IT in Education: What is Really Needed of Teachers’ IT Competencies?

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Abstract:
This paper argues that the conventional establishment of levels of Beginning, Intermediate and Upper Intermediate for teachers’ IT competency based on IT skill-sets is not be appropriate in enabling teachers for IT in education. Instead an Information-oriented model pegging on the central role of education is proposed.

1 Introduction

Teachers in recent years have experienced tremendous changes in their workplaces and in their job requirements with the rapid advent in IT. Indeed the situation has produced marked demands on teachers to “upgrade” their technology skills and practices to meet the new environment. Indeed different governing & professional bodies of countries such as Singapore, US and UK have devised their treatment of the issue with various teachers’ IT competency levels proposed.

However given the rapid advances in IT and related technologies, are these various contrived IT skill levels adequate? Or more aptly, what is really needed of teachers’ IT competency?

2 What IT Skills are needed of Teachers? – The Present

While different persons may have variant definitions and emphases of certain aspects of IT, the general perception of IT as information processing & communication technology prevails. In devising IT skills required of teachers, recent works in Singapore [7] and Hong Kong [1,2] essentially center around the IT competency levels of Beginning, Intermediate and Upper Intermediate with similar efforts also done in the US by the National Council for Accreditation of Teacher Education (NCATE, 1997). Led by the professional organization, ISTE (International Society for Technology in Education) and in conjunction with a number of other bodies, a set of IT competencies for teachers is devised with 23 indicators organized into the six summarized categories of: Technology Operations and Concepts, Planning and Designing Learning Environments and Experiences, Teaching, Learning, and Curriculum, Assessment and Evaluation, Productivity and Professional Practice and, Social, Ethical, Legal, and Human Issues. Basically these skills are contained within three levels of: recommended Foundations in Technology for All Teachers, standards for Basic Endorsement in Educational Computing and Technology Computing and Technology Leadership with each higher level subsumes the lower ones.

As for the UK, the National Council for Educational Technology has also produced a guide on defining what is meant by teachers’ IT (or “ICT” in their parlance) competence with a more a recent one updated by TTA (Teacher Training Agency) [5,6].

As the list of competencies contain a quite a few redundancies (and a bit confused) about what students need to know compared with what teachers need to know, their list of competencies fall into roughly eight general categories of skills: Understand basic operation skills and terminology, Able to find, manipulate and communicate information, Able to utilize the particular strengths of ICT, Able to prepare and present instructional materials, Recognize how ICT is connected to national curriculum goals, Use ICT-based materials and tools to support subject teaching, Understand health, legal and ethical aspects of ICT, and Use ICT professional for administrative use and efficiency enhancement. While the labels provided for these categories in the original document are rather unclear, but those listed above are what seem to be the general thrust.

In summary, the various establishments of teachers’ IT skills are mainly of level-based (except the UK one perhaps) with each level designates a certain group of performance indicators related to IT skills. While this is efficient for performance measure, such a skill-based approach nonetheless runs the risk of too IT-skewed that that would undermine the central role of education. Indeed it cannot be over-emphasized enough that as teachers, their main role is for education and all levels of IT competencies should help gear towards the direction. It seems current skill-level approach composed of various discrete skills might not be helpful in working towards the direction, especially with regard to recent IT development.

3 Teachers’ IT Competencies Re-defined

It goes without saying that in the last few years, there have been major developments in the capabilities of both hardware and software related to IT. Machines are faster, costs are lower, software is more powerful and friendly. Among the most important changes are: “networked-ness” and “friendliness” (Fig.1) in the use of IT applications.

As indicated in Fig.1, the efforts required in using IT in the future should be less than the present. In other words, what is needed for teachers’ present IT competency
may not be necessary in the future! This is evidenced from our experience e.g. FTP (File-Transfer-Protocol) and many IT operations. Nowadays many operations can be done with a few clicks without the need to type in a lot of “hard” commands. In other words, what is really needed of teachers is their conceptual understanding of IT rather than pure skills. As skills may go away with changing interface, the concepts remain. In other words, skill-wise it should be a “deflation” for teachers rather than “inflation” as the general perceive. Indeed what is really needed of teachers in the use and integration of IT in education is the discrimination, analysis and filtering of information rather than solely on the technologies per se.

It therefore becomes obvious then that purely producing a list of levels of IT competencies are not adequate enough to address the real situation. There is also a need to update and even re-conceptualize so called what is teachers’ IT competencies. More importantly, an information oriented conceptual approach should be adopted whereby the manipulation of IT for information handling (information searching and filtering, information communication, information storage and handling, information presentation, information analysis, information capturing and formatting) for various educational purposes should be focused. As such will help teachers view and acquire IT skills in a more coherent manner.

Such a model will also help teachers more appropriately position IT and education and apply the skills they have learnt in their daily teaching. The new approach aims at helping teachers to learn computer skills from practical application. For example, in Information Search and Filtering, teachers’ IT competencies expected will then be on the know-how of getting the information from various sources available via IT and have them judged “rightly.” In Information Storage and Handling, teachers will be required to be able to store and handle the information collected (after Information Search) in a decent manner either with some word-processors or similar software, and similarly the same applies to other circled dealings of the diagram. Note that here we are not producing an exhaustive list for the reason that too prescriptive may not be that really needed as what Peck [4] suggested. Indeed there are many contextual variables to consider in deciding how to effectively promote learning as instructional solution typically do not have a single optimal delivery system.

4 Conclusion

In this paper, we have discussed teachers’ IT competencies in various places and have explored on what is really required of teachers in this new IT era. With the present skill-level approach having the drawback of tending one to acquire IT skills in isolated manner with the central role of education de-emphasized, an information-oriented approach on teachers’ IT competencies is proposed.

References