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PEDAGOGICAL PRACTICES THROUGH INFORMATION COMMUNICATION TECHNOLOGY (ICT)

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Introduction :

Near about the past twenty years the use of ICT has fundamentally changed the practices and procedures of nearly all forms of Endeavour within business and governance. Education is a very socially oriented activity and quality education has traditionally been associated with strong teachers having high degrees of personal contact with learners. The use of ICT in education tends itself to more student-centered learning settings. But walking with the world which is moving rapidly into digital media and information, the role of ICT in education is becoming more and more important and this importance will continue to grow and develop in the 21 st century.

What is pedagogy?

Pedagogy is the act of teaching together with its attendant discourse. It is what one needs to know, and the skills one needs to command in order to make and justify the many different kinds of decisions of which teaching is constituted.

Pedagogy includes methods and strategies of teaching tools, mechanical and electronic devices and instruments, media equipments, library inventories and even textbooks. Pedagogy is an art as well as a science.

NCET : According to National Council of Educational Technology (NCET), Pedagogics of Education is " the development, application and evaluation of systems, techniques and aids to improve the process of Human learning."

Teachers' subject knowledge

The use of ICT in lessons is influenced by the teachers' knowledge about their subject and how ICT is related to it. Some teachers choose ICT resources that relate to a particular topic, while others use ICT to present the pupils' work in an innovative way, without any direct application to the topic. The evidence shows that when teachers use their knowledge of both the subject and the

way pupils understood the subject, their use of ICT has a more direct effect on pupils' achievement. The effect on achievement is greatest when pupils are challenged to think and to question their own understanding, either through pupils using topic-focused software on their own or in pairs, or through a whole-class presentation. The effects of using ICT to present and discuss pupils' work are less well researched, and therefore the effects on pupils' attainment are not so clear.

Not all the teachers were experienced in all the aspects of ICT that might be required in order to meet the Teacher Training Agency requirements for newly qualified teachers, and some teachers even said that they were unfamiliar with basic aspects of ICT. However, they all expressed confidence in using specific ICT resources in their teaching, and believed it to be an important resource for their pupils' learning. Although they did not use a wide variety of ICT applications, they were regular users of some ICT resources.

Teachers' pedagogical knowledge:

The teacher's own pedagogical beliefs and values play an important part in shaping technology-mediated learning opportunities. It is not yet clear from the research literature whether these results in technology are being used as a 'servant' to reinforce existing teaching approaches, or as a 'partner' to change the way teachers and pupils interact with each other and with the tasks. Teachers need deep knowledge of ICT to be able to select the most appropriate resources. They also need to understand how to incorporate the use of ICT into their lessons; they may need to develop new pedagogies to achieve this.

Pedagogical practices of the teacher using ICT:

The pedagogical practices of teachers using ICT can range from only small enhancements of practices using what are essentially traditional methods, to more fundamental changes in their approach to teaching. For example, some teachers using an interactive whiteboard have displayed content and ideas for class discussions in a traditional way, while other teachers have allowed pupils to use the whiteboard to present dramas to the whole class that they had planned and filmed themselves. Studies show that the most effective uses of ICT are those in which the teacher and the software can challenge pupils' understanding and thinking, either through whole-class discussions using an interactive whiteboard or through individual or paired work on a computer. If the teacher[1] has the skills to organise and stimulate the ICT-based activity, then both whole-class and individual work can be equally effective.

Access to ICT resources:

An important influence on the use made of ICT in subjects and classes is the amount and range of ICT resources available *to* the teachers. Where there are limited numbers of computers in a class, mostly in primary schools, this limits their impact, because each individual pupil is only able to use the computer for a few minutes. Whole-class use of an electronic whiteboard has both positive and negative effects. It promotes pupils' debates and helps them visualise difficult concepts and processes. However, some teachers focus only on the presentation aspects, disregarding the use of simulations and modeling which might be more challenging for the pupils. Only a few teachers report using subject-specific software which links directly to the content and purpose of the curriculum.

Teachers' knowledge of the potential of ICT in education:

In spite of teachers often being limited by the ICT resources available to them, there are many examples in the literature of teachers having a good understanding of a particular resource. However, very few teachers have a comprehensive knowledge of the wide range of ICT resources now available in education. This means that their pupils are not given all the learning opportunities which ICT could provide.

Teachers' confidence in using ICT

Teachers are confident in their chosen uses of ICT. Few teachers are confident in using a wide range of **ICT** resources, and limited confidence affects the way the lesson is conducted. Many teachers still fear some forms of technology, which prevents them making much use of them in their teaching.

Organisation:

The use of ICT has a limited impact on teaching and learning where teachers fail to appreciate that interactivity 3 requires a new approach to pedagogy, lesson planning and the curriculum. Some teachers reorganize the delivery of the curriculum, but the majority use **ICT** to add to or enhance their existing practices. Teachers need to employ proactive and responsive strategies in order to guide, facilitate and support appropriate learning activities.

Collaborative work and insights into pupils' learning:

Using ICT with pupils in pairs, groups or with a whole class, for example, the use of an interactive whiteboard enables teachers to gather extensive feedback from pupils by listening to

their explanations. From this, teachers are able to gain deeper insights into pupils' understanding and progress. Pupils collaborating in pairs or teams using subject-specific ICT resources are able to challenge each other's understanding and learn from such collaborations.

Pedagogy beyond the classroom:

Despite the need for a new pedagogy with ICT, including at times moving to a facilitator role, teachers still need to adopt a leadership role in the planning, preparation and follow-up of lessons. Where little planning has occurred, the evidence shows that the pupils' class work is unfocused and leads to less than satisfactory outcomes.

Effective pedagogical practices with ICT:

This literature review has identified a range of practices which should be part of teachers' pedagogical frameworks if they are to integrate ICT effectively into teaching, learning and the curriculum. These include the need for teachers to:

- Understand the relationship between a range of ICT resources and the concepts, processes and skills in their subject.
- Use their subject expertise to select appropriate ICT resources which will help them meet the specific learning objectives; this includes subject-specific software as well as more generic resources.
- Be aware of the potential of ICT resources both in terms of their contribution to pupils' presentation skills, and their role in challenging pupils' thinking and extending their learning in a subject
- Develop confidence in using a range of ICT resources, via frequent practice and use beyond one or two familiar applications
- Appreciate that some uses of ICT will change the ways in which knowledge is represented, and the way the subject is presented to and engages pupils
- Know how to prepare and plan lessons where ICT is used in ways which will challenge pupils' understanding and promote greater thinking and reflection
- Recognize which kinds of class organization will be most effective for particular learning tasks with ICT, for example, when pupils should work on their own, how working in pairs and groups should be organised, and when to use ICT for whole-class teaching.

The majority of teachers, including the most innovative, require more knowledge of and confidence with ICT, and a better understanding of its potential to help pupils' learning: This

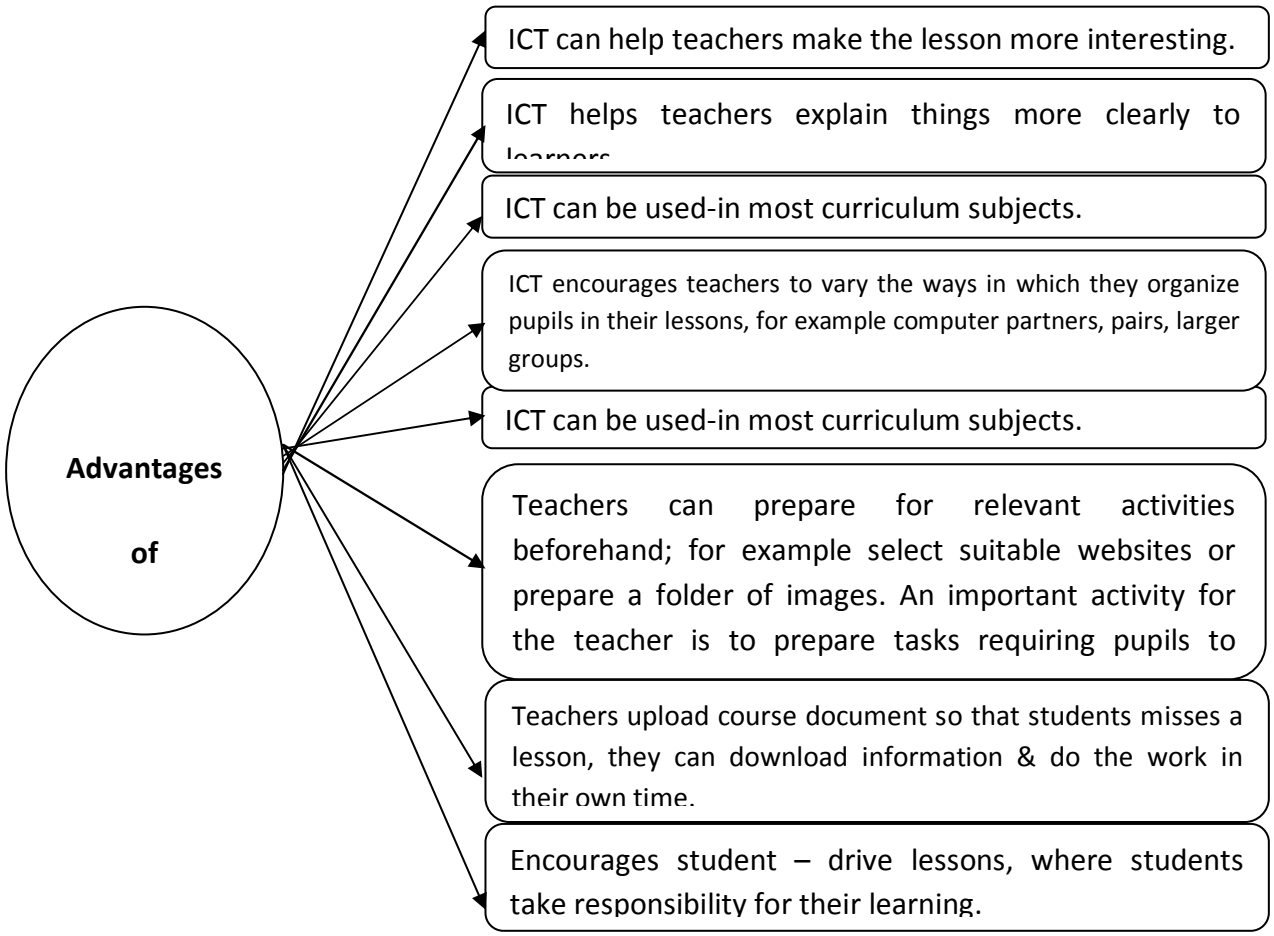
suggests that further substantial support for continuing professional development is necessary in order that teachers integrate the use of ICT and improve pupils' attainment.

Teachers' perceptions of ICT:

The first part of this section identifies what the teachers thought were the benefits that ICT can bring to teaching and learning, particularly in terms of pupils' attainment. These insights are drawn from a focus group conducted with a selection of the teachers. This section also identifies teachers' and pupils' current level of skill with ICT.

Advantages of ICT

The teachers considered that ICT can make an important contribution to schools, helping the teaching and delivery of the curriculum in a number of ways:



Benefits for learning:

Teachers reported that the use of ICT had many benefits for learning. One theme which emerged strongly was that pupils could control the learning process and see the results of their actions and decisions. Other specific examples of benefits arising from learning with ICT included:

a) Pupils can change variables in mathematics and investigate mathematical relationships interactively.
b) Simulations help pupils to distinguish and control variables.
c) Pupils can change one variable at a time in a simulation.
d) Pupils can collect data and do an experiment on an interactive whiteboard.
e) Using simulations challenges conceptual understanding.
f) Pupils can hypothesize and predict outcomes of processes.
g) ICT enables pupils to learn how to explain things to others.
h) The teacher can focus on the more important task of helping pupils in scientific thinking.
i) The use of interactive whiteboards helps the teacher introduce the theory behind topics.
j) The use of ICT encourages pupils to reflect on their own work.
k) ICT enables pupils to evaluate their own and others' work.
l) Having to explain an activity to others requires clarification in pupils' own minds.
m) Pupils can access more knowledge during school time.

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