

IT IS ALSO VERY HELPFUL FOR TEACHERS INTRODUCING ICT OR INTEGRATING IT INTO THE CURRICULUM. pdf

1: Cross-curricular integration of ICT | TES Community

ICT-based curriculum is one of the main elements in strategic planning for ICT integration in the Malaysian education system. This will ensure that technology investment decisions are optimized in.

As a result, all educators realize that ICT is a valuable resource for improving school education. However, the process of introducing and integrating technology into the curriculum is not easily or quickly accomplished. It is a challenge to reconsider teaching practices, the curriculum, the role of teachers, and the ways in which ICT can be incorporated into the school curriculum to maximize educational outcomes. To implement the technology change in scholastic and co-scholastic areas, teachers need to accept the use of ICT in the classroom. The teacher of the future must not only be accomplished in the use of ICT but also in the integration of ICT into the curriculum. It is, therefore, inevitable that for any effective change to occur, the use of ICT in teaching and learning must be accompanied by a corresponding change in the curriculum. ICT has to become as important as literacy in language and mathematics. Like reading, writing and mathematics, computing gives the student a basic intellectual toolbox with innumerable areas of application. To achieve these abilities, ICT curriculum should have substance in it. A national scheme of work for computer education should be rolled down to form the basis of curriculum planning. The practical skills of blogging, podcasting, ethical use of social networking must be inculcated in present generation learners. Computer education curriculum must include stances, which enable students to develop an appreciation for the emerging technology, usage and application of technology, and the impact of technologies on themselves and on society. The successful implementation of computer education will act as a building block for ICT integration in to classrooms. For language teaching, the World Wide Web should be used to build vocabulary, activities on listening, pronunciation support and so on. The listening drills provide not only sounds but also visual inputs that equip learners with more contextual clues. Latest web technologies like wikis, blogs, and podcasting can be built-in within the lesson plans of literature to enhance creative writing, good communication and critical thinking in learners. Videos and multimedia presentations can be used for complex grammatical concepts, thereby avoiding the boredom of written script. ICT simulations can be used in science education for understanding of theories, principles, ideas and concepts. Biological systems, industrial chemical plants and concepts such as radioactive decay and interactions within ecosystems, populations and food chains can be explained using CD ROMs, which are available with interactivity. A particular type of simulation is the virtual experiment through online laboratories. In some cases students can start at the beginning with a choice of apparatus, and move on to decide on amounts of materials or operating conditions. These kinds of software or online programs can be used by teachers to complement student practical work. It can be used as part of a pre-lab discussion to set the scene for the experiment, or to stimulate post-lab evaluation of experimental process and results. Various science educational applications make learning interactive and engaging. For mathematics, different kinds of interactive learning environments are available in the form of 3D programs. The integration of these 3D programs for teaching geometry will lead to a better understanding of the concept with an impact on the minds of learners. Construction of point, arcs, line, and further complex geometrical figures can be explained using construction software that serve as an ultimate tool for introducing the concept of construction. Many information processing tools like the spreadsheet package, can be used to teach graphs, formulas and functions, which help to identify the role of concepts in the real world scenario. Learners interacting with a computer actually use motor skills, which can have a strong reinforcing effect on the learning process by connecting physical actions like clicking and typing with desired results. Learners are also allowed more control over the learning process as they make the decisions on when to repeat questions, exercises and sequences based on their own progress. As a result, they experience expanded devotion towards the task, take the onus of the work done, learn independently, and are joyfully involved in the learning process. Teachers with ICT skills will need to carefully consider when, what and how to teach the generative

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topics integrated with ICT tools. Teachers may choose to use very simple or complex technologies to achieve their educational vision. The role of technology integration should be to enhance the content and pedagogy. Learners need to be engaged in tasks where technology facilitates their learning. It is not just the teaching-learning process that can be enhanced with the use of technology. Assessment of learning can also be heightened by the integration of technology. Capturing the moments of assessment using digital cameras and maintaining and calculating grades and marks, using information processing tools will save time and help teachers understand better how their students learn. Educators need to perceive ICT primarily as a tool for teaching and learning across the curriculum although there are foundations skills in ICT that students need to learn before they can participate fully in an ICT rich classroom. Clearly we are all convinced that teachers need to inculcate the willingness to learn enough about ICT to use it effectively in the classroom. For teachers to rethink and re-structure teaching and learning they must first learn enough about relevant technologies to apply them in their professional arena, and to translate them to their students as part of the integrated learning of the subject matter. The information explosion has changed the nature of knowing from the ability to recall information to the ability to define problems, to retrieve information selectively and to solve problems flexibly. This therefore changes the nature of learning from the need to master topics in class to the need to learn autonomously. Teachers and students now need to learn how to learn in an ICT rich environment. Resources for the classroom.

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2: Embedding ICT across curriculum subjects - Software Asset Management UK

into the curriculum, not the curriculum into the computer. Therefore, effective ICT integration should focus on pedagogy design by justifying how the technology is used in such a way and why. Effective ICT integration into the learning process has the potential to engage learners (Wang & Woo,).

Lack of competencies; Hargreaves and CEO Forum claim that information and communication technologies will be efficiently used in lessons only if teacher qualification development will be oriented specifically to the needs of the teachers and demands of the system of education. Lawton notes that accessibility is one of a number of problems. If the teachers are required to use such resources as information and communication technologies, they must have access to these technologies. It is also very important that these technologies function in an indefectible way, i. Lack of support Means and Olson assert that easily accessible technical support maintenance of computer hardware and intranet infrastructure is an important factor in the school change, integrating constructivist education and information and communication technologies at school. The authors remark that teachers will have no intention to use technologies if they feel they can encounter technical problems not working software, hardware problems etc. According to the research data by Ringstaff , teachers, supported and motivated by the school principal, used information and communication technologies more during their lessons in comparison with those who did not receive support from the school administration. School principal support is very important as technology integration into the school is related with resource redistribution, purchase of the new equipment, teaching schedule reconsideration, foreseeing teacher time to renew ICT competencies, subject qualification renewal and lesson planning. Time is the major factor which is necessary if teachers intend to develop their professional qualification, participating in various courses. Teachers are suggested spending half of the time for contact hours with students and the other half for carrying out professional responsibilities - teaching. Teachers need time to reflect upon what they have learnt and to plan how to apply the newly acquired knowledge in class. It is how the time is planned and used that is most important. CEO discerns five stages of integration and overcoming difficulties: Invention - new areas are invented where the use of technologies is appropriate. In stage one Entry learners, not the teacher, gets acquainted with information technologies. Technologies are treated as a problem and inconvenience Figure 1. Five stages of technology integration In stage two Adoption technologies are treated as a useful but limited phenomenon. Teachers use technologies to expand their personal tasks, such as administration of tasks, organizing schedules etc. In this stage teacher gives students examples and encourages learner use of technologies. In stage three Adaptation technologies are used in class work. Teachers use information technologies to add variety to the teaching content but do not change their teaching style. In this stage teachers do not change the teaching form and it remains teacher-centred. In stage four Appropriation teachers begin to perceive the opportunities provided by information and communication technologies and start creating tasks that are pre-eminent in their possibilities. Learners start guiding their own learning and use technologies for their learning aims to achieve their higher order thinking objectives. Technologies are perceived as a useful tool. Students use technologies to achieve basic and higher order thinking skills. Invention occurs when the teachers create tasks and even change class environment to take advantage of the opportunities provided by technologies. To successfully integrate technologies teachers have to change even their teaching style and their approach to teaching. Lack of qualification development It is a barrier number one in the above mentioned research. Education Review Office also emphasises that lack of teacher competencies affects lack of teacher self-confidence; consequently, teachers feel fear of using information and communication technologies in class. Insufficient financing Irrespective of the fact that schools lack computers, some hardware and software financial resources are morally and technologically out-of-date, there is lack of resources for the development of teacher computer skills, whereas a number of the Lithuanian teachers lack basic skills in using information and communication. School principal and deputy-principals are in the central position. The principal is often

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occupied with administration and managerial issues or lacks interest or vision in the area of information and communication technology integration into the school setting. Due to this reason time is very often considered to be one of the barriers. Having overviewed the barriers and difficulties of ICT integration presented by different authors, such as Murray and Campbell , Hargreaves , Cook, , Ang , Glennan and Melmad , Ringstaff , Lai , Sinko and etc. This attempt to integrate information and communication technologies can be fruitless and inefficient unless the Ministry of Education and Science plans and provides schools with proper resources

Lai School management Schools can play a very important role in integrating ICT into the system of education. It is worth mentioning that not only ministries should take how the process of integration should be organized, but also schools could give feedback on difficulties they are facing integrating ICT into curriculum and suggesting what could be done differently. Teacher as learner Teachers have to experience learner position. In the learner position teacher models a positive situation for learners and shows learners a different perspective, which makes the perception of new subjects easier. Teacher has to feel free and without any restrictions in the teaching environment. Only these feelings will foster the teacher to learn and develop further. Barriers as opportunities The emerged difficulties should be viewed as opportunities to develop. Peer support Reliable colleagues can become internal "technology" teachers who could teach in small and convenient groups. Teachers can be provided help by sharing best practices of the same school teachers or analysing the benchmarking projects. Time issue If the school intends to achieve good results in the area of ICT integration, then at least one week a year should be devoted to teacher activities outside the class. Fullan asserts that change is a complex phenomenon, whereas the teaching and learning change is even a more complex and complicated process. Fullan presents several principles which, according to him, lead to the successful change process. In these principles Fullan emphasises that change is a complicated process, because it is necessary to change power structures and because a great number of people participate in this process, including teachers, principals, school managers, learners and their families. Change cannot be required from the people who lead school or from the government; however, support of the latter is particularly important. Fullan also notices that during the change the problems arise and conflicts emerge and that it is necessary to learn from them, not to look at them as a negative phenomenon. Change requires cooperation, however, this cooperation has to allow for and foster the difference in opinions and different approaches. According to him, the whole process of change has to be flexible and its efficiency depends on the plan of change, i. Fullan claims that it is necessary to remember that schools and their situations are as much different as their decisions and their change process. Until these barriers exist, the learners will not be able to take full advantage of the opportunities provided by information and communication technologies.

CONCLUSIONS As ICT integration into the learning and teaching process and the whole system of education is a rather complicated process, new conceptions, strategies, plans and models have to be developed by the Ministry of Education and school administration which make full use of the potential of new technologies. An attempt to integrate information and communication technologies will be fruitful and efficient process only if it is preceded by proper planning provided by the Ministry of Education and Science and proper provision by resources for schools. A link to better learning. The CEO Forum school technology and readiness report. Finding time for professional development. Education Review Office In-service training for teachers in New Zealand schools. Number 1, Autumn , e-Learning. Teaching and Professional development with the Internet. Publisher by University of Botago Press. Fostering the use of educational technology: Elements of a National strategy. Changing teachers, changing times:

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3: Introducing ICT into Teacher-Training Programs - www.enganchecubano.com

that 'relatively few teachers are integrating ICT into subject teaching in a way that motivates pupils and enriches learning or stimulates higher-level thinking and reasoning' (p).

Problems in Bangladesh 1. But the use of ICT into teacher training usually faces certain obstacles. We then described the strategies to overcome these problems for improving the current status of ICT integration into teacher training. Finally, we concluded with emerging research issues and offered pertinent recommendation with respect to ICT integration into teacher training program for improving quality of teaching in Bangladesh. ICT integration, Teacher-training, knowledge and skill 1. Introduction Information and communication Technology ICT has become, within a very short time, one of the basic building blocks of modern society Clement, This would allow teachers to gain access to new knowledge and skills, improved educational resources, and overcome the traditional isolation of teachers and create individualized training opportunities UNESCO Bangkok, It is the belief of many teachers that the introduction and usage of ICT for teaching and learning situations would be time consuming for the teachers. Not many teachers in the big cities of Bangladesh are comfortable with the idea of using variations of ICT resources, and this limited amount of confidence acts as a barrier in conducting their lessons with ICT. In Bangladesh, most of the teacher training programmes have not been successful due to several barriers on it on what? The aim of this paper is to present the possible obstacles of introducing ICT into teacher-training program in Bangladesh. Therefore, this paper is primarily focused on problems in relation to implementing proposed training models. This study will put forward possible suggestions for eradicating these barriers so that ICT can be effectively introduced into teacher-training program in Bangladesh. To increase competency, ICT teacher training can take many forms. The lack of specific technology knowledge and skills, technology-supported pedagogical knowledge and skills, and technology-related-classroom management knowledge and skills has been identified as a major barrier to technology integration. Whether teacher trainers have competences in computer science or not does not make a difference in their pedagogical representations regarding the use of ICT, but it has an impact on the probability that they will integrate ICT in their practices. But Twidle et al. Teachers have to know how a computer or other technical devices work to be able to use them, but isolated workshops or conferences are not enough to establish a real change concerning the integration of ICT in classrooms Enochsson and Rizza, So for effective integration of ICT in teacher training demand easy access, adequate competency and positive attitudes towards ICT. Knowledge and skills of Teachers In addition to the lack of technology knowledge and skills, some teachers are unfamiliar with the pedagogy of using technology. According to Hughes , teachers need to have a technology-supported-pedagogy knowledge and skills base, which they can draw upon when planning to integrate technology into their teaching. In spite of lack of knowledge and skills teachers do not show their willingness to under go teacher training to improve their knowledge and skill. Moreover, those teachers have already got training; they are not even motivated to implement in their teaching situation. Sufficient funds Any innovation in training needs funds for implementation. In order to improve the quality of teacher training by integrating ICT is not apart from that. Teacher training related with ICT integration requires lot of funds not only for computers but for creation of additional infrastructure and employing trained people. Ertmer argued that the decision of whether and how to use technology for instruction ultimately depends on the teachers themselves and the beliefs they hold about technology. Over least years due to commercialization of Education, the opportunities of earning extra money through tuitions has been increased a lot. While on the other hand, success of all teacher-training require self initiative and self motivation to improve their ICT skills. Therefore, teachers are not showing much interested on under go teacher-training. More over most of the teachers put up with negative attitude towards integrating ICT into teaching-learning. Research found that in a program focusing on information and communication technologies in schools, failed to see the value of such technology for their students. Although they had seen the power of the computer in

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other areas, they were unconvinced that it could help in education. Lack of Resource Persons Dream of integrating ICT into teacher-training would not be a reality if we do not have sufficient number of trained resource persons. Due to lack of appropriate resource persons, most of the training programme could not even achieve their objectives. Affordability Bangladesh, a developing country, has to accommodate or adopt technology for the sake of development. But it is now a big question whether it will be able to economically, culturally, socially or politically afford a globalised system of education. This may lead to two scenarios. On the one hand, if knowledge is to be imported from developed countries at a high cost, it will place strains on the budget of the dependent country. On the other hand, if knowledge costs less to produce than in the country to which it is imported, then knowledge will be colonised. This, in effect, means those who control or provide technology will take control of aspects of the host country. A great number of people in Bangladesh is poor, they cannot afford technology for their benefit. Appropriateness and Acceptability It is becoming clear that a cost-effective, flexible and dynamic system of education is needed to meet the growing educational needs of the society. Obviously, educational development is dependent on the invention of new technology. It is now widely recognized that no single medium can be effective for all kinds of learning needs. Each technology has its own strengths and weaknesses. One medium may serve a teaching function better than another in a particular area, and culture and learners may have different preferences for the technology to best learn with. The socio-economic and cultural background of a person influences their ability to learn from different media technology. There are a number of factors that need to be taken into consideration before deciding on the appropriate use of technology. According to Alam, include availability and access, the unique pedagogic characteristics of each medium, instructional objectives, financial resources and personal resources. Use of new communication technologies requires trained manpower to design, develop, produce and deliver educational material. Few developing countries have adequately trained human resources for these specialised jobs. Most people working in educational technology are required to learn the job, and the occasional training courses organised by educational institutions often fail to equip them with the adequate knowledge and skills required to perform the job more effectively. Social and development perspective Most of the teachers in rural area in Bangladesh are not familiarized with ICT. They are not friendly with technology. They are habituated in a way that providing of education should be done in conventional mode. Most of the village is not under rural electrification. So the running of technology specially computer, television, audio-video conferencing is not possible. The female teachers in rural Bangladesh sometimes did not be permitted to go outside from their family to attend the literacy programme. The factors which discourage the illiterate women to attend the literacy training programme are: Policy and Management of Teacher Training on ICT In the policy level the expectations from ICT training program must be defined clearly and this expectations must be variable with the changing technology and flexible evaluation procedure should be adapted to check the expectation meet at what extent Enochsson and Rizza, This is now a big question: To ensure continuous training of teachers from pre-service teacher education to induction to in-service professional development, other training agencies should be mobilized and labour should be divided among them, with the MOE providing central coordination. A centralized training administration system for all teaching and non-teaching staff is crucial to document and monitor professional development. Government should formulate policies for integrating ICT into teaching and learning and proper initiative should be taken for improving teacher training programme. More teacher training institutions should be open up and necessary budget should be allocated for effective teacher training. Preparing trainers and resource personnel It is really hard to keep the same pace with the advanced world from the ICT context because lots of parameters are working behind it. This gap creates a change in attitude of the student teachers as well as trainers compared to the developing countries. In Bangladesh People who were born in the latter 20th century grew up surrounded by digital technology and the Internet. So, government should give all round support to prepare the student trainee teachers, trainers, resource personnel up to the standard of current technological requirement. TPCK, at its most foundational level, is the intersection between the development of knowledge of subject matter content, with the development of technology, and the

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knowledge of teaching and learning pedagogy. This framework, on a more global scale, combines appropriately selected technology with content-based learning experiences and pedagogical approaches. Technology knowledge TK, 2. Content knowledge CK 3. Pedagogical knowledge PK 4. Pedagogical content knowledge PCK 5. Technological content knowledge TCK 6. Technological pedagogical knowledge TPK 7. Knowledge required by teachers for integrating technology into their teaching in any content area. The developing countries like Bangladesh can take a vision in their national policy to integrate TPACK framework in the teachers training module because Technology, pedagogy, and content-specific knowledge should be blended together to improve teaching and learning Graham et al. In order to meet the present demand we have to give emphasis on preparing resource persons who can conduct training programme effectively. The workshop endorsed the value of using master-teachers as part of the main training strategy, and the aim is to prepare master trainers for project countries through regional workshops. Also, teacher directed training will help meet specific local needs. Development of a core group of external and local trainers in each of the functional areas could be useful and may prove to be an acceptable mode of training. Hybrid models that suit local needs may also be encouraged. Introduce on line training for saving money and other barriers Multimedia and multimodal transmission, while more expensive, is widely considered to be more effective. Furthermore, instruction that uses a range of formats, from video and CD, to printed materials and on-screen delivery covering prescribed curricula could well be beneficial. Online training using web technology, which is flexible and easy to revise, may be more useful for lifelong education and training. This mechanism can be useful for servicing more remote schools, and can even help teachers to connect with colleagues and other schools through online networks, and thus create an environment for building local capacity in the use of ICT, and may also help teachers to better serve their community. Teachers will thereby be able to further increase their own capacities to develop local teaching materials. This can also then act as a focal point for further inservice development. Formal certification of in-service professional development that leads to diplomas or degrees could provide an incentive for teachers to upgrade and update their skills in and knowledge of ICT integration. Incentive and motivation directly help teachers to change their negative attitude towards ICT integration into classroom. The effective professional development related to technology integration: First, focusing on technology knowledge and skills is clearly important because technology integration cannot occur if the teacher lacks the knowledge or skills to operate computers and software. Snoeyink and Ertmer " found that teachers did not see the value of technology integration until they had developed basic skills such as logging onto the network and basic word processing. When teachers perceive ICT as a tool to meet curricular goals, they are more likely to integrate ICT in their lessons. Teachers play a pivotal role in the integration of ICT in the school curriculum and assessment. When ICT is introduced into the assessment process, there is a need to reconsider the assessment approaches that must be incorporate in the teacher training module.

4: NCERT launches revised student-teacher ICT curricula - Livemint

Integrating ICTs into the Curriculum: Analytical Catalogue of Key Publications This first issue deals with integrating ICTs into schools. Many teachers have been.

5: ICT Integration in Mathematics - African Virtual University : African Virtual University

NCERT launches revised student-teacher ICT curricula The new curriculum focuses on integrating information and communication technology (ICT) with pedagogy to enable better learning outcomes.

6: Infusing ICTs into the curriculum

Opportunities for teacher qualification development are also foreseen. However, integration of information and

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communication technologies into the system of education is a more complex and more complicated process related to the change in the teaching.

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