A PARADIGM SHIFT OF LEARNING INNOVATIVE LEADERSHIP IN CLASSROOMS OF PAKISTAN

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ABSTRACT

This research was conducted to assist educational leaders in understanding and building their leadership styles amid paradigm shifts. The study emphasizes innovative leadership based on technology to enhance technology integration in classrooms. The purpose is to examine the innovative leadership prompted by technology, growing competition, and society's demands. The study also investigates roles and components of innovative leadership amid a paradigm shift to meet the needs of today's students. An experimental study was designed to collect quantitative data from 80 participants who were purposively sampled. In this experimental study, the population comprised all students from registered private schools in Pakistan. For the inferential statistics, a t-test was used for data analysis; two independent sample t-test was used to compare the potential of innovative teacher leader and traditional teacher leader on students' learning in the classroom in the paradigm shift at the secondary level. Results showed that secondary school students in Pakistan mainly practice the traditional approach in the classroom and have not integrated the 21st-century leadership skills in schools. It is therefore recommended that innovative and learning leadership behavior should be developed for lifelong and systematic learning.

Keywords:
21st-century leadership skills, innovative Leadership, Learning leadership, Pakistan, a paradigm shift

Introduction

Education is considered a humanist project for perfection to become better humans. The educational institutions recognize the understanding of the need to examine the current practices and the potential of technology. The use of educational technologies like laptops, the Internet, and online learning environments have facilitated the teaching and learning process. Teachers

and students are more active in knowledge reproduction (Monteiro, Leite & Lima, 2013). Present learning environments are based on one-size-fits. Our curriculum is dis-linked to the needs of society as technology has changed the nature of instruction and learning. Technology allows this prominent transfer of knowledge and knowing into cooperative learning (Zheng, Zhang & Gyasi, 2019) in bringing together students and teachers differently.

It gives emergence to the thought of the paradigm shift. Educational technology in recent years is a tool to support teaching and learning and also has improved teaching and learning by adding new pedagogical approaches and leadership styles. It is obvious that only continuing the formation of a new educational paradigm, which is a contemporary paradigm of learning, as the use of digital technology in education shifts the teaching and learning methods (Mikre, 2011). To attempt such transformation within all levels of education in the private sector, where lack of resources, infrastructure, and expertise are major problems, is critical to the success of an organization. The factors of knowledge reproduction are education and the motive power of society's development. Education is directly linked to the bringing up of society as a whole (Krasnova, 2015). Considering this important nature of education, the impact of the computer age has stimulated continuous and fast change in education to address the ever-changing technological need and applications. It is no gainsaying that technologies are making changes in society, cultures, and

so in education. These also transform the working environment, handling, accessing, and exchanging knowledge-information and teaching-learning approaches.

Modern and digital technology is changing humans' world and everyday lives (Kammerzelt's, 2017). Technology has changed that picture of knowledge and knowing completely. Until now, teachers have told students what to learn, but the digital age has taught them how to learn, and the students now know what is needed of them and demand the instructor to provide the same. Society demands education to provide the learners that society needs. These transformations are parallel with transformations in technology, as these transformations are running high on the agenda across all organizations (Ritchie & MacIver, 2020). Due to the rapid technological development, we need to define where we are concerned about the shift. The study stresses the profound and remarkable transformation in the paradigm shift of educational leadership in recent times due to information and communication technology (ICT). This means that technology is transferring the way teachers and learners think about teaching and learning.

What is Leadership?

The author's operational definition of leadership is 'Leadership is an act of stepping forward and realizing with empathy to work for a specific cause that ensures its follower's wellness selflessly; it involves taking and delegating responsibility, making staunch decisions with a clear and creative vision in mind.'

According to the author of the current study, a leader ventures forward with the support of followers and sets directions to engage, motivate and inspire them in the everyday management of the work needed to turn that vision into reality. Effective leaders build an engagement process (Makhdum & Mian, 2012). Leadership is about an action of stepping forward towards achieving end-result or high goals. Looking at leaders' relationships with their teams, to build empathy with people, a leader should be a good communicator, confident enough, and a good listener and understand others with sincerity for a strong and cordial relationship to resolve the problems faster and easier. It is pertinent for leaders to control their emotions while dealing with situations. A positive attitude for effective leadership in any given situation to improve work strategies comes with experience; they still learn and acquire their skills, traits, and characteristics. Drawing from these simple descriptions, it can be said that a leader should strengthen their students' belief and encourage them to achieve their aims while also helping them realize their potential.

A psychologist Kurt Lewin (1930), described three types of leaders; the autocratic leader, the democratic leader, and the laissez-faire leader (Billing, 2014); the autocratic leader set and carries out rules without involving the team; the practiced one where no creativity and innovation is empowered. The democratic leader promoted participation and resulted in innovative ideas. The Laissez-faire leader allows the team to perform independently, whereas leaders motivate the team intrinsically to achieve the shared goals. It resulted in higher levels of creativity and innovation.

What is a learning Leader?

According to the study's author, 'Learning Leadership is a complex endeavor and an action of stepping forward that creates the collaborative and innovative environment and leads a learning culture.

Due to our social and technological environments, leadership has evolved too. This is because the 21st century has brought digital and technological revolution; therefore, the leadership of the growing university will demand higher skills and knowledge. The context of leadership has been rapidly changing as technology has brought immense changes in education (Cascio & Montealegre, 2016). Only the learning leader can do remarkable and profound transformations in an organization. Many factors were not before, but they have emerged now. People are also very well-informed and accept something new due to digital advancements. To accomplish tasks accurately, a great deal of high-tech knowledge is needed. Likewise, to cope with challenges learning leadership is needed.

Thus, there is a need to instill abilities, knowledge, and skills in our leaders to cope with those challenges. A leader's influence cannot be ignored as they drive innovation and productivity, which is essential for any educational institution. This is in line with Kozioł-Nadolna (2020), who suggested that our institutions' role is that our leaders contribute to societal transformations and

organizational culture. Furthermore, innovative and learning leadership will be most suitable for any growing institution, and a learning leader is innovative and creative; so is most demanding nowadays. Effective and powerful leadership depends on the context within which it is going to be executed. The learning leader would be capable of incorporating change, innovation, and creativity to flourish the university's environment. A learning leader would be well-informed and will work as a change agent. These leaders would be aware of the challenges brought about by advanced technology as they will concentrate on developing an encouraging environment and culture where creativity and innovation are encouraged. To bring change in the learning environment of any institution, the learning leader will possess technical skills. The life-long learner will be ready all the time to grow university more and more, and a learning leader does not stop learning and adapts changes to avail opportunities of the time as continuous learning along with continuous improvement are necessary to keep up with the developments in teaching methodologies and technology (Marron & Cunniff, 2014). Thus, creativity and innovations are the best ways to manage the complexities and diversities of the universities. Hence, such innovation is essential for positive teaching and student learning. With the learning leader, the team will be resourceful, creative and innovative as they will create optimism and trust to work together to achieve shared goals. Only the learning leader can cope with new challenges and pressures of the world and politics. Leadership has to be extended to face the challenges, and there is a need to learn leadership as today's leaders will review the pedagogies that how new ideas are to be taught to the students. He or she must be able to carry out a logical and meaningful learning process. Emotional intelligence is important; the learning leader will learn and improve it. A leader will understand changes occurring in society, how technological acceleration is affecting education, and how trends are changing as only the learning leader is the most suitable and the right person who can work for the development of any institution (Belet, 2016).

Skills needed for an innovative leadership

The learning leaders will lead a learning society and culture. To facilitate learning skills, knowledge and appropriate behaviour are learned (Taylor, 2012). Communicating effectively,o mastery of the complexities, being more efficient in teams, and building relationships make them highly effective and more powerful and persuading leaders. Learning leaders prepare to work under changing conditions. They learn for their skill development but are also role models for their followers.

Smart leaders accept challenges and creative tasks and promote an environment where they learn from experience. Smart citizens are the assets without the infrastructure and resources to create a stress-free environment (Hyder, Iraqi & Mustafa, 2015). Using digital tools in the classrooms by its

leaders is a fundamental shift in the teaching and learning process. It moves from competition to collaboration and from short-term to long-term planning. Another move is from the single medium to multimedia and from un-directional to interactive. Today significance of education has changed with the change in the paradigm due to educational-based technological advancement. Due to the transactional change, learning and technology interact to change each other (Chomal & Sojiiklaini, 2013) and create a faster future trend than education prepares for it.

Four constructs are carried out to study and assess the quality of innovative leadership in the classroom: collaborative behaviour assessment score, visionary behaviour assessment score, assessment scores of information-age learning age, and smart citizen assessment. In this context, innovative leadership has the power to respond to the transformations of the 21st century with their technological and new skills to support instruction. Their leadership and management can integrate teaching-learning with ICT. Innovative leaders must be prepared to face the 21st-century classrooms and to generate new potential by adopting and initiating a vision of new technologies. Innovative leadership has to undertake this paradigm shift as leadership is the crucial component in guiding the nature of knowing and knowledge for preparing today's students who are digital natives (Raman, Thannimalai & Ismail, 2019). The pedagogies appropriate to the recent digital era can deepen student involvement with the content and strengthen their understanding (Raman, Thannimalai & Ismail, 2019). Recognizing the importance of innovative leadership in the classroom, four constructs have been taken into account to examine its effects on students' understanding and behaviour. Another role of this study was to determine the constructs of innovative leadership which stimulate the students' technology behavior in the classroom as needed for a secondary school in Pakistan.

Effective teachers' leadership performs different behaviors to bring positive changes in the classroom as leadership is not the name of a fixed behavior or one skill approach. Teachers demonstrate different behaviors while performing their routine tasks also in a prompt manner. Technological leadership in directing the teaching and learning process is pivotal for preparing today's students with relevant competencies as it plays an important role in technology integration (Gupta, 2018).

Attention will be focused on innovative pedagogical styles such as teach-back, learning through argumentation, teaching with Symbolab Calculator, Desmos, short video clips, PhET simulations, and Google Earth & Map Tool (google.com/earth). The study discusses several pedagogical forms, from the traditional teaching strategies to several innovative and learned approaches.

Students have options to learn in blended or collaborative environments as to what, when, and how to study. Coding is the ability to solve problems by applying relevant skills and using a visionary mindset to eligible learner for problem-solving independently and in teams to

collaborate and learn. Coding is the problem solving for better quality education and personality development rather than software development. At the elementary stage, a child is expected to be able to do practical work such as rudimentary practices. We as humans need to understand what our community and society want from us (Ivanova1, & Ivanov, 2016), and education plays a key role in building a sustainable society. In this context, smart tools will get handy for students to study real-life situations and link theory and practice. One of the most popular forms of the smart tool is streaming video that can be delivered via the Internet to students as it provides a wider range of content.

Further, multimedia, a widely used classroom technology, can deepen students' engagement with the content and improves understanding. Google Earth & map tool, Zoom, Microsoft Teams, and Skype are modern technologies that offer a practical way for students and strengthen their understanding of the connection between history, current events, and content. World Wide Web (Wikipedia) can create data, information, knowledge, and other web resources accessible 24/7 over the Internet. Lab-based models or you-tube videos (youtube.com), learning through argumentation (Chinn & Clark, 2013), Automated Writing evaluation (AWE) system (Foster, 2019), teaching at a distance, and collaborative learning for accessing technology such as conference tools, i.e., synchronous and asynchronous are for content delivery and support. Rocket Application is software for real-time classrooms, virtual group conferences, discussion channels for the support of students, sharing content, space for queries, and study group conversations. Rocket Math software is a game that can assist students in developing different mathematical skills (Brauner, 2018) and covers a wide range of facts such as basic rudimentary principles of Mathematics. It is designed to learn arithmetic skills differently. Another technology is the 'Climate Action project', a free student-centred project intending to lead to a change of behaviour through education.

Statement of the problem

Educational leaders must be equipped with new skills essential for smooth functioning and team-making. These skills and abilities are required to participate and contribute effectively to society. A collective and collaborative effort to assist them in this regard is the need for time. Hence, the study, 'A new paradigm shift of learning and innovative leadership in classrooms', was conducted to investigate how innovative leadership stimulates students' technology behaviour in the classroom. The study attempts to identify the role of learning leaders and technology in the paradigm shift and examine the 21st-century leadership paradigm shift. Teachers' responsibility as innovative leaders in helping learners access technological-based education and preparing leaders to become innovative learning leaders for a changing world should have the necessary expertise for better quality education outcomes. Learners should embrace technology for them to benefit their learning practice. The innovative leader must be well-informed and learned while being an

upbeat leader and role model. Realizing the importance of innovative leadership among teachers, the paper studied the role of teachers as innovative leaders and technology; the four constructs of the innovative leader's style on today's students' learning were determined.

Significance of the study

Professional development is essential at all levels of education for innovative and learning leaders in leading, managing, and running the classrooms. Innovative leadership develops strong relationships between teachers and students, ultimately improving students' performance. This study will provide authentic knowledge to innovative leadership, assisting teachers in improving their teaching and helping students learn today's necessary skills. The study will also identify the knowledge regarding the innovative leadership domain.

Research objectives:

1. To identify the role of teacher leaders and technology in changing the nature of teaching-learning amid paradigm shift at private secondary schools, district Lahore.
2. To compare the potential of innovative and traditional teacher leaders on students' learning in the classroom in the paradigm shift at the secondary level.
3. To determine the effectiveness of four constructs of innovative leader's style on today's students learning.
4. Based on the experimental study, a relationship model of the leadership style prompted by technology will be constructed.

Research hypothesis:

H_0: There is no significant difference in the leadership style of innovative and non-innovative teachers leader of the classroom

(Researcher's Hypothesis = H_1)

H_1: Performance of students improves after the intervention of innovative leadership behaviour

Research Questions:

What are the roles of learning and innovative leadership amid the paradigm shifts to meet the needs of today's students?

Do the constructs of innovative leadership stimulate students' technology behaviour in the classroom?

Literature Review:

In the past, researchers have proven that technological abilities and competencies have been significant in classroom leadership. School leadership needs to be imaginative and visionary to become technology leaders. Also, it has the power to make pedagogical decisions on technology infrastructure and school activities. According to Chang (2012), smart and innovative Leadership amongst Leadership is crucial to increasing digital literacy and technology integration in the classroom. Innovative leadership should be empowered with the knowledge and exclusive competencies that modern technology offers to achieve this accuracy in our classrooms. The Five Practices of Exemplary Leadership model by Kouzes & Posner (2018) researched experiences of good leadership that they can and should be shaping the future with a shared vision, inspire others to act,

guide, and create belief to achieve the common goal. In this paradigm shift, teachers must maximize the use of smart and innovative tools to be the strong, effective leaders this new change offers (Hyder, et al., 2015).

Wagner (2013) further asserted that due to technological innovation, 21st-century leadership and students need emotional intelligence, problem-solving and analytical skills, critical thinking, teamwork, problem-solving, initiative, adaptability, communication, and technological skills at the secondary level for survival. Because of technological development, new cultures and societies have emerged. With this, everyone has become better informed about his or her legal rights, so teacher leaders are making much effort to update themselves. Thus, leaders in the 21st century need to be more learned, efficient, powerful, and innovative to turn plans into action and to drive others towards a change. According to Hart (2018), self-reflect is the first step in the paradigm shift. Remarkable leaders are continuously learning to be powerful and innovative leaders. Deliver the instruction that transfers knowledge produces collaborative learning, elicits student discovery, creates powerful learning environments, and improves the quality of instruction and learning. Moreover, the role of a model for other innovative leaders is to achieve access for diverse students to drive deeper learning.

Hyder et al. (2015) further asserted the elements characterizing innovative leadership that how school leaders solve challenges such as critical thinking and innovation, which is the ability to create innovations to support the classroom

environment and same as analytical skills to analyze and critically assess situations and ideas to solve complex problems. Working in collaboration to manage and solve problems through an application, analysis, and synthesis of information becomes the norm. The rising demands for quality education and innovative leadership should shift their focus on knowledge, new ideas, novel techniques, methods, and new technologies.

According to Tipu et al. (2012), examining the leadership behaviour where leaders and followers raise one another to higher levels of morality and motivation represents a strong uncertainty avoidance culture. It criticizes the present leadership style in the context of different cultural settings concerning inefficient leadership practices, typical instructional strategies and inefficiency in quality assurance on the part of leaders in the country. Reasons for consistent and fast-changing learning culture are the availability of the Internet, cloud computing, computer-based learning material, and online conference tools involved in specific innovative leadership activities in 21st-century classrooms.

Attention will be focused on innovative pedagogical strategies as a direction for the learners of critical thinking, innovation, and creativity for the application of innovative teaching-learning process (Marron & Cunniff, 2014) based on the needs of learners; their main elements will be gathered to administer a test as a result of diverse and innovative changes in teaching and learning process due to the advances in information technology particularly. These changes in the educational

environment of Pakistan schools suggest the need for a paradigm shift in school leadership. Such inclusion of technology in classrooms has been recommended by the researcher and for school leaders' professional development in private sector education in Pakistan. The current study gives an insight into the impressive transformation which has taken place in the paradigm shift of education in recent years, owing to the use of technology. Constantly being a learning leader for meeting national and international standards mentioned above, educational leaders will have to fit in a paradigm shift and the tasks to be accomplished. How to develop students' innovative and creative skills without intruding on their rights is a major issue for educational leaders. The study in hand is an attempt to find out how leadership stimulates students' technology behaviour in the classroom of .

Pakistan to cope with the challenges of the 21st century in the educational context. A leadership paradigm shift that is outstandingly diverse and able to confront new challenges needs a revolutionary leader who is aware of the constraints of advanced technology (Hyder et al., 2015).

Syllabus of 'Computer Science" advised by IGCSE (International General Certificate of Secondary Education examinations (GCSEs)) for O-level will be regulated by UK (United Kingdom) agency.

Figure: The four innovative leadership constructs, collaborative behaviour assessment score, visionary behaviour assessment score, information-age learning culture assessment scores, and smart citizen assessment, are independent variables; and students' technology integration is a dependent variable

Figure 1

Innovative Leadership Versus Traditional Leadership	
Innovative Leadership	**Traditional Leadership**
Collaborative behavior assessment score	Competition behavior assessment score
Visionary behavior assessment score	Short-term plans/Follow existing solutions
Assessment scores of Information-age learning culture	Stabilization/avoid risk
Smart citizen assessment	Support uniformity/Routine-oriented

Emerging technologies related to teaching and learning have provided

effective and innovative pedagogies. Sophisticated and Innovative teaching-

learning methods were used in the classroom that includes and do not include technology, informal and formal settings to make the course content interactive, collaborative and visual. The teacher linked the topic with the student's experience in the exhibition and added it to the class discussion. There are subjects such as mathematics and language lessons, which lack variety. Therefore, smart, interactive, and touch screen whiteboards were linked with a computer that shows the image projected from the computer in the classroom to promote students' achievements (Teachthought, 2021). Another technique was to flip the classroom. Subjects such as English and Science were applied to the flipped classroom (Teachthought, 2021), where the teacher was the facilitator and students were independent and responsible learners. To engage learning through teamwork involved, cooperation and collaboration (Teachthought, 2021), which permitted the learners to solve problems in group study where they shared their knowledge and skills. To explore distant areas, the teacher used Google Earth Map Tool (GEMT) (Patterson, 2007), which has enormous potential. GMT provides data and information on places, people, and the environment for a class in geography and history to help students retain the topic for a longer time. Teachers and students save important data and resources such as lesson plans and notes, audio and video, and assignments by teachers and students on the cloud (Wigati, Wibisono, & Hidayanto, 2021). Desmos is a free online graphing calculator (Desmos, 2017) for math literacy to understand the

subject effectively; that could lead to significant gains in students' learning and improve their interests and attitudes toward mathematics. Teachers and students can easily access all these anytime and anywhere to stay updated. All this created an environment of activity-based learning.

Method

This section will include methodology, population, sample, sampling technique, data collection, instrumentation, research design, variables, statistical analysis, and conclusion.

Methodology

The study used the experimental research design, which enabled quantitative data collection from 80 purposively sampled respondents. The quasi-experimental research design was used. The study was guided by two research questions, which were used to prepare a questionnaire of test items scheduled for data collection. The leadership skills were practised in Divisional Public School & Intermediate College, Lahore, Pakistan. What are the roles of learning and innovative leadership amid the paradigm shift to meet the needs of today's students? Do the constructs of innovative leadership stimulate students' technology behaviour in the classroom in private secondary schools in Pakistan?

The experimental group and the control group were involved. Both experimental and control groups of students were selected using Divisional Public School & Intermediate College, Lahore. Students

were given treatment primarily using the four constructs in the classroom. Meanwhile, the control group of students was investigated without any prior training activity; the study evaluated the effectiveness of new technological tools using innovative and traditional leadership behaviours.

Population, Sample & Data Collection

The population included the private sector secondary school students of Lahore, Punjab, Pakistan. A questionnaire for the experimental and control group of students was used in the research based on test items by applying four constructs for assessing the innovative leadership behaviour on students' technology integration. The O-level students were selected. The experimental group of students (N=40) and the control group (N= 40) were selected. A purposive sampling technique was used for the selection of the sample. The constructs for innovative leadership style were developed from the literature review, and few changes were made to fit the school context at the secondary level.

The two subject specialists validated the instrument's content validity to assess the content in this field of research and confirm the content validity. A pilot testing for the instruments was done twice to assess the face validity, clarity of the questions and reporting formats; their suggestions were included.

Research Design & Statistical Analysis

A questionnaire was constructed constituting questions on collaborative behaviour (20 items), visionary behaviour (20 items), information-age learning culture (20 items), and smart citizen (20 items), and the survey was carried out to collect data from both control and experimental groups.

Initially, pre-testing was done based on inferential statistics. For this, two independent sample t-test was performed to test the equality of mean scores of both control and experimental groups before adopting any innovative leadership behaviour for the experimental group. SPSS version 25 was used to carry out data analysis

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Table 1: The results of the t-test of Overall Scores on Pre-test of Experimental and Control Groups

Groups	N	Mean	Std. Deviation	t-value	df	Sig. (2-tailed)
Control	40	64.90	14.033			
Experimental	40	61.93	13.317	.973	78	.334

The overall results of the pre-tests in both groups are shown in table 1. No statistically significant difference was found between the mean scores of the two groups ($p-value = 0.334$)

which shows that the control and experimental groups shared almost similar knowledge and skills of the material and were equal at the beginning of the intervention.

The intervention of Innovative leadership behaviour

The teacher adopted the innovative leadership behaviour for the experimental group of students, whereas the traditional leadership style will be continued for the control group.

To test whether the experimental group showed significant improvement in their innovative behaviour compared to the control group, pre-test and post-test observations of the experimental group under the innovative leadership style were compared. For this purpose, paired sample t-test was run to see whether students' performance was significantly improved after the intervention of leadership behaviour. Results are shown in table 2.

Table 2: The results of the Paired t-test on the Pre and Post-test of the Experimental Group

| | Paired Differences | | | 95% Confidence Interval of the Difference | | | | |
	Mean	SD	Std. Error Mean	Lower	Upper	t	df	Sig. (2-tailed)
Pre & Post-test	-15.600	10.534	1.666	-18.969	-12.231	-9.366	39	.000

The above results show a significant improvement ($p - value = 0.000$) in students' performance after the intervention of innovative learning methodology by the teacher. The learning leadership and innovation in education were the most appropriate level with the mean score. These leadership styles enabled teachers to adapt more adaptable to the characters and behaviours of students. Learning leadership is innovative leadership and vice versa, which affects innovation in educational institutions, and learners can think creatively.

Control Group (Traditional Style of Leadership):

The inferential statistical tool is used to obtain results to compare pre-test and post-test observations of the control group who were being dealt with traditional leadership style throughout. No evidence has been found to support the traditional leadership teaching style as to what extent the control group improved their scores. To test the statistical significance of any improvement in students' behaviour as a result of being taught by using traditional leadership behaviour, a paired sample t-test was calculated. The results are shown in Table 3.

Table 3: The results of the t-test on the Pre and Post-test of the Control Group

Paired Differences

95% Confidence Interval of the Difference

	Mean	SD	Std. Error Mean	Lower	Upper	t	df	Sig. (2-tailed)
Pre & Post-test	5.125	19.896	3.146	-1.238	11.488	1.629	39	.111

Table 3 shows that the non-innovative leadership among this group was not significantly effective ($p-value$=0.111), concluding that the traditional leadership style brought little improvement in student performance, which was not significantly significant.

According to the tables 2, the results of the data analysis indicated that experimental groups made significant progress. Innovative teachers' leaders showed more improvement and progress in their knowledge. In other words, the more frequently school innovative teacher leaders practice learning leadership approaches, the more positive effect will put a leader on students' learning in the classroom in the paradigm shift at the secondary level.

Table 4: The results of the t-test of Overall Scores on Post-test of Experimental and Control Groups

Groups	N	Mean	Std. Deviation	T	df	Sig. (2-tailed)
Control	40	59.78	13.929			
Experimental	40	77.53	12.197	-6.063	78	.000

 According to table 4, the post-test scores of both groups were compared. To test whether the experimental group showed a significantly larger improvement in their innovative behaviour compared to the control group, two independent sample t-test was calculated. The results revealed that both groups improved the treatment. For this, a comparison of mean scores in post-tests is presented in the table above. The results indicated that the mean scores were 59.78 and 77.53, respectively, which considered improvement larger in the experimental group compared with the control group at $\alpha = 0.05$ set by the researcher. There was a significant difference between the means (p = .000 < 0.05), therefore, there was a statistically significant difference in the leadership style of innovative and non-innovative teachers leader of the classroom. There is a significant difference in the mean scores of the knowledge formation applying the potential of innovative teacher leaders and teacher leaders on students' learning in the classroom in the paradigm shift at the secondary level.

This implied that innovative teacher leaders applied more effective teaching methodologies to improve school students' skills and knowledge at the secondary level.
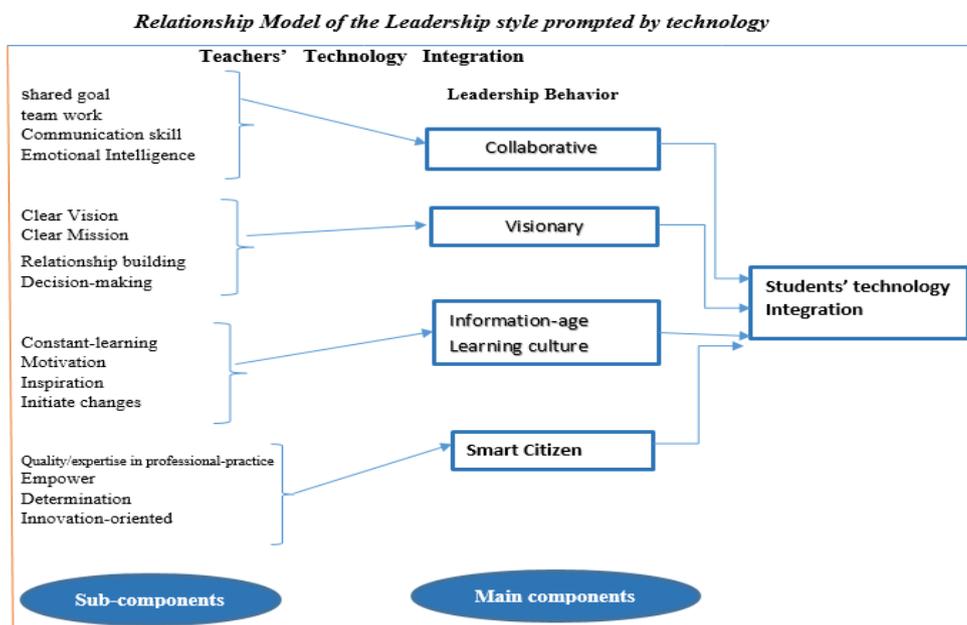

Figure 1, shows the proposed model for this study. The relationship model of innovative leadership style developed based on the leadership theories and prior researches prompted by technology were consistent with the behavior of secondary school leaders.

For the conscious implementation of the innovative leadership style, teachers need to be aware of the leadership to work up communication in all directions. Their belief in their abilities also promotes the students' motivation for learning. The model focuses on the teacher attitude prompted by technology in an institution to foster innovative leadership. The model incorporates teacher leaders' whole personalities as abilities, skills and social behaviour rather than only professional-self. The leadership behaviour's main components are collaborative, visionary, information-age learning culture and smart citizens. The model distinguishes four subordinate dimensions as sub-components of overall competence. The sub-components contain four competence domains each. All four sub-components constitute declarations of teachers' technology integration competencies corresponding to the leadership behaviour. Comprehensively, the model defines leadership style by teachers prompted by technology, which should promote and implement innovative leadership.

Variables description:

Controlled	teacher, students, time, average age, classroom condition
Un controlled	I.Q. of the participants, their previous achievements, socio-economic background, interests, habits and attitude

Discussion and Conclusion

Different learning strategies and innovative approaches ought to be adopted by today's teachers and students, such as online classes, collaborative learning, flipped classrooms and various smart tools such as Symbolab Calculator, Desmos, short video clips, PhET simulations and Google Earth & Map tool, to provide sufficient learning environment for individualized guidance. All these strategies stimulate the students' technology behaviour in the classroom as needed for a secondary school in Pakistan. Leadership varies with the situation. In recent times, society demands a great deal of knowledge-based information promptly. It is recommended that innovative leadership behaviour should be developed for lifelong learning. Students will get the new modes of education and will be provided with well-equipped faculty members to improve their learning techniques. This may necessitate improving school teachers' leaders' awareness and knowledge of the new roles they should play in facilitating innovative leadership to lead effectively and promote a quality teaching-learning experience. This is in line with Kozioł-Nadolna (2020) and Kaume-Mwinzi (2016), according to them technology integration at the school level in the classroom needs to understand the roles of today's teacher leaders. For this purpose, teacher leaders value the learning capabilities of their teachers. The paper was based on the four innovative leadership constructs: collaborative behaviour assessment score, visionary behaviour assessment score, assessment scores of information-age learning culture and smart citizen assessment. Digital technologies in teaching and learning have immensely affected the traditional classroom environment and contributed to innovation in the educational field. The paper informs the role of educational leaders who must interact with digital technology for educational renewal over time. They need to be aware of innovative leadership that is advocated for education and working up communication in all directions. Their faith in their skills promotes the learner's motivation for learning as they involve and implement support for developing student competencies, independence, interest, and individuality (Knauder & Koschmieder, 2019). However, the study has a few limitations. A longitudinal study is recommended to overcome the limitations so that more comprehensive results can be drawn.

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