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# The Role of Diplomacy in an Enduring Vocational Polytechnic Education to Nation Building: A Historical Imperative

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**Abstract:** *This paper examines the role of Polytechnic education to nation building in line with the various goals of education in Nigeria. The principal aim of establishing polytechnic education in Nigeria is to produce the middle level manpower obviously needed for industrial and technological development necessary for nation building. Indeed, no meaningful national development anywhere in the world can take place without sound and qualitative polytechnic education. It was through this means that the United Kingdom (UK) and other nations in Europe were launched into the technological world. Facts are overwhelming. First, Polytechnics offer highly competitive technical and scientific oriented education to scholars and researchers. Second, polytechnics produce necessary infrastructural tools for industrial growth. It therefore becomes imperative to establish well-funded Polytechnic institutions that can yield technical competence for industrial growth in Nigeria. However, this cannot be completely achieved without a rounded education which the Humanities provide.*

**Keywords:** *Education, Development, Technology, Manpower, Scientific*

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## Introduction

In essence, education has of recent become the centre stage for knowledge acquisition which is crucial for national development and individual's technical growth and competence. Therefore, knowledge can be acquired in two relevant ways. First, internally through behavioural changes, values re-orientation or norm's change. Second, externally through such sources as in publications and through institutionalized organs as in Polytechnics which can be properly positioned for vocational and technically oriented programmes to produce middle level manpower in order to meet the challenges of industrial growth and development.

It is no less wonder that Olai and Amadi Roberts (2011:241) described education as the cardinal instrument for the development of the complete man. They went further to state that it has to equip the learner with very good grounding in core disciplinary and general dimensions of human development. There is no society that has ever developed and can develop if the citizens remain uneducated. If the current state of Nigeria is anything to go by, then of course, the level of development of Nigerians should reflect the level of the educational attainment or advancement.

Therefore, Okpolosa (2011:207) meant well when he opined that for education to serve its purpose of promoting national development, it should be tailored in such a way that it takes into cognizance the aspirations and culture of the society it is intended to serve. Yet, according to

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probably found the strategy more informative than lecture method comparatively with their female folks. Consequently, they were more organized in monitoring their speed for correct answers quickly than the female students. They, perhaps, adequately utilized the steps involved in the PQ4R metacognitive strategy to their advantage by understanding of the electrochemistry concepts more clearly than the females. This led to their obtaining higher mean (57.89) than females (mean = 40.00) in their post-test. Interestingly, it can be concluded that male students are, probably, more hard working and creative than the females in metacognitive activities. So, they are more likely to set-up business ventures quite easily, through their creative and imaginative abilities than do the females to create employment and reduce poverty in the society.

The result is in support of the findings of Kumari&Jinto (2014), where, male students achieved higher mean of 52.27 than females (mean = 40.81). However, the study's findings with regards to gender, is at variance with the results of Sarimanah (2016) and Zouhor et al. (2016), observing no significant difference in academic performance between male and female students. These conflicting results have further opened windows of research studies on the use of this strategy, to be conducted at different locations of our society in order to strengthen the educational system of Nigeria.

## **Conclusion and recommendations**

This study revealed that metacognitive strategies are keys to understanding electrochemistry concepts in school. The PQ4R metacognitive strategy, embedded steps that made it quite, quick and easy for students to connect ideas that were already familiar with the new concepts being learned. It has helped them to have identified, asked, monitored all plausible and fruitful ideas, in order to clear-off misconceptions (if any), that could have prevented their understanding of electrochemistry concepts taught in classrooms. Through their reflections on followed steps, they were able to link information gathered from both the teachers' lessons and textbooks referrals with the ideas already known. By following the steps conscientiously, they were able to conduct self-appraisal/evaluation of knowledge gained, summarized and explained salient points meaningfully using their own words. Thus, it encouraged their retentive ability for higher academic achievement. This strategy also, encouraged co-operative learning and consistent engagement of students in mental activities. Societal well-being is also encouraged by this strategy, reflecting on the shared vision of learning to live together through education. Accordingly, such strategy is at the heart of quality learning, in line with UNESCO international bureau of education, which Nigeria is a signatory (Obioma, 2014).

The following recommendations are proffered:

1. Teachers should adopt the application of PQ4R metacognitive strategy in their daily classrooms instructions to encourage learning and critical thinking amongst students.
2. Curriculum planners should incorporate PQ4R metacognitive strategy into the teacher education program in schools.
3. Government, education-stakeholders, and many other professional bodies; STAN, ICCON, CSN, ICASE and many others, should organize workshops and seminars on PQ4R metacognitive strategy for in-service teachers.

**Hypothesis two (2):**

- (iv). There is no significant difference between the mean academic performance scores of male and female students taught electrochemistry using PQ4R metacognitive strategy.

Table 5: Table of *t*-test analysis of the mean performance scores of male and female students taught electrochemistry using PQ4R metacognitive strategy.

Group	N	Post-test Mean.	Standard dev.(SD)	Degree of freedom (df)	Standard Error of Deviation(SED)	t-cal	t-crit	p-value
Male	70	57.89	3.02	118	0.08	2.13	1.97	0.001
Female	50	40.00	6.00					

Significant at 0.05; df = 118; t-critical value = 1.97

SOURCE: Analyzed *t*-test value between Male and Female students in electrochemistry.

The result of the above analysis showed that the calculated *t*-value = 2.13; is greater than the tabulated *t*-value = 1.97 at 0.05 level of significance, with 118 degrees of freedom. Thus, the null hypothesis is rejected. This implied there is significant difference between the mean academic performance scores of male and female students in electrochemistry, when taught using PQ4R metacognitive strategy.

**Discussion of findings**

The findings of this study as presented from the analyses of data showed that students taught electrochemistry with the use of PQ4R metacognitive strategy performed academically better than those taught without the strategy. The result agrees with the findings of Zouhor, Bogdanovic&Segedinac (2016), Sarimanah (2016), Kumari&Jinto (2014), Thomas and Robinson (1972, cited in Dixon-Krauss, 1996). Accordingly, Zouhor et al. (2016) observed that metacognitive strategy would undoubtedly, improved students’ achievement in physics if applied effectively. Similarly, Sarimanah (2016) observed that PQ4R metacognitive strategy enhanced the reading ability of students, as well as their academic achievement, in language lexis and structures. Kumari&Jinto (2014), who researched on the effectiveness of K.W.L metacognitive strategy on achievement in social studies, concluded that, metacognitive strategies are enhancing if effectively applied by teachers in school. It would not only enhance achievement, but also, improve retention ability with respect to students’ cognitive style.

These findings have revealed that PQ4R metacognitive strategy, indeed, is a useful strategy for enhancing students’ academic performance in electrochemistry. PQ4R metacognitive strategy, like the KWL metacognitive strategy, is one of the innovative teaching strategies aimed at enhancing students’ academic performance irrespective of subject discipline. It would make students to become creative, imaginative, productive and industrious in live after schooling. Consequently, the nation’s economy will grow in heaps and bounds as the society would be advanced scientifically and technologically.

In this study, male students achieved higher academically than the females, with respect to the application of PQ4R metacognitive strategy. Perhaps, the male students must have grasped the concept of electrochemistry far better than their female counterparts. They seemed to have