

Sacred Heart University

From the Selected Works of Robert McCloud

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Final Report and Recommendations: Ministeria e Arsimit dhe Shkences, Tirane, Albania

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Final Report and Recommendations

Ministeria e Arsimit dhe Shkences, Tirane, Albania

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1. Review of current policies

The emphasis of current policies has been on Internet connectivity, bridging the digital divide and raising awareness of ICT needs in the schools.

As of January 2011, we are schedule to have dedicated Internet service of 1MB download and 256K upload per school. Every Albanian school with a headmaster will have this connectivity. The only schools that will be excluded are in those remote towns where five grades (1 through 5) are consolidated into a single class. It is unfair to exclude these students. If their schools are going to stay open, then they should also be included in the digital divide bridge. The digital divide will have become very narrow indeed. This is a testimony to the success of the Albanian Education Excellence and Equity Project (EEE-P).

One part of the EEE-P is essentially complete. Even though we recognize that the 2011 upgrade will not provide optimal connection speed, it does mean that there will be a significant Internet availability to almost all Albanian pre-university public schools. Including connectivity, the overall objectives of EEE-P are:

- Connect all public primary and high schools to the Internet
- Equip these schools with computer labs
- Train ICT teachers in instruction and lab management
- Integrate ICT into the overall school curriculum

While the Albanian government has committed an impressive portion of scant resources to the EEE-P, there are many goals that remain. Achieving these goals takes imagination, money, risks and commitment. At the conclusion of this, my fifth visit to Albania, I am convinced that the talent and ability are in place. The Ministry of Education and Sciences, together its eEducation directorate, have a

talented, hard working core, a group of individuals committed to creating a system that will give all Albanian students a solid base of ICT competency.

2. Needs analysis and integration assessment

ICT classroom integration

Currently classroom teachers who want to use ICT as part of their regular teaching strategy face several hurdles.

1. They must borrow a laptop and projector either from the Headmaster's office or from the computer lab. The equipment must be carried to their classroom and set up. If a DVD or CD is needed, it must be loaded. These activities take time, which is not freely available in a teacher's typically busy daily schedule. Even with the time constraints, the typical school has up to four laptops and projectors. There is no guarantee that one will be available and working when the teacher needs it.

The simple awkwardness and time away from teaching have combined to make ICT integration difficult. If Albania is truly committed to integrating ICT into daily teaching, then the within the next four years:

- Every classroom should have a projector hung from the ceiling. Ceiling mounts provide a better projection angle and also are inherent protection against vandalism.

- Every teacher should have his/her own laptop. With the current limited state of teacher compensation it is unrealistic to expect that teachers will purchase their own laptops. Providing a laptop, with support, will both increase the teacher's professional pride and also encourage ICT integration. By purchasing the laptops on a four-year cycle, one-quarter of the stock can be refreshed every year.

- There is currently little opportunity for classroom teachers to interact with ICT teachers on a regular basis. What consultation does take place is typically during coffee breaks, in the hallway, at lunch, or in some other brief conversational time. Certainly it is reasonable for classroom teachers to expect that they can find help from the resident "experts", who are the ICT teachers. It would be good to find a way to provide time for this consultation.

On a more formal basis we recommend having from two to four in-service training days per year. These would be regular paid working days, but students would

have the day off from attending class. Teachers would meet to share pedagogical ideas on a regional basis. Such regularly scheduled thinking and development time would provide encouragement for ICT integration and also give teachers the opportunity to see how their colleagues are progressing. Opportunities for collegial sharing are perhaps the best learning tool available to teachers.

Identify and nurture talented students

According to the *Crosscutting Strategy on the Information Society*, Research activities in Albania are limited, first of all due to the lack of infrastructure and insufficient financial resources. A significant number of specialists have abandoned their scientific research institutions and the majority has emigrated. IT departments have been severely affected by the "brain drain". For this very reason public institutions, run into difficulties when it comes to finding specialists for the daily maintenance of their IT systems.

Teacher training

As discussed below, a continuous, ongoing teacher training plan needs to be implemented. A two-part program is suggested. One part would have training materials installed in the school labs. The second part would consist of regular meetings, as a district level, so that colleagues can learn together and share ideas.

On my first visit I had thought that the best solution would be an online, on-demand training library. However, bandwidth limitations render this impossible.

Increased computer access

While the number of school computers is scheduled to be increased, there is still need for computer and Internet access. This is especially true outside of Tirana. Below we propose a plan for increasing access. The plan will, however, will need to be funded at the rate of 200 euros per month per lab.

3. Implementation action plan

3a. Technology infrastructure needs

- laptop for every ICT teacher
- 4MB connectivity: to match international standards
- keep labs open: beginning in next budget year
- laptop and projector in every classroom: by 2015

3b. Digital content development and dissemination

game experiment: has already begun. Expansion based on evaluation

FTP server: to allow schools to download training materials for lab installation

e-books: provide both books and access. Especially important for students outside Tirana.

Experiment to be conducted before moving forward

i-safe curriculum: best available. Provides actual lesson plans for teachers

3c. Training for ICT teachers

Studies of educational innovation around the world show that many ICT educational initiatives ultimately fail because too little effort or too few resources are devoted to preparing teachers.

All teachers need increased language training. Through the Peace Corps we have arranged for 27 teachers to help with English training. I have also spoken with Epoka University about providing English language training.

3d. Training for technology integration

I propose the concept of in-service days for training. Teachers can share ideas with each other on days when school is in session but the students will have the day off so teachers can train. There should be four in-service days per academic year. One alternative to this brought up during teacher meetings was to use part of the vacation time for training.

3e. Software licenses

In many cases teachers who want to teach a particular application, such as Photoshop or Dreamweaver, only have access to that application through downloading 30 day trial

versions. Recommend negotiating with Adobe for national license. This also would allow teaching Flash, which could lead to cadre of programmers who would be available for outsource work.

4. Stakeholder analysis

4a. Students

Albania's students are ahead of teachers in some respects. They understand the importance of electronic games in our culture. Facebook's popularity is already pervasive throughout the country, with students beginning social networking activity at a very young age. During visits to schools I noticed students using Facebook in the labs. Student awareness and advancement is a fact. Our job is to teach them responsible computing.

4b. Teachers

ICT teachers are clearly committed to professional improvement. Our job is to provide them with the necessary tools. One project that is top priority is the provision of a laptop for each ICT teachers. We want to have that in place by early 2011. This would be a very effective way of increasing professional standing and also raising performance expectations. It would show that the ministry is serious about and committed to ICT improvement and integration.

4c. Administrators

Administrators need to be onboard, especially for our plan to keep computer labs open during weekday late afternoons and on Saturdays. My discussions with school leadership have shown that they recognize the need for more hours, in addition to other programs. They are, however, also realistic that it will take increased funding to implement these programs.

4d. Parents

Educational researchers struggle to isolate factors that contribute to the creation of a successful school. Money, physical plant, class size, technology integration, teaching style and homework approach are some of the factors that have been proposed. While all of

the above factors are important, the only one that has definitely been shown to influence educational quality is parental involvement.

Albania is fortunate to have a national culture that values education. Parents are a resource that can be tapped. We could begin by increasing the number of times parent councils meet during the year. Since there is a stated national policy of pushing control down to the local level, parents should know that they have the power to improve their children's education.

4e. Society

Ultimately It is Albania itself that will be the major beneficiary of the ICT upgrade program. The country needs to think of itself as leaders, as an emerging society with tremendous capability. One step in this direction is to identify and grow the talents of our best and brightest students. This program will provide scientists, mathematicians, programmers, physicians, economists and the other intellectual leaders that Albania needs. Also, by upgrading all ICT education and integration, Albania's overall capabilities and awareness will greatly improve.

5a. Curriculum: Grade three

Description of year: Basic introduction to computer and networks.

Program theme: In this introductory year students will learn to relate to the computer as machine that can enhance the quality of their life. They should understand both the power and dangers of computing. Students will also develop essential skills for care and regular maintenance.

Standards and expected outcomes:

Goals	Standards	Students will...
Data entry	Data item	Understand computer as blank slate that can accept and process input
	Keyboard	View electronic computer as part of historic development in information storage, calculation and retrieval
Hardware	Basic function of computer as machine	Know difference between input devices, display, and memory
Internet	Network	Grasp Internet as network of networks
Information literacy	Develop definition of information	Distinguish between information and opinion
	What is a search?	Format basic search question
Safety	Community	Understand Internet as a worldwide community, one that has both good and bad people living in it.

Specific knowledge and skills:

Students can	Students use
Create information	Hand written information creation assignments
Store information	Cards/paper to create non-digital storage system
Discuss history of data storage and computation	Abacus or other historic calculation/storage mechanism.
Grasp breadth of Internet	Globe or world map to explain how the Internet is everywhere.

End of year performance tasks:

Examples	Brief Description
Information identification	Student will view list of items and identify which of these satisfy the definition of information
Identify computer parts	Correctly identify the various parts of a computer system. Explain function of each part.
Network comprehension	Draw illustration and client-server communication model
Internet as network of networks	Written explanation of what is a network. Demonstrate comprehension of Internet as network of millions of other networks.

5b. Curriculum: Grade four

Description of year: Build on concepts introduced in grade three. Students will need some hands-on time. This could come from teachers assigning exercises that will be completed in the computer labs with extended opening hours. Students will learn about opening, saving and closing files. Use a text editor to develop keyboard skills. Introduce notion of the cloud. Begin understanding of web files. Overall idea here is to integrate the learning process so hardware and software concepts blend and work together.

Program theme: Empowerment. Students grasp that they are in charge of both information creation and online behavior. Further, they begin to learn new skills for using this power wisely.

Standards and expected outcomes:

Goals	Standards	Students will...
Data entry	Editing data	Become competent at general file management.
	Keyboard skills	Enter text accurately.
Computer	Hardware and software	Articulate differences between hardware, applications and files.
Internet	Internet and World Wide Web	Discover that World Wide Web is just one part of many capabilities enabled by Internet
Information literacy	Reliable information	Look at World Wide Web as one of greatest garbage dumps of bad information ever created
	Discretion	Learn basics of what constitutes reliable

		information
Safety	Community	If the Internet is one big world community with good and bad people, how does a person begin to take care of himself

Specific knowledge and skills:

Students can	Students use
Keyboard with proper hand placement	Copy of text provided by teacher to read while keyboarding
Create file	Open a new file with a text editor
Name file	Use camelCasing as professional file naming convention
Save file	Utilize "save" and "save as" to place file on hard drive
Close file	File closing to save file to desktop
Identify special keys	Articulate function of keys such as "control", "tab", "esc" and other special commands
Identify an application	Name common application types and purposes
Understand concept of source	Name examples of unreliable information
Be aware of online dangers	Give examples of inappropriate online behavior

End of year performance tasks:

Examples	Brief Description
File creation	Using text provided by the teacher, student will keyboard file into a text editor, name it with camelCasing, then save the file. Student will locate file and re-open it.
Keyboard literacy	When shown pictures of individual function keys, student will describe capabilities of each key.
Application awareness	Student will explain why an application is a special type of software, identify where the application lives and describe a text editor as a special type of application.
What is World Wide Web	Student will provide written description of World Wide Web. Student will explain why Web was created and detail its connection with the Internet.
Bad information available	Provide written explanation of why bad information is so readily available on the World Wide Web. Student will provide at least two ways of identifying information that is likely to be reliable.
Identify risky behavior	Student will demonstrate understanding of why "nobody know you're a dog on the Internet." Student will cite three risky online behaviors to avoid.

5c. Curriculum: Grade five

Description of year: Grade five will be one more year of staying with a text editor.

He/she will gain power through using more advanced capabilities, paving the way for transition to a word processor in grade six.

Program theme: Gain depth of understanding. This is the last year before regular lab time is available. Utilizing concepts the student will build on the previous year to begin understanding the further complexities of such ICT sections as the World Wide Web, data storage and retrieval, pitfalls of online behavior

Standards and expected outcomes:

Goals	Standards	Students will...
Data entry	Editing data	Having mastered file creation and storage, students will now edit, check spelling, set line spacing and create paragraphs
	Keyboard skills	Use option commands to access extended keyboard capabilities such as mathematical symbols, accents and special characters
Computer	Memory	Learn concept of memory as coded data based on binary storage system
Internet	Web file/web site	Grasp concept of a web site as a collection of individual files. Understand URL structure

Information literacy	Search engine strategy	Using Google as an example, explain how to frame a search for relevance.
Safety	Risks of unsupervised surfing	Emphasize role of trust in Web usage. Involve parents in supervising child behavior. Teach children when to advise an adult that questionable behavior has taken place.

Specific knowledge and skills:

Students can	Students use
Utilize advanced text editing capabilities	Spell checker, either paragraph indent or increased space between paragraphs, word wrap.
Understand limits of spell checking	Own proofreading skills to further edit document after it has been spell checked.
Learn location and use of special keys	Option command to identify location of special keys for insertion into their documents.
Manage files	Folders and nested folders to create storage levels for good organization practice.
Understand difference between a web site and a web file	Examples from teacher showing a web site as a collection of individual files. Concept of a home page is explained as way to tie a site into a domain name.
How to use social networking sites	Understanding of social networking to avoid dangers of being trapped into revealing sensitive information or contacting unsavory individuals.

End of year performance tasks:

Examples	Brief Description
Advanced text editing	Using an original error-filled document provided by teacher, student will first use spell checker, then read document himself/herself to produce totally edited piece for turning in.
Complex keyboarding	A document with special characters will be provided by teacher. Student then recreate document using his/her own keyboard knowledge.
Memory comprehension	Student will produce written document explaining how data gets from his/her keystrokes into the computer's memory.
File management	Teacher will give student a group of text files with instructions on levels of storage and which files go together. Student will create and name series of nested folders as storage and retrieval system.
Web files and web sites	Teacher will provide a series of URLs. Student will parse each URL, explaining meaning of the web site structure.
Social networking dangers	Teacher will provide series of online social networking behaviors. Student will explain, in writing, why each behavior is or is not dangerous.

5d. Curriculum: Grade six

Description of year: This is a seminal year. For the first time students will have regularly schedule computer lab time available. Previously ICT instruction focused on concepts and classroom instruction. Now the curriculum turns to a more hand-on structure. In grade six we introduce the concept of a word processor. Also, students have regular experience with the World Wide Web and social networking.

Program theme: Because this will be the initial year of regular lab time, the year's theme will be to put into practice the concepts they have been discussing in class. In addition students will complete a series of hands-on projects designed to bring theory into actuality.

Standards and expected outcomes:

Goals	Standards	Students will...
Word processing	Microsoft Word 2007	Create a file and do basic formatting. Name and save file.
	Files	Understand the importance of file extensions as denominators. They will also learn the basics of dot syntax as a way of providing levels of information to the computer.
	Alternate types of data capture	Implement other types of data capture in addition to keyboard input.
Internet	Internet structure	Diagram basic Internet structure
Information literacy	Search engine results	Analyze search engine

		results to distinguish between paid earned search rankings. Understand the components of a search match.
Safety	Facebook safety settings	Study Facebook as an example of confusion and obfuscation in the effort to protect privacy. Generally consider the question of privacy on the Web.
Intellectual property	Attribution	Provide attribution to any words, images or ideas that are borrowed from any source other than yourself

Specific knowledge and skills:

Students can	Students use
Create word processing file	Microsoft Word 2007 to open file. Input text and use basic Paragraph and Font formatting. Control typeface, line spacing, margins, and paragraph indentation.
Modify word processing file	Basic tools for spell checking, proofreading, inserting bold and italic formatting, changing typefaces and margins
Use dot syntax for file extensions	.doc for previous versions of Word and .docx for Word 2007. Students understand that file extensions tell computer format for file storage and retrieval
Input data from outside sources	Copy and paste to bring text from Internet to a word processing file.
Implement other types of data capture in addition to keyboard input.	Paste Special command to save input as unformatted text and remove Web coding.
Intellectual property	Provide URL for source attribution to any text imported from a Web page
How Internet structure works	Concept of clients, servers, and routers to

	understand how information is stored, requested and sent over the Internet
How World Wide Web works	Understand Internet as hardware and World Wide Web as software. Use HTML tags to code basic web page of headline and text. Understand browser as local software that allows for display of HTML coded document

End of year performance tasks:

Examples	Brief Description
Create word processing files	Student will be given text file. File is to be copied and pasted into new Word document. File will then be formatted using specifications provided by teacher
Edit word processing files	Student will take existing file and edit both typography and formatting according to teacher instructions
Input attributed text to a word processing file.	Student will go to Web, copy and paste text. Text will be stripped of web formatting, then inserted into a Word 2007 document. Student will provide source attribution for copied text
Understand basic intellectual property rights	Student will write essay on topic, "Why it is wrong to buy a bootleg CD"
Basic HTML formatting	With a text file provide by teacher, student will create a basic HTML text only document that opens locally on his/her web browser.

5e. Curriculum: Grade seven

Description of year: Having expanded our lab hours to begin at grade 6, in this year we build upon basic skills. We ask students to stretch, to deepen their understanding, and to use their creativity to produce assignments from regular classroom teachers.

Program theme: This year's theme is clear communication.

Standards and expected outcomes:

Goals	Standards	Students will...
Word processing	Legibility	Learn basic typographic history, including purpose of serif and why they were challenged in early 20 th century. Student will distinguish between serif & sans serif typefaces. Understand difference between preparing documents for digital and print outputs
	Document editing	Utilize menus and commands to revise document content and structure
Communication skills	Basic PowerPoint	Create text-only PowerPoint presentation with self developed content
Hardware	Data entry	Experiment with additional data entry including file import, photo image download from camera, and PDF file creation.
Internet	Continue HTML development	Progress from simple page to including three levels of headers, paragraph breaks, inline formatting, page title creation and linking

Information literacy	External source inclusion	Demonstrate proper use of data and quotations in a research paper.
Safety	Viruses	Understand nature and dangers of computer viruses
Intellectual property	Source attribution	Develop respect for other's ideas. Use parenthetical attribution to give credit to outside sources within a document

Specific knowledge and skills:

Students can	Students use
Make systematic word processing document changes	Find and replace command; page setup; Format drop-down menu; spelling and grammar and hyphenation tools
Understand basic typographic legibility standards	Type library and history to experiment with graphic choices
Working with assignments from regular classroom teachers, students will create original graphic, text-based, presentations	PowerPoint to both create slides and handouts
Manage the import and export of data by file manipulation and transformation	Using existing word processing files, students will import, photo image download from camera, and PDF file creation. These same skills will later be applied to other types of files, such as Excel and PowerPoint
Build a small, linked website	Create a website with links, headings and navigation. This can be done using existing copy or by working with classroom teachers to do research that is then applied to the web development projects

Computer viruses	Student will understand what a virus is, how it spreads, and how to protect against viruses. Students will implement virus protection programs on local computers
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End of year performance tasks:

Examples	Brief Description
Revise existing Word document	Using document provided by teacher, student will check spelling, improve word spacing with hyphenation, change line spacing, justification, spacing before and after paragraphs, leading and type size.
PowerPoint presentation	Student will present text-only PowerPoint presentation to the class. Student will demonstrate principle of parsimonious use of words. Student will provide written handout for audience to take home.
Typography	Student will identify basic serif and sans serif typefaces. Student will also demonstrate knowledge of difference between digital display and printed typography. Student will show awareness of proper use of boldface and italic type.
Data import and export	Students will understand that data can be imported to a file through a variety of means. They demonstrate this by bringing in external files and graphic images. They also will create PDF read-only files for export
Website creation	Using a subject assignment from regular classroom, students will build three or four page site that can be opened locally on the desktop browser
Information literacy and attribution	Based on a topic provided by regular classroom teacher, student will reach

	<p>conclusion illustrated by specific expert evidence. Student will provide attribution in parenthetical form</p>
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5f. Curriculum: Grade eight

Description of year: Students will broaden their knowledge by mixing text and graphics, understanding communication principles, and exploring depths of applications.

Program theme: Sophistication through mixing capabilities

Standards and expected outcomes:

Goals	Standards	Students will...
Word processing	Legibility	Utilize basic lessons of cognitive learning theory as it applies to word processing. Goal is to increase document legibility through page structure.
	Document preparation	Move beyond text formatting into more sophisticated document elements
Hardware	Data redundancy	Gasp basic concepts of data storage and magnetism. Create backup strategies
Internet	Basic web site construction	Understand concept of meta data; create basic link structure and navigation bar
Communication skills	Mix of text and graphics	Utilize PowerPoint's graphic capabilities to enhance text presentations
Information literacy	E-mail	View e-mail as basic Internet application. Understand working of e-mail server and limits of privacy. Tie in with study of computer memory and

		storage.
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Specific knowledge and skills:

Students can	Students use
Format typography and page according to legibility standards	Microsoft Word 2007 to create legible documents by paying attention to white space between lines and around paragraphs; kerning; ragged right versus justified; space before and space after;
Apply graphic elements to add sophistication and flexibility	Use commands and tools such as Paste Special, Page Break, tables, bullets and numbering, and borders and shading where appropriate to add document flexibility and sophistication
Formulate and execute data backup strategies	USBs and Google Docs to back-up current projects and store completed projects
Create basic web site	HTML to format and link small web site
Create graphics enables presentation	PowerPoint to go beyond text only. Explore capabilities, but also understand that too many bells and whistles will detract from the presentation's goals
Explain basic structure of Internet e-mail	Internet e-mail in knowledgeable way

End of year performance tasks:

Examples	Brief Description
Enhance word processing document	Using document provided teachers, student will improve document by demonstrating facility with Paste Special, Page Break, tables, bullets and numbering,

	and borders and shading
Web site creation	Students will use page title, description and xxxxxx meta tag as means of understanding connection between site and search engine. Student will also learn navigation rules, insert links, and produce navigation bar
Present graphic communication	Student will create a PowerPoint presentation that combines text and graphic capabilities. Student will stand up and present this presentation to fellow classmates
E-mail structure	Student will create diagram explaining the way an e-mail travels from his/her computer to the recipient

5g. Curriculum: Grade nine

Description of year: Perhaps the most important aspect of grade 9 is the introduction to Excel. This program has become powerful and pervasive throughout the world. Excel mastery is an important key to business and professional success. The grade 9 year takes advantage of three previous years of ICT lab: students are ready to move into graphics and to a deeper understanding of Internet functioning.

Program theme: Using ICT knowledge intelligently to structure files and documents for maximum communication and flexibility

Standards and expected outcomes:

Goals	Standards	Students will...
Document preparation	Principles of graphics in word processing documents	Study file formats for graphics
Intellectual property	Source reference	Provide a source for every file borrowed from World Wide Web or any other resource
Internet	E-mail capabilities	Move beyond simple sending of text messages
Online Safety	Social networking	Explore use and dangers of social networking
Web development	Introduce Dreamweaver CS5	Learn how application can simplify, standardize and control web development
World Wide Web	Social networking	Explore existing sites, find new ones
Electronic spreadsheets	Excel	Understand basic function of spreadsheet

Specific knowledge and skills:

Students can	Students use
Import and create graphic files	.jpg, .gif, .png file formats, understanding what use each format is appropriate for
Internet e-mail	Attachments, mail lists, reply, reply to all, cc. Netiquette for polite e-mail communication. Re-enforce understanding of Internet e-mail structure
Web development	Dreamweaver CS5 to create web page with headers, columns, photographs, and typographic control
Social networking	Using Facebook as a beginning, student will explore other social networking sites such as Twitter, Flickr and Tumblr.
Open and create an electronic spreadsheet	Excel to create a spreadsheet based on columns and rows. Understand concept of a cell. Learn why use cell references instead of values. Do basic color and typographic formatting. Learn different ways to display data

End of year performance tasks:

Examples	Brief Description
Use word processing knowledge to implement personal style	Write an essay about some part of student's personal life. Use a serif face for headlines and subheads, a sans serif face for text. Apply leading, paragraph spacing, and page setup margins and justification according to legibility standards learned. In essay include section that explains choice of typefaces.

Manage e-mail communication	Student will create and send e-mail message that goes to a list, includes a cc and utilizes proper Netiquette. Student will also explain why attachment file size is a correct one for the structure of Internet e-mail
Web page	Student will create web page with headers, columns, photographs, and typographic control. Student will research single topic and include attribution for sources
PowerPoint report on social network	Student will find a social networking site not discussed in class, create and give a PowerPoint presentation on the site
Excel spreadsheet	Working with a topic defined by the teachers, student will research and find data. This data will then be used to create a basic, formatted Excel spreadsheet

5h. Curriculum: Grade ten

Description of year: Students will begin writing formulas and understand functions in Excel. They will also learn basics of graphic communication through creating graphs and charts based on data. This will lead to integration as Excel documents are imported into PowerPoint presentations and Word documents.

Program theme: Power and integration

Standards and expected outcomes:

Goals	Standards	Students will...
Graphs and charts	Excel 2007	Study different varieties of charts and graphs available in Excel
Electronic spreadsheets	Excel 2007	Explore the power of Excel by creating formulas and using basic functions
Internet	Search engine	Understand nature of a search algorithm. Construct and modify searches to improve results.
Communication	Communicate meaning of information graphically	Import Excel chart into slide presentation
Document organization	Word 2007 document management	Add section and legibility guides to a large word processing document
Web development	Deamweaver CS5	Create a multi-page site, with linked pages and navigation bars. Understand home page design and functionality

Specific knowledge and skills:

Students can	Students use
Display data for presentations	PowerPoint to link to spreadsheet created in Excel
Create calculating Excel spreadsheet	Excel to understand absolute and relative cell references, formula creation and using basic functions
Create and modify graphic files	Tools in Microsoft Word to crop, change colors and tonality, rotate and skew objects. Students will become capable in the use of the Word drawing toolbar.
Organize a large word processing document	Microsoft Word to organize documents into sections, create a table of contents, use headers and footers on pages, write styles to apply during document creation and revision
Provide proper attribution	Format provided by teacher, student will use accepted attribution standard to give credit to graphic file or document creator

End of year performance tasks:

Examples	Brief Description
With text provided by teachers, student will create a one-page newsletter	The newsletter includes headlines, column rules, three-column structure, flag, photograph(s) downloaded from World Wide Web, WordArt, and clip art.
Write a short-research paper	Student will, in consultation with teacher, select a topic for three-page, double-spaced research paper. Paper will include graphic files download from Internet. All sources and file creators will be properly attributed.

Create four-page web site	Student will research and create four-page Dreamweaver web site, including columnar structure, home page, navigation bar and graphics.
Complete Excel spreadsheet	Teacher will provide an Excel spreadsheet, together with calculation specifications. Students will use absolute and relative cell references, formulas and simple functions to solve the problem.
Appropriate use of Excel charts	Utilizing spreadsheet data provided by the teacher, students will create a chart to display the data in the most informational manner. Student will be able to explain why he/she chose that particular chart style.

5i. Curriculum: Grade eleven

Description of year: In grade 11 students are asked to use mathematics skills as they apply to ICT. They also begin database understanding, learn that there is an international standard for references and citations, and begin utilizing code to control web pages.

Program theme: The power of code and numbers

Standards and expected outcomes:

Goals	Standards	Students will...
Electronic spreadsheets	Excel 2007	Create formulas and utilize functions in Excel
Hardware	Digital memory	Learn the binary representation of digital memory
Internet & information literacy	Digital library	Use digital library to search and utilized specialized information sources
Database use	Microsoft Access 2007	Use an existing database to understand basic concepts. Plan and design own simple database.
Web development	Dreamweaver CS5	Apply one standard to entire web site
Document attribution and reference	MLA	Apply footnotes, create bibliography for research document

Specific knowledge and skills:

Students can	Students use
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Solve spreadsheet calculation problems with either their own formulas or pre-built functions.	Formula builder to identify proper function. After function is identified, arguments are inserted and tested. Student will also demonstrate ability to write his/her own formula when no function is available for that purpose.
Understand the bit and the byte as fundamental basis for all digital hardware storage	Represent and manipulate base 2 numbers. Move between base 10 and base 2 by converting a given number from one system to the other. Student will also understand concept of a Boolean switch and what constitutes both a bit and a byte
Create single file for site control	Utilize external Cascading Style Sheet (CSS) file structure language to create both embedded styles for web pages.
Master basic web graphics	Download and manipulate .jpg, .gif and .png files. Student will understand basics of file compression. Student will use files of size that will accommodate bandwidth limitations
Create a basic database file	Microsoft Access to understand concepts and terminology through opening an existing database. Student will customize work environment and understand "Getting Started" window and the "Quick Access" toolbar
Annotate and provide references for research document	Using the MLA style, students will footnote and create a document bibliography

End of year performance tasks:

Examples	Brief Description
Create basic database file	Using data provided by teacher, student will plan and design a database file including fields and records

Show mastery of at least ten Excel functions	Student will be given spreadsheets with data entered. Student will select and utilize proper function to solve problems given.
Demonstrate familiarity with binary math	Teacher will give students series of numbers in base 10 and base 2. Students will then convert each number to the other base
Be able to explain use of web graphics	Teacher will provide examples of .gif, .jpg and .png digital graphic files. Student will open each file locally in his/her browser. Student will then determine and explain why each file is or is not appropriate for use in a web page
Create footnotes and bibliographic data	Teacher will provide a raw text file with quotations and references included. In a separate document teacher will give students the source material for each quotation or reference. Student will open file in Word, insert footnotes and create a bibliography based on information provided by teacher.

5j. Curriculum: Grade twelve

Description of year: During the last year of high school students develop a sense of completing this phase of their education with the creation and production of a capstone project. Work on the project take place throughout the entire year, and provides the opportunity for both ICT and classroom teachers to work together. The student chooses the topic, and it is anticipated that all classroom teachers will be involved in the integration because of the breadth of topics selected. While work on the capstone project continues, studies continue on the other learning goals defined below.

Program theme: Sense of achievement

Standards and expected outcomes:

Goals	Standards	Students will...
Electronic spreadsheet graphic communication	Formatting	Apply principles of professional graphic standards to improve legibility and attractiveness in Excel worksheets
Electronic spreadsheets	Excel 2007	Conceive and design complete electronic workbook. Implement conditional formatting to utilize "what if" scenarios for checking the potential results of various decisions
Database	Access 2007	Understand and be able to utilize fundamental database concepts
Internet	Delimited file data	Import data from web and utilize in creating Access and Excel files

Web development	Dreamweaver CS5	Apply modern design concept to small web site.
Capstone project	Integrate knowledge	Integration is the goal. Work with classroom teachers to define, research and produce a complete project that uses ICT knowledge to communicate about the chosen topic. Students will begin topic development during the first and second week of classes and work on the project under the joint guidance of the ICT and classroom teacher.

Specific knowledge and skills:

Students can	Students use
Begin with a data only spreadsheet and improve it with graphic formatting	Excel formatting palette for color, typography, layout, number display specification, alignment, spacing, borders, shading, page setup, sheet orientation, and display of gridlines and headings
Create interactive, dynamic Excel work books	Conditional formatting and multi-page development to give the user ability to change information to interact with the workbook to see what would happen under various scenarios
Design and create basic Access file	Keys, fields and data typing to create a single table file
Download useable data from World Wide Web	Web skills to locate data and import it into Access and Excel. Students will understand the concept of a delimited file and use commas as delimiters

Use modern design principles to add sophistication to a web site.	Navigation trees, linked files, animation, tables and images
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End of year performance tasks:

Examples	Brief Description
Add graphic sophistication through spreadsheet formatting	Using a data only spreadsheet provided by teacher, students will demonstrate formatting knowledge to turn spreadsheet into an attractive, clear communication document
Create multi-page workbook with conditional formatting	This can be part of capstone project. Students will research, download data and insert it into Excel. They will produce a multi (more than one) page workbook that includes both charts and conditionally format worksheets for implementing the "what if" scenarios that make Excel especially valuable for business and research.
Create sample Access and Excel files from imported data	Teachers will assign topic. Students will find data on web, use delimiters, and import data to create workable files
Format existing Web site	Beginning with a Web site provided by teacher, students will apply formatting and navigation techniques to improve design and functionality.
Capstone project	Student will use communication skills learned to present his/her capstone project findings to the class.

Recommendations

Expanded hours for school computer labs: By keeping labs open late in the afternoon and on Saturday new opportunities will be provided for both teachers and students. Teachers can receive additional training. Students will be able to work on assigned projects. This recommendation is also particularly important for bridging the digital divide.

Implement recommended curriculum based on ICT integration, projects and year-end goals: The recommended curriculum requires both students and teachers to stretch. They must learn new skills and creative, researched-based ways of thinking. The rewards, however, will be substantial.

All ICT teachers have laptops by winter, 2011: This is probably not as expensive or difficult as it sounds, since many ICT teachers already have effective control over a laptop because of their principal's policy. Also, we already have funds in the budget to purchase one additional laptop and project for each school in the next year. In addition, additional outside funding might be available for this project.

All classrooms have laptops and projectors within four years: This is essential if ICT is to truly be integrated into the daily curriculum. It will also facilitate the ICT learning curve for classroom teachers.

Installed ICT training modules: Last summer I had thought we could set up a central server to host online, on-demand training modules for teachers. After visiting schools outside Tirana, I realize this will not work. There is not sufficient Internet access available. The proposed solution is to distribute training modules and sample work files either via e-mail or FTP server. These files will be installed in computer labs for teachers to use during the extended lab hours.

Regular seminars for ICT teachers to meet: Learning by yourself with a computer is okay as far as it goes. We also need interaction, sharing, and collegiality. This can take place either during in-service days or when teachers come to school on their vacations.

Expanded English language training for teachers: Already in place is an agreement with the Peace Corps to provide 27 English language teachers around the country. They will be working with our ICT and classroom teachers as needed. I have also spoken with Epoka University about providing free training for us. We have to recognize that English is the language of ICT. To a considerable extent our integration efforts will be affected by the English ability of our teachers.

Two teachers to study for MLA to make digital library sustainable: Plans are already in place to build a digital library. Now we should work to make it sustainable by Albanians. I recommend that two teachers be funded to obtain MLA degrees from American universities with digital library specialties. The University of Pittsburgh is one such university. It also has a blended program that lets teachers combine online and on campus study. I am also seeking outside funding for this idea.

Develop gifted students program with Johns Hopkins University: I have travelled to Johns Hopkins University's Center for Talented Youth, which is the leading United States program to identify and nurture talented students. Funds for our participation in this program are included in next year's recommended budget. My discussions with Johns Hopkins center around a transfer of intellectual property that will allow the program to become self-sufficient and sustainable as it is eventually run in Albania, with Johns Hopkins continuing as advisor.

Send 8 – 10 teachers to study at Johns Hopkins summer program: As part of the gifted program, we can send teachers to study at a summer institute, located both at campuses around the United States and in Baltimore, home of Johns Hopkins. While the program specifically increases teachers' skills at nurturing gifted students, it also will result in better overall teaching. It is expected that the returning teachers will share their new knowledge and skills with their colleagues.

Try electronic games as learning aids: We have already installed an electronic math learning game (donated by Johns Hopkins) in several schools. We should evaluate the results of this experiment. It could result (1) in using the math learning game

countrywide and (2) leading to a search for other games that could be used for pedagogical purposes.

Begin Mavis Beacon typing program in third grade: This is widely regarded as the leading program for self-instruction on typing. Since so much of ICT involves keyboard use, having good typing skills is essential. The instruction should begin in grade 3, when we are actually beginning the ICT curriculum.

Negotiate for iSafe Internet curriculum and lesson plans: This might be optional. Microsoft has offered a free Internet safety curriculum. However, the iSafe curriculum provides lesson plans and has been tested on an international basis.

Work with Adobe to obtain CS5 licenses: Having Adobe programs such as Dreamweaver, Flash, and Photoshop is especially critical for the technical schools that plan on having separate ICT curricula. However, they could also be very useful in all schools. Adobe is the accepted international standard.

Do e-book experiment: this could improve textbooks and also help bridge the digital divide. E-book readers come with their own Internet access.

Convene conference to solicit ideas for maintenance policies: In my school visits the topic of maintenance almost always comes up. However, thoughts as to both the severity of the problem and its solution are varied. I recommend convening a conference to hear everyone's thoughts and suggestions before deciding on any type of policy.

Investigate anti-virus solutions: With increased computer lab usage and storage, the Internet virus situation is almost certainly going to get worse. We should evaluate various solutions and decide on a national standard. There is no real international standard here, since so many solutions are available.