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Empowering Leadership in Education Ecosystem through Technology Enabled Practices

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ARTICLE HISTORY

Paper Nomenclature: Empirical Research Paper

Paper Code: GJEISV13I3JS2021ERP1

Submission at Portal (www.gjeis.com): 31-March-2021

Manuscript Acknowledged: 31-March-2021

Originality Check: 31-March-2021

Originality Test (Plag) Ratio (Ouriginal): 14%

Author Revert with Rectified Copy: 04-Apr-2021

Peer Reviewers Comment (Open): 28-Apr-2021

Single Blind Reviewers explanation: 01-June 2021

Double Blind Reviewers interpretation: 25-June-2021

Triple Blind Reviewers annotations: 09-July-2021

Authour Update (w.r.t. correction, suggestion & observation): 14-July-2021

Camera-Ready-Copy: 18-Aug-2021

Editorial Board Excerpt & Citation: 20-Oct-2021

Published Online First: 31-Dec-2021

ABSTRACT

Purpose: This paper focuses on antecedent's educational leadership in higher education ecosystem through technology enabled practices. It also involves the identification of changes required in management practices and structural factors in higher education for better dissemination of knowledge in a student-centered ecosystem. In fact, rapid changing technology has created new and constantly evolving job, and competencies demands new skills, which has facilitated significant progress in accommodating the need of students in various aspects. Technological changes revolutionize the delivery of education by allowing access to higher education for greater numbers of students at low cost, flexibility of adoption of latest courses in demand and providing student centred ecosystem. Surprisingly, technology solution has transformative effect on students' learning and success by laying foundation according to goal, need, and interest of the students. While addition of innovative technology in the existing structures has made the goal barely more efficient and flexible.

Design/ Methodology/ Approach: This study is based on data taken from Noida it comprises of four universities and 20 colleges and Lucknow with 13 universities and 20 colleges. Overall, 438 respondents were selected randomly from various higher education institution located in the two cities. Confirmatory factor analysis (CFA) and structural equation modeling (SEM) were carried out for data analysis.

Findings: The result indicates, taking full advantage of technology helps in setting cutting edge standards among educational leadership through creating a shared vision, plan for achieving goal, and the ability to build capacity for adopting innovation and change. As a starting point, leaders across higher education ecosystem need to prioritize the success of all students while engaging technology to expand appropriate support for all students, especially for those who lack traditional support networks. Using ICT effectively throughout the higher education institutions and across the ecosystem around student-centered design strategies while supporting the institutional structures, education policies, and teaching practices helps in evaluating and developing evaluated greater access, affordability, and overall success.

Paper Type: Empirical Research Paper.

KEYWORDS Higher education | Leadership | Education ecosystem | Technology | Institution

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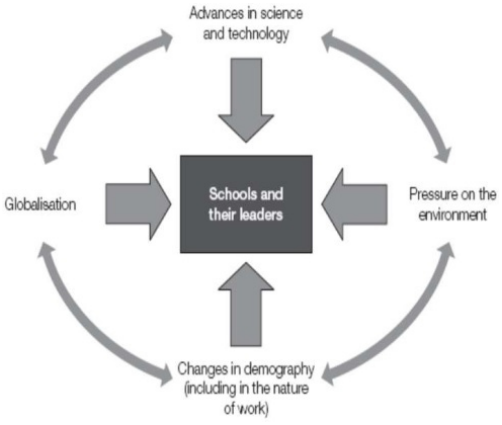
- Present Volume & Issue (Cycle): Volume 13 | Issue-3 | July-Sep 2021
- International Standard Serial Number: Online ISSN: 0975-1432 | Print ISSN: 0975-153X
- DOI (Crossref, USA) https://doi.org/10.18311/gjeis/2021
- Bibliographic database: OCLC Number (WorldCat): 988732114
- Impact Factor: 3.57 (2019-2020) & 1.0 (2020-2021) [CiteFactor]
- Editor-in-Chief: Dr. Subodh Kesharwani
- Frequency: Quarterly
- Published Since: 2009
- Research database: EBSCO https://www.ebsco.com
- Review Pedagogy: Single Blind Review/ Double Blind Review/ Triple Blind Review/ Open Review

- Publishers: Scholastic Seed Inc. and KARAM Society
- Place: New Delhi, India.
- Repository (figshare): 704442/13

Introduction

Measuring educational leadership through technology impact and how leaders make a difference is one of the biggest challenges facing the field today. If the belief in educational leadership through technology is currently higher then all involved in the study and practice of educational leadership through technology should prepare to explain how they know educational leadership through technology is so influential. Teachers have the greatest effect on pupils' learning, followed by educational leadership through technology. Not only do we need to know the pathways by which leaders' influence others, but also how they influence the quality of teaching. "Governments and foundations around the world are devoting unparalleled resources to the development of aspiring education leaders, as well as those already in the role. While England's National College for Educational leadership through technology is the most visible instance of this investment, virtually all developed economies are in the middle of unprecedented, if less dramatic, efforts to improve the quality of existing programs and to launch fresh initiatives in educational leadership through technology. It is not a coincidence that these efforts are taking place in the face of tremendous pressure for public educations to be more publicly accountable" (Day & Leithwood (Eds.), 2007, p. 1). Education leaders should be part of this conversation – and to be so engaged is their first challenge.

Occasionally education leaders need to position themselves so that they are able to see 'the bigger picture'; to detach themselves from the hurly-burly of the moment, gain a more distant view of challenges that are close by and pressing (Heifetz & Linsky, 2002). But care is needed. When lost on a highway, a road map is very useful; but when one is lost in a world where the topography, such as that provided by the education systems and structures that serve it, is constantly changing, a road map is a type of little help.



Source: Mulford, 1994

Fig 1: Education Systems and Structures

Use of technology in Higher Education for Empowering leadership

In the field of communications and automation, the use of computers is in wide scale the availability of medical discoveries, continue to impact massively on every sector (Mulford, 1994). The links between scientific and technological change have become clearer. Automation and computers have facilitated data storage and retrieval at a very fast pace. Communication and transport systems allow us to be less time or place bound. Ease of travel facilitates greater immigration (including illegal). There are shifts in the demography of populations as a result of the combined effects of advances in, and growing acceptance of, contraceptives, work opportunities (rural/urban) and longevity. Education, scientific research on the brain has led to educational research into learning styles indicates a need for a much more varied approach to teaching than the standard teacher-focused format (Harris, 2006).

The pace of technological change has and will continue to increase exponentially. For instance, increases in bandwidth will lead to a rise in Internet-based services. Access to video and television (Gilbert, 2006) will increase. Costs associated with hardware, software and data storage will decrease, resulting in the opportunity for near-universal access to personal, multi-functional devices, smarter software integrated with international standards and increasing amounts of information being available to search online (using everything from Google and Yahoo to the more recent developments of Wikipedia, Blogger, YouTube, My Space, Second Life, and del.icio.us). Wikipedia's founder, Jimmy Wales, has defined Wikipedia as 'a world in which every single person is given free access to the sum of all human knowledge.' (Harris, 2006, p. 10).

These developments mean there will be far greater access to, and reliance on, technology as a means of conducting daily interactions and transactions, including in educations. Demonstrates the point, "A powerful indicator of the new wave of change is the hand-held mobile telephone. It is now an all- purpose device with multiple functions, and it is revolutionizing thinking and interaction patterns across the world. It is soon to become a powerful teaching and educational device which will outdo, in its significance, what the computer has been for the previous generation. When the technology is growing on a faster pace in every sector, it should be implemented in higher education in the same pace. Hence, it is time to redesign the overall higher education system using technology for better educational leadership and excellence achievement. It should be considered as educational product or service provided to the society. It is the process of developing a new product or service for the market. This type of development is considered the preliminary step in product or service development and involves several steps that must be completed before the product can be

introduced to the market. Even involvement of technology in higher education provides more personalized learning new technologies geared toward customized learning aim to alleviate challenges teachers face in meeting the needs of diverse student populations. Personalized learning programs include digital devices, software, and platforms that are integrated into various teaching methods. These offer innovative and unique options for tailoring education to each individual student's academic strengths and weaknesses, interests and motivations, personal preferences, and optimal pace of learning. One example is a personalized student dashboard, accessed on classroom laptops, that outlines lessons completed and tasks yet to finish. By making use of multiple technologies and a flexible classroom setup, different learning styles can be accommodated simultaneously. For instance, some students may learn best using different tools like laptops, while others prefer gathering in front of a smart board for interactive small-group instruction and the individual can also get focused instruction on their own desks and devices. The goal of technological enabled practices in higher education is to provide rich experiences with personal involvement and customized help for students to achieve good results. The use of technology is creating diverse educational opportunities that address a variety of learning needs and desires. At the same time, these advances nicely complement the fundamentals of good education: building an environment that encourages curiosity and challenges students in innovative ways, while providing them with problem- solving tools for the future.

Scope of the Research

The scope of the research is limited to education level educational leadership in education ecosystem through technology adoption. It also does not include the external environmental factors such as economy, students, competitors and government regulations. The basic underlying assumption is that the external environment is same for all, as the study has been undertaken in the higher education. The individual level educational leadership through technology including promotion, reassignment within education and development of political skills is beyond the scope of the research. The individual characteristics including individual risk-taking propensity, desire for autonomy, need for achievement, goal orientation and internal locus of control have not been included in the present scope of research. The study covers higher education institutions in Noida and Lucknow region. The study is focused only on education and operational level antecedents taken together.

Literature Review

Concept of Leadership in Higher Education Through Technology

For the purpose of the study, educational leadership through technology has been defined as a process of education renewal that has two distinct but related dimensions: innovation and new education teaching pedagogy environment. The innovation dimension is characterized by renewal activities that enhance an education's ability to compete and take risks including the redefinition of the education concept, education, and the introduction of system-wide changes for innovation for betterment of students. Innovation includes all activities related to modification of existing pedagogy, modification of existing processes and introduction of new processes within India, and modification of students. Modification in this context is defined as the necessary changes made to existing pedagogy or the processes. In broadest conception, leadership behaviour is a comprehensive term that captures all actions taken by an education's members relating to the discovery, evaluation, and exploitation of leadership opportunities (Schrum and Levin, 2009). Moreover, leadership behaviour also includes use of new resources, interactions with new students, involvements with new students and/or with new combinations of the existing resource portfolio, student base, and served students (Hitt et al., 2001; Ireland et al., 2001). The various challenges involving the implementation of educational leadership

Frameworks of Education-Educational Leadership Through Technology

The forces are challenging the very nature of education (Indian Council of Deans of Education (ACDE), 2004). They are causing educational organizations and systems around the world to broaden and personalize curricula (e.g., DfES, 2005; Leadbeater, 2004a, 2004b, & 2005) and to rethink education structures (Marginson, 1997). In India there has been a flurry of activity designed to broaden the curricula by foregrounding generic skills and capabilities (e.g., Government of South India, 2006; Tasmanian Department of Education, 2005).

In this paper emphasise is given on developing sustainable knowledge base with a realization that ICT in education covers a wide spectrum — both thematically and along the administration–pedagogy axis. This is a consequence of the incremental integration of ICT into all domains of education. Kozma (2008) has highlighted this in his work, and he acknowledges that ICT strategies in many countries cut across diverse fields. PISA (2003) and PISA (2006), follow-up analysis based on ICT data has been undertaken. In future, the ICT analysis of PISA should be replicated and improved, and the ICT familiarity questionnaire should be updated in order to keep up with the evolving use of ICTs for learning.

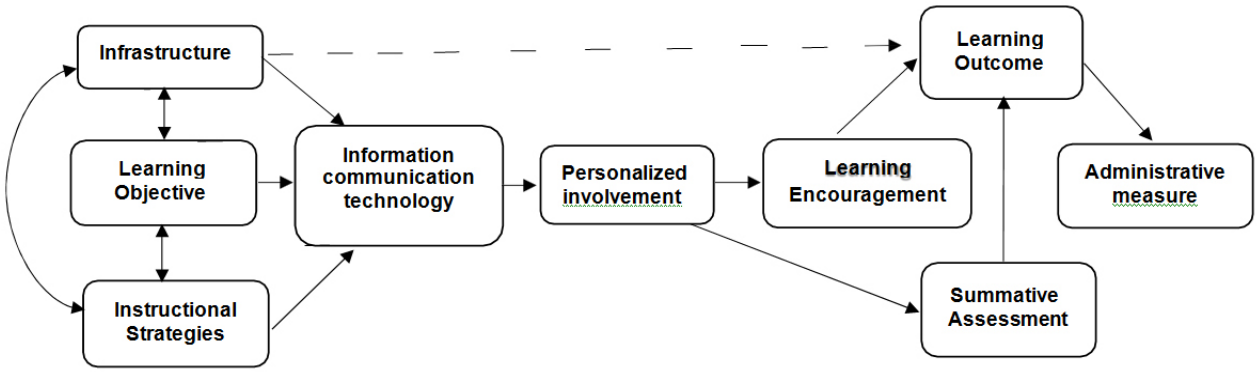


Fig 2. Conceptual Model developed from theoretical review.

The model is intended to depict the internal education drivers for development of educational leadership. In this research paper, Educational leadership is possible through technology, which is measured in terms of the increase in number of new teachings, services, students and processes developed within India. New teachings are defined as new pedagogy for the existing student or added feature to the current pedagogy. A conceptual model has been built that captures antecedents impacting leadership behaviour of the educations. All of these variables are controllable by administration. Practice application of this research can help to create an environment for stimulating leadership in the higher education ecosystem. Educational leadership through technology is a process whereby an individual or group develops an innovation with the help of technology adoption (Sharma and Chrisman, 1999). The authors emphasized on educational leadership as an education process that contributes to an education's survival, performance and quality initiative processes are also recognized as educational leadership activities.

In recent years, there has been a tendency to argue that complexity is an issue in itself in studying knowledge practices or studies on ICT, development and educations (Riisla, Katrin.2016). In order to fully understand or assess the effects of ICT in education we need to know more about how ICT operates on different levels, and what we are really measuring on which levels. It is crucial that we synthesise the research with a holistic perspective in order to lay a foundation for further development in this area (Sutherland, Robertson and John, 2009). In this paper, the above conceptual model is developed around the need to look at the bigger picture in order to create sustainable developments throughout our education ecosystems with proper coordination of ICT which act as a catalyst for change. The impact of ICT in education is since several sets of indicators which can be developed by using different factors in the existing model of educational practices. The objective is finally developing the mathematical model that looks at how different levels and dimensions work together to create conditions for change and the integration of ICT in Higher education ecosystem. In general, there has been a tendency to simplify the research approaches and understanding of how digital technologies might have an impact on educations and educational outcomes (Cuban, 2015), and evidence of the impact of ICT on educational practice has mainly been drawn from small-scale case studies (Condie and Munro, 2007). Hence, it is required that both policymakers and instructors should create learning objectives by keeping in mind to maximise the utilisation of innovative technologies for knowledge dissemination as well as student learning. Many studies have been oriented towards the new possibilities and limitations created by the implementation of digital technologies into educational settings (De Corte, Verschaffel, Entwistle and van Merrienboer, 2003). Therefore, we focus on developing a framework which will empower leadership in higher education ecosystem by improving the learning environment along with effective learning outcome the review of literature indicates that appropriate education-level practices facilitate the availability of internal resources and expertise to address the challenges of educational leadership. conceptual model for technological educational leadership through technology has been evolved. The study variables have been identified and relevant constructs have also been defined. Research hypotheses have been framed for each of these areas for the study. Higher education antecedents involve the risk-taking, management support, rewards, education flexible boundary, work discretion, intelligence generation, intelligence dissemination, and time availability for educational leadership. This shows the multidimensional nature of problem, encompassing multitude of challenges differing from each other in nature and also complex. To deal with this, attention has focused on systematic screening, monitoring and progression frameworks such as Cooper's 'stage-gate' approach (Cooper, 1985).

Table 1. Hypotheses based on conceptual framework.

Variables	Hypotheses	Number
Learning Objective	Demanding learning objectives supports the use of technology.	H1
Infrastructure	Institutional infrastructures prioritise the adoption / use of innovative technology.	H2
Instructional strategies	Based on demanding courses new instructional strategies will involve the use technology to the highest.	H3
Infrastructure	Institutional infrastructures has positive effect on learning outcome.	H4
Information, Communication and Technology (ICT).	ICT provides personalised involvement.	H5
Personalised Involvement.	Personalised Involvement encourages learning process.	H6
	Learning Encouragement influences self- assessment.	H7
Learning Encouragement	Learning Encouragement influences learning Outcome.	H8
Learning Out come	Learning outcome influences feasible administrative measures.	H9

Methodology

To find out the links between work environment and innovation and leadership, we have used two methodologies: experiments & interviews. While controlled experiments allowed us to identify causal links, the interviews and surveys gave us insight into the richness and complexity of innovation within education educations. This study is based on data taken from Noida it comprises of four universities and 20 colleges and Lucknow with 13 universities and 20 colleges. Overall, 438 respondents were selected randomly from various higher education institution located in the two cities. In this study, the goal is to identify different factors with the help of which a conceptual framework can be developed by implementing technology in the higher education ecosystem and how the inculcation of technology in the system affects the administrative practices linked to innovative outcomes. To fulfil the requirements, the reacher interviewed teachers from these higher education institutions and asked them to describe in detail the most innovative events in their educations. A closely studied of these transcripts of interviews has been done while noting the managerial practices which created the environment that appeared as a successful innovative event and, conversely, in those that were unsuccessful. Our research has also been bolstered by a quantitative survey instrument developed through the study. The survey fact sheet consisted of variety of questions dealing with prevailing academic environment, such as administrative support for empowering leadership and leadership efforts. This survey was taken by teachers at top and middle level working in educational institution.

Table 2. Details of Respondents Considered for the Study

Levels of Principals/ Teachers	Average Experience in Current Positions (Years)	Number of Respondents
Principals/ Directors/Faculty Dean.	30 >	80
Faculty members (full time)	15 >	200
Visiting faculty	10 >	158

Results

Sample Characteristics

In light of the purpose, research questions and objectives of the present study, purposive non- probability sampling technique was adopted for the recruitment of participants from universities, colleges. Purposive sampling, also known as judgmental sampling, technique to choose respondent deliberately. Based on the characteristics of the information required the researcher selects participants possessing a set of qualities differentiating him from the population.

From the 438 completed survey, twenty-nine cases were dropped due to missing values. Thus, 409 cases were analysed. The sample consist of 80 Principals/ Directors, 179 Faculty members and 150 visiting faculties. With experience ranging from 10 to 35 years. With a mean of 20 years (SD = 12.4). The total population of the aforementioned cities is approximately 8.25 million. The sample size of the respondents for the aforementioned population was calculated as:

- Sample Size = (Z Score)^2 x Std. Dev (1- Std. Dev.) / (Margin of error)^2
- Sample Size = {(1.96)^2 x 0.5(0.5)} / (0.05)^2 = 384.16 ☐ 385 respondents

(At 95% confidence level, Z Score= 1.96, 0.5 standard deviation and a margin of error (confidence interval) of +/- 5%).

The final size of 409 participants taken in the present study was more than the estimated sample size (385) as well as higher than 400 as recommended for a population over 0.25 million with a confidence level of 95% and 5% margin of error (The Research Advisors 2006). However, since the purpose of the study was to develop a conceptual framework for empowering leadership in higher education, indicates the experience, qualification and Techno friendliness are the desirable criteria for the evolution of the conceptual model. Hence the sample was determined to be appropriate. Thus, the result from the current study will contribute to an understanding of Technology and its use in education ecosystem in India.

Statistical Analysis

The Statistical Package for Social Sciences (SPSS) Ver. 24 was used to estimate mean, standard deviation, skewness and kurtosis of constructs and items under each construct for consumers' opinions in context of RTC and RTE food choice on a five-point Likert scale. Further, SPSS Ver. 24 was employed to assess the Cronbach's alpha to ensure the reliability and internal consistency of the measuring instrument (questionnaire). The value of the Cronbach's alpha varies between 0 to 1. The corresponding test is commonly used when the developed questionnaire is based on the Likert scale statements. The reliability of the questionnaire is acceptable when the Cronbach's alpha value is greater than 0.6. However, Hair et al. (1998) reported that the reliability of the questionnaire is acceptable when the Cronbach's alpha value is greater than 0.5. The AMOS ver. 23 was used to determine the composite reliability (CR = (∑ standardized loadings) ²/ (∑ standardized loadings) ² + (∑ indicator measurement error)) of the scale (Calvo-Porral et al., 2013; Rezai et al., 2014; Lu et al., 2015; Konuk, 2019).

The Confirmatory Factor Analysis (CFA) technique was performed to assess the validity of constructs of the measurement model with AMOS version 23. The confirmatory factor analysis (CFA) is used for assessing the validity of constructs and items under each construct (Jackson et al, 2009). It is normally employed to verify the number of underlying dimensions of the factors and the pattern of items and factor relationship (Brown, 2006). In confirmatory factor analysis, the standardized factor loading should range from 0.50 to 0.95 (Wu, 2009; Hair et al., 2014). The Average Variance Extract (AVE) was determined (AVE= (∑ squared standardized loadings)/ (∑ squared standardized loadings) + (∑ indicator measurement error) to examine the validity of the construct. The statistical indices such as Root Mean Square Error of Approximation (RMSEA), Goodness of Fit Index (GFI), Comparative Fit Index (CFI), Tucker Lewis Index (TLI) and Standardized Root Mean Square Residual (SRMR) were determined to examine the fit of the measurement model (Steenkamp and Baumgartner 1998; Hair et al., 2010)

Cronbach alpha coefficients were calculated to examine the reliability of multi-item scale. Result showed that a high reliability was achieved for scale; ☐ = .836.

Table 3. Composite Scores of Constructs

Constructs	Mean	S.D	Skewness	Kurtosis	Cron Bach (□)
Infrastructure	4.55	1.617	-.555	-.276	0.765
Information communication technology	4.50	1.683	-.276	-.787	0.943
Learning Objective	4.58	1.574	-.483	-.322	0.874
Instructional Strategies	4.53	1.526	-.382	-.446	0.821
Personalised involvement	3.45	1.751	-.363	-.705	0.788
Learning Encouragement	4.49	1.563	-.501	-.297	0.878
Learning Environment	3.54	1.532	-.373	-.777	0.811
Learning Outcome	3.46	1.633	-.417	-.680	0.86
Self Assessment	4.72	1.694	-.375	-.796	0.719
Administrative Measures	4.89	1.746	-.305	-.891	0.903

The hypothesized relationship among the variables in the model were analysed using structural equation program (EQS) (Bentler, 1989) and parameters were estimated using maximum likelihood. Correlations among manifest variables with standard deviation are provided in Table 3.

The correlation analysis for each variable is performed to examine the association between the constructs. then, the proposed structural equation model was tested for the group of constructs.

Table 4 Spearman rho between the constructs

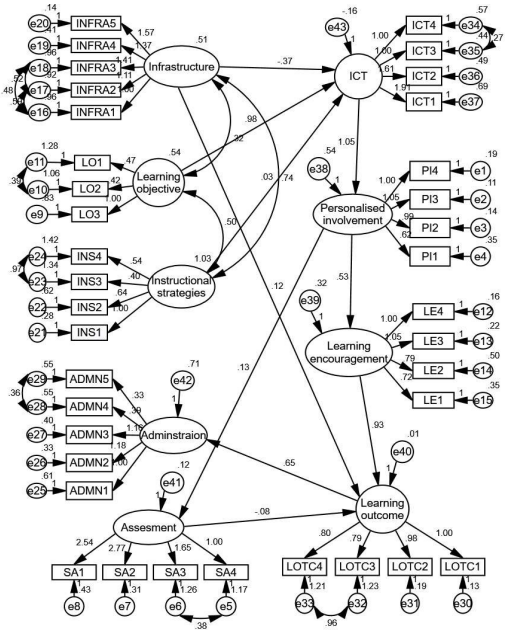
Spearman's rho N = 121	Infrastructure	ICT	Learning Objective	Instructional Strategies	Personalised Involvement	Learning Encouragement	Learning Outcome	Self-Assessment	Admin Learning Measures
Infrastructure	1.000								
ICT	.679**	1.000							
Learning Objective	.950**	.680**	1.000						
Instructional Strategies	.598**	.695**	.651**	1.000					
Personalised Involvement	.269**	.449**	.344**	.633**	1.000				
Learning Encouragement	.458**	.701**	.489**	.763**	.491**	1.000			
Learning outcome	.537**	.673**	.562**	.728**	.582**	.745**	1.000		
Self Assessment	.485**	.370**	.531**	.447**	.483**	.365**	.405**	1.000	
Admin Learning Measures	.602**	.619**	.611**	.485**	.351**	.379**	.359**	.392**	1.000

**. Correlation is significant at the 0.01 level (2-tailed).

Confirmatory Factor Analysis (CFA)

The results of the CFA of the constructs indicate a very good fit of the model to the data (chi- square

χ^2 = 235.7 [23df] for the group). The above corelation matrix of indicators within the same construct indicates convergent validity.



CFI= 0.944, χ^2 = 23.34 [607df], GFI =.942, TLI =.903,
RMSEA = 0.72 Probability Level= 0.00**

Fig 2. Structural equation modelling to assess the role of Infrastructure, Learning objective, instructional strategies, learning outcome on administration.

The confirmatory factor analysis was carried out to determine the internal consistency, reliability and validity of conceptual / measurement model. The factor loading, cronbach alpha, composite reliability and average variance extracted for Learning Objective, Infrastructure, Instructional strategies, Information, Communication and technology (ICT), Personalised Involvement, Learning

Encouragement and Learning outcome are presented in Table 5. The factor loading of all 52 items of marital status, gender, age, employment status, meal patterns, attitude, purchase intention, consumption and satisfaction were highly significant ($p \leq 0.01$). The cronbach alpha and composite reliability values obtained for different constructs reveals good internal consistency and reliability of scale items (Hair et al., 2006; Hair et al., 2010). The average variance extracted for Learning Objective, Infrastructure, Instructional strategies, Information, Communication and technology (ICT), Personalised Involvement, Learning Encouragement and Learning outcome constructs ranged from 0.520 to 0.928, which exceeded threshold value of 0.50 (Hair et al., 1998).

Table 5 Validity of Construct responsible for empowering leadership in higher education ecosystem through ICT

Constructs	Item	Estimate □	Squared Loading $\lambda 2$	AVE	Composite reliability	P value
Learning Objective				0.925	0.974	
	Learning Objective 1	0.978	0.956			***
	Learning Objective 2	0.923	0.851			***
	Learning Objective 3	0.984	0.968			***
Personalise Involvement				0.564	0.943	
	Personalise Involvement 1	0.721	0.519			***
	Personalise Involvement 2	0.665	0.442			***
	Personalise Involvement 3	0.586	0.343			***
	Personalise Involvement 4	0.953	0.908			***
Information communication technology				0.541	0.872	***
	ICT 1	0.681	0.463			
	ICT 2	0.88	0.774			***
	ICT 3	0.712	0.506			***
	ICT 4	0.717	0.514			***
Learning Encouragement				0.561	0.843	
	Learning Encouragement 1	0.772	0.327			***
	Learning Encouragement 2	0.713	0.508			***
	Learning Encouragement 3	0.708	0.501			***
	Learning Encouragement 4	0.801	0.641			***
Instructional Strategies				0.767	0.811	
	Instructional Strategies 1	0.786	0.622			***
	Instructional Strategies 2	0.774	0.599			***
	Instructional Strategies 3	0.771	0.594			***
	Instructional Strategies 4	0.985	0.970			***
Self- Assessment				0.629	0.821	
	Self- Assessment 1	0.903	0.815			***
	Self- Assessment 2	0.873	0.762			***
	Self- Assessment 3	0.945	0.893			***
	Self- Assessment 4	0.632	0.399			***
Learning Outcome				0.657	0.903	
	Learning Outcome 1	0.658	0.432			***
						***
	Learning Outcome 2	0.829	0.687			***
						***
	Learning Outcome 3	0.847	0.717			***
						***
	Learning Outcome 4	0.827	0.683			***
						***
	Learning Outcome 5	0.791	0.625			***
						***
Infrastructure				0.632	0.764	
	Infrastructure 1	0.759	0.576			***
	Infrastructure 2	0.761	0.579			***
	Infrastructure 3	0.774	0.599			***
	Infrastructure 4	0.853	0.727			***
	Infrastructure 5	0.827	0.683			***
Administrative Measures				0.601	0.912	
	Administrative Measures 1	0.753	0.567			***
	Administrative Measures 2	0.789	0.622			***
	Administrative Measures 3	0.794	0.630			***
	Administrative Measures 4	0.824	0.678			***
	Administrative Measures 5	0.814	0.662			***

The above table shows the results of the CFA for each of the constructs indicate a very good fit of the model to the data (Chi square = 23.34 [607df], CFI = 0.954, RMSEA =0.07, GFI = 0.937) for the group of construct Multivariate Lagrange Multiplier (LM) tests indicate no cross loading of λs, which indicates discriminant validity.

Proposed Structural Equation Model (SEM) Tests

The result of the SEM test for the group indicates that the model is good fit to the data (χ^2 = 2361.34 [df=607], CFI = .954, RMSEA = 0.08). This shows Execution of educational activities require supportive internal environment. Hence the results shows that supportive environment and a cooperative endeavour not within the education benefit for the corporation but also innovative principals. In large corporations, formation of more formally autonomous or semi-autonomous units or educations is classified under competitive environment (Scholl hammer, 1982; Vesper, 1981). The antecedents of competitive environment in higher education includes risk-taking, management support, rewards, educational flexible boundary, work discretion, intelligence generation, intelligence dissemination and time availability. Administration should support and encourage to take innovative initiatives including quick adoption of technology, educational commitment to R&D, recognition of principals who bring activities forward, support for small experimental projects and fund allocation to get projects off the ground. Rewards enhance the motivation of individuals to engage in innovative behaviour. Educations may reward the teachers based on the overall performance monetarily or recognizing innovative practices.

The results of the structural model presented in Table 6, revealed the extent of association between Learning Objective, Infrastructure, Instructional strategies, Information communication and technology (ICT), personalised involvement, learning encouragement and learning outcome (ß = 0.654, S.E. = 0.011, t-value = 17.202, $p \leq 0.01$), which support the postulated hypothesis H1 (Table 6). The findings of the present study revealed that Learning objective plays important role to drive towards ICT. The learning objective provide proper guideline for the teachers / instructors to find means to develop indispensable skills and knowledge which allows the students to pursue detail studies and respond as per the demand of the society. Both teacher and student motivates to rely on ICT tools. The hypothesis H2 which postulated positive relationship between infrastructure and ICT was accepted (Table 6) because standardized estimate of the path of structural model was significant (ß = 0.432, S.E. = 0.021, t-value = 31.343, $p \leq 0.01$). The results revealed that the infrastructure of the institution influence the uses of ICT significantly in the education ecosystem. In contrast, the studies carried out elsewhere reported that Supportive infrastructure can bring out efficient and smart use of ICT by integrating learning encouragement and its significant outcome. The findings of this study evidence that leader empowerment in higher education is possible only through assist and sustainable change by improving quality of the range of offering through ICT and the need for leadership through ICT is essential for effective education (Sherry, 2000).

The hypothesis H3 postulated the positive relationship between instructional strategies and ICT was accepted (Table 6), because standardized estimate for the path of structural model was significant (ß = 0. 421, S.E. = 0. 033, t-value = 28.611, $p \leq 0.01$). The results revealed that instructional strategies is positively associated with ICT. Previous studies reported that delivering instruction with the help of ICT has been widely accepted (Serin, 2011; Inan and Lowther, 2010; Ahuja, 2016). The administrations of the institutions as well as human resource ministry have deployed new policies on information and communication technology in education (Spector, Merrill, Merrienboer & Driscoll, 2008; Hogarty, Lang & Kromrey, 2003), along with high investments have been made while integrating information and communication technologies in institutions. The hypothesis H4 which proposed negative relationship between infrastructure and learning outcome was accepted (Table 6), because standardized estimate for the path of structural model was not significant (ß = 0. 025, S.E. = 0. 015, t-value = 21.219, $p > 0.05$). It is evident from the results that learning outcome is important determinant which drives students encourages learning attitude which leads to better learning outcome. Buildings, classrooms, laboratories, and equipment and overall education infrastructure - are crucial elements of learning environments in education institutions and universities. There is strong evidence that high-quality infrastructure facilitates better instruction, improves student outcomes, and reduces dropout rates, among other benefits.

The hypothesis H5 which postulated positive relationship between ICT and personalised involvement for better learning outcome (Table 6), because standardized estimate for the path of structural model was not significant (ß = 0.051, S.E. = 0.037, t-value = 1.303, $p > 0.05$). The findings of the present study revealed that Personalized involvement is a consistent and blended approach for learning which combines the delivery of education both within and beyond the traditional classroom environment. The Personalized involvement model fosters a collaborative partnership between the teacher, parent, student and school that designs a tailored learning program for each student according to the needs and interests of each individual student.

The hypothesis H6 that postulated positive relationship between personalised involvement and learning encouragement was accepted (Table 6), because standardized estimate for path of structural model was highly significant (ß = 0. 654, S.E. = 0. 043, t-value = 12.609, $p \leq 0.01$). The findings of the present study revealed that personalized involvement in learning is the factor which drives learning encouragement. Students can set personal plans and goals that are aligned with their interests, talents and passions which is possible through encouragement for learning, but the other side without any clear and specific personal goals, there can be no personalized involvement for learning. The personalised involvement encourages students to set these goals, monitor

progress towards the goals, and modify or set new goals as appropriate. The hypothesis H7 that postulated positive relationship between learning encouragement and learning outcome was accepted (Table 6), because standardized estimate for path of structural model was highly significant (ß = 0. 858, S.E. = 0. 026, t-value = 12.609, p ≤ 0.01). The findings of the present study revealed that students' opportunities to assess their own learning through self-reflection exercises. This is a great way for students to develop metacognitive, as well as cognitive skills. Personalised involvement encourages self-assessment frequently, which includes their learning capabilities and application. Personalised involvement leads new assessments of what they learned on latest. As we conduct more assessments for learning, we will be able to more effectively personalize learning involvement for the student. The hypothesis H8 that postulated positive relationship between learning encouragement and learning outcome was accepted (Table 6), because standardized estimate for path of structural model was highly significant (ß = 0. 328, S.E. = 0. 033, t-value = 54.516, p ≤ 0.01). The findings of the present study revealed that which learning motivation is appropriate with desired learning outcomes, which students' initial knowledge and consideration. Even the previous studies states, motivation as a process of push and maintain a particular purpose by steering someone's behaviour, motivation is power in learning that gives students power and strength to study, Schunk & Hanson (1989). Learning outcomes allow instructors to set the standards by which the success of the course will be evaluated, and it also help to define the goals and essential aspects of higher education within the institution, to students, and to the general public. The hypothesis H9 postulated positive relationship between learning outcome and administration was accepted (Table 6), because standardized estimate for path of structural model was highly significant (ß = 0. 712, S.E. = 0. 068, t-value = 23.831, p ≤ 0.01). The findings of the present study revealed that Learning outcomes are always precious to learners, instructors, and administrators. Even in the previous studies Mark Battersby (1999) of the process of learning outcome explains, that result from proper learning are more than simply adds more importance to existing teaching plans or curriculum; instead of development of learning outcomes and their use within a unit of instruction process learning and assessment activities and will enhance student engagement and learning. Learning outcomes provide structures from which courses and programs can be evaluated and can assist in program and curricular design, identify space or overlap in program offerings, and clarify instructional, programmatic, and institutional priorities.

Table 6 Structural model results to examine the association between Learning Objective, Infrastructure, Instructional strategies, Information, Communication and technology (ICT),Personalised Involvement, Learning Encouragement and Learning outcome empowering leadership in educational ecosystem.

Hypothesis	Structural path	Standardized Estimate (ß)	Standard Error (SE)	t-Value	p-value	Results
H1	Learning objective ☐ ICT	0.654	0.011	17.202	***	Accepted
H2	Infrastructure ☐ ICT	0.432	0.021	31.343	***	Accepted
H3	Instructional strategies ☐ ICT	0.421	0.033	28.611	***	Accepted
H4	Infrastructure ☐ learning outcome	0.025	0.015	21.219	0.875	Rejected
H5	ICT ☐ Personalised involvement	0.251	0.067	32.432	***	Accepted
H6	Personalised involvement ☐ Learning encouragement	0.654	0.043	12.609	***	Accepted
H7	Learning encouragement ☐ Learning outcome	0.858	0.026	61.241	***	Accepted
H8	Learning encouragement ☐ self assessment	0.328	0.023	54.516	***	Accepted
H9	Learning outcome ☐ Administration	0.712	0..068	23.831	***	Accepted

Discussion

The results also indicate that before implementing any kind of change management initiatives including leadership change to analyse the internal environment for stimulating such behaviour. The research efforts aim was developing a model to measure the individual elements of intelligence generation and intelligence dissemination, management support and work discretion and its relationship with educational leadership through technology outcomes. Such a tool can be of prime importance to identify the elements to

create appropriate environment for encouraging educational leadership activities. Further, the Hypothesis results reveal that the structure, systems and education's vision plays important role in implementing educational leadership through technology practice. The hypothesis was developed by using the different types of structure which help to implement various practices of educational leadership through technology. Also, the researcher have studied various systems which stimulate educational leadership through technology behaviour within India. The hypothesis developed by researchers also reveals the impact of infrastructure and systems on educational leadership through technology outcomes. The model developed in this study also has practical implications for principals. For instance, the tool can be used as an assessment tool for evaluating leadership training requirements in leadership and innovation. This kind of tool may further help to understand if they have the necessary internal environment to initiate educational leadership through technology. The results can help to identify the gaps. This tool can therefore be used as a diagnostic tool for educational leadership through technology. Many educations have initiated such programs in recent years to identify areas requiring attention to encourage leadership activities.

The results of empirical analysis indicated that a infrastructure should also designed to enhance educational leadership through technology appreciably affected perceptions of the environment by principals (Harrison, 2002). Therefore, the instrument developed in this study can be used as an investigative tool for identifying whether India has the necessary environment for initiating educational leadership through technology activities and the training needs to motivate the teachers for educational leadership through technology. This research has also the practical implications in terms of managing change within education sector in India. The tool can be used to identify the preparedness of leadership change. The present study also contributes towards the theory of leadership revitalization of India to gain competitive advantage (Volberda, 1998).

Conclusions

Based on the constructs responsible for developing leadership in higher education influence the conceptual model have been presented which bring out the dependencies and complementary nature of various education practices. It is found that educational leadership practices are strongly influenced by the internal environmental factors. Education level micro-practices have also been presented and their influence on Educational leadership through technology has been brought out. Unique challenges for educational leadership practice in work environment, evolved from the case studies have also been presented. These have been evolved on the basis of the case studies of educations, relevant for other educations with respect to educational leadership, implemented in dynamic education environment. The hypotheses testing is based on the strength of correlation among the variables. Regression analysis gives useful results regarding model formulation. The results of the study have been presented and discussed in this chapter. The key challenges and dominant/ useful education level practices have been identified. These results also provide useful deep-insight into the antecedents of educational leadership. The learning's from questionnaire survey studies and the case studies are compared to bring out the commonality and support from one study to the 'weak variables' of the other study. Antecedents selected have been synthesized and are grouped on the basis of the conceptual framework, which ultimately transformed into a conceptual educational leadership model.

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Annexure 1

Submission Date	Submission Id	Word Count	Character Count
31-Mar-2021	D100278635 (Ouriginal)	7359	50568

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Document Information

Analyzed document	633-Empirical Research Papers (ERP) -1288-1-2-20210327 (2).docx (D100278635)
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Reviewers Memorandum

Reviewer's Comment 1: The study is very restricted in its scope as it covers only two cities Delhi and Lucknow. The study can be made even more robust by analysing the data from other metropolitan cities and that can bring some interesting results and can help in a comparative analysis of the cities. The study lays a roadmap by providing further scope to other researchers to conduct a similar study by employing a wider scope.

Reviewer's Comment 2: The author has done some extensive research on the topic and has considered a good number of references for the study. The sample size is quite large for the study and serves the purpose.The use of right tools has further enhanced the quality of study.The study will be of immense use to the educational facilitators to frame their syllabi as per the market requirements .

Reviewer's Comment 3: The work reflects a narrow approach as the external drivers of the environment were not considered. However inclusion of external drivers would have amplified the importance of study to all educational institutions. Within the limited scope of study the author has met the objectives and portrayed the results in a structured manner.

Citation

Mohammaed Eshteiwi Ahmouda Shafter and Naser Abdul Hameed Farhart "Empowering Leadership in Education Ecosystem through Technology Enabled Practices" Volume-13, Issue-3, July-Sep 2021. (www.gjeis.com)

https://doi.org/10.18311/gjeis/2021
Volume-13, Issue-3, July-Sep 2021
Online iSSN : 0975-1432, **Print iSSN** : 0975-153X
Frequency : Quarterly, Published Since : 2009

Google Citations: Since 2009
H-Index = 96
i10-Index: 964

Source: https://scholar.google.co.in/citations?user=S47TtNkAAAAJ&hl=en

Conflict of Interest: Author of a Paper had no conflict neither financially nor academically.

Editorial Excerpt

The article has 14% of plagiarism which is the accepted percentage as per the editorial board's observations and blind reviewers' remarks the paper had some minor revisions which were communicated on a timely basis to the authors (Eshteiwi and Farhart) and accordingly all the corrections had been incorporated as and when directed and required to do so. The comments related to this manuscript are noticeably related to the theme "**Empowering Leadership in Education Ecosystem through Technology Enabled Practices**" both subject-wise and research-wise. This paper focuses on the factors that strengthen educational leadership in the higher education ecosystem through technology enabled practices. It also involves the identification of changes required in management practices and structural factors in higher education for better dissemination of knowledge in a student centric ecosystem. Data was collected from two cities with a large sample for study. Findings revealed that comprehensive use of technology helps in setting cutting edge standards of educational leadership and the ability to build capacity for adopting innovation and change. Overall, the paper promises to provide a strong base for the further studies in the area. After comprehensive reviews and editorial board's remarks the manuscript has been categorised and decided to publish under "**Empirical Research Paper**" category.

Acknowledgement

The acknowledgment section is an essential part of all academic research papers. It provides appropriate recognition to all contributors for their hard work and effort taken while writing a paper. The data presented and analyzed in this paper by (Shafter and Farhart) were collected first handily and wherever it has been taken the proper acknowledgment and endorsement depicts. The author is highly indebted to others who had facilitated in accomplishing the research. Last but not least endorse all reviewers and editors of GJEIS in publishing in a present issue.

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