Agricultural Engineering Education and the Capability for Technological Innovation.

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Abstract:

This study attempted to establish a national picture of agricultural engineering education in Nigerian Universities. Data were collected at four universities with well established Departments of Agricultural Engineering namely: Ahmadu Bello University, Zaria (ABU); University of Nigeria, Nsukka (UNN); University of Ibadan, Ibadan (UIB); and University of Ife, Ile-Ife (UIF). The results of the analysis of data from UNN with the highest percentage returns of 73.8% for the students' questionnaire were discussed. UNN serves best to illustrate and corroborate the basic premises of the theoretical construct. UNN's agricultural engineering programme, established in 1962, also is the oldest in Nigeria.

A theoretical model curriculum aimed at enhancing the capability for technological innovation was derived as basis or datum for assessment of present agricultural engineering curriculum. The empirical aspect of this study employed a modified form of the semantic differential (SD) technique, a popular tool for the assessment of images, to assess the UNN agricultural engineering curriculum's enhancement of capability for technological innovation.

The UNN agricultural engineering programme was found to enhance the students' capability for technological innovation to some extent. Assessments made for three of the five categories of course-subjects believed to enhance attributes of capability proved satisfactory. Typically, between 68% and 91% of the respondents stated they understood the scientific concepts and have mastered relevant technological techniques as much as most people in their class. Also, the percentage of the respondents who expressed that the degree of difficulty they encountered in understanding or mastering was not as much as they expected was about 85%; while the percentage of the respondents who stated they developed at least some appreciation for the application of the concepts and techniques taught in these three categories of course-subjects was typically between 56% and 89%. These figures are weighted percentage averages.

The assessments for two categories of course-subjects: the design courses, especially creative design, and for courses in the social sciences and humanities were judged as not satisfactory. The percentage of the respondents who have mastered the design skills were, on the average, about 48% and 40% for design of elements and for creative design respectively. Also, typically between 60% and 75% of the respondents encountered much more difficult than they expected in mastering the design skills. Within this a generally higher figure was recorded for creative design. The percentage of respondents who developed at least some appreciation for the relevance of social science and humanities courses to the practice of agricultural engineering was considered not high enough - generally about 42% on the average. The findings of this study thus suggest that the UNN Agricultural Engineering Department would need to review and improve those aspects of its curriculum found not satisfactory.

The data from the other three universities should be analysed and interpreted as soon as feasible to enable comparison of findings. The whole study should be replicated using the same approach in order to validate the modified form of the SD technique.

Keywords: Agricultural engineering education/ technological innovation

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