

Subject:  
Information and Communication Technologies (ICT)

School Approval Standard:  
Ed 306.42

***This is the second in a series of Technical Advisories issued by the Department to clarify the new School Approval Standards.***

## I. Actual Text

Ed 306.42 Information and Communication Technologies Program.

(a) The local school board shall require an integrated approach to the use of 21<sup>st</sup> century tools, including, but not limited to digital technology and communication tools, within all curriculum areas through the adoption of information and communication technologies literacy (ICT) program in grades K - 12 that provides opportunities at developmentally appropriate levels for students to:

- (1) Develop knowledge of ethical, responsible use of technology tools in a society that relies heavily on knowledge of information in its decision-making;
- (2) Become proficient in the use of 21<sup>st</sup> century tools to access, manage, integrate, evaluate, and create information within the context of the core subjects of:
  - a. Reading;
  - b. Mathematics;
  - c. English and language arts;
  - d. Science;
  - E. Social studies, including civics, government, economics, history, and geography;
  - f. Arts; and
  - g. World languages;
- (3) Use 21<sup>st</sup> century tools to develop cognitive proficiency in:
  - a. Literacy;
  - b. Numeracy;
  - c. Problem solving;
  - e. Decision making; and
  - f. Spatial / visual literacy;
- (4) Use 21<sup>st</sup> century tools to develop technical proficiency at a foundational knowledge level in:
  - a. Hardware;
  - b. Software applications;
  - c. Networks; and
  - d. Elements of digital technology; and
- (5) Create digital portfolios which:
  - a. Address the following components:
    1. Basic operations and concepts;
    2. Social, ethical, and human issues;
    3. Technology productivity tools;
    4. Technology communications tools;
    5. Technology research tools; and
    6. Technology problem solving and decision-making tools;

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b. Represent proficient, ethical, responsible use of 21<sup>st</sup> century tools within the context of the core subjects; and

c. Include, at a minimum, such digital artifacts as:

1. Standardized tests;
2. Observation;
3. Student work; and
4. Comments describing a student's reflection on his/her work.

(b) The local school board shall provide opportunities for students to demonstrate ICT competency by the end of 8th grade using assessment rubrics applied to the contents of digital portfolios as required in (a)(5) above. Students who successfully demonstrate knowledge, skill, and understanding of these competencies shall have the opportunity, as high school students, to take a higher level computer course to meet the ½ credit requirement.

(c) The local school board shall provide opportunities for students to complete a ½ credit ICT course prior to high school graduation, including, but not limited to:

- (1) Use of common productivity and web based software;
- (2) Use of a variety of multimedia software and equipment;
- (3) Configuring computers and basic network configurations; and
- (4) Applying programming concepts used in software development.

## II. Department Comment

These ICT Literacy standards are based on standards and policy recommendations which have emerged over recent years from several national and international efforts. More resources related to these efforts can be found at <http://nheon.org/oet/standards/ICTLiteracy.htm>.

The local school board should have a *policy* for both K-8 and high school instruction which includes portfolio development and ensures integration of 21<sup>st</sup> century tools within all curriculum areas. The *policy* should include the adoption of competency assessment rubrics at both the middle school and high school levels. It is the district's responsibility to either create assessment rubrics or adopt appropriate rubrics from other sources. The Department is working with educator groups to develop common ICT assessment rubrics and will make them available at <http://nheon.org/oet/standards/ICTLiteracy.htm>.

The submission of an assessment portfolio by the end of 8<sup>th</sup> grade does not normally qualify the student to receive ½ credit for ICT Literacy required for high school graduation. If the local board policy so states, a student may meet the requirement for high school ICT in middle school only if an appropriate high school rubric is used. This would be the exception for a middle school student, not the norm. However, a successfully completed 8<sup>th</sup> grade portfolio assures the student that they do not have to take a beginning ICT course in high school and provides them the prerequisite for more advanced ICT high school work, such as interactive multimedia, networking courses, or portfolio artifacts created within the context of the core subjects.

**The Department responds to frequently asked questions about the ICT standards:**

*Question 1: Do middle school students have to create digital **portfolios**?*

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A: Yes, the district must provide opportunities for 8th grade students to demonstrate competency by submitting a digital portfolio which is then assessed using locally developed rubrics.

*Question 2: Is the middle school **portfolio** built in the 8th grade year or is it cumulative?*

A: Cumulative. Ideally, it is a cumulative portfolio representing the development of a student's competencies over their experiences in grades K - 8. During this period of transition to the new standards, it is likely that these portfolios will only represent the most current digital artifacts available. Start with what you have. Over time, portfolios will more fully represent a student's work through all elementary grades.

*Question 3: Does this end-of-8<sup>th</sup> grade **portfolio** qualify for the required high school ½ credit?*

A: No, the portfolio does not qualify for high school credit, but it does qualify as the "prerequisite," if you will, for the higher level course that shall be taken in high school to meet the ½ credit requirement. The standards refer to "opportunities at developmentally appropriate levels." For example, a student who successfully creates a digital portfolio in 8<sup>th</sup> grade can take a high school computer networking course to satisfy the graduation requirement.

*Question 4: **Who reviews the portfolio** and determines whether or not students are competent? How are we going to define what is required in this portfolio? Are there any guidelines for the creation of the portfolio? Do we need to build a **rubric**?*

A: Your district's teachers review the portfolios, using a locally developed assessment rubric, in order to determine competency at the end of 8<sup>th</sup> grade. Please review the resources listed at <http://nheon.org/oet/standards/ICTLiteracy.htm> for guidelines and resources on creating portfolios and rubrics. More resources will be posted to this site over time as they are identified and formatted for distribution.

Digital portfolios might contain examples of work that involve using technology to:

- Communicate electronically (i.e., using Power Point, Publisher, Movie Maker, etc.)
- Address ethical issues (i.e., using word processing software to create a writing piece on plagiarism, using digital images and including proper acknowledgement of the source)
- Create content specific documents (i.e., creating Excel spreadsheets and graphs to show results of science experiments)
- Conduct research (i.e., appropriately cite web page sources for project papers, search by topic for articles in SIRS database)
- Promote critical thinking for problem solving (i.e., use Inspiration to map out project steps)

*Question 5: Is it **stored** just in district? How does it move from place to place if it needs to do that (i.e., building to building)?*

A: Storage locations are determined by the district. The Department recommends that districts review their current storage capacities and develop long term plans as needed. Common options range from setting up standard formats for storing each student's files on individual CDs, to individual student folders on the school server, to using a web-based storage provider for individual student records.

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**Question 6:** Do the new standards **impact this year's classes** for the end of the year? Must the 8th graders of this year produce a digital portfolio that meets Ed 306.42? What about current 9<sup>th</sup> graders?

A: Yes, since the rules took effect on July 1, 2005, the new standards impact students in 9<sup>th</sup> grade and below. Current 10<sup>th</sup>, 11<sup>th</sup>, and 12<sup>th</sup> graders are considered under the prior standards. During this transitional time, it is acceptable to be moving toward a goal that meets this standard. Therefore, schools should evaluate their current middle school courses to determine whether such coursework could be considered roughly equivalent to the contents of what will be produced under the new digital portfolio approach, in order for those students to be eligible in 9th grade to take advanced ICT courses. A letter should be placed in the file of each student (for this year only) that such an evaluation has taken place and that the student is eligible to take an advanced ICT course. For current 9th graders (class of 2009), see the responses to questions 7, 8, 13, and 14.

**Question 7:** If they do not complete the **portfolio** by the end of 8th grade, how do they get to take their more advanced class to fulfill their ½ credit? Is there a class in the 9th grade (semester or full year?) in which they will build this portfolio?

A: According to the standards, they cannot take a more advanced class until they successfully demonstrate competency through the portfolio approach. Students could take an "Intro Course" or could develop a basic portfolio in 9<sup>th</sup> grade, which would then qualify them for an advanced ICT high school course. As an example, a high school might have exemplary science labs, writing assignments, Internet research assignments, and math labs that address various parts of ICT literacy. These could be the start of a portfolio. For current 9<sup>th</sup> graders (class of 2009) during this transitional time, the portfolio equivalent approach described in question 6 above should be applied in order for those students to also be eligible to take advanced ICT courses in high school to earn the ½ credit required for graduation.

**Question 8:** Are students in the current freshman class (2009) required to create a digital **portfolio**? If so, since the class of 2009 and 2010 may not have a portfolio depending on the year they took computers in the middle school, will it be necessary to file a petition to try to waive this requirement for these students?

A: No, this is not necessary. Please see question 7 above regarding portfolio equivalence. Since the portfolio is an intended approach to instruction for all of grades K – 12, current freshmen (2009) will be expected to develop portfolios in high school as part of their high school instruction, and they need to take a high school "½ credit course or demonstrate proficiency." While a portfolio is required for instructional purposes in high school, it is not necessarily used as a means of assessing competency. It is **optionally used** (based on a district decision and policy) in high school for assessment to meet the ½ credit in high school.

**Question 9:** I currently teach a semester (90-day) **course** called "Understanding Computers" to 7<sup>th</sup> grade students. Upon completion, we award students ½ unit of high school credit. Is there a minimum of hours that must be attained by students to receive their mandatory computer credit for this course?

A: No, the issue is not the number of hours, but rather that 7<sup>th</sup> grade courses cannot be used to satisfy the high school credit requirement. The standards specify that students are to demonstrate competency at the end of 8<sup>th</sup> grade through the use of digital portfolios, followed by taking a high school course to earn ½ credit in high school. Since 7<sup>th</sup> grade courses do not provide students with high school credit under the new

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standards, the above described “Understanding Computers” course cannot be used to award 7<sup>th</sup> grade students ½ unit of high school credit. The Department recommends that districts with this type of middle school course use the opportunity to help students develop end of 8<sup>th</sup> grade portfolios.

*Question 10: What are the **consequences** for districts that do not meet the standards?*

A: Non-compliance with these standards will impact future reviews during the School Approval process, as well as approval of District Technology Plans. Non-compliance will also result in students being inadequately prepared to enter and succeed in the 21<sup>st</sup> century workplace and/or in institutions of higher education.

*Question 11: Can there still be a **test out** option for all middle school students in a district? For example, can the high school review the program at the middle school and then award ½ credit, knowing the quality of the work necessary to complete a portfolio and pass the middle school course?*

A: No, the high school should not award ½ credit for a middle school course. See the response to question 3 above. There is one **exception** to this practice. Under Ed 306.26 (e), it is possible for a local school board to have a policy for granting high school credit for middle school work based on demonstration of competency. However, the policy must ensure that “the course demonstrates content requirements consistent with related high school course(s) and the student achieves satisfactory standards of performance.” Therefore, if a student is requesting ½ credit of ICT literacy for middle school work, the high school must review that student’s portfolio to ensure it is actually high school / advanced level work.

*Question 12: Does this **portfolio** become part of the student’s record or does the student retain it?*

A: Yes, while the portfolio being constructed, it is considered part of a student’s record similar to other classroom work that yields grades and competency statements on transcripts. FERPA allows parents or a student to have copies of any and all records in the student’s file maintained by the school/district. Once competency has been achieved using a portfolio and the resulting grade(s) appear on a student’s transcript, the digital artifacts within a portfolio do not need to be retained. The Department recommends that districts have a method for students to save their portfolio contents to take home, such as saving to a flash drive or CD before portfolios are deleted from school storage systems.

*Question 13: We currently have a **9th grade class** called “Intro to Computers.” Will there no longer be a need for a specific class like this? Is a portfolio, created within the context of regular core content classes and used to assess their technical skills, to be used instead of the Intro to Computers class?*

A: The district can decide whether to keep the course or simply move to a portfolio only approach. If an “Intro to Computers” course is still offered, it should address, at a high school level, the topics listed in Ed 306.42(c). The Department encourages you to consider revising the course as a forum for students to develop portfolios in high school, which are further refined during their entire high school experience and then used for college and job application purposes.

*Question 14: Is a digital **portfolio** required of both middle school and high school students?*

A: Yes, the Ed 306.42 (a) standards include portfolios as one of the five integrated elements to ICT Literacy

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which apply to grades K – 12. Therefore, both K – 8 and high school students should create digital portfolios as part of their ICT Literacy experience. The portfolio which is completed at the end of 8<sup>th</sup> grade is to be used to demonstrate competency at the end of 8<sup>th</sup> grade and to provide a “prerequisite” for the higher level work. High school students may submit their high school level portfolio as evidence of competency OR instead may complete a ½ credit course. Districts are encouraged to design their ½ credit courses so that students create portfolios as a culminating experience in the course. Districts should also note that the requirements for high school graduation allow for “demonstrated proficiency.” Such proficiency must be measured against a high school level assessment rubric, not a middle school level rubric.

*Question 15: Which **high school courses** are districts required to offer?*

A: Districts may determine how to configure ICT courses, but the four topic areas listed in Ed 306.42 (c) must be provided so that students may complete a course in one of or a combination of the four areas in order to earn their high school ½ credit. Consistent with the K – 12 integrated approach using portfolios [see Ed 306.42 (a) (5)], high schools should ensure that students have opportunities to gather digital artifacts and develop portfolios. At the very least, a high school should offer a basic ICT course which addresses the four areas. Above that offering, the courses they offer as “advanced” could be tied to a variety of disciplines (i.e., vocational courses or computer science courses for networking or programming, business courses using office productivity software, or graphics courses using Freehand and Flash).

*Question 16: If the **high school courses** are supposed to cater to individual students’ ‘career aspirations,’ are there suggestions for how a school may do this, especially small schools with limited teaching resources?*

A: One course or a combination of courses can provide flexibility for students to follow a particular topic most suited to their career aspirations. For example, students who intend to follow a career in graphic arts may find that course work that emphasizes using a variety of multimedia software and equipment provides the most relevant experience.

*Question 17: How will districts be **monitored** to ensure they are following the ICT requirements?*

A: The Office of School Approval has a process for reviewing and approving schools on a five-year cycle. This process includes review of the extent to which schools meet each of the School Approval Standards. Additional monitoring can occur during technology plan reviews, as well as through various Department surveys and reports.

*Question 18: How will DOE work with districts to help them **implement** the standards?*

A: Technical assistance sessions will be provided at the Local Educational Support Centers, located in Keene, Manchester, Exeter, Penacook, Claremont, and Gorham. There can also be informational meetings scheduled for superintendents, principals, guidance department heads, technology aides, and others as necessary. The Support Centers can provide professional development to districts to help them develop and implement a plan that works for their particular district and school situation. This would include working with teachers involved in determining the contents of the digital portfolio. Technical assistance session dates will be posted periodically at <http://nheon.org/oet/standards/ICTLiteracy.htm> as they become available.

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### Further Clarification as of 3/20/06

Since the posting of Technical Advisory #2 and subsequent information sessions conducted by the Department, several points of clarification have been requested by districts. Such clarification is provided below. For all issues, the Department recognizes that fully meeting these new standards will take time, probably a few years instead of a few months. It is important to begin planning strategies and developing policies. Future ICT work sessions held at the Centers will help with this.

#### Digital Portfolio Storage

Ed 306.42(a) requires an integrated approach for students to create digital portfolios. Ed 306.42(b) requires schools to use those portfolios to assess student ICT competency by the end of 8<sup>th</sup> grade. Some means of digital storage is necessary in order to have portfolios. The method and extent of digital storage provided for each student, as well as the maintenance of digital files is not specified in the standards. According to the 2006 Annual School Technology Survey, 180 out of 318 schools (57%) report that their students have login accounts on the school server, with storage space ranging from a minimum of 5 MB to and a maximum of unlimited storage space. Therefore, the Department recommends:

- a. Provide a minimal amount of storage space for each student to the extent possible with current budgets.
- b. District requirements for the kinds of artifacts that students are expected to store in their digital portfolios should be modest and aligned with the amount of storage you make available to each student.
- c. As your storage capacity increases, the portfolio requirements can become more sophisticated to better demonstrate the kinds of student work possible with technology.

#### Digital Portfolio Requirement

Ed 306.42(a) requires an integrated approach with core content areas as students create portfolios. Districts which have not been using a portfolio approach to instruction will need some time to review and adapt their core content curricula and any "computer literacy" kinds of courses which they may have offered through 8<sup>th</sup> grade in the past. Therefore, the Department recommends:

- a. Review your existing middle school "computer literacy" course syllabi to determine whether the student work from such courses indicates that students have demonstrated ICT competency that is generally equivalent to what would be demonstrated in a digital portfolio.
- b. If, during this transition phase to a portfolio approach, you conclude that students have demonstrated ICT competency, students should then be allowed to take a more advanced ICT course in high school to earn the ½ credit.
- c. You should not use this approach indefinitely, but rather until your 8<sup>th</sup> grade portfolio approach is in place for the class of 2011 (students currently in 7<sup>th</sup> grade).

#### High School Courses

Ed 306.42(c) requires students to complete ½ credit of ICT by completing either a course or demonstrating proficiency. Ed 306.27(m) and (n) also address this requirement, while Ed 306.27(p) describes how a student may earn interdisciplinary credits. The class of 2009 is the first class which is affected by these new standards. The Department is aware that some students have already planned their high school course schedules under the assumption that they had already completed their ICT literacy ½ credit in the 8<sup>th</sup> grade. Since these new standards took effect during the year they entered high school, they are responsible for the high school graduation requirements listed in Table 306-2 of 306.27. These students still have 3 years to complete ½ credit and can do this in a variety of ways. Therefore, the Department recommends:

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- a. Review your existing high school course list to determine which courses will allow students to earn the ½ credit for ICT through interdisciplinary means.
- b. Review your existing high school curricula to determine the ease with which you might implement the use of digital portfolio for students to demonstrate ICT proficiency in order to earn their ½ credit.

### Assessment Rubrics

The standards allow for districts to design their own assessment rubrics for assessing ICT competency or to adopt rubrics developed elsewhere. Many districts have expressed a desire for a committee to develop common assessment rubrics which districts could adopt and/or adapt. Therefore, the Department recommends:

- a. Review the current assessment rubrics used now in your district to determine if they would be suitable to adapt to your ICT literacy program for assessing portfolios.
- b. Periodically visit this website (<http://nheon.org/oet/standards/ICTLiteracy.htm>) for information about upcoming ICT Literacy workshops for this and other aspects of ICT Literacy program assistance.

### District Policies

Other sections of Ed 306 standards (Ed 306.04; Ed 306.06; and Ed 306.14) address issues related to these ICT Literacy standards, such as records retention, professional development, and instructional policies. More information is provided within the Policy and Procedure section of the online Tech Planning Guide at <http://www.nheon.org/oet/tpguide/policy.htm>. Therefore, the Department recommends:

- a. Review the pertinent information in the Tech Planning Guide to determine whether new policies need to be developed or existing policies revised.
- b. Districts should make a distinction between portfolio work in process and completed portfolios which result in competency statements and/or grades. Districts only need to retain those portions of student digital portfolios that would be necessary to assess their competency, resulting in information for student transcripts. After student records/transcripts accurately reflect portfolio completion, the individual materials within a portfolio do not need to be retained further, since portfolio materials are similar to other classroom work.
- c. Districts are encouraged to develop a mechanism for students to show their portfolio work to parents/guardians and for students to be able to save a personal copy for themselves before portfolio materials are deleted from school storage.

### Technology Plans

Districts are required to have current and approved Technology Plans in order to receive federal technology funding. Such plans are frequently used for other strategic planning purposes as well. When updates pertinent to the ICT Literacy standards are made to the current Technology Plan Approval Rubric, the Department will notify districts via the Office of Educational Technology's ETNews and the Department's Key Messages. The Department anticipates that the updated Approval Rubric will be available by June 2006.

### III. For more information on this technical advisory, contact:

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