



## Total Quality Management and Educational Goals Achievement of Students in Polytechnics in Rivers State

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**Abstract:** The study was conducted to ascertain the relationship between total quality Management and educational goals achievement in polytechnics in Rivers State. It was guided by three specific objectives, three research questions and three hypotheses. The study adopted a correlational research design with a population of 261 top management staff from two polytechnics in the state. The sample constituted 189 top management staff selected through purposive sampling technique. Two instruments were used for data collection which included: Total Quality Management Scale and Educational Goals Achievement in Polytechnic Scale. The instruments were face and content validated by three experts and with an overall reliability coefficient of 0.90 for the Total Quality Management Implementation Scale and 0.63 for the Educational Goals Achievement in Polytechnic Scale. The research questions were answered and the hypothesis tested using Pearson Product Moment Correlation Statistics. The hypotheses were subjected to t-transformation to establish the significance of the r-value at 0.05 level of significance. The result showed that a positive, high and significant relationship existed between commitment to total quality management, teamwork, staff involvement in decision making and educational goals achievement in the study area. Based on the findings, it was recommended that management of polytechnics should be committed to implementing total quality management by sharing their vision and mission for total quality management to staff.

**Key words:** Commitment, management, Staff involvement in decision making Educational Goal Achievement.

### Introduction

Education is the bedrock of any nation. In Nigeria, education is considered a tool for achieving economic development. One of the aims of education in Nigeria is to develop the mental, physical, cultural and social capacities of individuals and to equip the citizenry with the appropriate skills needed to contribute meaningfully to the development of the Nigerian society (Federal Republic of Nigeria, FRN, 2013). Development in the world today is influenced by technological

advancement in all economic sectors. For example, in the health sector, new technologies are utilized to enhance success in medical operations. In the agricultural sector, information and communication technologies are used to gather information to help farmers make appropriate decision in their planting activities. Data analytics, artificial intelligence among others are new technologies aid service delivery in many industrial operations.

Technology education is therefore key to national development. Polytechnics were established in Nigeria to enhance access to technology education (Federal Republic of Nigeria, FRN, 2013). Polytechnic education plays a vital role in human resource development of a country by creating skilled manpower, enhancing industrial productivity and improving the quality of life. Polytechnic education promotes technical and vocational education and training, technology transfer as well as skills development to enhance the socio-economic advancement of the country. Polytechnic education in Nigeria prepares individual as technicians and technologists in courses leading to awards of National Diploma (ND), Higher National Diploma (HND) and Advanced Professional Diploma relevant to the needs, aspirations and the development of the nation's diverse economy and industries (Jahun, 2017).

Achievement of these goals of polytechnics requires an effective and efficient management system. Such a management system should be able to optimally utilize available resources to achieve the goals of polytechnic education in Nigeria. Integrating the elements of total quality management in the management of polytechnics could enhance achievement of educational goals in these institutions.

Total Quality Management (TQM) relates to management of quality in an organization and it involves complete and comprehensive quality management in all regards, both in small areas, and all organizational operations, from top to bottom (Weihrich, 2013). In total quality management, an organization employs managerial functions to operations and focuses on quality in every activity carried out to ensure total customer satisfaction is met. Total quality management also encompasses a long-term and continuous effort put into work operation by all members of an organization to maintain continual improvement in quality service delivery towards meeting and exceeding customer desires (Shivangi, 2020). Furthermore, total quality management refers to the application of quality principles to overall process and all the management functions in order to ensure total customer satisfaction in educational services (Teryima, Fabrm, John & Philip, 2016).

By the above description, total quality management in polytechnic would mean application of management functions to ensure quality in service delivery by all members of staff towards meeting the goals of polytechnic education in Nigeria. Polytechnic education in Nigeria aims to equip students with core practical skills as well as on the job experience for easy transition to the world of work among students after graduation (Eze & Eze, 2015). Consequently, training and education in polytechnic in Nigeria should have direct relevance to industrial practices since students are prepared for the industry. Ensuring that training and education in the polytechnic have relevance with industry practice as well as equipping students with skills for easy transition to the world of work requires an effective management system in place. By its description, total quality management promises to fulfill this purpose. With total quality management in place, attention is given to quality in managerial functions and operations towards achieving educational goals in the polytechnics.

Key elements of total quality management include: staff training and retraining; leadership or management support; teamwork among others (Nechi, 2017). In the school system elements of

total quality management include: management commitment; involving teachers in decision making, focus on students (customer focus/satisfaction); communication; quality planning; staff training; collaboration/teamwork; continuous improvement in instructional delivery (Kakingo & Lekule, 2021).

Leadership and management commitment as well as effective quality assurance measures are vital elements of total quality management. Leadership involves providing a vision for an organization. Such vision guides all the activities of members of such organization. Without a visionary leadership, an organization may find it difficult to make any successful advancement. To ensure total quality management in polytechnics, the top management personnel such as the rectors, heads of different schools, heads of departments, directors among others must be able to provide visionary leadership geared towards achieving quality in their service delivery. Furthermore, to ensure effective leadership, management must be committed to ensuring that quality is maintained through quality control procedures across all units of the system. In the polytechnics, management of the school must ensure that quality assurance measures are in place (Kakingo & Lekule, 2021).

Teamwork involves collaborating together as a team to achieve goals. There is the common saying that two heads are better than one. When individuals work together in teams, goals are achieved faster. Efficiency can also be achieved (Nayantara, 2018). Within an organization, it is important to stress the need to work collaboratively. TQM is an all-inclusive initiative, which requires everyone to work both individually and as a member of a team. This can be within the one department of a company or interdepartmental. Teams in a kaizen environment could develop the culture of total quality through building collective responsibility and developing a sense of ownership, providing additional communication channels between individuals, management, customers and suppliers, developing problem solving skills and facilitate awareness of quality improvement potential, leading to attitude change (Barrie, 2007). An initiative that works well within a team is quality circles. Within quality circles problems will only be solved if the team has developed effective relationships. They would tend to operate by consensus as the members work together to improve quality as they adopt quality control techniques.

In the present globalized organizational environment, it is highly essential to practice employee involvement without lapse. There is growing evidence that both employee involvement and TQM can lead to substantial improvements over traditional bureaucratic management in many respects. Although employee involvement and TQM share some common themes and place a common emphasis on giving employees more responsibility, power, information, and knowledge, they are different in so many ways that they are not interchangeable (Joseph & CM, 2018).

The concept of employee involvement is relatively new and somewhat contradictory to the traditional style of management, in which management makes all the decisions and workers are there to follow its policies and directions to accomplish each job task. Workers today are more and more being asked by management to join employee involvement programs in order to improve the quality of their work lives. It is in the best interest of both workers and supervisors to increase happiness and satisfaction on the job, because happy and satisfied employees are productive employees who insure the employer's profit and continued existence of the company and the worker's jobs (Joseph & CM, 2018).

### ***Statement of the Problem***

Polytechnics play significant role in technological advancement in Nigeria. Polytechnics in Nigeria were established to produce middle level manpower to meet the technological need of the country (Petinrin, Agbolade & Petinrin, 2021). As stipulated in the Nigerian National Policy on Education by the Federal Republic of Nigeria (FRN, 2013), polytechnics were established with the aim of equipping individuals with technical knowledge and skills necessary for agricultural, industrial, commercial and economic development in Nigeria. Also the polytechnics aimed at training and impacting the necessary skills for the production of technicians, technologists and other skilled personnel who shall be enterprising and self-reliant.

Unfortunately, it is observed that quite a number of students graduate from the polytechnics are yet to be gainfully employed in either a paid job or self-created job (Longe, 2017). This situation has been attributed to different causes such as very limited relevance of training in schools to industry practice, inadequate practical training, poor funding for acquisition of training facilities and infrastructure in the school, among others (Onoyase, 2019; Ugbomhe & Ogie, 2018). The presence of these problems poses threat to achievement of educational goals in polytechnics.

Achievement of educational goals required adequate provision of human, material and financial resources. It also requires effective and efficient utilization of the available resources (Usman, 2016). Effective utilization of resources for optimal achievement of organizational goals is a key objective of total quality management. How has management of polytechnics been harnessing the available resources to achieve educational goals is a questions that need answer. The present study sought to provide answer to this concern.

### ***Purpose of the Study***

The purpose of this study is to ascertain the relationship between management commitment to total quality management and educational goal achievement of students in polytechnics in Rivers State. Specifically, the study intends to:

1. ascertain the relationship between management commitment to total quality management and educational goals achievement of students in polytechnics in Rivers State.
2. find out the relationship between staff involvement in decision making and educational goal achievement of students in polytechnics in Rivers State.
3. find out the relationship between teamwork and educational goal achievement of students in polytechnics in Rivers State.

### ***Research Questions***

The study provided answers to the following research questions. Specifically, the study intends to:

1. What is the relationship between management commitment to total quality management and educational goals achievement of students in polytechnics in Rivers State?
2. What is the relationship between staff involvement in decision making and educational goal achievement of students in polytechnics in Rivers State?
3. What is the relationship between teamwork and educational goal achievement of students in polytechnics in Rivers State?

### ***Hypotheses***

The following hypotheses were tested at 0.05 level of significance.

1. There is no significant relationship between management commitment and educational goal achievement of students in polytechnics in Rivers State.
2. There is no significant relationship between staff involvement in decision making and educational goal achievement of students in polytechnics in Rivers State.
3. There is no significant relationship between teamwork and educational goal achievement of students in polytechnics in Rivers State.

### **Methodology**

The study adopted a descriptive research design. In correlation research design as described by Nwankwo (2016). The researcher collects data on two variable from one subject and correlates the two variables to ascertain how much and the nature of the relationship between the two variables. In the present study, it is the intention of the researcher to correlate data gathered for total quality management and educational goals achievement. Based on this, correlational design is considered appropriate. The population of the study was 189 top management staff from Ken Saro Wiwa Polytechnic Bori and Captain Elechi Amadi Polytechnic Port Harcourt (Source: Registry of the three Polytechnics). The number consists of 99 top management staff from Ken Saro Wiwa Polytechnic Bori, 90 top management staff from Captain Elechi Amadi Polytechnic Port Harcourt. The top management staff included: top management administrative staff such as directors as well as heads of departments and schools. The sample size for the study was 189 top management staff of two polytechnics including 99 from Ken Saro Wiwa Polytechnic Bori and 90 from Captain Elechi Amadi Polytechnic Port Harcourt. Based on the manageable size of the population, the researcher adopted census sampling technique. Two different instruments were used for data collection in this study. The first is Total Management Commitment to Total Quality Management Scale (TQMIS). The second instrument is Educational Goals Achievement in Polytechnic Scale (EGAPS). The TQMIS comprises seven sections with each rated on four point rating scale ranging from Very High Extent (VHE) with a score of 4, High Extent (HE) with a score of 3, Low Extent (LE) with a score of 2 and Very Low Extent (VLE) with a score of 1. The instruments was validated by three experts with one from the field of measurement and evaluation, the research supervisor and one from the field of educational management. A draft copy of the instruments was distributed to these experts and based on their responses, adjustment were made before a final copy was produced for administration. The instrument had an overall reliability coefficient of 0.88. A total of 189 copies were administered and a total of 171 copies were completed and used for data analysis.

### **3.9 Method of Data Analysis**

The research questions were answered using descriptive statistics of mean. Cut off mean of 2.50 was used as decision rule for the mean. Consequently, a mean response up to 2.50 and above was considered High Extent (HE) and accepted while any mean response less than 2.50 was considered Low Extent (LE) and rejected. For the hypotheses, Pearson Product Moment Correlation (PPMC) was used. The r-values were transformed to t-values to make decision for accepting or rejecting the hypotheses. This is achieved by converting calculated value of r (r-cal) to t-test statistics. The formula for converting r to t according to Udoh (2003) is:  $t = r \sqrt{\frac{n-2}{1-r^2}}$ , where r is the calculated coefficient of correlation, n is the sample size. This becomes the calculated value of t.

This value was compared with the critical value of  $t$  at 0.05 level of significance and 187 (189-2) degree of freedom. If calculated value of  $t$  ( $t_{\text{cal}}$ ) was greater than the critical value of  $t$  ( $t_{\text{crit}}$ ), the hypothesis was rejected otherwise, retained.

### **Results**

**Research Question 1:** What is the relationship between management commitment and educational goals achievement of students in polytechnics in Rivers State?

**Table 1: Relationship between Management Commitment and Educational Goals Achievement**

Variables	N	$\sum X$	$\sum Y$	$\sum X^2$	$\sum Y^2$	$\sum XY$	r
Management Commitment (X)	171	430	438	1134	1172	1140	0.750
Educational Goal Achievement (Y)	171						

Field Survey, 2022

Result from Table 1 shows the result for the relationship between implementation of management commitment and educational goals achievement. The result shows a correlation coefficient ( $r = 0.750$ ). This value shows that there is positive high relationship between management commitment and educational goal achievement in polytechnics in Rivers State. This means that the higher the implementation of management commitment as an element of total quality management, the higher the achievement of educational goals in the study area.

**Research Question 2:** What is the relationship between staff involvement in decision making as an element of total quality management and educational goal achievement of students in polytechnics in Rivers State?

**Table 2: Relationship between Staff Involvement and Educational Goals Achievement**

Variables	N	$\sum X$	$\sum Y$	$\sum X^2$	$\sum Y^2$	$\sum XY$	r
Teacher Involvement (X)	171	454	438	1262	1172	1197	0.641
Educational Goal Achievement (Y)	171						

Field Survey, 2022

Result from Table 2 shows the result for the test of hypothesis 1. The result shows a correlation coefficient ( $r = 0.641$ ). This value shows that there is positive and slightly high relationship between teacher involvement and educational goal achievement in polytechnics in Rivers State. This means that the higher the implementation of teacher involvement as an element of total quality management, the higher the achievement of educational goals in the study area.

**Research Question 3:** What is the relationship between teamwork and educational goal achievement of students in polytechnics in Rivers State?



**Table 4.4: Relationship between Teamwork and Educational Goals Achievement**

Variables	N	$\sum X$	$\sum Y$	$\sum X^2$	$\sum Y^2$	$\sum XY$	r
Teamwork (X)	171						
		415	438	1066	1172	1099	0.648
Educational Goal Achievement (Y)	171						

Field Survey, 2022

Result from Table 3 shows the result for the test of hypothesis 1. The result shows a correlation coefficient ( $r = 0.648$ ). This value shows that there is positive and slightly high relationship between teamwork and educational goal achievement in polytechnics in Rivers State. This means that the higher the implementation of teamwork as an element of total quality management, the higher the achievement of educational goals in the study area.

**Hypothesis 1:** There is no significant relationship between management commitment and educational goal achievement of students in polytechnics in Rivers State.

**Table 4: Test of Significant Relationship between Management Commitment and Educational Goal Achievement Skills and Employability (df =169)**

Variables	N	$\sum X$	$\sum Y$	$\sum X^2$	$\sum Y^2$	$\sum XY$	r	t-cal	t-crit	p-value	Decision
Management Commitment (X)	171										
		430	438	1134	1172	1140	0.750	14.757	1.974	0.000	Rejected
Educational Goal Achievement (Y)	171										

Field Survey, 2022

Table 4 shows the result for the test of hypothesis 1. The result shows a correlation coefficient ( $r = 0.750$ ). This value shows that there is positive high relationship between management commitment and educational goal achievement in polytechnics in Rivers State. This means that the higher the implementation of management commitment as an element of total quality management, the higher the achievement of educational goals in the study area. Transforming the correlation coefficient of 0.750 to t, yielded a calculated value of t (t-cal) of 14.757 against a critical t value (t-crit) of 1.974 at a degree of freedom (df) of 169. Since, t-cal is greater than t-crit, and also, p-value is less than 0.05 the hypothesis was rejected. This implies that there was a significant relationship between the extent of implementation of management commitment and educational goal achievement in polytechnics in Rivers State.

**Hypothesis 2:** There is no significant relationship between staff involvement in decision making and educational goal achievement of students in polytechnics in Rivers State.

**Table 5: Test of Significant Relationship between Management Teacher Involvement and Educational Goal Achievement Skills and Employability**

Variables	N	$\sum X$	$\sum Y$	$\sum X^2$	$\sum Y^2$	$\sum XY$	r	t-cal	t-crit	P-value	Decision
Teacher Involvement (X)	171	454	438	1262	1172	1197	0.641	10.844	1.974	0.000	Rejected
Educational Goal Achievement (Y)	171										

Field Survey, 2022

Table 5 shows the result for the test of hypothesis 2. The result shows a correlation coefficient ( $r = 0.641$ ). This value shows that there is positive and slightly high relationship between teacher involvement and educational goal achievement in polytechnics in Rivers State. This means that the higher the implementation of teacher involvement as an element of total quality management, the higher the achievement of educational goals in the study area. Transforming the correlation coefficient of 0.641 to t, yielded a calculated value of t (t-cal) of 10.844 against a critical t value (t-crit) of 1.974 at a degree of freedom (df) of 169. Since, t-cal is greater than t-crit, and also, p-value is less than 0.05 the hypothesis was rejected. This implies that there was a significant relationship between the extent of implementation of teacher involvement and educational goal achievement in polytechnics in Rivers State.

**Hypothesis 3:** There is no significant relationship between teamwork and educational goal achievement of students in polytechnics in Rivers State.

**Table 6: Test of Significant Relationship between Management Teamwork and Educational Goal Achievement Skills and Employability**

Variables	N	$\sum X$	$\sum Y$	$\sum X^2$	$\sum Y^2$	$\sum XY$	r	t-cal	t-crit	P-value	Decision
Teamwork (X)	171										
Educational Goal Achievement (Y)	171	415	438	1066	1172	1099	0.648	11.072	1.974	0.000	Rejected

Field Survey, 2022

Table 6 shows the result for the test of hypothesis 3. The result shows a correlation coefficient ( $r = 0.648$ ). This value shows that there is positive and slightly high relationship between teamwork and educational goal achievement in polytechnics in Rivers State. This means that the higher the implementation of teamwork as an element of total quality management, the higher the achievement of educational goals in the study area. Transforming the correlation coefficient of 0.648 to t, yielded a calculated value of t (t-cal) of 11.072 against a critical t value (t-crit) of 1.974 at a degree of freedom (df) of 169. Since, t-cal is greater than t-crit, and also, p-value is less than 0.05 the hypothesis was rejected. This implies that there was a significant relationship between the extent of implementation of teamwork and educational goal achievement in polytechnics in Rivers State.



### ***Discussion of Findings***

The result for research question one showed that there was positive and high relationship between management commitment as an element of total quality management and educational goal achievement in polytechnics in Rivers State. This means that the higher the implementation of management commitment the higher the achievement of educational goals in the study area. The result agrees with that of Aletaiby, Rathnasinghe and Kulatunga (2021) who found that top management was continually commitment to quality in majority of oil companies. The result however negates that of Ansar (2017) who found from Indonesia that principles of total quality management were lowly implemented. The result also negates the result by Ibidunni, Salau, Falola, Ayeni and Obunabor (2017) who found that no relationship between top management commitment and organizational reputation.

The result for research question two showed that there was a significant relationship between the extent of implementation of management commitment as an element of total quality management and educational goal achievement in polytechnics in Rivers State. This implies that the high relationship recorded between the two variables as observed in research question one was statistically significant at 0.05 level of significance. The result agrees with that of Gachanja and Kinyua (2021) who also found a significant and positive influence of top management commitment on school performance in Kenya.

The result for research question three and test of hypothesis three showed that there was positive and slightly high and statistical significant relationship between staff involvement and educational goal achievement in polytechnics in Rivers State. This means that the higher the implementation of staff involvement as an element of total quality management, the higher the achievement of educational goals in the study area. The relationship was significant at 0.05 alpha level of significance. The result agrees with that of Joseph and CM (2018) who found some level of staff involvement at varying level among manufacturing industries in public and private sectors in India. The result agrees with that of Kakingo and Lekule (2021) who found that TQM improves classroom instruction, contributes to employees' continuous improvement and promotes teamwork among organization departments. Likewise, the findings indicate that TQM enhances good leadership and encourages goal setting in the organization which leads to students' academic achievement.

The result for research question four and test of hypothesis four showed that there was positive and slightly high and statistical significant relationship between teamwork and educational goal achievement in polytechnics in Rivers State. This means that the higher the implementation of staff involvement as an element of total quality management, the higher the achievement of educational goals in the study area. The relationship was significant at 0.05 alpha level of significance. The result agrees with that of Ejionueme and Oyoyo (2015) who found that teamwork is applied to a high extent in secondary school administration.

### ***Conclusions***

The study investigated the extent of implementation of total quality management and its relationship with educational goal achievement in the study area. Based on the findings, it can be concluded that management commitment to total quality management, teamwork and staff involvement in decision making have positive, high and significant relationship with educational goals achievement in polytechnics in Rivers state implement elements of total quality management

such as management commitment. Also, it can be concluded that educational goals are being achieved to some extent in Polytechnics in Rivers State. Furthermore it can also be concluded that total quality management has positive and significant relationship with educational goals achievement.

### ***Recommendations***

Based on the findings, the following recommendations were made:

1. Management of polytechnics should be committed to implementing total quality management by sharing their vision and mission for total quality management to staff.
2. Staff should be encouraged to take part in decision making process to enhance educational goals achievement.
3. Teamwork should be encouraged in polytechnics in Rivers State.

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