

Impact of Introducing Vocational Education in Model Schools and Colleges of Bangladesh: Present Status and Future Prospects

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Abstract-- The purpose of the study was to investigate the present status of vocational education and to find out the difficulty of implementing of vocational education in the Model Schools and Colleges of Bangladesh. Out of seven proposed vocational educational institutions three were considered as sample institutions from three different divisions of the country. Data was collected from the administrators and teachers through a comprehensive questionnaire, informal interview and a check list by visiting the sample institutions. Data were analyzed by non-parametric chi-square test and Weighted Average calculation was done manually and qualitative data were organized and summarized constructively. It was found that there is no vocational education in any Model Schools and Colleges though it was proposed in project profile. But all physical facilities are available for Vocational Education including raw materials and funds in every institution. Also, there was no recruitment of staffs and teachers in the vocational education sector; even the student enrolment was absent. The study revealed some difficulty for introducing the vocational education like, giving less importance to the vocational education by the administrator and higher authority, tuition fees, stipend issue, admission, site selection of the institution etc. The study also showed that Model Schools and Colleges are the better place to offer the quality vocational education. Finally, some recommendations were made for proper implementation of vocational education in model schools and colleges.

Index Term-- Vocational education, general education, model schools, Bangladesh

I. INTRODUCTION

In the process of economic development of a country, technical and vocational education (TVE) has always been playing an important role of cultivating professional talents in excellent quantity and quality to devote to production and facilitate prosperous development of economy of the country [1]. As the economy of the world is changing into knowledge based economies, the world requires an individual to be

specialized in a particular skill. Only a person who is expert in a particular field can get a good job. In this situation vocational education only can impart specialized and practical knowledge to a person and help them become independent at a particular age [2].

Education must be general as well as vocational. There are numerous benefits of vocational education. It solves the problem of unemployment. It trains the students in commercial, scientific and industrial trades, according to their interest. It can make the student independent while studying. They can earn and learn together. Finally, such education is helpful to the economy. Thus, vocational education is in no way different or inferior to normal education. In fact it is a part of wholesome education that our government wants to give. It may even be said that vocational education is more wholesome than the normal education [3]. Kang and Bishop [4] were the first to examine the effects of combining academic and vocational coursework. They discovered a positive interaction between the number of academic courses and the number of vocational courses in predicting post-high school earnings for males who did not attend college. Arum and Shavit [5] identified students who had taken a set of advanced academic courses, a sequence of vocational courses, or both had the greatest likelihood of being employed in professional, managerial, or skilled jobs and also the greatest likelihood of being enrolled in postsecondary education. Levesque et. al., [6] analyzed achievement test results and found that students who combined a college-preparatory academic curriculum with a specific vocational sequence had gains in math, reading, and science test scores during high school.

It is a general principle that an integrated approach to teaching and learning is designed to strengthen the academic base of work-related skills, on the one hand; and to provide a context and motivation for learning academic skills, on the other [7, 8]. This implies that the integrated approach involves reforms from two perspectives: one as an occupational reform, and another as a general pedagogic reform. In the area of occupational programs, academic content is infused into

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technology instruction, aiming at developing thinking skills, decision-making, problem solving, and knowing how to learn, as well as basic academic skills [9]. In the area of general education, the applied concept is integrated with the existing academic curriculum. The basic rationale is that students will learn better when courses are taught in a real - world context, by connecting the classroom to the workplace, and abstract concepts or knowledge to real problems [10, 11, 12].

Recent studies on the evolution of instructional reform however, have found various barriers to disseminating the new pedagogical approaches to both secondary and post-secondary schools [13, 14, 15]. Obstacles to curriculum integration include a difference in culture between vocational and academic programs due to a longstanding separation between the two worlds [16, 17] and the large amount of effort and expenditure needed to integrate instruction [18]. Perin [18] also found that despite enthusiasm for academic-vocational integration, few programs have carried out a comprehensive implementation of the reform, and actual examples are few. She points out that obstacles to integration abound in terms of the cost in time, effort, and expenditures needed for professional development and instructional planning. Other researchers have found persistent concern among faculty in both academic and occupational programs about the use of integrated curricula in their classes, and this concern often translates into resistance to the introduction of such instruction [19]. In its most basic form, curriculum integration involves the infusion of academic content into vocational programs, often referred to as *enhanced academics*. The new vocationalism, however, calls for *enhanced relevance*, which is achieved when students engage in learning experiences that are situated in real-life contexts and that afford in-depth understanding and the development of higher-order thinking skills [20, 21].

Urquiola et al. [22] note that curricular integration reflects the process of contextualization by bringing authentic work elements to abstract academic subjects. It contributes to the development of students' critical thinking and collaborative skills as well as those that prepare them for skilled jobs. School-based learning gives students an opportunity to use academics in authentic workplace contexts through such means as applied academics. It can include training on the job, supervision by workplace mentors, and instruction in general workplace competencies and all aspects of the industry [12]. The concept of curriculum integration offered by [23] illustrates the potential for academic and vocational education to connect students to all aspects of the workplace. Work-based learning, which engages students in worksite learning experiences, is an expanded academic and vocational integration activity that affords students an opportunity to

receive mentoring and instruction for industry-recognized skills [20] Each of these practices offers the potential for students to engage in problem solving, teamwork, and communication within the job context, taking into account the unique aspects of the jobs purpose, work tasks, organizational structure, job culture, and so forth [12].

Education in Bangladesh has three major stages like; primary, secondary and higher education [24]. Secondary and higher secondary education are important terminal stages in the system of general education because it is at these points that the youth decide on whether to pursue higher education, opt for technical training or join the workforce. Educationists and experts have consistently recommended that education at these stages should be given a vocational bias to link it with the world of employment [25]. In Bangladesh, Higher education and higher secondary stages provides general and professional education like; specific vocational, technical, engineering, medical, agriculture education etc. Secondary education also offered general and vocational education.

The socio-economic conditions of our country are not strong enough. Many students drop out before going to the upper secondary level. After dropping out from the school they become burden for the country because they cannot contribute to the country economy. Result of research shows that diversified and elaborate innovation and development of TVE meeting demands of economic industry and structure transformation have brought concrete performance and obtained recognition of the society [1]. To this direction, if we can provide vocational education in junior part of the secondary level, they will gain the vocational knowledge and idea and become skilled workers. On the other hand, if they continue vocational education in upper part of the secondary level and other higher technical and vocational education, they will do better because they already have the strong vocational background knowledge. In this way our technical and vocational education will stand on strong foundation. But problem is that this policy generates two groups: one vocational pass out student and the other pass out from general schools. Most of the time it is found that two groups cannot accept each other. For solving this problem government has taken up a project of introducing vocational education in general schools and colleges. To run vocational and general education in one institute government has established eleven (11) Model schools and Colleges, among them five in Dhaka and other six in six divisional cities. Since, government has taken decision to experiment and to see the effect of running vocational education and general education in one institution so, it is important to observe how it is going on. If it is found that, the experiment is successful than it can be implemented on large scale. The next step is to ensure that policies on

TVET education are relevant and that they are aligned with government plans for the development of the country. Implementation of TVET will result in massive changes in the current policies of education especially concerning the organization and infrastructures [25].

In this regard, the purpose of the study was to find out the Status of introducing the Vocational Education (VE) in Model Schools and Colleges in Bangladesh and to investigate the present status of VE in Model Schools and Colleges. At the same time this study investigates the difficulty of implementation of VE in Model Schools and Colleges of Bangladesh.

II. METHODOLOGY

There are in total eleven model schools and colleges in Bangladesh. Among these eleven model institutions seven were selected for introducing vocational education. The model schools and colleges are: Dhaka Model School and College, Chittagong Model School and College, Barishal Model School and College, Khulna Model School and College, Rajshahi Model School and College, Sylhet Model School and College, Bogura Model School and College. All the teachers, students and administrators of these institutions were considered as the population of study. The sample of this study was selected demographically from different locations of the country for the true outcome. Among the seven institutions, the sample institutions were Dhaka Model School and College, Chittagong Model School and College and Barishal Model School and College. All the Administrator and Teacher of selected Model Schools and Colleges were the sample of this study. The study did not include any student as sample as they are not matured enough to give any comments on the problem objectives. Sample is presented in the following table:

TABLE I
INSTITUTIONS AND SAMPLE SIZE

Name of the institution	Teacher	Administrator
Chittagong Model School and College	22	12
Dhaka Model School and College	22	12
Barishal Model School and College	21	12
Total	65	36

According to above table, total sample size was 101 (65 Teacher + 36 Administrator=101).

A. Tools Used For This Study

A structured questionnaire was used for collection of data from the respective administrator and teachers. The questionnaire was developed under the close guidance of the supervisors. It was also validated with the expert's opinion. The experts were requested to provide advice and opinions on different aspects of the questionnaire. The questionnaire was mainly of two parts. The first part contained direct questions with Yes/No answer and also asked for views and ideas of the respondents for the qualitative analysis. The second part was

to gather information on different aspects of introducing Vocational Education in their respective institutions. The questionnaire was prepared based on five point rating scale. A check list also used to collect information about the physical facilities and present condition. Informal interviews were also administered to extract the deep root causes on different issues. Data were collected by visiting the sample institutions. Researcher went to the sample institution and took informal interview from the respondents and also gave the questionnaire to the respondents. Researcher himself helped the respondents in filling up the questionnaire and assisted them by clarifying some of the typical points in the questionnaire. Some important information was collected through a check list.

Collected data was analyzed by using different statistical methods and techniques of analysis. Results of the statistical test are presented through tabular form. The Percentage and chi-square (χ^2) values have been calculated for each of the item at 0.05 level of significance. The formula of the chi-square test is as follows:

$$\text{Chi-square, } \chi^2 = \sum \left[\frac{(f_o - f_e)^2}{f_e} \right];$$

Where, f_o = Observed frequency and f_e = Expected frequency considered with equal probabilities.

Degree of freedom, $df = (C - 1) * (R - 1)$; Where, C = Number of columns, R = Number of rows.

B. Data Analysis

Administrator Responses regarding impact of Vocational Education (VE) in Model School and Colleges (MSC)

TABLE III
RESPONSES OF ADMINISTRATOR REGARDING IMPACT OF VE IN MSC (N=36)

Sl. No.	Statement	χ^2	WA
1	Model Schools and College (MSC) is suitable for VE.	57.06	4.30
2	If VE offered in MSC, more VE student will come to admit.	53.77	4.61
3	The improvement of MSC may be increased if VE is offered.	68.72	4.28
4	MSC can give the quality VE	98.44	4.70
5	If VE start in MSC than country will be benefited.	68.44	4.44
6	VE can hamper the status of MSC.	18.16	2.25
7	There will be clash between VE student and general student	82.88	1.14
8	There will be clash between VE teacher and general teacher.	34.00	1.75

$$df = 4 \text{ and } \chi_c^2 \text{ is } 9.49.$$

TABLE II
ADMINISTRATOR'S RESPONSE REGARDING IMPACT OF
VOCATIONAL EDUCATION IN MSC (N=36)
(Figures in the parenthesis indicate percentages)

Sl. No.	Statement	Yes	No	χ^2
1	There is VE in MSC.	00(0)	36(100)	*
2	VE has not been start in MSC	02(6)	31(94)	25.48
3	In Project Profile there is a provision for VE	36(100)	00(0)	*
4	Advertisements of VE teacher and stuff recruitment	33(92)	03(8)	25.00
5	Applicant applied for the post	30(83)	06(17)	16.00
6	Applicant was called for interview	00(0)	36(100)	*
7	People recruit in VE section	00(0)	36(100)	*
8	Announcement for VE student admission	00(0)	36(100)	*
9	Government supplied the necessary equipment	36(100)	00(0)	*
10	Separate VE section in MSC building.	36(100)	00(0)	*
11	Meeting about VE to start	02(6)	34(94)	28.44
12	Notice about VE for start or stop	06(17)	30(83)	16.00
13	Monitoring System on VE	00(0)	36(100)	*
14	People came in MSC to know about VE	05(14)	31(86)	18.77
15	Shortage of fund of VE in MSC	20(56)	16(44)	00.44
16	Starting VE is possible if higher authority took necessary steps	30(83)	06(17)	16.00

* Due to unilateral responses it is not possible to calculate χ^2 values.

$$df = 2 - 1 = 1 \text{ and } \chi_c^2 = 3.84 \text{ at } 0.05 \text{ level of significance.}$$

According to table 2, more than 50% respondents were positive on the statement no. 4, 5, 15 and 16. Whereas more than 80% respondents gave negative response on the statement no 2, 11, 12 and 14. 100% respondents were agreed on the statement no. 3, 8, 9 and 10. On the other hand 100% respondents were disagreed on the statement no 1, 6, 7 and 13. Except the statement 13, teachers' opinions were significant as the χ^2 value is greater than the critical value of χ_c^2 . Regarding the statement 13, teachers opinions were found insignificant.

C. Administrator Responses Analysis Through Weighted Average

From the table 3, according to weighted average most of the respondents were agreed with the statement no. 1, 2, 3, 4, 5 and their responses are positively significant. On the other hand, most of the respondents strongly disagreed with the statement no. 6, 7, and 8 and the responses are also significant as in every case the χ^2 value is greater than the critical value of χ_c^2 .

A qualitative approach has also been administered through informal interview to collect in-depth data. It was found that most of the administrator is unfamiliar with the Vocational Education of Bangladesh. They think that starting vocational education is only the duty of the Directorate of Technical Education. So, they are not interested about vocational education. But some of them have the interest and knowledge about the Vocational Education. They think that, Academic authority should be controlled by Directorate of Technical Education. However researcher talked with them and tried to collected important information. Most of the administrators view is to revise the whole project considering vocational education. Separate admission criteria and recruitment policy should be administered for vocational education. Fund and project should also be separated. Administrators also think that tuition fee weaver or stipend system is introduced to make the vocational education popular. Model schools and colleges are only known as general education. Some advertisement should be made to create awareness in the society about the vocational education in model schools and colleges. Short training or workshops can also be arranged for the administrators of polytechnic institutes for the successful implementation of vocational education. There are some technical instruments that are idle and because of this idleness instruments are being out of order. If it is not possible to start vocational education in any of the model schools and colleges then these instruments should be transferred to the nearby technical institutions.

From the above information it is very much clear that higher authority should take necessary steps so solve all the problems related to the implementation of the vocational education in technical schools and colleges. Special care and monitoring is also required to make a separate policy, plan and project. Another important aspect is to make vocational education popular. To sum up, it can be concluded that if all the responses (qualitative & quantitative) of the administrative personnel are consider importantly than it will be easy to run vocational education in MSC.

D. Teachers' Responses

TABLE IV
RESPONSES OF TEACHER REGARDING IMPACT OF VE IN MSC
(N=65)

Sl. No.	Statement	Yes	No	χ^2
1	There is VE in Model Schools and College	0	65	*
2	Do you know why VE has not been start in MSC?	05 (0.08)	60 (0.92)	46.53
3	Is there any meeting about VE how to start?	0	65	*

* Variable is constant. χ_c^2 Calculation cannot be performed. χ_c^2 value is 3.84 at 0.05 level of significance for $df = 1$

Table 4 has only one statement which is significant. Remaining two statements have the constant variables as it is not possible to calculate chi-square value. From the above analysis it is very much clear that there is no VE in MSC and there was no meeting even about VE.

E. Teachers' Responses Analysis Through Weighted Average

TABLE V
RESPONSES OF TEACHER REGARDING IMPACT OF VE IN MSC
(N=65)

Sl No	Statement	χ^2	WA
1	Model Schools and College (MSC) suitable for VE	48.46	4.00
2	If VE offered in this institution than More VE student will come to apply	101.3	4.43
3	VE will slow down the improvement of MSC	73.07	4.30
4	MSC can give the quality VE	56.15	4.69
5	If VE start in MSC than country will be benefited	123.4	4.73
6	VE can hamper the status of MSC	33.07	2.61
7	There will be clash between VE student and general student	56.92	2.10
8	There will be clash between VE teacher and general teacher	106.9	1.64

χ_c^2 value is 9.49 at 0.05 level of significance when $df = 4$

Table 5 revealed that most of the respondents strongly agreed with the statement no 1, 2, 3, 4, 5 and the responses are significant. On the other hand Most of the respondents strongly disagreed with the statement no. 6, 7 and 8 and the responses are significant as $\chi^2 > \chi_c^2$.

F. Qualitative Analysis And Interpretation Of Teacher Responses

A qualitative approach has also been administered through informal interviews among the teachers. It was found that most of the teachers are not familiar with the Vocational Education. They believed that vocational education was supposed to be practiced only in technical institutions, so they

are not interested about vocational education. But some of them have the interest and knowledge about the Vocational Education. Most of the teachers were in the same line about the construction of a model vocational education syllabus. Separate admission criteria should be made. They thought that reduction of tuition fees as well as stipend system can attract the poor community towards vocational education. So site selection is also an important part to implement vocational education. Creating awareness in the society is also an important duty of the directorate to technical education. Some short training program or workshop can also be arranged with general teacher of model school and colleges about vocational education.

To sum up it can be concluded from the teachers' response, higher authority should sit with the teachers of the MSC and take necessary steps according to the comments of the teacher. The data from the interview is also revealed that though it was tried to integrate the vocational education and general education under one model institution but it will take time. They emphasized that a separate syllabus, admission policy and some publicity will required for the good opening of MSC.

G. Data Analysis Through Check List

TABLE VI
CHECK LIST FOR THE IMPACT OF INTRODUCING VE IN MODEL SCHOOLS AND COLLEGES

S/L No.	Item	Sample Institution		
		Dhaka	Barisal	Chittagong
1.	Vocational course is offered	Nil	Nil	Nil
2.	No. of trades or subjects offered	4	3	4
3.	Seats available for VE students	920	920	920
4.	No. of required teachers in each department	3	3	3
5.	No. of present teachers	Nil	Nil	Nil
6.	Other staff required.	Nil	Nil	Nil
7.	No. of present staff	Nil	Nil	Nil
8.	Required No. of classrooms is available	✓	✓	✓
9.	Required No. of labs is available.	✓	✓	✓
10.	Lab instruments are in good working condition	✓	✓	✓
11.	Sufficient raw materials are available in workshops	✓	✓	✓
12.	There is regular grant for raw material	Nil	Nil	Nil
13.	Raw material is purchased on yearly basis	Nil	Nil	Nil

The above table gives us specific information about different facilities available to run vocational education in the model schools and colleges. It is noticed that there is a good number of vocational students but there is not sufficient teachers for teaching. Required no. of labs, classroom, lab instruments, raw materials etc. are available in model schools and colleges.

III. FINDINGS AND DISCUSSION

The implementation of vocational education in model school and colleges in Bangladesh has been going on for a fairly long time. Similar situation has been observed in developed countries like Australia, United States of America, European countries and also Asian giants such as Japan and China [25]. Although there are differences in methods due to the factors of cultures, population and the education system, vocational education has been a vital method or field that highly needed since it could provide high level of skills that can help model schools and colleges to practically dominating a certain field of expertise.

TVET policies should be relevant to the future development of the country. The implementation of TVET in model schools and colleges requires major change within the organization as well as infrastructure. For example, if a course of Electrical Device Installation is planned to be integrated in the secondary school curriculum, the head of the school is required to choose a suitable teacher who are well prepared to lead the program. The existing teachers might also need to undergo certain training courses to prepare them for the successful implementation of the new program [25]. Our observation shows that the selected model school and colleges are equipped with sufficient labs, lab equipment as well as teachers. But it is a matter of fact that vocational education is not properly practiced in these organizations.

It is surprising how little is known by the community and in many secondary schools about the TVET possibilities. Awareness programmes must start with ourselves in our own country, in the educational context in which we work. Having comprehensively informed ourselves, we need to spread this knowledge throughout our country's schools. We need to inform teachers, students, management and administrative staff, traditional and religious leaders, parents' groups and mothers' clubs. The wider community must also be informed. Community awareness programmes that include visits to vocational schools and colleges, public meetings, brochures and handouts, television and radio broadcasts, and informative articles in the local print media should be mounted.

TVET providers must also publicly address the issue of gender equity. All TVET courses should be available to both male and female students. We need, for instance, to bypass the thinking that only men should undertake plumbing and that only women can weave. Sometimes in certain countries cultural norms override gender equity and cultural sensitivity is required in such situations. Epeli Tokai and Jennie Teasdale [26] have suggested that the following practical steps should be taken by any secondary school that wants to integrate TVET into its curriculum. These suggestions are presented from the perspective of the principal, though steps can be taken in collaboration with appropriate staff, industry representatives and other stakeholders. The steps as suggested by Epeli Tokai and Jennie Teasdale are-

Step 1: Develop an action plan that clearly defines the task, the time-frame, the people responsible, the resources and the costing. It is wise to monitor, evaluate and review these elements constantly.

Step 2: Look carefully at the vision or mission statement of the school to see how TVET can be encompassed within the existing structures.

Step 3: Review workable ways of integrating TVET into the existing curriculum. All the things that matters need to be reviewed in order to ensure the curriculum is appropriate.

Step 4: Involve stakeholders in the review process.

Step 5: Identify career pathways or courses that are relevant to the local community. Build on what already exists. This will be linked to the geographic locations and the resources available.

Step 6: Inform the Ministry or Department of Education of the needs of the school by submitting the recommended revised curriculum.

IV. CONCLUSIONS AND RECOMMENDATION

From the analysis and findings of the study it can be concluded that Vocational Education is not offered in Model Schools and Colleges. All necessary infrastructure and physical facilities are available in all institutes. There is no teacher and staff for the Vocational Education. To implement the Vocational Education, all necessary preparation was there during the implementation period. From the respondent data it is clear that surrounding student will come for admission in Vocational Education in Model Schools and Colleges. The higher authority and implementing authority did not want to introduce Vocational Education in Model Schools and Colleges. After establishing the Model Schools and Colleges there was no proper monitoring for Vocational Education. Some administrator and teacher are not aware about the importance of Vocational Education. Majority of the teachers and administrator think that Model Schools and Colleges can give the quality Vocational Education. Surrounding people think that Model Schools and Colleges are not for Vocational Education. These are only for general education. Model School should provide the quality Vocational Education that is why a model Vocational Education Curriculum is needed. Site selection of general education and Vocational Education are not the same.

Some recommendations can also be made on the basis of the current status of the implementation of vocational education in the model schools and colleges in Bangladesh. The Whole project should be revised considering the VE. Separate admission criteria and recruitment policy should be made. Separate fund and project is needed for Vocational Education. A decision should be made about the tuition fees and stipends for the VE students.

Academic authority should be controlled by Directorate of Technical Education. A short training or workshop should be arranged with the principal of the MSC about VE. Under the one principal there will be two vice principals one for VE, another for general education. Some advertisement is needed for VE because people know that MSC is only for general education. If VE course cannot be started the supplied instruments should be given to nearby technical institution. Centrally, one monitoring team should be formed only for VE including Directorate of Technical Education. A model

syllabus should be proposed for VE. Separate admission criteria should be made. Public awareness should be increased about VE because people know that MSC are only for general education.

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