Appendix10
of Regulation No. 1 of the Government
of the Republic of 6 January 2011
National Curriculum for Basic Schools

Last amendment 29 August 2014

Optional subject: Informatics

1. General Provisions
1.1. Educational Goals

The subject of informatics at the basic school level strives to direct the students to:
1) develop the basic skills of learning and working with computer, primarily to search for information, process and analyse it, and to compile text documents and presentations;
2) comprehend and know how to avoid potential health, security and personal data protection threats that are likely to occur when using information and communication technology (hereinafter: ICT);
3) create, using ICT means, a functioning and efficient learning environment; and
4) participate in virtual communities and use the online environment to publish digital materials in compliance with good practice in intellectual property protection.

1.2. Description of the Subject

The general goal of teaching informatics is to ensure that basic school graduates are able to use the ICT to shape their current working and learning environments. Hence, school informatics focuses primarily on the competences needed in the school context and less on compliance with the future job requirements. Informatics at the basic school level does not have to be taught on the basis of the structure and content of the academic discipline of computer science that is the indirect foundation of the school subject of informatics. The teacher should instead proceed first and foremost in accordance with the daily needs of students as computer and Internet users. At the same time it is recommended to offer to students attending science-biased schools the additional course entitled "Introduction to computer science".

The following are the principles of teaching informatics at the basic school level:
1) relevance: examples, tasks, etc. are derived from daily life and are familiar to the students (school, home, hobbies and mass media);
2) active learning and creativity: preference is given to learning methods that stimulate student activeness and creativity;
3) innovation: novel technology and solutions are preferred as encouraged by the cross-curriculum dimension "Technology and innovation";
4) collaborative learning: both during lessons of informatics and for home assignments preference is given to methods of collaborative learning;
5) knowledge creation: new knowledge is co-constructed by learners through meaningful collaborative activities, not acquired by memorising outdated information;

6) freeware and open content: wherever possible, free software and content with flexible licenses are preferred over proprietary software and copyrighted content;

7) safety: the school promotes safe ways of network usage and ensures that the online systems and services used by students are secure ;

8) integration with other subjects: learning tasks, such as abstracts and presentations, use topics from other subjects; and

9) independence from software vendors: the study process cannot be based on the use of a platform/solution provided by just one software vendor; it is the duty of the school to introduce alternatives.

The subject of informatics can be easily integrated with all other subjects because ICT is a natural part of the modern learning environment. Such integration is bidirectional: on the one hand, learning tasks for informatics are compiled using topics from other subjects to foster meaningful learning and, on the other hand, ICT competences are shaped in other subjects through the work on written texts and presentations, data collection and analysis. Special attention should be given to opportunities for strong interrelation between the updated civics and informatics syllabuses, addressing the topics of the e-government, e-inclusion and virtual communities. The syllabus of informatics creates the conditions for the successful integration of the cross-curriculum dimension "Technology and innovation" into other subjects.

The approach to the subject of informatics is conventionally concentric as the students revisit previously acquired knowledge and skills in greater depth at every subsequent stage of schooling. The main stress is on practical computer use when studying different subjects.

During the 1st stage of study, ICT-related topics are studied as integrated into other subjects and there is no need for a separate informatics course. At the end of the 2nd stage of study it is recommended to teach the first course from this syllabus ("Working with Computer") and during the 3rd stage of study the second course, entitled "Information Society Technologies".

1.3. Learning activities are planned and conducted in the following manner:

1) the basis consists of the fundamental values and general competences stipulated in the curriculum, the general goals of the subject, the content of studies and the expected learning outcomes, with support given to integration with other subjects and cross-curriculum dimensions;

2) the students' workload (including home assignments) should be moderate and evenly distributed throughout the school year, leaving them sufficient time to rest and pursue their hobbies;

3) the students can study alone or with others (independent and pair or group work) as this supports their development as active and independent learners;

4) differentiated learning tasks are given and their content and levels of difficulty support an individual approach and enhance motivation to learn;

5) learning environments, teaching materials and resources are used which are based on modern information and communication technology;

6) the learning environment is expanded: natural environment, computer classroom, school yard, museums, exhibitions, companies etc.;

7) it should be remembered that the main stress is on shaping the skills of creating an online personal learning environment;

8) it is ensured that the students also learn good practice in online behaviour, including that in virtual networks and official information systems (e-school, e-learning environment and school and local government websites);

9) the topics studied should be interconnected based on cooperation between the subject teachers and timed to match civic studies, foreign languages and studies of the native language. In the middle of the course the students begin working in smaller groups or pairs on a development project, connecting the topics of further studies with this project;

10) the students can select project topics based on recommendations or requests from other subject teachers, parents, local companies, the local government or social networks;

11) at the end of the course the students present the materials and solutions created during their project work.

1.4. Physical Learning Environment

The students in the informatics classroom are guaranteed the use of the following means:

1) usually each student has a computer workstation; in exceptional cases two students share one computer;

2) data projector;

3) possibility to save files on a network drive or in an online environment offered/supported by the school;

4) possibility to use additional devices (printer and USB flash drive);

5) access to information systems (e-school, intranet or online content management system and group work environment);

6) the computer workstations have adjustable chairs, computer desks, forced ventilation and window shades;

7) computers with different operating systems (for instance, in addition to MS Windows, Mac OS or Linux);

9) ID card readers;

9) earphones and microphones; and

10) digital photo camera and video camera.

1.5. Assessment

The learning outcomes in the optional subject of informatics are assessed during the course based on completion of the learning tasks and at the end of the course to summarise the results, usually with the aid of the e-portfolio. The e-portfolio is a personal online environment where each student collects, over a longer period of time, their completed work and thoughts on the learning experience. At the end of the course each student selects those materials in the e-portfolio that best illustrate their acquired competences and there will be a public defence, if possible. E-portfolio can be compiled by the students either individually or collaboratively. The grade derived from the portfolio defence represents the summative assessment of the course outcomes. The following aspects are assessed upon the e-portfolio presentation:

1) studying with conformity to plan; creativity and rationality;

2) achievement of the learning outcomes stipulated in the curriculum and convincing proof by the students of the possession of the relevant competence;

3) technical implementation, aesthetic qualities and originality of materials created with the aid of computers;
4) validity, depth and meaningfulness of the students' reflections on practical activities; and
5) development of the competences.

2. Syllabus
2.1. Learning Outcomes and Learning Content and Learning Activities in the 2st stage of study

Learning Outcomes

The students:
1) use computers to format shorter and longer texts (for example: advertisements, posters and abstracts), adhering to the basic rules of text processing (uppercase and lowercase first letter; punctuation marks; return and spaces; text in bold, italics and underlined; superscript and subscript; word, row and paragraph spacing; text alignment; styles and document templates; and lists; colours, drawings, images, charts and tables);
2) find on the Internet and copy into a text file or presentation initial materials in different formats (text, images, tables and charts) and process them if necessary in compliance with good practice in intellectual property protection;
3) refer to and reuse initial materials found on the Internet and in other information sources in a proper manner, avoiding plagiarism;
4) understand the need for critical assessment of information found on the Internet, assess the objectivity of information sources and find, if necessary, sources offering alternative viewpoints concerning the same topic;
5) make skilful use of the graphical user interface of the operating system (change the window size, work switching between several windows, change content viewing modes, sort files and perform searches);
6) save their work where assigned, find and open a previously saved file, save it renamed, copy files from one location to another and compare file size with the free space on the data medium;
7) compile a presentation on the assigned topic containing text, charts, tables, images, audio and video;
8) design the presentation in a legible and aesthetically pleasing manner, taking into account these criteria among others: optimal information amount on a slide, keywords instead of connected text, source references and minimalism in design;
9) compile, on the basis of received data, a data sheet, frequency tables and charts of a suitable type (column, pie or line);
10) properly format these parts of an abstract: title page, automatically generated table of contents, introduction, chapters, chapter sections, drawings, tables, header and footer, summary, bibliography and annexes;
11) save the completed abstract in different file formats (doc, odt and pdf), compress the file, attach it to an e-mail message and send it to the teacher, upload the file to an online environment and print it out;
12) clarify how improper computer use can affect their health (addiction, aberrations in joints and posture, eye strain etc.) and know how to avoid such risks when working with computers on a daily basis: select the right sitting posture, monitor duration of computer use, take breaks for eye and wrist exercises etc.;

13) protect their virtual identity from misuse, choosing a new and strong password for every online environment they access and changing passwords frequently, and do not publish sensitive personal information on the Internet;

14) transfer digital photographs, video clips and audio recordings from source devices to the computer; and

15) safely connect various additional devices to the computer (USB flash drive, mouse, printer and external hard drive).

Course Content

Computer as a means of work

Introduction to text processing. Text entry, formatting and copying. Poster/advertisement compilation and design. Work methods: safe and economical computer use.

File management: saving, copying, deleting and compressing. Graphical user interface of the operating system. Working with several windows.

Searching for information on the Internet and work with multimedia files. Internet security, intellectual property rights and protection of personal data. Sending e-mails with attachments. Transfer of digital photographs, video clips and audio recordings from cameras, dictaphones and telephones to the computer.

Data processing. Compilation of data sheets and frequency tables. Creation of charts from frequency tables.

Presentation compilation. Slide structure and design. Adding text, images, tables and charts to slides.

Abstract formatting. Header and footer and styles in headings. Automatic generation of table of contents. Page numbering.

Learning Activities

The subject of informatics at the 2nd stage of study is predominantly delivered in the form of exploratory and active learning. The students are allowed to learn new work methods through self-activity. Lectures should be avoided, but a systematic approach to the skills studied must be ensured, primarily via well-planned study tasks with feedback.

To ensure understanding of the course content, self-reflection on the acquired knowledge must be supported along with oral reports. The students must be able to explain their work methods and decisions using proper terminology in their native language.

In addition to predominantly individual tasks, student group work must be facilitated (including an online environment). It is important to adhere to the principle of methodological diversity, switching between individual and group work and between exploratory and presentational learning strategies in lessons.

The topics for abstracts and presentations are usually taken from other subjects, thus improving subject integration.

2.2. Learning Outcomes and Learning Content in the 3rd stage of study

Learning Outcomes
The students:
1) find, on the Internet, communities that are of personal interest and join them; start a new virtual community if necessary and create an online cooperation environment for it;

2) use the assigned or freely selected online environment purposefully and safely; join the environment, choose a secure password, create a user profile and add materials;

3) reflect on the learning experience in a blog;

4) cooperate with fellow-students to compile hypertext documents with the aid of Wiki;

5) create new online content and reuse their own or somebody else's online content (text, images, audio and data) in compliance with good practice in intellectual property protection and the terms and conditions of the author's licence;

6) make rational use of chosen keywords and social bookmarks to tag personally created content and that found on the Internet;

7) add video clips, photographs and whole presentations to web pages and subscribe to RSS feeds;

8) notice different levels of security in online environments (for example: http *vs* https and security certificates) and take these into account when using an online environment;

9) use the information systems offered by the school, local and national governments and various e-services for young people;

10) compare two assigned online information sources: suitability, objectivity/bias and timeliness;

11) apply, when working on a development project, the knowledge and skills acquired during the informatics course(s) from the previous school stage(s); and

12) use a virtual identity safely and ethically: protect their identity, are careful when communicating with strangers in a virtual environment (false identities) and avoid using somebody else's identity.

Course Content

Information society technologies

Internet as an environment for communication and work. Different methods and means of searching for information. Registration and user profile creation in online environments. Own virtual identity protection. Basics of safe and ethical online behaviour. Rules for using the school's information systems and e-learning environment.

Estonian e-state and e-services. Using the ID card for authentication and digital signatures. Finding and using e-services on the local government website. Using the citizens' portal eesti.ee.

Creation of a personal learning environment using social software. Using blogs to reflect on the learning experience. Using Wiki and online office software to create documents in cooperation with fellow students. Using social bookmarking and news aggregating websites. Commencing the development project and creating an online cooperation environment for it.

Content production, reuse and licences. Preserving, tagging and sharing online presentations, photographs, video clips, audio materials and data files. Subscribing to RSS feeds. Adding photos, videos and presentations to websites. Creating podcasts.

Participation in a virtual practice community. Planning, conducting and documenting an online meeting. Organising a group discussion and problem-based learning in an online environment. Group time management. Managing different versions of digital documents and cooperating during compilation of one common document.

Completion of a development project. Ensuring project prominence with online means. Compiling a presentation and the project report. Group self-assessment.