



Item	Content
Introduction	<p>The Committee of Advisors on Science and The Panel on Educational Technology in the USA suggested that teachers should teach with educational technology, not teach about educational technology. Thus, ICT can be subject, and it can be a tool to use to teach other subjects, or to access information, communicate with others. In US public schools, three approaches to integration of ICT into curriculum are commonly used in middle and high schools: a) a separate ICT course; b) across the curriculum; and c) a mixture of course and cross-curricular work. The following models were proposed and implemented:</p> <ul style="list-style-type: none"> • <i>Model 1: ICT as a subject matter:</i> In this model, ICT is accepted as a subject matter. Therefore, this model requires a specific course ICT course integrated into the 5th grade curriculum. Grade: 6th, Subject: ICT, Goal: To develop the necessary skills and knowledge to use a variety of information and communication technologies, Content: Input and output devices: Multimedia authoring, presentation, Web tools, digital cameras, scanners, E-mail, online discussions, Web environments, Calculators, data collection probes, videos, educational software. • <i>Model 2: ICT Integration:</i> Within this model, ICT is not a subject of teaching. ICT is a cultural, mediational tool in the activity system in which students and teachers construct and co-construct new knowledge, in other words, students, and teachers are doing the work of knowing. Grade: 10th, Subject: Geography, Goal: Learning different geographic areas and recognizing cultural differences, Content: Eskimos, Geography, location on earth, population, demographic information, economy, major trade. Material: Internet, Google Earth, Google Search engine. • <i>Model 3: Integration of ICT into an integrated curriculum:</i> This model uses curriculum integration theory as a basis for the integration of ICT. In this model, ICT is seen as a subject matter (one of the content area) that is integrated into a variety of other subject matters, such as math, science, literacy, and technology together. Grade: 6th, Subject: How does an apple tree grow?, Goal: Constructing and reconstructing how things work in nature. Content: Science (anatomy of a tree, kinds of trees, branches, body, height, size) Social Science (value of tree, the uses of trees, etc.). Health (cleaning air), ICT (searching, writing, watching, and developing a new program. Material: A tree (school backyard), digital camera, video camera, computer, internet. • <i>Model 4: Curriculum integration (ICT as a cultural mediational tool):</i> Grade: 12th, Subject: Black Sea, Goal: Learning the nature of Black Sea. Content: Science (Location, size, content, characteristics (salt rate), Social Science (ownership, countries around, politics, life, interaction, history), Ecology. Material: ICT (communicating (virtual communities), computer (map developing), Internet (communication, searching), writing, watching, and creating (anything possible). • <i>Model 5: A Mixed Curriculum:</i> Subject matter supported with an ICT lab course: Grade: 5th, Subject: History of Columbus, Goal: Be able to identify the important dates and events from Columbus history, Content: History Content: Geography of Columbus, first settlers, independence, wars. ICT content: PowerPoint (developing basic skill to create presentation, time sheets), calculators, data collection probes, videos, educational software. Material: Computer lab, Presentation software
Type of institution involved	Middle and High School
Title of the methodology used	ICT Integration Models into Middle and High School Curriculum in the USA
Type of educator	Teachers
Tool/tools used	digital cameras, web tools, scanners, data collection probes, educational software
Main Challenges, Key Success & Enabling Factors	It seems that it is very difficult to define, assess, and evaluate teachers' PCK. Teachers develop subject subcultures during pre-service education and their professional lives. Subject sub-cultures represent teachers' identities, in relation to their area of expertise. For example, science teachers have certain ways of teaching science, and the way they teach science represents their identities and their academic culture; this would be the same for art teachers, and mathematics teachers. Therefore, this curriculum model requires ICT teachers to teach a variety of ICT courses in K12 schools. However, this model will not be the best model for ICT curriculum, because the unclear line between ICT as a subject and ICT as a way of instruction.
Lessons Learnt & Recommendations	In order to prepare student with the skills and knowledge that necessary for the information society, ICT should be integrated to the all level and all subject matter curriculum with appropriate way. To this end teachers need to be prepared with the skills and knowledge of academic area, ICT, and pedagogies of both for the integration. Teaching merely ICT, should not be the goal of education. ICT should provide opportunities to the all learners to learn better and faster in an enjoyable environment. It is believed that these models will expand the understanding of ICT integration into teaching and learning of middle and high schools subject matters.
Country	The USA
Name of the Institution/Education Center	-



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