops introducing different websites to connect with students.Then students investigating through teachers and gathering information on students financial statues to provide laptops if possible Then talk with the administration to ensure there support and approval so it will for a longer-view and a systemic not just temporary." (R15)

The third research question was *"What were your motivations for creating change? Was there a founding event" that created the need for change in you school?*"

The key cause for locating and directing change was Coved 19. Teachers' anxiety when they needed to engage and interact with their kids but didn't know what to do.

One interviewee stated:
"As I said earlier Coved 19 was the main reason for finding and leading change. The stress teachers faced when needed to connect and interact with their students not knowing what to do." (R6)
The other participant has explained like this:
"Desire to keep pace with development with improvement in performance and to obtain better outcomes." (R1)
The fourth research question was "*How did you lead the technological change process*?"
An interviewee asserted that:
"I went to the principal to prepare, set the line, and officially inform teachers, parents and students, as for teachers, parents and students, meetings were held for them for the purpose of guidance, and then videos (explanations) were made." (R3)
Another respondent who has been interviewed pointed out:
"I have excellent knowledge in using computer and as a consultant in my school I was asked to help other teacher to connect through different sites such as zoom, classroom, google…etc." (R4)
The fifth research question was *"What are the key successes of the technological change process? How are they related to how you led the process?"*
Teachers who believe in the concept become supportive and eager to accept and strive for change. Staying engaged and close to administrative needs and desires has been another major achievement.
One interviewee asserted that:
"Teachers will and conviction of the importance of using technology. Providing schools with all the equipment needed foe e learning.Qualification courses for teachers to use different means and programs. Courses for students to be able to use technology.Exchanging experiences between staff.Providing laptops to students." (R7)
Another participant who has been interviewed pointed out:
"From my point of view, one of the most important successes of the change process is realizing the importance and need for change, the ability to read the future correctly (insight), and knowledge of the available capabilities and capabilities, and all that need leader know how to lead effectively." (R8)
The other participant has claimed:
"Teachers believing in the idea become supportive and willing accepting the change and working towards achieving it. Another key success has been staying connected and close to administration needs and wants. I Gathering support from stakeholder groups, making sure that each group knows about the other and communication and give feedback." (R10)
And one more interviewee has explained that:
"Have connection with others who wants to lead and believe in the importance of change. Have a vision to what you are going towards. Gather supporters and be connected with all the community that surround in order to become a partner not an enemy." (R11)
The sixth research question was *"What were the main difficulties and obstacles along the way? How did you deal with them? What did not work? How does all this relate to how you led the process?"*
An interviewee who just his career asserted that:
"Challenges included resistance from naysayers, "this won't succeed," for example. Another was funding. I addressed the resistance head-on by listening, hearing concerns and then presenting benefits when they were ready to hear them." (R13)
Another participant who has been interviewed pointed out:
"It can be difficult to work across distances. Technology can help with this. Technology can also help us to access all kinds of information. I can get lost in Youtube videos or googling about a subject I'm trying to learn about. It's wonderful to have such knowledge and information at our fingertips. But this is NOT the great challenge of education. The great challenge is understanding what to do with all of this information and knowledge. The great challenge is practicing how to ask questions, how to evaluate sources. How to engage in discussion, how to write, how to think. . . ." (R9)
The other participant has claimed:
"Obstacles are and were the difficulties administrators have with change in a district – the bureaucracy and the slow nature of change – disconnection of administration to teachers and students – this is also hard….the feeling that you

cannot change the system at times because of so many obstacles." (R4)

The seventh research question was *"What is the educational knowledge on which you relied in the process of change? How did you achieve it? What were your learning processes before and during the change? What do you recommend for change-oriented managers in the context of knowledge and learning?"*

Here are some of their answers:

"Has the ability and Knowledge, keen to the idea of change, accepting other thoughts and ideas. Knows what is he doing and ready to sacrifice and do for his idea. Patience understands that it takes time to lead change and also effort to convince others." (R14)

An interviewee has explained that:

"Knowledge of what I am doing. Believing in the idea. Willingness, thinking positively. Gathering "small committed group of people" can and do change the world**.** Be open minded and convincing. Attributes and skills." (R5)

And one more interviewee has explained that:

"The pedagogical knowledge that I relied on is the SWOT model." (R7)

The eighth research question was *"What are the most important qualities and skills required for a change generator manager?"*

One respondent has explained like this:

"To have leadership and have a clear vision with the ability to influence others in addition to having a charisma that is able to provide continuous addition and development." (R8)

The other participant has claimed:

- "Patience – long –view.Awareness of many and diverse voices, opinions and perspectives creating the most beneficial and lasting change." (R3)

And one more interviewee has explained that:

"I believe that the qualities and skills I've described above are the ones that work well those who want to make change. . .My last suggestion—is that they find trusted partners and allies." (R1)

6.2 Interpretation and Implications of the Interviews

According to the responses of interviews, it can be concluded that when it comes to the level of principals' technology leadership, most respondents claimed that they have experienced technology leadership at access and teaching level. These are two levels at which, by definition, technological devices and instruments such as laptops, and tablets as well as information, the Internet connection, data systems, and e-textbooks are provided for students and are put within the school (access level) and the extent to which the devices and facilities are used effectively and efficiently under the supervision of trainers (teaching level). Therefore, the schools which are studied are good at providing these two levels because these two create a basis for learning level. However, the important fact is that the destination and end goal is not accessing and teaching technological facilities. They are just a medium to reach learning level. However, the analyses of responses bring us to the fact that although the technologies are provided, they do not perfectly lead to learning level where the availability and teaching technology result in preparing skilled graduates who can find a job due to having needed skills.

Similarly, the level of technology integration at schools, as responses indicated, is restricted to two levels of entry and adaption. Therefore, it can be connoted that in order to increasetechnology leadership and bring it to the most effective way, which is learning level, the principals need to integrate technology at the maximum level, which is namely transformation level at which principals will be able to understand, use, transfer, and creatively create ways to convey technological means of education.

Finally, on the basis of the interviews, budget limitation, resistance to change, and cultural problems are three most frequent problems reported by principals that face them on the way leading technology at schools which is consistent with the study by Richardson and McLeod's (2011) as discussed in literature. In other words, their responses somehow could be rated to one of these three factors most. In this regard, the government can comes into play and provide schools with better infrastructure and furnish them with stronger culture which welcome change; the culture that motivates people to convert into using technology and be prepared and ready to promote and encourage it exceedingly well.

6.3 Limitations and Recommendation for Future Research

First problem that this research faced was during collecting data, because this study have been established during the Coronavirus pandemic around the world. Most of the principals have left the countryor worked online. There are few principalsavailablefor the study.

The second problem was about communicating with some principalswhose English was bad and could not speak English very well, and it was hard for them to understand interview questions or to answer in details about what the research was looking for.

Finally, this analysis offered recommendations about how this review might help to improve school teaching and open up new areas of learning at school. Future studies can take into consideration and focus on the other dimensions and aspects of technological changes in another interview-based study or some other methods. Other recommendation for future studies is that interview questions can be made into more languages, not just English, so it would be easier for the participants to understand the questions better. Furthermore, it is recommended that in the future research other challenges with regard to others issues, rather than technological changes, faced by principals, should be under consideration.

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