Quality Management in Educational Institutions

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Abstract- **Total Quality Management addresses the situation of implementing continuous necessary changes ti ensure quality education. Quality management in an educational institution does not fixate over conventional strategies, it uses new age devices and technology to improve quality. Data science has been used by past researchers to improve quality education by determining the impact on parameters such as learning, satisfaction, and student involvement. Actions by management have been discussed in the manuscript. A section for recent use of data analytics for quality education has been mentioned in the manuscript. The detailed manuscript presents challenges in quality measurement and the necessary strategies have developed to ensure quality education.**

Keywords— **Data analytics, quality education, student, institutions, management**

I. INTRODUCTION

The education system has been a part of society ever since learning was realized. The education system was always established to provide learning to functioning members of society. Religious institutions focused some large, quantifiable amount to schooling basic norms that were practiced. Educational institutes were for most part of pre-modern history was functioning social structures that could be identified as a part of society. Education was initially the only tool which was effective for religious learning and aligning the civilization under a kingdom rule and to conserve knowledge of the past. Education was a means to pass knowledge to the next generation. The earlier education system included knowledge of combat training and military skills, arts, commerce and science. The division of application based learning has been a relic of the past and it still prevails today. A very noticeable example that can be put to illustrate history of learning in India is about Takshashila and Nalanda which holds remaining evidence of world-wide connectivity network of connected scholars and their work submitted and recorded in libraries[9]. Learning accelerated our cognitive ability and provides us motivation to explore and create more knowledge which is crucial to human survival not just for a particular section of society, but for the entire human race[10]. Education system incurred a great change during imperial rule when India was under British rule, also missionaries that habituated some parts of country brought with them their methods of schooling. The developments included convent education and centralized public schooling all over India. Government of India act provided educational grants to increase literacy. But it was only through amalgamation of existing culture and preexisting social norms that finally lead to formation and development of education model in implementation today. Early critique of English medium education existed and also been mentioned in "Topsey Turvey Education" (Tagore 1892) a speech delivered by Rabindranath Tagore.The following developments that took place concerned formative educational experience and creative development. The purpose of education is to develop organized meritocracy and bring out full potential of an individual or a group.

Education system in India was cited as a very big contributing factor to economic development of India, considering this fact alone education is of extremely vital important and is the source of strength to any nation. Earlier viewed as a political instrument education should be carefully implemented [5]. Education in any nation is bound to shape future of the nation and eventually in the global environment it might affect the world.

Education now is implemented in an organized way and is time bound, although adult literacy in region with lower literacy rate is also a growing concern and is being addressed it should be given due consideration that it is now being addressed using quality measures, the Adult Literacy challenge which is a world wide endeavor is supported by Xprize [16] (An organization that wishes to change the world by supporting and funding such challenges), using solutions that do not compromise with quality, globally every team has responded with a quality solution to implementing adult literacy, the backbone to such working solutions lies in technology, with growing adaptation to engineering developments all over the world quality solution can be implemented. [11]

Quality management takes place when the education department and its working sections are assessed and improved fundamentally and as per the needs of the coming change.[15] This raises the questions regarding use and assigning the necessary roles of the administration. To deliver quality work, it is required, selection or recruitment process to have worked out effectively. This analysis within the organization and its development for setting standards to ensure quality work promises quality management in effect. The development, although is an integration of the other major parts of the organization and must be addressed, it is thus mentioned later in the article and its quality is thus defined by assessing delivery of its intended function, if a department or an individual of a department fails to deliver its

intended function, even though if it's a student part of a team in play, the quality of education is in doubt.

Education in India comes from:

1. Public Sector
2. Private Sector

The funding of education comes with three levels, a combination of the three levels could also be seen from where the funding is derived. The three levels are:

1. Central Government
2. State Government
3. Local Government

The funding also indicates control and administration with ties to other existing businesses that flourish due to education. Education cannot be ignored as it is vital to the economy and also to the future of the nation. In India education to students from age 6 to 14 years is a fundamental right and is free [12]. Educations in India is institutionalized [8].

The quality of a state in today's world is determined by its literacy rate and its capacity to provide vocational training. The quality of education can affect the quality of a nation, education remains a vital investment on a nations perspective. The amount of investment that educational demands are huge, for example, in India recent approximate amount of endowment education attracted was about 15 billion US$, whereas national education budget for United states of America in 2007 was 1 trillion US $[13]. Education can deeply affect a country and make nations compete even while students are in class. Japan has a literacy rate of 99.99 percent. The figure illustrates how education is a result of quality management in the process. Federal system of education is suited both for constitutional monarch as well as democracy. Now global education with schools that open their branch world wide are in play, which offer student be a part of global society. The education in the modern world is being in terms with its verified and academically addressed quality implementation for quality education.

II. QUALITY EDUCATION AND CHALLENGES

The quality education must be visualized firstly in terms of access to adult, children and youth and to all sections of society as per the World Declaration of education for All (1990) but at the same it must address their needs and essential to their life. Education can transform the life an individual and can provide him training to pursue a life of purpose and have a place in society, but the difference quality education makes is it inculcates lifelong learning which can enable an individual to perform and learn till his lifetime and promote education. This feature of education must be taken into consideration and must be implemented, learning should happen in such a way that it creates a desire for learning. Fostering the desire that intrigues and individual and enable critical thinking could cause a lifelong learning process. Such human actions require active cognitive ability and good acquisition for available knowledge.

Adapting to global dynamics is another feature of quality education and should be inculcated while learning. The quality education is a powerful tool that can help bring the following factors into play:

1. Improving economic conditions
2. Reducing poverty
3. Better healthcare

With nations competing, and achieving such goal oriented education system, it could enable any nation to become powerful and provide better, for its own population and the coming generations ahead, gap created in the prosperity of nation in terms of education quality is extremely hard to overcome[14].

Education should be delivered to inculcate closer to action, attitude among student, practical approach to problem solving, a secular approach which require appropriate representation of minority groups with policies in effect to ensure the proper distribution of resources and access to facilities. The location of education faculty, its staff and interaction with students decide the quality of education. Education ensures lower death rates and increases chances of survival, an educated and literate individual is more likely to avail medical health care of an expert and follow instructions provided by an expert thus ensuring a solution to attain a cure in case of disease.

Some valid points that ensure quality education are addressed below. Quality education can be defined by measuring the quality of the such division individually and once assessed and appropriately functional, these elements could deliver in a combined way to provide quality education.

1.1 Infrastructure and Institution location:

The infrastructure is the most interactive and physical form of what could be identified as contributing and crucial to educational institutions. If an institution is recognized, then it is recognized through its location and address as per allocated by the local authority which identifies it as a functioning institution. Legal documentation regarding the functioning should be as per the norms mentioned in the constitution and must be followed while constructing keeping in mind the safety [17]. The institution should have the facility to manage disaster and handle emergency exits. The facility and land should be legally occupied and institution should be made keeping in mind the physical characteristics of students. Ergonomics should be applied while constructing classrooms and other usable environments. The institution should be able to provide clean water and should be located in a place where there is pollution under control. The education institution should have sanitation facility with proper staff to monitor its cleanliness. The infrastructure should have proper classrooms where appropriate sitting is available and must have windows for proper circulation of air within the institution. The classroom should have proper desks with enough space to rest arms and leg space for proper posture sitting. The classroom should have sufficient light so that students could read effortlessly. The location of the institution should be within the access of everyone willing to attend. The guest house availability should be in capacity of the infrastructure. The infrastructure should be interactive for students using it, should have proper bins to dispose off garbage. The institute should have the infrastructure designed in such a way that it

has colors that reinforce positive emotions, use of bright colors that illuminate the facility should be used. The sports facility should be used properly and under the supervision of a instructed or physical education expert. A proper water drinking facility near the sports complex should be made. The medical unit should have a hired professional with experience of dealing with children. The overall institute should not be ethnically motivated and must treat both genders similarly. The infrastructure generates conformance to working in an organization and promotes professionalism. The infrastructure unit should be very carefully designed and must be always in the process of adapting to change. The space utilized in building infrastructure must habituate all kinds of academic activities. It should serve its purpose of providing a chance of academic exposure to students and faculty of all kinds of education background. There should be a place for students to talk and discuss day to day activities. The infrastructure should not restrain students, it must be designed to empower students. The students must use the infrastructure to do productive work. The institute must be designed in accordance of policies of the organization and must conform to the planning done initially. The infrastructure should have vegetation and must encourage students to use a green environment. The daily trends of using eco- friendly products must be encouraged within the institution also. The global demand can only be fulfilled by designing the infrastructure so as to make students adapt to professional environment.

1.2 Administration involved:

The administration takes the most important part of the organization. The quality of education is responsibility of administration and faculty [18]. The administration should design the policy that needs to implemented as per the current certification and standards of schooling within the state or the country. The management must work with the staff using updated technology. The communication should be done using the required tool and equipment, such as telecom within the institution with working extensions, with current use of smart classrooms the communication should improve and ways of talking to each other should become effective. The administration must schedule the tasks effectively. Proper management is also a learning mechanism since students observe the management and began to organize themselves, so the management should be ideal in practicing the policies designed for students, it should not be gender challenged and must act timely in case of unforeseen circumstance. The administrations should enforce workshops, and training session in dealing with routine problems effectively. The useless and unprofitable activities should be avoided and wastage should be brought down to a bare minimum or zero. The administration should use better ways to teach discipline. The staff should communicate with students to create a healthy and positive atmosphere. Students must never be afraid to visit or interact with administration with reserved feelings of being punished by being misunderstood. The student should be transparent in communicating their problems with the management. The effective management will take place with the support of students by making them

feel welcome and creating a healthy atmosphere within the facility. The administration must be aware and vigilant about people visiting the facility. Communication with parents and their information must remain always updated with the management. During any social event the management is responsible for anything going wrong. The management must cooperate with the police in case of a conflict between student groups and should not wait for informal compromise. The management must not be biased towards any student or gender. The management must practice daily routines to enhance trust building between employees and must not discuss conflicts in front of students. Administration of higher institutions must treat students as an adult and must value organizational ethics.

1.3 Student involvement:

The most essential factor that determines quality of an educational institute is the students who are interested in pursuing education from the institute, the basic or conceptual knowledge should be within the capabilities of aspiring student. A student aspiring to do graduation must consider making very good efforts during school education [19]. If the prerequisite to take the course is absent in the aspiring students, the student should be redirected to acquire necessary skills to pursue what is required to study. A competitive environment ensures students are equipped with prerequisite to pursue education. Quality can be ensured if the students are sincere towards education and understand what is needed and how they will manage to pursue the course. The basic skill set is always a necessary to ensure that capability to perform academically remains within student before pursuing the course. Even in federal education students pursue classes in a numerical order.

1.4 Teacher Involvement:

Transfer of information takes place through various activities and the essential most activity that provides knowledge by means of information transfer is teaching. In a study conducted by Gokbel and Boston it was found that the teachers who questioned significantly impacted students' response. Quality of teachers could be ensured through continuous evaluation, assessment by students and quality of teachers is also reflected in the academic gains of the student [20]. Thus, teachers must be evaluated by the functioning of an educational institute, if the institute delivers quality student then quality teachers are at work. The teachers should ensure that all the processes within the institute are being operated properly. The optimal utilization of resource and time should in supervision of teachers. The communication between student and teacher should be effective and productive. Teachers should have strong collaboration among themselves and must value educational ethics.

III. QUALITY MANAGEMENT STRATEGIES

The above mentioned quality education requirement can be fulfilled using strategic decision making by applying basic principles[1]. The following applied measure that can ensure above mentioned requirements

3.1 Continuous Improvement

The education is timed event as it is scheduled but learning is an ongoing process[2]. The learning can be made an everlasting process with students taught in such a way that they acquire a learning attitude with a desire to learn new things and daily. The education requires changes in curriculum and teaching methods with time so that with time education system improves continuously and helps make generation better. The use of benchmark to ensure goal oriented improvement is necessary.

3.2 Dynamic Communication

The most essential form of learning is through communication and must be designed carefully so that all the matters are addressed through proper channel and are righteously addressed. The establishment of such communication ensures organizational behavior and effective modes of collaborative intelligence. The dynamics of communication dictate the kind of relationship that will take place in an educational environment and motivates trust building. Effective modes of communication makes student more aware to interact and form bonds with classmate and teacher early. Organizing social events, small tea parties help people open up about themselves and communicate efficiently. Proper communication avoids conflict and establishes quality time within and institution. Time utilization is one indication of effective dynamic communication. Relationship building leads to team formation and students are usually required themselves to learn how to function in a group and they rely on each other for tasks. But the working mechanism to establish social equilibrium is appropriate communication and proper communication channel. The efficient use of communication helps determine the appropriate role for the administration while operating during a particular event. The establishment of dynamic communication ensures a systematic approach within an organization. The communication is the first step to cognitive learning, it's a process of getting involved and must be carefully addressed.

3.3 Change Management

Change management is a quality concern. Applying quality management for educational institutions ensures redefining roles and responsibilities. The change management is a quality perspective as it focuses on changes required for effective leadership. The migration could cause a certain school to function differently, majority of a certain ethnic group will require changes made in the way system is being organized[15]. The current policy based research in the field of education is required to adapt to change and its implementation should be done keeping in mind the demand of the state. The quality management cannot be implemented without being synchronized and synergize. It must be implemented in such a way that students feel motivated to work towards quality goals. The internet of things provides interactive devices that are connected to the internet and help generate literacy and education through media devices [21].

IV. IMPLEMENTING QUALITY EDUCATION BY THE USE OF DATA ANALYTICS

In recent times use of data analytics has been implemented to improve quality of education. The data analytics could be used for prediction in many segments of society such as education. Useful knowledge could be analyzed to identify critical information relevant for policy up-gradation and quality improvement [22]. Big data have a role to play in quality improvement in education sector [23]. Analytics is widely implemented for analyzing educational activities [24].

A recent study conducted by a research group tried to establish the impact of globalization on education and income equality in selected Asian countries which included India, China and Malaysia[24]. They came to a conclusion that technological globalization affect education that lowers the income inequality whereas financial globalization increases the income inequality.

The study required the use of pooled OLS and instrumental variable least square technique. They also found that education impacts income inequality inversely[24]. Use of analytics to derive result is essential to evaluate quality education. This leads effective implementation of quality management strategies suggested in the manuscript. Continuous improvement can only function with input available after conducting such studies. Continuous improvement is the most effective management strategy and is widely implemented. The most productive way to implement is to realize input from studies conducted through data analytics in the field of education.

Use of measurement assessment system at student growth level is essential[25]. Such measures could be established by the use of correlation and other data analytics technique. The usage of such techniques. In a study conducted by the research group only two assessment models were selected with the use of school level data only. In the study conducted by P. Kelly, H. Coates and R Naylor a strong emphasis is given to satisfy the need of quality education through generation and identification of evidence. The is possible through education analytics[26]. There have been use of data visualization for digital education governance[27]. The need for analytics for establishing quality education through such measures is now taking shape. Digital governance requires analytics for decision making and analyzing necessary educational requirement. Implementation of digital governance will lead to quality education. Analytics has a huge role to fulfill this requirement. The recent data in the field of education is also increasing[28] and the use of analytics to make operational decisions by educational institutions are now becoming desirable. As the demand for online courses in increasing the need for facilities that could analyze data being generated has also increased. The use of analytics the higher education is also rising[29]. With the role of ICT (Information and communication technologies) in education and smart infrastructure[30], the role of analytics has increased. Quality education is delivered through smart classrooms and smart devices. Data analytics has been used to study before such implementation to carry out decisions that will eventually model such infrastructure.

V. CONCLUSION

Education has evolved from an instrument of political control to a globalization mechanism to connect, collaborate and organize, but without quality in control it remains ineffective. Quality control in the education sector is now instrumented by the use of data analytical techniques and methods. The use of social statistics software help perform such operations. The manuscript included the generation of challenges in the field of education and how quality of education could be evaluated. The implementation of quality education has been suggested after detailed research of earlier studies conducted and results published. The strategies for ensuring quality education has been designed and mentioned in the manuscript. The use of data analytics for quality education has been investigated and mentioned in the manuscript.

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