

IMPACT OF TEACHER LEADERSHIP ON ICT IMPLEMENTATION AND TEACHING EFFECTIVENESS

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ABSTRACT

Information and Communication Technologies (ICT) have become an integral part of modern education. The use of ICT has several benefits, such as providing opportunities for students to learn how to operate. Moreover, ICT creates an impact on the quality of teaching. However, the success of ICT largely depends on how effectively it is implemented. Many authors argue that the successful implementation of ICT relies on the technological knowledge and positive attitudes of educators. Several studies emphasize educators' responsibility in initiating and implementing the changes in schools through the utilization of ICT. Furthermore, the integration of ICT in teaching methodologies can positively affect the quality of teaching, which consequently improves the overall level of education imparted. This study investigates the way in which the attitudes of educators affect the implementation of ICT in educational institutions and the influence of ICT on the effectiveness of teaching. Meta analytical methodology is used in the study; and, an extensive review and analysis of several previous studies have been conducted.

Keywords: ICT, ICT implementation, ICT barriers, teacher's attitude, teacher's role

INTRODUCTION

The profession of a teacher is rather complex and a demanding one as the teacher is required to comprehend the thoughts of students and make them learn through a common channel. Teachers need to be knowledgeable and highly skilled to enable a significant change in the students' perceptions and enhance their learning outcomes. The modern educational system is replete with advanced technologies and the role of Information and Communications Technology (ICT) in moulding of teachers and students is not be underestimated. The attention of several researchers has been on the utilization of ICT for educational purposes. Many countries have mandated the inclusion of ICT in the educational systems.

The adoption of ICT in the regular classroom practices may pose several challenges to the administrators. The foremost aspect is that teachers must be able to learn to implement ICT in the classrooms, master the techniques and render ICT as an successful and competent tool in the educational field. The use of ICT helps students to come out of their conventional mindsets and enables them to be more proactive in their learning approach. The role of teachers is crucial in the effective implementation of ICT, as the learners need the elementary guidance (Budhedeo, 2016).

Teachers leadership can be generally defined as the teachers' attitude through which the thought processes of students and colleagues are affected in such a way that the process of learning is redefined to a finer level and the extent of students' achievement is enhanced (York-Barr and Duke, 2004).

The importance of leadership cannot be undermined in any field, including education. The process of teaching and learning requires an application of mindset from both teachers as well as learners. The basic thought processes, behaviors and knowledge of people are significantly influenced by the methodology adopted by the teacher whose abilities, skills and attitudes are influenced by the career choice and the training. Although the transfer of knowledge and skillsets between a teacher and a student is important, it is often neglected in most of the cases. A crucial aspect of the teacher's work is to maintain the discipline in a classroom, which can be achieved by following a specific style of leadership that influences both learning and teaching (Okoroji, Anyanwu and Ukpere, 2014).

Several studies (Khan and Malik, 2013; Nappi, 2014; Uribe-Florez et al., 2014) suggest that both teaching profession and educational environment are improved because teachers have innate leadership qualities to fine tune the processes of teaching and learning. The content can effectively be taught by teachers only if they understand the concepts well. The core attributes of efficient teachers are developed by professional techniques that enable them to develop appropriate strategies to make their students acquire the knowledge. The intricate processes of teaching and learning improve the understanding of teachers and the metacognitive skills of learners.

Students' perspectives and thinking capabilities are considered by teachers who strive to improve their levels of knowledge and understanding by interacting with them. Suitable classroom atmosphere is created by teachers while making the students undergo and complete tasks that help them to understand the subject. Furthermore, the students' learning progress is tracked by conducting tests and assessments, on the basis of which the learning modules may be improvised. The students may also use the outcomes of assessments to mull on their strengths as

well as weaknesses and adopt suitable means to amend their learning approach. Additionally, assessments help in determining and amending the flaws of curriculum (Rubio, 2009).

Teachers need to chalk out the incorrect conceptions of learners by making them aware of their preconceived notions and helping them in changing their beliefs. This process not only helps students to master the subject, but also helps teachers as well, as they are required to modify the tools of assessment in accordance with the change in teaching modules. The assessment tool also enhances the accountability of teachers in cases where they are not sure of the correctness of their approach (Orey, 2010).

Various instances are cited by teachers who propagate the learning concept and lay a strong foundation of subject knowledge. Instead of teaching all topics in a trivial manner, effective teachers select few topics and teach them in great detail so as to make the learners comprehend the essentials. Although various topics may need to be simultaneously covered, the focus of teachers lay in the deep study that is required to enable learners in grasping the finer aspects of a particular field. Efficient and experienced teachers need to possess an in-depth knowledge of all concepts, facts and processes that undermine the subject and the inter-relationship among the components. The learners' thinking abilities and approaches must be well anticipated and appropriate methodologies adopted by teachers (Bhattacharjee and Deb, 2016).

The curriculum covering several subjects needs the incorporation of metacognitive skills by efficient teachers, who need to ponder about the various processes involved in teaching. The teachers must be in total control of the various procedures that formulate the teaching and the learning modules. The students' ability to learn and understand, and the improvement made by them in changing their perceptions must be monitored and assessed by teachers. Teachers must be aware to incorporate activities in curriculum that help students in developing the metacognitive abilities as such skills are necessary for autonomous learning (Tomei, 2008).

Changing prototype of pedagogy

A lot of changes are taking place in the educational field where the utilization of ICT is concerned. Although the preparedness on the part of teachers is essential, the partaking of students is also crucial in implementing the ICT in the educational field. According to Kirschner and Davis (2003) notice a rise in the number of technology savvy students as they state that the availability of ICT-enabled devices both at schools and homes help students to develop their digital skills. They also find that with regards to the pedagogic utilization of ICT, most of the teachers have either minimal or no ICT skills.

The digitized way of learning has facilitated several changes in education and instead of using the previously established facts, both educators and learners must have a need to interact with

each other for improving the pedagogical notions (McLoughlin and Lee, 2010). The potential of advanced learning approaches and its significances need to be understood well enough to promulgate the benefits of using ICT (Garrison and Anderson, 2011).

The modern pedagogies can be compactly described as the framework of associative learning amongst educators and learners, whereby the primary goal is to enable a deep learning with the use of ICT (Fullan and Langworthy, 2014).

A major reform at a large and integral level is stated by Fullan (2012) where the penetration of technology in the pedagogical applications has resulted in a vast degree of change in acquisition of knowledge and skills, owing to the ease of using ICT in not only educational, but all fields. The importance of guidance in implementing the technology in learning is stressed by Beetham and Sharpe (2013) who posit that mere possession of technological knowledge may not be sufficient for enhancing the learning experience of students who may require intervention by the faculty members, as they believe that pedagogy is more about guiding the students to achieve a specific level of learning rather than instructing them to study on their own.

Need of ICT for the 21st century

The societal demands in the twenty-first century has caused noteworthy changes in the educational sector along with a rapid growth in utilization of ICT. The students of the modern digital age need to be well conversant with the growing technological advances and must be in a position to cope with the changing scenario. The knowledge and skills attained by students must be synced with the latest technological updates as further electronic growth is anticipated (Barber and Mourshed, 2007).

Quality in various levels of education can only be ensured by integrating ICT in the education system. Although the introduction and adoption of ICT into the curriculum may not be supported by everyone, the issues encountered in the processes of teaching and learning can be overcome by the adoption of ICT. The accumulation and distribution of knowledge entails the utilization of ICT that has become a major tool of assessing the development of a country in the 21st century. The different approaches and skillsets that are required to cope with the ever-changing demands of the digital age can be acquired through the implementation of ICT, which needs to be initiated right from the schooling stage. The utilization of ICTs catapults the learners' levels of understanding and performance, and has the potential to change the educational procedures (Adesote and Fatoki, 2013).

The educational establishments are aware of the fact that technological advances have penetrated in every field possible and it has become imperative for them to stay abreast with the latest advancement in ICT. The curriculum and the classroom facilities need to be regularly

reorganized due to the vast influence of ICT on the daily activities. In order to facilitate effective learning and enable professional efficacy among learners, the ever-changing technologies need to constantly adopted and implemented in the existing academic scenario (Tomei, 2008).

Barriers to ICT implementation in india

Teaching and learning through ICT-enabled systems has its own share of challenges, in which the lack of standard parameters required for assessing the quality of education is the foremost. Teachers lag behind in acquiring adequate knowledge of the latest technology, resulting in the learners being more informed than them (Bharadwaj, 2007).

ICT hardware and software is generally not designed for educational purposes. Learners are taught only the basics of information technology and computer applications are imparted to them. Additionally, students in India have limited opportunities to practice their computer skills out of their schools. Other barriers include the development of material required for electronic learning as it is both time consuming and expensive. Students may also be misguided by an overload of information available online (Arora, 2007).

The cost of establishing the ICT-enabled systems and devices could be enormous and even after installing such setups, the lack of know-how on the teachers' part may aggravate the quality of education being imparted. The lack of adequate skills and knowledge together with the shortage of formally trained teachers prove to be the chief deterrents in the implementation of ICT. Hence, it can be ascertained that the utilization of ICT in educational fields can be maximized by professionally training the teachers (Mitakshara, 2009).

The unwillingness of some teachers, especially the elder ones, in adapting to latest curricular and technological requirements need to be subdued, as they play a stellar role in educating their students. The conventional socio-cultural background and attitudes of people tend to discourage the utilization of technology, which affects the educational field. Additionally, schools do not have adequate sources in acquiring the materials and equipments that are required for effective teaching and learning (Chavan, Gaikwad, and Kulkarni, 2012).

The teachers are generally given more work than they can do within the stipulated working hours and this often leads to the teachers being overworked. The teachers may not find sufficient time to improve on their skills about the advancements in education. It is only after they understand the nuances of the latest developments in ICT that they can make appropriate amendments in their teaching and learning modules. Hence, shortage of time of teachers may prove to be a hurdle in the ICT implementation (Fullan and Langworthy, 2014).

Chalk and Talk

Chalk and talk is the method adopted by a teacher, where the matter to be discoursed is written and the mandatory explanation is given about it. The students listen and note down whatever they feel as important and this may at times cause some misunderstandings. However, modern digital aids enable learners to access electronically stored information and the teachers may contribute in helping them learn the topic without any doubts or uncertainties. The teachers' role and guidance is especially necessary as the modern technologies may sometimes be complicated. Consequently, the crossover from traditional methods to electronic alternatives is a crucial juncture for both educators and learners (Shinde and Patil, 2015).

Lack of overhead projectors

Lack of technologically compatible equipments and devices can be found in the education field, especially in government schools. Every student is instructed to share the computer with one or more students. The classroom session generally revolve around either the teacher dictating the notes or explaining the concepts on a blackboard. The shortage of overhead projectors cause the mode of imparting education to be more vocal than digital. In some of the rural areas, learners do not have the choice for studying in private schools are they are scarce. Additionally, educational institutions lack the vital resources that are required to sustain the electronic mode of teaching. The limited number of ICT equipments possessed by rural schools eventually prove to be unworthy, due to the non upgradation of hardware and software, and other related issues (Unal and Ozturk, 2012).

In certain cases, the teachers and the staff members are not adequately trained for imparting the necessary knowledge to the learners. The lack of proper service centers and technical support required for servicing and maintaining the digital equipments make matters worse, especially when machines breakdown at the most critical periods, resulting in wastage of time and human resources. Educational institutions may also not be able to provide the necessary infrastructure for conducting the ICT-enabled classes. Provision of supplementary equipments, such as digital boards, printers, scanners, projectors, etc., and uninterrupted power supply may not be readily available due to shortage of funds. Another major deterrent is the lack of internet connection in most of the rural areas. Even if the internet connectivity is available, some rural institutions may not be able to afford the subscription charges. In cases where the internet facilities are provided, the operating speed may not be to the desired levels, thereby defeating the essence of ICT-enabled education (Sampath Kumar and Biradar, 2010).

Technology to the rescue

ICT has enabled the ease of multiple operations and has become a boon in several walks of life in the past two decades, positively affecting the working procedures. The field of education has also been benefited through the advent of ICT, as the collective experience of teachers helps in the affirmative transfer of knowledge. The role of ICT in education is very significant as modern education is being based on technology. (Noor-Ul-Amin, 2013).

The contribution of ICT in the field of education is explored in a review of literature conducted by Noor-Ul-Amin (2013). The author predicts that ICT will assume a huge role in the field of education, causing major reforms in teaching as well as learning. Furthermore, vast improvements are envisaged in the accessibility and quality of the education being imparted along with a remarkable progress being made in academic procedures, performance and environment. Irrespective of geographical locations and time constraints, the use of electronic media has the potential to reach a wide base of learners when compared to conventional teaching methodologies. There is a possibility of new avenues of imparting information and knowledge being searched and utilized by both educators and learners. The performance of learners may be drastically improved due to the motivation provided by such initiatives.

OBJECTIVES

The chief objective of this study is to find out the impact of teachers' leadership in implementing ICT and the effectiveness of teaching. Any other effects of ICT implementation on the educational system also need to be considered.

METHODOLOGY

The databases used for the study include online database sources such as Google scholar, EBSCO, ProQuest, ERIC, JSTOR, Boston University Library, data base management library of Cornell University . The study uses the keywords such as 'teacher leadership', 'ICT' and 'Teaching effectiveness' for finding the appropriate studies.

A total of 3,424 papers on ICT was considered for referring, out of which 93 papers were shortlisted for further reading. Among these 93 papers, the studies that were relevant to the objectives of this paper were selected on the basis of their content. The keywords used were barriers to ICT implementation, ICT and teachers' attitude, and teachers' role in ICT. Considering the time and space constraints, 10 recent studies were reviewed for each of the three keywords. Hence, a total of 30 papers was chosen for an in-depth analysis on ICT in education.

RESULTS AND DISCUSSION

A total of thirty research papers were reviewed, in which three keywords were used. The three keywords were “barriers to ICT implementation”, “teachers’ attitude towards ICT” and “teachers’ role in ICT implementation”. The papers were selected on the basis of the content and the year of publication. It was important to consider the recently published papers, not exceeding beyond ten years. A discussion of the three sets of ten research papers regarding the three keywords is presented here.

Barriers to ICT implementation

A study was conducted by Santosh and Panda (2016) for researching the sharing behavior of the teaching staff of the National Open University in India. It was found that publishing was the most preferred knowledge sharing mechanism; sharing of learning materials was more encouraged in the institution; and borrowing from Internet was more preferred in networks; and, sharing was less preferred voluntarily. The study also found that lack of recognition and absence of a organizational knowledge-sharing culture were found to be the perceived barriers.

Awadhiya and Miglani (2016) conducted a study for exploring the intensity of the possible challenges faced by teachers in the implementation of m-learning in Indian open universities. The three most significant challenges discovered were lack of support for instructional design for m-learning, lack of institutional policy for m-learning, and lack of infrastructure/technological support. This research identified that educational institutions need to provide adequate support in terms of policy, infrastructure and instructional design for the successful implementation of m-learning.

Pandolfini (2016) explored the impact of ICT in education along with the challenges and controversies involved. An Italian case study was taken up for understanding the complications of ICT implementation in schooling. A conceptual framework was provided in this paper, wherein the methodologies for assessing the various aspects and queries were discussed along with the indicators.

In a research conducted by Kharade and Peese (2014), an attempt was made to explore how a problem-based learning approach can help pre-service language teachers to develop Technological Pedagogical Content Knowledge (TPACK) and impact their teaching practices. It was discovered that the pre-service teachers became better positioned to use ICT in their teaching practices. The shift from teacher-centredness to student-centredness was also observed in their instructional planning. The problem-based learning approach created critical but safe opportunities for pre-service teachers to understand that teachers may have to re-evaluate their

teaching practices while using technology and rethink the nature and scope of the subject for which they will be used.

Shivakumar and Manichander (2014) conducted a study on capacity building and found that the deficiencies of ICT-trained teachers and their competencies were significant factors of retardation. The implementation of technology was to be a vital aspect that educators need to address. They also found that successful teachers need to be acknowledged for their feats and must be encouraged to get others in to the ICT fold. Additionally, support strategies and governmental policies need to be well placed in the adoption of ICT in education.

Gupta and Singh (2014) researched the utilization of e-learning tools and the study identified the status of e-learning in the teachers' education curricula, infrastructure, and application of e-learning tools for teacher educators and trainee teachers. Their study found that the infrastructure was inadequate despite the curricula of e-learning being ample in the selected university. It was found that although the trainee teachers knew the basics of computer applications, they lacked the advanced skills that were essential for e-learning.

Bhushan (2014) examined the utilization, attitudes and barriers to ICT access amongst female learners. The paper highlighted the local contexts within which attitudes towards the use of technology were shaped and barriers to access were embedded. The paper points to the need for ICT-enabled learning to be cognizant of the above aspects and suggests interventions to increase female participation in open and distance learning to enable the move towards gender equality.

Bhatnagar and Das (2014) conducted a study to identify the concerns and perceived barriers of regular school teachers in Delhi, India about the inclusion of disabled students, in which eleven barrier themes and three concerns were identified.

In a study conducted by Nachimuthu (2012), the web based learning and training was explained with regards to educational portals, where the barriers and assessments of online teaching were discussed. The search engines and the entering methods in web based education were illustrated in this paper. It was ascertained that although technology is indispensable in today's world, it cannot replace an efficacious teacher.

Sampath Kumar and Biradar (2010) researched to examine the ICT infrastructure, status of library automation, barriers in implementation, and attitudes of librarians, to know about the utilization of ICT in 31 college libraries in Karnataka, India. The study found that the major constraints for library activities being not automated were lack of budget, lack of manpower, lack of skilled staff and lack of extensive training. The findings of this study are intended for the perusal of college librarians, government and University Grants Commission.

Teachers' attitude towards ICT

A study conducted by Aslan and Zhu (2016) investigated both the pre-service and starting teachers' perceptions for ICT-related variables with regards to the integration of ICT into teaching practices and the extent of ICT integration into education. It was found that certain variables related to ICT significantly predicted the teachers' integration of ICT into teaching practices. The outcomes demonstrated that simulated tasks were underutilized and the ICT integration was limited to a basic and demonstrative level. In order to increase the competency of teachers in ICT utilization, certain implications and suggestions were mentioned for professional training and development.

Kihoza, Zlotnikova, Bada and Kalegele (2016) conducted a research in Tanzanian secondary schools that depicted examples of teachers' pedagogical practices in ICT applications in improving the traditional approaches of teaching. The impact of increased education level on the ICT utilization and competence perception was studied by the research along with the impact of ICT knowledge level and skills on the adoption of combined learning contents. The outcomes of this study suggested that the ICT knowledge level of teachers cannot be determined by their education level. The decision of using combined learning was impacted by the level of ICT knowledge. The study also identified the internal and the external barriers to ICT utilization in education. A goal-oriented teacher training framework was suggested wherein a sophisticated integration of content, pedagogy, technology, infrastructure and overall educational objectives was envisioned.

Mustafina (2016) conducted a study on the status of ICT integration in a Kazakhstani secondary school by querying the teachers' perceptions. This study explored the role of teachers' attitudes towards ICT integration in school by studying certain factors that influenced the students' academic motivation. It was found that owing to the advantages of technology over conventional teaching, the teachers had a positive attitude towards ICT.

Copriady (2014) examined the role of teachers as mediators for their readiness in adopting ICT in teaching and learning. The impact of exogenous variables was differentiated from the impact of endogenous variables on the basis of academic subjects. Motivation was found to be a significant mediating variable between the variables of readiness with ICT application in education. It was proved that two independent variables were linked directly and indirectly to the dependent variable of the study. The study suggests that teachers' attitudes and motivations with regards to adopting ICT must be heeded by the governing bodies and education ministries; and, adequate facilities, equipment, training and infrastructure be provided to encourage the utilization of ICT in education.

A present study conducted by Lal (2014) revealed the attitudes of teachers who used ICT and also of those who did not use ICT. The outcomes of the study suggested that attitudes of teachers who used ICT was positive when compared to those who did not use ICT. Owing to several reasons, a majority of secondary school teachers were positively inclined towards using ICT in teaching their subjects.

Varol (2013) explored the relationship between the attitudes of elementary school teachers towards ICT and their engagement in ICT applications. The outcomes of the study demonstrated that the teachers' attitudes were not encouraging and that the usage of ICT was low. It was ascertained in this study that teachers' confidence in technology can be predicted by their attitudes.

Uslu and Bümen (2012) gauged the effects of professional development program on Turkish teachers. The influence of professional development program on integration of technology and attitudes of teachers towards ICT in education was probed in this research. The outcomes of the study revealed that the integration of technology was positively affected by the professional development program. However, the teachers' attitudes towards ICT in education were found to be unaffected.

A study conducted by Ageel (2012) examined the effects of virtual learning environments on the attitudes of teachers in using ICT and formulated a model to be used by interested stakeholders for promoting the ICT applications. It was found that teachers' attitudes towards using ICT can be positively influenced by virtual learning environments, thereby promoting the utilization of ICT-enabled teaching. This paper states that the teachers' attitudes can be improved with regular participation in virtual learning environments. Additionally, any ICT program deployment must be adequately supported by educational institutions.

Giavrimis, Giossi and Papastamatis (2011) conducted a research in Greece to examine the reasons of teachers' participation in ICT programs, to know about their sociological approaches, and to know their focal point in attaining their objectives in ICT-enabled teaching. It was found that the teachers were interested to participate in programs and exploit ICT at both professional and personal levels. The teachers' perceptions revolved around providing education according to the modern socio-cultural requirements.

The progress made towards a knowledge-based economy was stated in a research paper written by Ghosh and Ghosh (2009). This paper talks about the commitment shown by the Indian government in developing the workers' fundamentals, innovations and sharing infrastructure, centered on knowledge repositories. This study identified the role of libraries as builders of

inclusive knowledge economy. Furthermore, the weaknesses of knowledge economy were identified and appropriate recommendations were stated in this paper.

Teacher's role in ICT implementation

A study conducted by Mirzajani, Mahmud, Ayub and Wong (2016) attempts to determine the factors that affect Iranian teachers' motivation in using ICT in education. The study attempts to identify the extent to which certain variables impact teachers' inclinations to adopt ICT in teaching. The outcomes identified several factors that determined the ICT implementation in education. The importance of adequate equipment and technical support for encouraging teachers was emphasized. This study may help in the conceptualization of policies and in creation of suitable learning environment for ICT implementation in education.

Yağcı (2016) researched to examine the thinking styles and attitudes of pre-service teachers who are expected to apply ICT in their approaches. The relationship between the two variables was also sought in this research. The outcomes revealed that the thinking styles of teachers were innovative and visionary, and their attitudes regarding ICT in education were found to be highly positive, which affected the levels of academic success.

A research paper written by Goodwin, Low, Ng, Yeung and Cai (2015) delves into the personal attributes of Singapore teachers and learners in the application of ICT. The results of the study indicated that the effect of personal attributes on the perceived significance of ICT was arbitrated by risk taking orientations, but the arbitration effect was not noticed with perceived competence in ICT utilization. The academic self-concept was found to have an insignificant relation with the ICT variables. The study ascertained that the application of ICTs as pedagogical tools can be promoted by nurturing and enhancing the risk taking attitudes of students and teachers.

Albugami and Ahmed (2015) conducted a study to find the factors that affect the successful implementation of ICT in Saudi Arabian secondary schools. The outcomes of their research indicated that although ICT was regarded as a vital tool in the learning procedures, the implementation of ICT in education was laden with several challenges that needed prompt attention.

Zhu and Winkel (2015) scrutinized the role of ICT-enabled learning tools in meeting the social and educational needs of sick adolescents in their research paper. The outcomes of their study suggested that ICT tools positively fulfilled the social and educational needs of sick adolescents. The researchers found that the utilization of ICT tools diminished the sick adolescents' isolation, which consequently enhanced their self-confidence.

Prakash and Amaladoss Xavier (2014) studied the role of educational institutions in developing the personalities of student teachers. The outcomes revealed a substantial difference in the personalities of government-aided and self-financed college student teachers.

A study conducted by Prestridge (2014) focused on the teachers' reflections in the form of blogs, wherein the perceptions and engagement in reflective activity was described as a part of an ICT professional development plan. The study discovered that the ICT pedagogical beliefs and practices of teachers can be transformed by the teachers' reflective actions. The constituents of professional development in ICT were reshaped by the reflective activities within the ambit of professional development.

Kayode and Olaronke (2014) conducted a study that emphasized on the need of ICT awareness among educators. The study also examined the educators' and students' perceptions about the role played by ICT in developing teachers' approaches in education. It was found that children's overall development and interest in learning can be facilitated by preparing the teachers to integrate ICT in their teaching methodology. This study suggests that educators need to be adequately trained in the implementation of ICT in teaching and learning.

Van Niekerk and Blignaut (2014) attempt to identify the reasons of unsuccessful ICT integration in South African schools. The role of principals regarding the ICT integration through teacher professional development was examined in this study. The perceptions and experiences of principals, and their impact on the education system were identified. The leadership and management styles along with the principals' strategic thinking on ICT and professional development were examined in this research. The interrelatedness of the aspects that determine principals' leadership was exemplified by the theoretical framework of this study.

A research paper authored by Konstantinos, Andreas and Karakiza (2013) examined the teachers' perceptions with regards to the Greek education ministry's objectives on ICT integration in education, and the obstructions encountered in their teaching endeavors. The outcomes of the study revealed that teachers faced several internal as well as external barriers and they were perplexed over their role in introducing and implementing ICT in primary education.

CONCLUSION

Based on the analysis, this study concludes that the leadership and the attitudes of educators directly affect the implementation of ICT in educational institutes and the successful ICT implementation in education has a positive impact on the teaching effectiveness and quality. This study shows how the proactive attitudes of educators leads to the successful implementation of ICT in educational institutes and how it brings positive changes in the teaching effectiveness,

which ultimately helps to enhance the quality of education. This study provides a good reference for future studies in this area.

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