

Industrial Technology in Secondary Schools: Implications for the Teacher Education Programmes at UTECH, Jamaica

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Historical Background

- Advent of Technical Teacher training at CAST

Established in the Technical Education Department in 1971

- Government Applied for loan in 1971 from Canadian International Development Agency (CIDA)

Granting of loan created Programme expansion in 1974

Transition from Technical Education Dept. to FELS in 1998

- FELS - School of Technical and Vocational Education (SOTAVE) and Department of Liberal Studies.

Transition from CAST to UTECH in 1995

- Progression from College to University status

Historical Background cont'd

- In SOTAVE, the B. Ed. TVET in Industrial Technology was offered. This was then revised to the B.Ed. in Industrial Technology and took in its first cohort in Academic Year 2010/11. Prior to this revision enrollment was 50 students for Academic Year 2008/9.
- There has been a decline in the total intake of students. In fact, at the beginning of academic year 2010/11 the intake was 43 students; 10 Mechanical, 14 Electrical and 19 Construction. This trend has continued.

Statement of the Problem

- The researchers are of the view that Secondary level education must provide a framework for Industrial Technology programme that is designed to prepare students to pursue Industrial Technology at the tertiary level.
- It was observed that there is a decline in numbers, interest, attitude, aptitude, and perception in this once thriving career option at the secondary level.

Purpose of the Study

This study was designed to:

- Assess the current context in which the Industrial Technology curriculum is being implemented.
- Ascertain the status of Industrial Technology at the Secondary level and its implications for enrolment in FELS at UTech.

Purpose of the Study (cont'd)

- Ascertain the perception of both students and teachers regarding Industrial Technology programmes in the schools.

and

- Assess the status of the various inputs that support delivery of the Industrial Technology programmes at the Secondary level.

Research Questions

The study focused on the following Research questions:

- **Primary question:** What is the status of Industrial Technology at the secondary school level and its implications for enrolment in the Faculty of Education and Liberal Studies, University of Technology, Jamaica?

Research Questions (cont'd)

➤ **Context Evaluation**

What is the context in which the Industrial Technology programmes are being offered at the secondary level?

➤ **Input Evaluation**

What is the status of the resources (teachers, equipment, materials) that support the delivery of the Industrial Technology programmes?

Research Questions (cont'd)

Process Evaluation

- How do students at selected secondary schools perceive the Industrial Technology programmes?
- How do teachers at selected secondary schools perceive the Industrial Technology programmes?
- What kinds of learning activities do Industrial Technology students of selected secondary schools engage in?

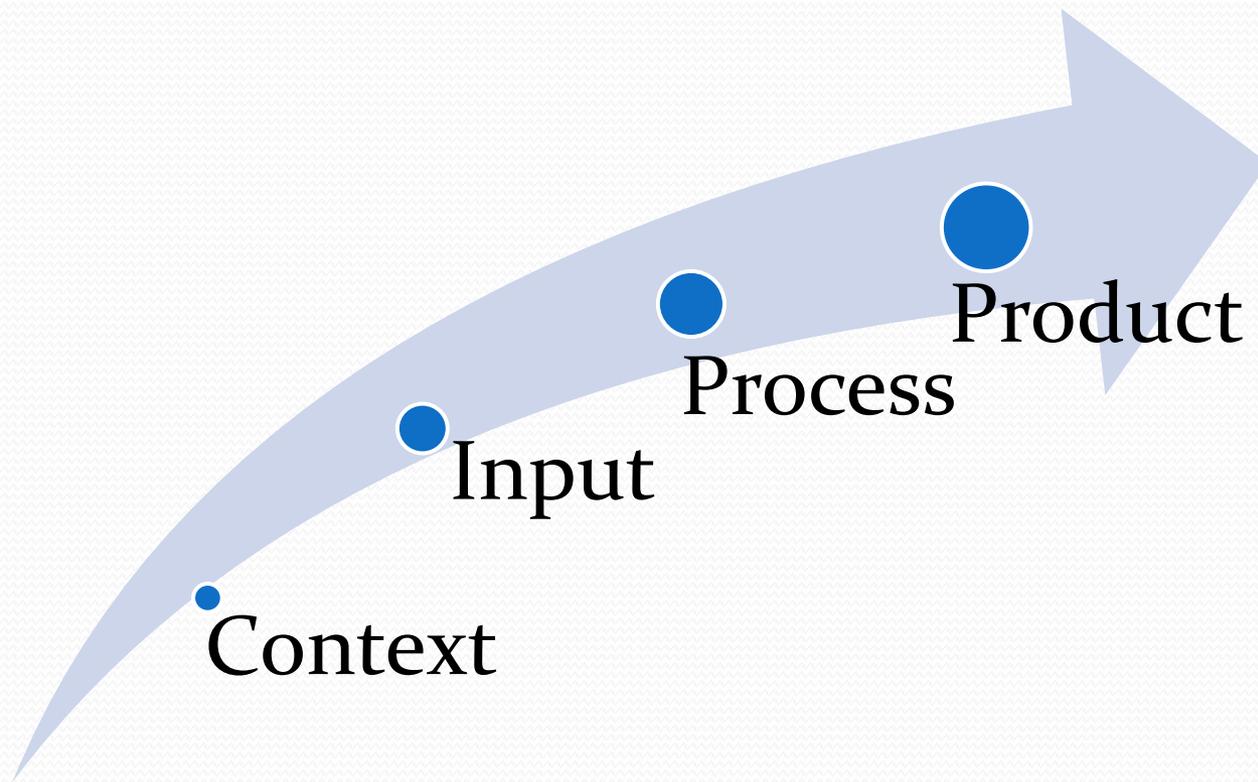
Research Questions (cont'd)

Product Evaluation

- Where are the graduates of the secondary level Industrial Technology programme?

Theoretical Framework

- The theoretical framework that was used to guide the process of assessment in this study was the CIPP model for Programme Evaluation.



Literature Review

- According to the literature, the CIPP model is a comprehensive framework for guiding formative and summative evaluations of projects, programmes, personnel, products, institutions, and systems - Stufflebeam, Gullickson, & Wingate (2003).
- This model was deemed suitable for assessing Technical and Vocational Education programmes and was used to form the framework for the current study.

Literature Review

- The literature also revealed that the *cost for funding* Technical and Vocational Education programmes compared to General Education is far much higher.
- According to Eze (2007), one of the biggest problems that schools face is the funding of their TVE programmes. This lack of funding is evident in many of the ill-equipped Industrial Technology labs.

Literature Review

- It is internationally acclaimed that the best means to adequately fund TVE will be achieved when both government and the private sector recognize that it is an investment, not a cost - Eze (2007).
- This notion, it is not surprising yet the Technical and Vocational Education programme in Secondary level institutions regionally and globally is still faced with serious financial constrains affecting its continued existence.

Methodology

Design

- The Evaluation design with Mixed methods approach was utilized.

Population

- 186 Industrial Technology students and 11 teachers from the three schools studied (one traditional, one Technical, one newly upgraded).

Instrumentation

- Two sets of questionnaires (one set for students and another set for teachers), observation, interviews, and Lab Audit were used for data collection.

Methodology

Data Analysis

- Data from the questionnaires were analyzed using mean and standard deviation. This analysis was done using the Statistical Package for Social Science (SPSS). The findings were presented in tabular form.
- Content analysis was carried out on the data collected using interviews and observations by categorising the content into themes and codes. The results of the lab audit were presented using frequency counts and qualitative descriptions .

Methodology (cont'd)

Instrumentation

Both sets of questionnaires were divided into five sections; section **A** contained demographic items related to the participants, while sections **B** through **E** contained structured items designed to collect data in answer to the research questions.

The students' questionnaires consisted of 23 items while the teachers' questionnaires consisted of 18 items.

The two instruments were designed with closed-ended items.

Methodology (cont'd)

Procedure

- Pilot testing was conducted at a technical high school in Kingston one week before the actual study took place.
- Twelve questionnaires were administered to grade 9 students and twelve to grade 10 students. Four teachers also completed questionnaires.
- A Cronbach's Alpha reliability coefficient of 0.985 was achieved for the instrument.

Results

- The overall response rate for students was 100%.

School	Frequency	Response Rate (Percentage)
Traditional High School	124	66.7
Upgraded High School	39	20.9
Technical High School	23	12.4
Total	186	100.0

Results (cont'd)

- Eleven teachers were selected to participate in the study. The response rate was 100%.

School	Frequency	Response Rate (Percentage)
Traditional High School	2	18.2
Upgraded High School	2	18.2
Technical High School	7	63.6
Total	11	100.0

Results (cont'd)

- Demographic characteristics of students in sample size (gender)

School	Male	Female	Total
Traditional High School	124	0	124
Upgraded High School	18	21	39
Technical High School	21	2	23
Total	163	23	186

Results (cont'd)

Context Evaluation

Research Question 1. What is the context in which the Industrial Technology programmes are being offered at the secondary level?

- The findings suggested that contextually the Industrial Technology programme was being appropriately implemented.

Results (cont'd)

Context Evaluation

- Students' at the traditional and upgraded high schools were being exposed to the programme at an early stage (grade 7) which allowed them to choose effectively.
- At the technical high school, the teachers' pointed out that although students were exposed to Industrial Technology at a later stage (grade 9), it did not pose a problem when they chose their future careers.

Results (cont'd)

Input Evaluation

Research Question 2. What is the status of the resources (teachers, equipment, materials) that support the delivery of the Industrial Technology programmes?

- In terms of Input, results seemed favourable from the perspective of the students. The teachers, however, thought that more could be done by school administrators as insufficient tools, equipment, and machines hampered teachers in carrying out their jobs effectively and efficiently.

Results (cont'd)

Process Evaluation

Research Question 3. How do students at the selected secondary schools perceive the Industrial Technology programmes?

- Students were generally satisfied with the execution of information to them by their teachers, and also the state of the facilities to which that they were exposed.

Results (cont'd)

Process Evaluation

Research question 4. How do teachers' at the selected secondary schools perceive the Industrial Technology Programmes?

- The teachers were not satisfied with the state of the facilities available to them.

Results (cont'd)

Process Evaluation

Research Question 5. What kinds of learning activities do Industrial Technology students of the selected secondary schools engage in?

- Students at the upgraded and technical high schools were involved in work experience which contributed to their professional and technical development.
- However, students at the traditional high school were not privy to such experience as this practice was abandoned years ago.

Results (cont'd)

Product Evaluation

- *Research Question 6.* Where are the graduates of the secondary level Industrial Technology programme?
- The findings suggest that some graduates of the Industrial Technology programme usually go on to tertiary institutions.

Results (cont'd)

Product Evaluation

- However, the majority of them chose to seek employment after leaving Secondary School in order to alleviate their families' expenses.
- Also, most graduates chose not to move on to tertiary institutions as they were unable to afford tuition fees and other expenses relating to tertiary education.

Results(cont'd)

Product Evaluation

Research Question 7. Do you plan to further your studies at a tertiary institution?

The majority of students who showed an interest in attending UTech were interested in studying engineering.

Conclusion

- This findings of the study disclosed that there was a marked difference in the status of the three categories of secondary schools that offered Industrial Technology in Jamaica.
- These differences were noticed in the areas of curriculum implementation, provision of learning environment, and teacher-student relationship.

Conclusion

- The study also indicated that admissions to tertiary institutions were purely based on academic achievements only and therefore Industrial Technology students who are practically oriented were at a disadvantage.
- The ideals of Industrial Technology as a tool for national development should be widely considered and evenly applied to all secondary schools, thereby eradicating the observed differences in status. Consequently, this will enhance smooth transitions to tertiary institutions.

Conclusion (cont'd)

- Furthermore, the findings revealed that the schools were not allowing Industrial Technology students to do the required number of subjects that would allow them to matriculate into a university.
- In fact, students are selected to do the required number of CXC subjects based on the results of a 'screen test'. This result at times restrict them to only sit 1-3 subjects in CXC (these were often their TechVoc ones). This process has become an hindrance for students to matriculate to the tertiary level.

Implications

The following are the implications of the study:

- If keen attention is not given to the number of subjects that Industrial Technology students are allowed to do in schools, they will continue to experience difficulties in matriculating to the tertiary level.
- Poorly funded Industrial Technology programmes at the Secondary level may adversely affect the quality of students that may gain acceptance in the Industrial Technology programme offered in FELS.

Implications Cont'd.

If the Promotion Committee of FELS does not increase its promotion strategy for the Industrial Technology programmes the opportunity to influence the mindset of Secondary level students for matriculation to tertiary institutions will be undercapitalized.

Recommendations

- Government and schools' administrators should ensure that Industrial Technology workshops are adequately equipped with modern facilities for training.
- Adequate financial support should be provided by the government for the day-to-day running of Secondary level schools.
- The schools must devise workable strategies to generate funds to complement the government's subvention that is used to run the programmes in these institutions

Recommendations (cont'd)

- Concerted efforts should be made by all stakeholders of TVET to reorient the society against stigmatization and bias.
- The MOE should design routine Seminars and Workshops to enlighten stakeholders on the value of Industrial Technology.
- Administrators of traditional high schools should place keen interest the delivery of Industrial Technology programmes.

Recommendations (cont'd)

- Government should devise strategies to attract and retain individuals to the teaching profession as is the case of Engineering and other allied professions.

Suggestions for Future Research

- One area to be further researched is the socio-economic status of Industrial Technology students at the secondary level.
- The findings have revealed other areas of study which the researchers saw as being important to investigate. These areas include an investigation into secondary level students' preference to pursue higher education based on socio-economic background.

Suggestions for Future Research

- Another possible area of study is to do a comparative study of the academic performance of FELS students coming from the technical high schools, traditional high schools, and the newly upgraded high schools in Jamaica.



Thank you!!

What are your Questions?