

Teachers Readiness for Computer Education Classes in the Secondary Schools of Bangladesh

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Abstract

The objectives of the study were to identify the qualifications and competencies of the Computer Education(CE) teachers, assess the quality of teacher's performance and identify to what extent the CE curriculum is covered in B.Ed. computer curriculum as a supporting course for the subject teachers. The findings were based on classroom observations and interviews of 42 CE teachers in 42 secondary schools (October 2010 to February 2011). Observation checklist, semi-structured interview schedule and a questionnaire were used to collect the data. The findings revealed that the qualifications and competencies of Computer Education teachers were inadequate for conducting computer classes; classroom performances of the teachers were poor; and CE school curriculum were not fully integrated into the Bachelor of Education course. The researcher suggested extensive in-service training programmes focusing on computer education contents, providing content based teaching materials, arrange workshops and seminars, and inclusion of contents which were not included in the B.Ed. computer curriculum.

1. Introduction

As developed nations moved rapidly toward utilizing computers in their education systems, the governments of developing countries began to be concerned about being left behind. These governments were concerned that if computers were not introduced into their education system, the gap between their societies and those of the developed nations would become even wider. In an effort to address this problem most of the developing countries incorporated computer education into their educational systems (Zamani, 1997). Computer Education was introduced at the secondary education level of Bangladesh as an optional subject in 1996. In the recent years, vigorous efforts have been made to improve the quality of Computer Education. The Government of Bangladesh has taken a decision to introduce ICT in Education at the secondary level as a compulsory subject, instead of an optional one (Bangladesh Education Policy Report, 2010). The present study was an investigation of how far the computer teachers are prepared for implementing the recent government decision. The study tried to identify teachers' qualification; competencies, teaching performance and

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their professional upgrading needs for this subject. The outcome of the study is expected to assist the Government to identify what they should do for the subject teachers. The study is also expected to facilitate the designing of a need based training program for teachers and strengthening B.Ed. computer curriculum to ensure adequate coverage of contents for the school Computer Education course.

2. Significance of the Study

Teacher's quality and qualifications plays a significant role and is considered as very important factors in ensuring the quality of Computer Education. Liu (1995, p2) stated that "We describe and analyze quality of education. Yet we have not made any efforts to study quality of computer education in Third World countries." However, in recent years computer related education and research has received increasing interest (Almstrum, Hazzan, & Ginath, 2004; Fincher & Petre, 2004; Goldweber, Fincher, Clark, & Pears, 2004). Computer Education still remains the most neglected and unpopular optional subject at the secondary education level in many developing countries for different reasons including shortage of skilled teachers and computers (Konesappillai, 1998).

Bangladesh has shown a strong policy interest on Computer Education at the secondary level. Despite initial delays in introducing Computer Education as a subject, several notable initiatives have been taken in public and private sectors for the development of Computer Education. Training of the teachers is one of the major initiatives among them. Still, a legitimate question is: What actually happens in the computer education classes? Are the teachers trained to conduct the classes? A full answer is lacking, because the questions so far remain unexplored. It is intended to seek answers to these questions in this study.

"Teacher training and a continued, on-going and relevant professional development are essential if benefits from investments in ICTs are to be maximized" (Trucano, 2005). One of the challenges of developing nations to adopt Computer Education is lack of trained teachers (Gulati 2008; Kozma 1999). Educational Technology experts believe that one barrier in implementing computers is a lack of teacher training which is more obvious in developing countries. According to Hawkrige, Jaworski and MaMahon (1990, p282), "Almost all teachers using computers in developing countries were never trained to do so during their initial training, and have had only the briefest of in-service courses relating to computers." Evans-Andris (1996) explains that some teachers who lack computer knowledge and skills may feel less confident about controlling their students when they take them into the computer lab, especially if problems occur in using computers. Hasselbring et al. (2000) indicate that teachers feel less confident with computers because they feel they do not have enough knowledge and skills. The present study aims to determine the state of readiness of Computer Education teachers in the Secondary Schools of Bangladesh.

3. Objectives of the Study

The primary objective of the study was to investigate the teachers' readiness to implement the Computer Education curriculum in classes IX and X. The specific objectives were to:

1. Identify the academic and professional qualifications of the Computer Education Teachers.
2. Review the extent, nature and duration of the training programmes related to Computer Education.
3. Assess the competencies and qualities of Computer Education teachers' performances in the class.
4. Identify to what extent the Computer Education curriculum is covered in B.Ed. Computer Education curriculum.

4. Methodology

This was a descriptive study of an exploratory nature. It used a combination of quantitative and qualitative methods. Primarily, the survey method was followed to collect data. Table 1 shows the sample size and instruments used in this work.

Table 1

Sample	Size	Objectives	Techniques	Instruments
Teachers	42	Identify the academic and professional qualifications of the Computer Education Teachers.	Interview	Semi Structured Interview Questions
Teachers	42	Review the extent, nature and duration of the training programmes related to Computer Education	Interview	Semi Structured Interview Questions
Teachers	42	Assess the competencies and qualities of Computer Education teachers' performances in class	Class Observation	7 point Rating Scale
6 TTC's Teachers	6	What extent the Computer Education curriculum is covered in B.Ed. Computer Education curriculum.	Opinion polling	Questionnaire

Data were collected from 42 schools of seven Divisions of Bangladesh. Two Districts from each Division (7X2=14 Districts.), and one Upazila from each sampled Distric

(14 Upazilas) were selected. Three schools (1 urban 2 rural) from each Upazila were surveyed; thus a total 42 schools were surveyed.

- Observation check lists with some open ended questions were used to observe classroom presentation. Teachers' performances were assessed with a through 7-point rating scale; ((i)very poor, (ii) poor, (iii) moderate, (iv)good, (v) very good, (vi) excellent, and (vii) not applicable). A list of 20 class room instruction skills were compiled and used in collecting data regarding classroom performance.
- Forty-two teachers were interviewed through the semi-structured interview questionnaire.
- Open ended questionnaires were used to collect opinion of six Teachers Training College (TTC) Computer Education teachers. They were asked about Computer Education curriculum used in B.Ed. programme.

5. The Findings of the Study

Academic Qualification of Computer Teachers

The findings of the study demonstrated that although the number of schools offering Computer Education subject in Bangladesh had significantly increased, the qualifications and teaching quality of the teachers had not been satisfactory. It was revealed from the findings that the computer classes were largely taken by the existing teachers with some kind of elementary training on Computer Education. Among 42 Computer Education teachers (36% female and 64% male teachers) interviewed, a significant number of them (81%) were not recruited as computer teachers. Only 8 teachers (19%) introduced themselves as Computer Education teachers and they were newly recruited and their teaching experience was less than 10 years.

Table 2 presents the findings regarding teachers' educational qualifications. The table shows that most of the teachers (86%) were Graduate, and they had B.A, B.Sc, or B.Com degrees; while only 12% had Post Graduate (M.A. and M.Sc.) degree. The remaining teachers (2%) had different diplomas (Agriculture and Computer). The Computer Education teachers studied different disciplines like Bengali, Political Science, Islamic Studies, Social Science, Commerce etc. rather than computer related subjects. More than 45% of the teachers were from arts and social science background and others from science and commerce background.

Professional Qualification of Computer Teachers

It emerged from the data about teachers' professional qualifications (Table 2) that most of the teachers (67%) had Bachelor of Education (B.Ed.) degree, while 29% still did not have any professional degree like B.Ed. Among the teachers who had B.Ed and M.Ed Degrees, only 10 % of them studied Computer Education subject in their course. Only 5% of the subject teachers had M.Ed Degree.

Table 2: Subject Teachers' Qualification

<i>Educational Qualification</i>	N=42	Percent
M.A. or M.Sc.	5	12
B.A., B.Sc., B.S.S., B.Com.	36	86
Others Diploma	1	2
<i>Professional Qualification</i>		
No Professional Degree	12	29
B.Ed.	28	67
M.Ed.	2	5
Computer Subject Studied at B.Ed.	4	10

Computer Education Course of Teacher Education Programme

A carefully designed B.Ed. course is intended to build a teacher's knowledge, skill and competency. During the survey, 6 Computer Education teachers of TTCs were asked about the extent the B.Ed. curriculum covered Computer Education syllabus for Classes IX and X. The findings of the teachers' responses are shown in Table 3 and in Figure 1.

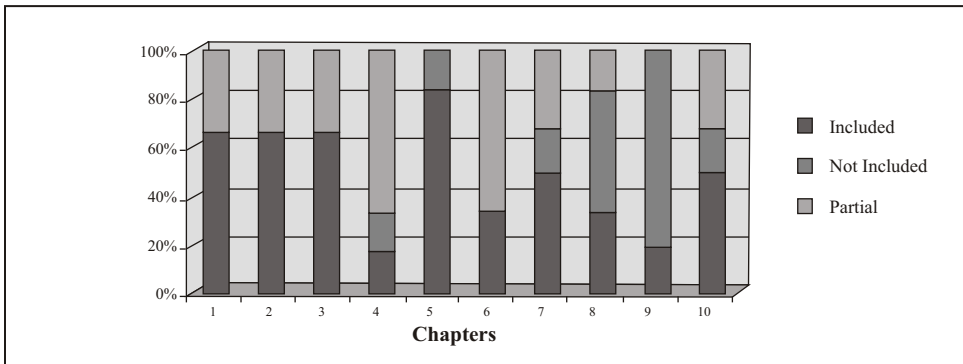
Table 3: TTC Teachers Opinions Regarding Chapter-wise Inclusion of CE School Curriculum in TTC's Curriculum

Title of the chapters	TTC's Teachers Response					
	Included in B.Ed Course		Partially Included In B.Ed' Course		Not Included in B.Ed' Course.	
	N=6	%	N=6	%	N=6	%
Computer and History of Comp.	4	67	2	33		0
Organisation of the computers	4	67	2	33		0
Computer Software	4	67	2	33		0
Operating System	1	17	4	67	1	17
Word Processing	5	83	1	17		0
Number system and Comp. Logic	2	33	4	67		0
Spread Sheet Analysis	3	50	2	33	1	17
Database	2	33	1	17	3	50
Concept of the Program.	1	17		0	5	83
Lang.Application of the Computers	3	50	2	33	1	17
	Total 29	48%	Total 20	33%	Total 11	18%

It transpired that 67% of TTC teachers indicated that contents of chapters 1 to 3 of Computer Education curriculum for class nine and ten were included in the B.Ed. course. However,

33% of them stated that these chapters were partially included. A significant number of teachers (67%) stated that Chapter 4 (operating system) and Chapter 6 (Number System and Computer Logic) were partially included. 83% of teachers expressed that Chapter 9 (Concept of Programming Language) was not included at all. 50% of the teachers indicated that Chapter 8 (Database) was also not included. About 50% of the teachers stated that Chapter 7 (Spread Sheet Analysis) and Chapter 10 (Application of Computers) were included, whereas 33% of them opined that these were partially included. Most of the teachers (83%) informed that Chapter 5 (Word Processing) was included.

Figure 1: TTC Teachers Opinions Regarding Chapter-wise Inclusion of CE School Curriculum in TTC's Curriculum



It transpired from the findings that there was a gap between the Computer Education school curriculum and B.Ed. computer curriculum. As a result of this gap, there was a lack of confidence and competence among the teachers. Consequently, they faced various problems and difficulties in conducting the Computer Education classes.

Computer Education Related Training

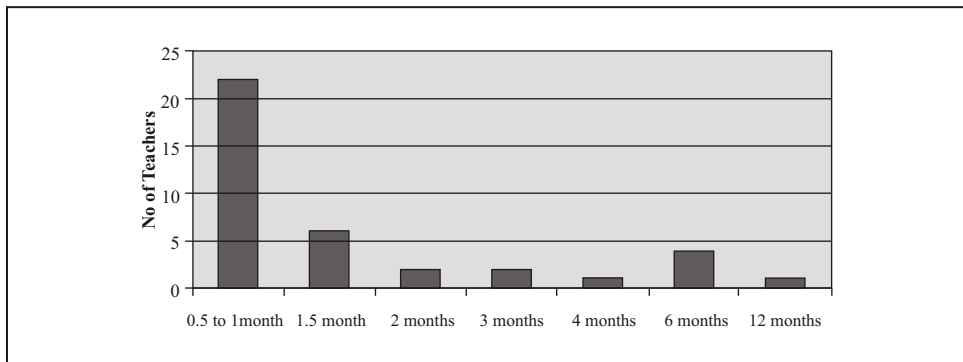
One of the key challenges in implementing Computer education in schools is the lack of appropriate training for teachers (Griffin, 1987; Persky, 1990). According to Marshall, "with possibly 50% or more of their teaching population having no training at all, many developing areas have a considerable way to go before in-service in the instructional application of computers makes sense" (Marshall, 1984, p. 380).

A significant number of the teachers received their training from Teaching Quality Improvement Project (TQI), Bangladesh Institute of Administration and Management (BIAM), National Academy for Educational Management (NAEM), and NOTRAMS (spell out).

The teachers during their interview stated that a vast majority of them (90%) received training on Computer Education. A small proportion (10%) neither received any kind of

Computer Education training nor their academic background was related to teaching Computer Education. The nature of the training offered was of an introductory nature. Most of the training duration was not more than a month. However it was revealed from discussion with teachers that a large part of the training programmes were concerned with general pedagogy rather than on Computer Education or ICTE. In many cases, only a day out of 30 days of the training program was allocated for Computer Education training. Figure 2 shows duration of the computer training programme completed by the teachers. 22 teachers (52%) participated in training of 15 to 30 days'; 6 (14%) teachers got one and half month long training; 5 (12%) teacher had 2 to 4 months' training; 4 (10%) had 6 months training; and only one teacher had a 1 year computer training leading to a Diploma. Computer Education teachers generally said that they were not adequately trained to teach students.

Figure 2: Duration of Computer Training Programme of CE Teachers



The study clearly revealed that in-service training courses for teachers were insufficient, especially in content areas. These in-service training courses also had a lack of hands-on activities. It appeared that due to lack of appropriate training, the teachers were likely to be without self-confidence, disinterested and de-motivated. These shortcomings in training led the teachers to be un-interested, unenthusiastic, and reluctant to engage in teaching Computer Education.

Chapter wise Teachers Confidence Level

The sustainability and effectiveness of a curriculum largely depends on its proper dissemination. About 45% of the teachers stated that they never saw the curriculum. Due to lack of knowledge on the subject, the teachers' observations on some of the contents were negative and harsh.. The teachers recommended content based training program for enhancing their competency, capacity and knowledge. It emerged from the analysis of teachers' perceptions about contents of the Computer Education curriculum that most of the contents of CE were relevant and necessary. However about 12% of teachers stated that spread sheet as a content was unnecessary. About 11% of teachers expressed that networking

and internet as a content was irrelevant and unnecessary. The chapter-wise detailed analysis of teachers perception is presented in Figure 3.

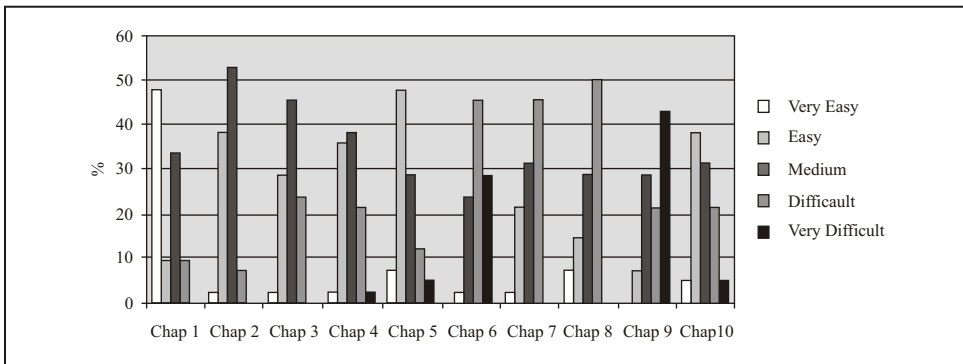
Chapter 1: Computer and History of Computer.

About 58% of the teachers stated that the chapter was very easy (48%) and easy (10%), and 32% of them considered the content medium type and only 10% perceived it as difficult. None of the teachers found this subject very difficult.

Chapter 2: Structure and Organization of the Computer.

A large number of teachers (52%) ranked the content of medium difficulty; 38% ranked the content as easy. Only 2% of the teachers found it ‘very easy’.

Figure 3: Teachers’ Difficulty Level of the Contents:



Chapter 3: Software and Operating System

It emerged from the study that teachers’ ranking of this content ranged from easy to medium and none of them found it very difficult.

Chapter 4: Number System and Computer Logic.

About 38% of the teachers ranked this content as easy to very easy; 23% teachers felt that this section was difficult or very difficult.

Chapter 5: Word Processing.

The comments provided by the teachers on this content were mixed. Although a small group of teachers found this content as difficult, 55% of the teachers graded this section as very easy to easy; 17% and 29% of the teachers respectively graded this section as difficult to very difficult and as of medium difficulty.

Chapter 6: Spread Sheet Analysis.

A noticeable number of teachers ranked this section as difficult (45%) to very difficult (29%); 24% of the teachers ranked this chapter as of medium difficulty. None of the teachers found it very easy and only 2% graded it easy.

Chapter 7: Database.

A large number of teachers ranked this content difficult.

Chapter 8: Concept of Computer Programming

A larger number of teachers (50%) found Programming section difficult, but none of them ranked it as very difficult; 21% of the teachers stated that the chapter was very easy to easy.

Chapter 9: Networking and the Internet:

A significant number of teachers (64%) found this chapter very difficult or difficult.

Chapter 10: Computer Application and Multimedia:

About 43% teachers and 67% students found this chapter as easy or very easy; 21% teacher opined that this chapter was difficult, whereas 5% teachers found it very difficult.

Teacher’s Performance

A teacher’s performance in classroom logically is the ideal criterion to evaluate the teacher’s readiness for the CE class. Table 4 presents the performance of teachers in classroom presentations.

The performance of CE teachers in classroom presentations was ranked by considering 20 items related to relevant pedagogic skills. It was observed that 29 teachers (69%) followed the traditional lecture method of teaching. It was also found that a teacher was conducting class just by reading from the text book. Ten (24%) teachers taught their classes following the lecture method with some discussions and questioning, and 3 (7%) teachers tried to apply the learning by doing method.

In 41 (97%) classes, there were provisions for hands-on practice, but only 10 teachers (24%) applied this method partially. It emerged from the above that absence of hands-on practice which is the most important component of a practically oriented subject like Computer Education, the students would likely to be reluctant and disinterested to learn. This deficiency had largely accentuated the gap between the prescribed and practiced curriculum.

Table 4: Teachers Performance of Some Selected Skills

	Motivation	Preparation	Clear conception	Engaging students in their lesson	Questionin Technique	Board use	Effort to understand	Explaining new words and concepts	Voice
Not Applied	13 (31%)	-		16 (38%)	14 (33%)	33* (79%)	3 (7%)	23 (55%)	
Very Poor	8 (19%)	3 (7%)	2 (5%)	2 (5%)	2 (5%)	0	3 (7%)	1 (2%)	1 (2%)
Poor	4 9.(5%)	9 (21%)	7 (17%)	9 (21%)	8 (19%)	2 (5%)	5 (12%)	6 (14%)	6 (14%)
Moderate	10 (24%)	22 (52%)	18 (43%)	10 (24%)	14 (33%)	24 (57%)	24 (57%)	9 (21%)	16 (38%)
Good	7 (17%)	7 (17%)	11 (26%)	5 (12%)	4 (10%)	7 (17%)	7 (17%)	3 (7%)	17 (41%)
Very Good	0	1 (2%)	4 (10%)	0	0	0	0	0	2 (5%)

Table 4: Continued..

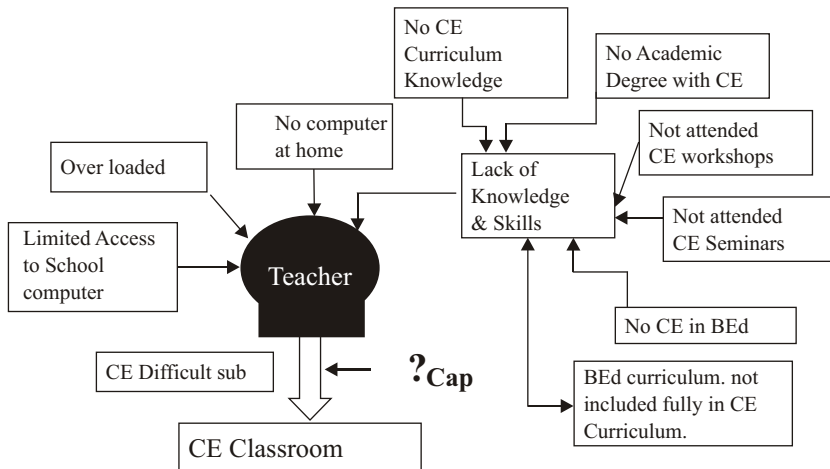
	Subject oriented	Easy to Hard	Format-i've Evaln.	Evaln. at the end.	Gesture	Eye contact	Sense of Humour	Encouraging question	Students participation	Technique of use T.Aid **	Method relevant
Not Applied		14 (33%)	26 (62%)	28 (67%)		6 (14%)		29 (69%)	1 (2%)	42 (100)	
Very Poor	1 (2%)	-			1 (2%)	2 (5%)	39 (92%)	1 (2%)	1 (2%)		3 (7%)
Poor	6 (14%)	12 (29%)	7 (17%)	3 (7%)	11 (26%)	11 (26%)	1 (2%)	1 (2%)	6 (14%)		6 (14%)
Moderate	16 (38%)	16 (38%)	8 (19%)	9	27	20	2 (5%)	8 (19%)	25 (60%)		23 (55%)
Good	17 (41%)	-	1 (2%)	2 (5%)	3 (7%)	2 (5%)		3 (7%)	9 (21%)		10 (24%)
Excellent	2 (5%)					1 (2%)					

*8 schools do not have any board to use in the class. ** None of them use teaching aid except computer.
 (None of the students was retarded or came from an ethnic group.)

Teacher performance was generally found to be very poor in classes observed. The impression one had was that the teachers were unprepared, had no clear concept of the topic, and lacked basic computer education knowledge and skill. They lacked confidence in taking their classes and the students were passive and unattentive. The quality and projection of voice, body language and eye contact, as the teachers spoke, could be considered satisfactory. However, due to deficiency in knowledge and understanding of the content, state of readiness of teachers, and their performance in motivating the students, engaging the students in the class, questioning technique, use of teaching aids and board using technique were unsatisfactory and frustrating.

The scenario described above about teachers' competence and state of readiness for conducting classes is illustrated in Figure 4

Figure 4: Findings on Computer Education Teachers' Readiness



6. Conclusion and Recommendations

According to Hawkridge, Jaworski and MacMahon, (1990, p. 282), "Almost all teachers using computers in developing countries were never trained to do so during their initial training, and they have had only the briefest of in-service courses relating to computers". The study also revealed that the teachers were conducting the Computer Education classes with inadequate knowledge, skills and training in Computer Education. It also emerged that the teachers were facing many challenges in conducting classes due to lack of Computer Education related knowledge and skills. Due to these limitations and deficiencies the teachers were unable to conduct their classes with confidence and competence.

Recommendations:

- In order to ensure effective implementation, systematic dissemination of the Computer Education Curriculum among the Head Masters and Computer Education teachers should be made through trainings, workshops and seminars.
- Computer Education teachers should have a clear idea about what they are expected to do and should be clear about the objectives and expected outcomes of the subject. The duties and responsibilities should be made clearly articulated and made available for all teachers.
- Those responsible for policy regarding computer education should consider how an effective in-service training for computer education teachers can be designed and implemented and identify organizations which can assist in this effort.
- The training program should cover the curriculum and make a teacher more skillful and confident about the subject. The in-service training courses should focus on practical hands-on computer work and not only on theoretical materials. The content of the in-service computer courses should be determined according to the participants' needs.
- Opportunities should be created for computer education teachers to participate in seminars and meetings with other computer teachers in order to keep them updated on developments in computer usage and implementation.
- Government should employ Institute of Education and Research (IER) University of Dhaka, and Government TTCs to coordinate the plan and programme on professional development of computer education teachers. The B.Ed. Computer Education curriculum should be strengthened to produce computer conversant trained teachers.
- Incentives (financial assistance) should be provided to motivate teachers with a view to compensating for unusually high demands on teacher time and initiative.
- Support should be provided to computer education teachers to have access to teaching aids, such as, content based teaching materials including electronic materials, books and journals.

- Access to internet is essential. Communication with other people in the computer field and consultation with computer experts should also be made available.
- Several private and non-government organizations such as Bangladesh Computer Council, Youth Development Centers, and BANBEIS are engaged in providing support in the form of supplying computers to the schools and arranging training programs for the Computer Education teachers. These training programmes should be conducted emphasizing Secondary School Computer Education Curriculum. A study is also needed to examine the impacts of these interventions.

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