Education Technology Literacy
PREAMBLE

When an educator uses technology as tools for teaching and learning, he/she must keep in mind the following principles:

1. *Technology is constantly evolving and so examples given below must be reviewed so that the most up to date version of a tool or instrument is used. Educators should always explore beyond the examples cited in this document.*

2. *Whether the tool is emergent or traditional, these questions must always be answered:*
    a. *Is this the best tool for the purpose?*
    b. *Is this the best tool for the individual student to learn the topic?*
    c. *Does using this tool enable a student to learn a difficult topic in a way not possible without the technology tool?*

3. *Both the teacher and the school district have responsibility to maintain educators' knowledge base.*

4. *Online and face to face teaching share some technology tool applications and instructional practices. Educators need to make these distinctions and practice with the appropriate strategies.*

Finally, italicized examples below are illustration of activities that teachers have designed and implemented.

I. Teaching and Learning with Technology

A. Engages in instructional technology pedagogy to encourage students' creativity, innovation and authentic learning.

• The teacher creates lesson plans and delivers lessons using district-developed guidelines that integrate technology to reach a lesson's objectives, for example, using wikipedia to teach research skills.

• The teacher engages in online searches: effective, efficient, objective, accurate, authentic, current and comprehensive, and models this process for students.

> Online Resource: Research, Write and Publish http://educate.intel.com/en/TechnologyLiteracy/Describe/TeacherGuide/TG_ResearchWritePublish/ (In the *Research, Write, Publish* project, students develop the fundamental skills needed to use technology in support of research, creativity, and communication. Students become more effective researchers, writers, and publishers by learning and applying sound methods and processes.)

• The teacher develops his/her own website for student use or enables students to explore through the state's (MassONE) or other vetted portals.

B. Uses current and emerging technology tools to personalize and customize teaching to align with students' learning styles.

• The teacher chooses the appropriate technology to match students' learning styles.

Online Resource: Differentiated Instruction
http://www.edutopia.org/stw-differentiated-instruction-ten-key-lessons
(Effective technology integration is achieved when its use supports curricular goals. It must support four key components of learning: active engagement, participation in groups, frequent interaction and feedback, and connection to real-world experts.)

• The teacher incorporates social networking sites, which are approved by the school district, in lessons to teach students how to maximize these tools for learning.
Online Resource: Edline Interactive Classroom www.Edline.com

• The teacher refines lessons to ensure student engagement, higher order thinking skills and authenticity...using design, development and assessment tools.
Online Resource: LoTi http://loticonnection.com/

•The teacher instructs, models and advocates good digital citizenship: legal, safe and ethical guidelines.
Online Resources: Internet Safety (students and educators)
Cyberbullying—MARC http://webhost.bridgew.edu/marc/
NetSmartz http://www.netsmartzkids.org/indexFL.htm
i-Safe www.isafe.org

Copyright and Fair Use (Teach Act, etc)
Teach Act http://www.copyright.com/media/pdfs/CR-Teach-Act.pdf
Netiquette
http://en.wikipedia.org/wiki/Netiquette
Creative Commons http://creativecommons.org/

• The teacher understands universal design and incorporates it into all lessons. The teacher also understands other diverse learners such gifted & talented and at risk students and how to employ technology to advance their learning.

Online Resources: CAST
http://www.cast.org/research/udl/index.html "In today's schools, the mix of students is more diverse than ever. Educators are challenged to teach all kinds of learners to high standards, yet a single classroom may include students who struggle to learn for any number of reasons, such as the following:

- Learning disabilities such as dyslexia
- English language barriers
- Emotional or behavioral problems
- Lack of interest or engagement
- Sensory and physical disabilities…"

Gifted and Talented
http://www.gifted.uconn.edu/
At Risk
http://www.ncrel.org/sdrs/areas/issues/students/atrisk/at600.htm

• The teacher uses data for decision making to inform instruction, to assess student development and to monitor student growth as a result of creating a tailored curriculum. Those data are used to revise the curriculum appropriately (formative assessment). The teacher also may develop his/her own databases or use existing databases to keep track of relevant classroom and student information.

• The teacher collaborates with colleagues on the same team, in the same grade level across the district to analyze data and finds key focus areas for improvement where students have demonstrated deficiency (placement, IEPs). This is accomplished using the district's/state's data warehouse.

Online Resource: Data Warehouse
http://www.doe.mass.edu/infoservices/dw/

• The teacher uses data, stored and analyzed, to make quick responses to students to leverage remediation, to track understanding and growth.

Online Resource: Response System
http://cft.vanderbilt.edu/teaching-guides/technology/clickers/
Turning Technologies http://www.turningtechnologies.com/

Example: A teacher in the fifth grade uses the response system (clickers) daily to monitor students' understanding of the lessons taught. Students are assigned a clicker by number so the teacher is the only one who knows if a student is grasping the content. The teacher saves the data for future reference and can perform data analysis for the class's level of understanding regularly (a version of formative assessment).

Online Resource: Think Critically with Data
http://educate.intel.com/en/TechnologyLiteracy/Describe/TeacherGuide/TGThinkCriticallyWithData/ (In the *Think Critically with Data* project, students develop the fundamental skills needed to use technology in support of critical thinking, data analysis, and communication. Students also learn how to monitor and be accountable for their own thinking and analysis.

• The teacher uses technology for program and student assessment (e.g. portfolios simulations). The teacher develops his/her own e portfolio system or uses a commercial or school district developed prototype. The portfolio enables retention of exemplars of student work for the student and for future instruction.

Online Resource: http://www.ideasconsulting.com/ and
http://eduscapes.com/tap/topic82.htm

C. **Matches technology use to the content or discipline**
The teacher determines appropriate tools to teach his/her discipline to elicit deep and wide understanding of the content.

These are examples from five disciplines:

Science
The teacher uses a document camera to show the entire class the dissection of a frog. By using the document camera the teacher prevents students from crowding around a desk. Instead they use their own computers or an interactive board. All students have the opportunity to see the dissection in its entirety. They are also given a virtual site on which they can perform the dissection themselves.

The teacher attaches probes to the computer to compile data points from a science experiment to provide evidence for conclusions drawn.
http://www.edutopia.org/clearfield-high-school-technology-video (Tech in Real Life: Students See Devices as Tools, Not Toys)

Mathematics
The teacher uses the graphing calculator and additional software to explain numerical relationships to students.

Online Resources: Geometric Supposer *http://www.cet.ac.il/math-international/software5.htm*
The Geometer's Sketchpad *http://www.dynamicgeometry.com/*

Language Arts
The teacher uses podcasts or vodcasts to record and analyze student developed theatrical/literary productions.

World Languages
The teacher uses computers as a language lab for students to practice oral language development in the languages taught in the school.

Technology Literacy
The Elementary Instructional Technology Specialist plans together with the teacher to make the Internet Safety curriculum more engaging by integrating BrainPOP videos and activities into the lessons.

Online Resources:
BrainPop http://www.brainpop.com/
Boston Public Schools http://www.bpscybersafety.org/

D. Develops student competencies in alignment with state and national technology standards
The Instructional Technology Teacher collaborates with the subject matter teacher and grade level colleagues to develop lessons that ensure the advancement of a student's

technological proficiency level as it aligns with the state standards. The teachers download the standards from the ESE site and review and coordinate them with teaching strategies, using mapping software.

Online Resources:
Curriculum Mapping—Concept Maps http://cmap.ihmc.us/
ISTE www.iste.org
DESE Technology Literacy Standards
http://www.doe.mass.edu/edtech/standards/itstand.pdf
Curriculum Frameworks http://www.doe.mass.edu/frameworks/info.html

II. Online teaching and learning

See all statements above and note that some strategies such as the physical use of clickers cannot be used online. It is, however, possible to replicate that function, e.g polling in LMSs, or to use cell phones.

Online Resource: Poll Everywhere
http://www.polleverywhere.com/sms-classroom-response-system

III. Managing the Classroom Environment using Technology

- The teacher uses technology to fulfill management/administrative duties such as maintaining records, determining grades, making observations, taking attendance on his/her computer and/or the school's server.

Eaxmple: Teachers in school A have access to a desktop/laptop. They take daily attendance using the district supported electronic grade book. The software gives teachers the ability to input students' grades regularly with automatic calculation. The software (called a "virtual classroom") takes care of adding students, updating their information and communicating with parents and students.

- The teacher uses digital content (Digital content may take the form of text, such as documents, multimedia files, such as audio or video files, or any other file type which follows a content lifecycle which requires management-- from wikipedia) instead of printed textbooks to lighten student backpacks, reduce costs, expand resources.

Online Resources:
Flex Book http://www.ck12.org/flexr/
Discovery Education http://www.discoveryeducation.com/
WGBH http://www.teachersdomain.org/

- The teacher develops and maintains classroom portal/website.

Example: A high school teacher creates online teams for student and student-teacher collaboration, both in and out of school on the classroom portal. The teacher is enabling the class to work on an authentic project. The teacher gives partial access to parents. As a

result, the responsibility and the learning are shared by all three stakeholders (teacher, parent, student).

IV. Professional Responsibility and Activity

A. Maintains appropriate online presence and communication

• The teacher is conscious and attentive to information that is private and that which can be made public.

• The teacher develops an appropriate "presence" or "persona" for public consumption and teaches students to do the same.

B. Student/Teacher/Parent Relationship

The teacher uses ConstantContact, email, classroom portal, social networking to communicate regularly with parents.

Online Resources: Constant Contact
http://www.constantcontact.com/index.jsp
Edline www.edline.net
First Class Webpages www.softarc.com

C. Stays current with uses of extant and emerging technology tools through professional development offered in and out of school.

Eaxmaple: On a regular basis District A requires each school to devote some of a faculty meeting to update and refresh the staff on the district policies relating to electronic resources. All new teachers/staff to the district attend a half day training on the resources available to the teacher/staff and "how to demos" are presented to the teacher/staff. Teachers are members of professional learning communities which they have created with the sanction and encouragement of the administration.

A cohort of middle school teachers as part of the goals of their school chooses to attend PD sessions provided by MassCUE and a conference mounted by ISTE.

D. The teacher explores other sources of updated information.

Online Resources:
Blogs 50 Must-Read Upa dn Coming Blogs
http://www.teachingtips.com/blog/2008/06/30/50-must-read-up-and-coming-blogs-by-teachers/
Top 20 Teacher Blogs
http://www2.scholastic.com/browse/article.jsp?id=3752562

Electronic periodicals
eSchool News http://www.eschoolnews.com/
Tech and Learning
http://www.thefreelibrary.com/Electronic+periodicals-s111066

Free Library of Electronic Periodicals
http://www.thefreelibrary.com/Electronic+periodicals-s111066
The Journal
http://thejournal.com/Home.aspx

Example: A seasoned elementary teacher decides to take a course at the local university, approved by the school district, to learn the necessary methodology to use technology in his classroom.

The Superintendent specifies that principals should hire only educators who have demonstrated the effective use of technology in their prior teaching.

E. The teacher networks with other classrooms, colleagues outside the school, professional associations and other countries and cultures (global diversity)

- The teacher belongs to and participates in professional blogs, wikis etc.

- The teacher uses DESE website resources (MassONE)

- The teacher regularly checks to see what is new and what he/she should be aware of and incorporates what is appropriate to his/her students.

- **The teacher understands and observes policies relating to electronic resources**

Online Resources: Acceptable Use Policy/Responsible Use Policy
Web publishing http://www.webwise.ie/article.aspx?id=4527
Electronic student records http://www.clcm.org/student_records.htm
CIPA http://www.fcc.gov/cgb/consumerfacts/cipa.html
FERPA http://www2.ed.gov/policy/gen/guid/fpco/ferpa/index.html