

Technology Literacy Assessment Project (TLAP)

Proposal to Colorado Department of Education Power Results Grant Program

Executive Summary

Project Context and Goals. This proposal addresses the initial year of a multi-year technology literacy (TL) assessment project that moves the state toward transformative support for 21st century learning. Collaboratively conducted by a consortium of school districts and BOCES, the project builds on the experience obtained by consortium districts in developing and implementing a TL assessment instrument during 2007-08.

Project work will initially determine a common definition, standards, and proficiency criteria for TL, based on the CDE-endorsed standards, then develop or adapt an assessment instrument. The assessment will be available free to all Colorado school districts; variations in the mode of delivery will accommodate districts' divergent technology capacities. Districts may use this instrument, adapt it based on local needs, or create their own assessment. The project will devise common procedures for implementation, reporting, and data collection that apply to all districts which use the assessment instrument, and facilitate development of assessment analysis practices that improve both TL and content curricular and instructional design. The project will incorporate assessment and acquisition of TL into content standards and instructional practice. Dissemination efforts will seek opportunities to tie TL into content-area teaching and learning. These efforts will focus in particular on initiatives to revise the state's content standards, improve students' preparedness for postsecondary options, and adopt 21st century learning.

Project Implementation and Activities. This proposal seeks funding for one year in order to develop, deliver, and analyze a pilot TL assessment. However, fully achieving the project's (and CDE's) goals — in particular, incorporation of TL into content learning, development and implementation of effective TL teaching and learning, and refinement (and updating) of the assessment instruments — will require at least two years of intensive work. Accordingly, the project consortium plans to submit a Year Two proposal to CDE in spring 2009.

Project Participation and Leadership. Initial consortium participants include urban, suburban, and rural districts. Centennial BOCES will serve as fiscal agent. An Executive Board, will make policy related to development and implementation of the assessments, and maintain oversight of all project activities. A Project Director will provide daily policy direction, supervise project operations, and liaison the project with other organizations and initiatives.

Budget. Total estimated cost for the proposed year of this project is \$599,165.

Pilot assessment design and development	\$ 104,000
Pilot assessment delivery and reporting of results	\$ 66,000
Professional development	\$ 152,250
Project Evaluation	\$ 60,000
Project administration	\$ 153,000
Equipment and supplies (other than for Professional Development)	\$ 30,000
Indirect costs (fiscal agent)	\$ 33,915

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Section A: Project Design

Background and Context

Current federal legislation (NCLB) decrees that by 2013 educators will obtain “technology literacy” (TL) for all students by the time these students complete the 8th grade. The U.S. Department of Education has mandated that states must report annually, beginning in 2008, on the percentage of students who have achieved TL by the end of the 8th grade¹ — leaving interpretation and implementation of this requirement to the discretion of each state. To comply with the federal mandate, the Colorado Department of Education has ordered school districts to report by fall 2008 the percentage of their students who have achieved 8th grade TL, declaring a common definition and standards for TL but ceding to districts the authority (and responsibility) for determining the proficiency levels that indicate attainment of TL and for devising the mechanism for determining attainment of said literacy. (See Appendix C — CDE Statement of Technology Literacy Reporting Requirement.)

In response to these federal and state expectations, Colorado school districts have been scrambling to create/acquire and conduct TL assessments. The result is a potpourri of assessment methodologies, ranging from district-developed performance assessments to standards-based report cards.² Definitions of TL diverge, but most districts rely, directly or implicitly, on the 2007 ISTE-NETS technology literacy standards.³ Among the various assessments in use is a limited-response (aka multiple choice) exam developed during 2007 by the districts involved in this proposal and offered without charge to other districts across the state. Significantly, this exam does not address the three most Information-Age-oriented of the six CDE-endorsed standards (Creativity & Innovation; Communication & Collaboration; Critical Thinking, Problem Solving, & Decision-Making).

Now, Colorado Power Results grant funds create the opportunity for the state’s educators to shift from muddled NCLB compliance to transformative support for 21st century learning. This proposal presents a multi-year project designed to achieve that transformation.

Proposed Project Outcomes

The project outlined in this proposal, collaboratively conducted by a consortium of school districts and BOCES⁴, would accomplish the following:

- Determine a common definition, standards, and proficiency criteria for TL;

¹ For the sake of brevity and simplicity, further references to the expectation that students will attain technology literacy by the end of the 8th grade will be stated as “8th grade TL”. In fact, the imagined literacy could be attained by a student (and assessed) at any time prior to the completion of the 8th grade.

² A sample of district assessment strategies is shown in Table 1 at the end of this document.

³ www.iste.org/Content/NavigationMenu/NETS/ForStudents/2007Standards/NETS_for_Students_2007.htm (accessed 5-12-08).

⁴ Consortium membership includes Centennial BOCES, Denver Public Schools, Jeffco Public Schools, St. Vrain Valley School District, and Widefield School District.

- Develop or adapt an assessment instrument that addresses the determined standards and proficiency criteria;
- Develop common procedures for delivery of the assessment that will apply to all districts that use the assessment instrument (“participating districts”);
- Establish assessment results reporting mechanisms for all participating districts;
- Facilitate development of assessment analysis practices and application of assessment analyses to improved curricula and instructional design;
- Work to incorporate assessment and acquisition of TL into Colorado content standards and instructional practice.

The project builds on the experience of consortial partners and other districts in devising and implementing a limited-response assessment that addresses three of the six CDE-endorsed TL standards (Research & Information Fluency, Digital Citizenship, and Technology Operations & Concepts). Investing at least \$120,000 in staff time, assessment design consultants⁵, technology, and other resources, these districts collaborated from September 2007 through May 2008 to create an assessment that would be easy to administer and would provide reliable results to inform instructional planning as well as fulfill NCLB and state reporting requirements. (See Appendix D — Existing Consortial Technology Literacy Assessment Project.) While that work provides a solid foundation for the proposed project, much more remains to be accomplished in creating and using a comprehensive TL assessment. Additional work includes:

- Benchmarking the CDE-endorsed TL standards to grade levels;
- Developing an assessment for the more complex and sophisticated elements of TL (Creativity & Innovation; Communication & Collaboration; Critical Thinking, Problem Solving, & Decision-Making)
- Developing an assessment that emphasizes performance-based demonstrations of student proficiency;
- Making the assessment instrument available in formats that maximize usability for all interested school districts, with a preference for online delivery;
- Establishing a data reporting system and procedures;
- Designing and delivering professional learning related to implementation of a TL assessment and the use of assessment data to improve instruction;
- Incorporating TL assessment into instructional design and practice.

The additional work outlined above comprises the core of this proposal. Further explanation and elaboration of the intended project outcomes are provided in the paragraphs that follow.

Common definition, standards, and proficiency criteria — In order to assess (and report) TL, Colorado educators must first agree on what it is. Despite CDE’s endorsement of a single

⁵ The consortium’s primary consultant was Bernajean Porter, a nationally recognized expert in technology literacy and assessment design. See www.bjpconsulting.com/index.html

definition and set of standards, definitions and standards used by districts across the state do not necessarily conform to the CDE statement. This project would help to clarify such ambiguities.

The 2007 ISTE-NETS standards, which CDE modified and endorsed in August 2007, provide valuable common ground for linking technology and information literacies⁶, re-orienting the conceptualization of these literacies as instrumental rather than terminal.⁷ Significantly, these standards reflect the growing national agreement that technology is a means rather than an end, and, correlatively, that TL should be understood as a way to support learning and working rather than an isolated accumulation of skills and knowledge.⁸ The six CDE-endorsed and ISTE-NETS categories (Creativity & Innovation; Communication & Collaboration; Research & Information Fluency; Critical Thinking, Problem Solving, & Decision-Making; Digital Citizenship; and Technology Operations & Concepts) reflect this growing agreement, and portend a shift toward Information Age learning.

Accordingly, guiding principles for a common understanding of TL include:

- Emphasis on information and communication skills;
- Emphasis on application of tools to learning and productivity outcomes;
- Connection of TL to student achievement in content areas;
- Emphasis on broad tool-use and problem-solving strategies rather than narrow mastery of particular technologies;
- Focus on enduring skills, understandings, and dispositions that transcend short- and medium-term technology developments.

Significantly, the CDE-endorsed modification of the ISTE-NETS standards adds elements of technology literacy not addressed by the national standards — that of “design-build” technologies and processes (e.g., the creation of solutions, process, design, and products).⁹ This addition adds an important element to TL that presents interesting performance-based assessment design challenges.

An assessment instrument — The project will develop or adapt a TL assessment that addresses all six state-endorsed TL standards and follows the guiding principles described above. The

⁶ The integration of technology and information literacies was initiated by CDE’s Educational Technology and Information Literacy (ET-IL) initiative (begun in 2002). Integration is also reflected in the more common national (and international) label of “ICT” (Information and Communications Technology) literacy. (See the ICT Digital Literacy webpage, <http://www.ictliteracy.info/>, and the Educational Testing Service’s iSkills test webpage, www.ets.org/portal/site/ets/menuitem.1488512ecfd5b8849a77b13bc3921509/?vgnnextoid=1ebb0e3c27a85110VgnVCM10000022f95190RCRD&vgnnextchannel=34b4a79898a85110VgnVCM10000022f95190RCRD.)

⁷ <http://www.cde.state.co.us/edtech/StandardsForStudents.htm>

⁸ See “Tests of Tech Literacy Still Not Widespread Despite NCLB Goals,” in *Education Week*, 1-30-08, pp. 1, 12; www.edweek.org/ew/articles/2008/01/30/21techtests.h27.html (accessed 6-8-08).

⁹ See Colorado’s Technology Literacy Standard IV-B: “Students use critical thinking skills to plan and conduct research, *design and* manage projects, solve problems, *engineer solutions* and make informed decisions using appropriate digital tools and resources. Students: ... (B) plan, *design and* manage activities to develop a solution or complete a project (italics shows text added to original ISTE-NETS standard by CDE technology literacy standards committee).”

developmental process will include review and, potentially, adaptation of assessment instruments already developed (or in the process of development) by other organizations with proven assessment expertise. To the extent practicable, the assessment instrument will be performance-based. The assessment will be available free to all Colorado school districts. Of course, districts may use this instrument or create their own. In order to assure common ground and meaningful application of assessment results, districts that use the assessment will align their TL standards and proficiency criteria with those determined through the project.

Experience gained through the consortial work already conducted member districts of this project, in creating the existing 3-standard TL assessment, lays the groundwork for the extensive **validity and reliability studies** that must be conducted to create an instrument that produces usable results. Assessment staff within the districts guided such studies on the existing assessment; that work included analysis of questions for bias and age-appropriate language, placement and order of questions, misleading answers, non-indicative answers, and test-delivery of the assessment to representative populations (considering not only demographic, language, and ability diversity but also anticipated technology literacies of the populations to be assessed). Through this process the districts' assessment staff acquired deeper understanding of the particular challenges presented by TL assessments, and their increasing expertise will guide the proposed project. In addition, grant funds make it possible to consult with other assessment design experts who have particular knowledge in this area. (See Appendix D — Existing Consortial Technology Literacy Assessment Project.)

The project will also explore the value and feasibility of assessing students in the 4th and 8th grades — the earlier assessment serving a formative function that helps districts design and adapt curricular and instructional plans.

Common procedures for delivery — Although district flexibility in timing and manner of implementation will be a priority, core implementation procedures will be standardized in order to obtain reliable, usable results. Development of these procedures will seek to minimize the burden of implementation on Colorado educators.

The project-produced assessment will be available for online delivery (using a single platform, preferably one, like Moodle¹⁰, that is free or inexpensive), in order to make reporting of results more efficient and uniform. Variations in the mode of delivery will accommodate districts' divergent technology capacities. Alternatives to online delivery (e.g., making some or all parts of the assessment available in non-digital environments, or facilitating administration by individual districts through their LANs, with uploaded reports following implementation) will be explored to ensure maximum feasible accommodation.

Reporting mechanisms — A primary value in conducting a common assessment is that it facilitates extensive analysis of the results — including, for example, demographic and item analysis of assessment results. Online delivery of the assessment will enable automated and uniform reporting of results, which is one reason online delivery will be the primary method of implementation. Whatever the assessment delivery modality, the project will develop common

¹⁰ The Moodle platform is used here as an example only, not a recommendation.

reporting procedures, tools, and platforms to ensure that all results reported from districts that use the project-developed assessment are consistent, and can be collectively and meaningfully analyzed. The project consortium will coordinate with CDE to establish common proficiency ratings, reporting procedures, and a state database that makes assessment results easily and promptly available to all education stakeholders. Individual student identities will be protected in the same manner as they are in CSAP administration.

Assessment analysis practices — The primary application of TL assessments should be to enable Colorado educators to improve learning and curriculum design — not just with respect to students' acquisition of TL but in content-area learning as well. Professional learning related to the assessments will emphasize analysis of assessment results (e.g., use of data-driven dialogue) that guides teaching and learning practices.

Work to incorporate assessment and acquisition of TL into Colorado content standards and instructional practice — Ongoing dissemination efforts throughout the project will seek opportunities within individual districts and across the state to tie TL into content-area teaching and learning. These efforts will focus in particular on initiatives to revise the state's content standards, improve students' preparedness for postsecondary options, and adopt 21st century learning.

Statewide Availability

All products developed through this project will be available free to all school districts in Colorado, although, of course, use of the assessment by districts not participating directly in the project will be optional. Delivery methodologies will adapt to the range of districts' TL development and technology infrastructures in order to meet the needs of *underserved districts*. In addition, professional development — via workshops, webinars, and other mechanisms — will be available statewide. The professional development plan calls for four to eight regional workshops in order to enhance accessibility for all districts.

The member districts of the project consortium have more than 150 *high need schools*, based on the CDE criteria. Full-scale use of the assessment, of course, will apply to all of these schools. In addition, pilot assessment efforts will focus on high need schools in order to ensure that the assessment serves not only their capacities in delivering the assessment but their needs in using the assessment to improve student learning.

Research Support for the Proposal.

The Technology Literacy consortium has conducted its own research, in the context of its existing work creating a TL assessment; and project work will apply these findings, while continuing to pursue additional research. In addition, research nationwide on TL and other related assessments, ranging across age cohorts and subject areas, have demonstrated (1) the viability and value of performance-based assessments for measuring the skills and knowledge described by the CDE-endorsed TL standards, and (2) the feasibility to deliver such assessments online (and obtain reports of the assessment results). Significant examples of these efforts include:

- Student Tool for Technology Literacy — Florida Department of Education — assesses the six ISTE/NETS TL standards¹¹;
- iSkills — Educational Testing Service — assess the Information and Communication Technology (ICT) literacy of students seeking admission to four-year colleges¹²;
- College Learning Assessment — Council for Aid to Education — assesses information, communication, and problem-solving skills of four-year college students¹³
- TechYES — Generation Yes — assesses the six ISTE/NETS TL standards through student projects¹⁴;
- Learning.com — may assess the six ISTE/NETS TL standards (though it appears to emphasize technical operations), primarily through a limited response test but partly through simulations¹⁵

All of the assessments listed here have substantial research support, undertaken by the organizations creating the assessments. This research informs the proposed TL assessment project, especially since the organizations involved, along with others, will be sought as partners in the project. The project's assessment development plan makes examination of other instruments, especially Florida's, a high initial priority. Adaptation of an instrument already developed and analyzed would move the project significantly forward.

In addition, the project is informed by the research already conducted by the work of the consortial-member districts that have created the existing 3-standard TL assessment. That research included extensive validity and reliability studies, conducted under the guidance of those districts' assessment directors. (See Appendix D — Existing Consortial Technology Literacy Assessment Project.)

¹¹ See www.flinnovates.org/sttl/default.htm (accessed 6-8-08) for a description of the Florida assessment project. Kate Kemker, the Florida Department of Education Bureau Chief for Interactive Media, reports (in e-mail correspondence with the applicants for this grant) that the state recently completed pilot studies of the assessment and plans statewide implementation in Fall 2008. According to Len Scrogan, Director of Educational Technology for Boulder Valley School District, the Florida assessment project was funded by a \$2.5-million grant from the National Science Foundation.

¹² See www.ets.org/portal/site/ets/menuitem.1488512ecfd5b8849a77b13bc3921509/?vgnnextoid=159f0e3c27a85110VgnVCM10000022f95190RCRD&vgnnextchannel=e5b2a79898a85110VgnVCM10000022f95190RCRD

¹³ According the Generation Yes promotional material, "TechYES encourages all students to complete technology projects that are creative and personally involving. The projects can also meet requirements for core curriculum classes or community service. These projects are the basis for the TechYES evaluation and certification." See www.cae.org/content/pro_collegiate.htm.

¹⁴ See www.genyes.com/programs/techyes/

¹⁵ Publicity materials from Learning.com claim, "When taking the online test, students interact with assessment content in ways that allow them to demonstrate their proficiencies. Often, they must perform actions via simulations, rather than pick answers from among multiple choices. Thus, students must be able to format a paragraph, apply a spreadsheet formula, or conduct a database search. And they must demonstrate durable skills via generic menus and commands, not through brand-specific memorized shortcuts." See Arizona Pioneers Statewide Measurement of Students' Technology Literacy Skills, from Learning.Com, <http://www.learning.com/casestudies/arizona.htm> (accessed 6-7-08).

Section B: Project Evaluation

This section addresses the evaluation plan for the one year of the project proposed for the 2008-09 timeframe. The Public Good, Inc., a Colorado research firm with expertise in K-12 educational technology use, will lead the project evaluation, working with the project leadership, executive board, and advisory council to ensure that all necessary data are available in a timely manner to decisionmakers, participating districts, and the Colorado Department of Education.

Evaluation Methods

The evaluator will collaborate with the project management team to develop and refine a plan for formative and summative evaluation. The evaluator will provide quarterly reports and recommendations to the project team, and a final report documenting project outcomes. The evaluation design will seek to answer these guiding evaluation questions:

- How is the project being implemented?
- To what extent are stated goals and objectives being met?
- What is the quality of the work (resources, services and products)?
- What are the project outcomes?
- How are the project outcomes improving learning?

The evaluator will draw on multiple methods and resources to answer these questions, including project documentation (administrative activities and records), documentation of project activities and artifacts, observation of educator professional development activities, surveys of participating districts and workshop participants, and data analysis. A further breakdown of the data collection plan is presented in the next part of this section.

The evaluation plan presents an opportunity not just to review the outcomes but to disseminate project work to educators and policymakers statewide. In addition, the evaluation plan assumes an active role by the evaluator in the project, rather than detached observation — providing more formative than summative assessment to inform the work throughout the project

Evaluation Data

Both quantitative and qualitative data will be collected relevant to the project goals and objectives. The proposed data collection plan is subject to revision with the approval of the project leadership.

Evaluation Question	Potential Data Sources
How is the project being implemented?	<ul style="list-style-type: none"> • Administrative records and documents, including project oversight procedures, professional development plans, technical committee meeting records • Project correspondence • Observation of meetings, professional development opportunities, piloting

<p>To what extent are stated goals and objectives being met?</p> <ul style="list-style-type: none"> • Conduct needs analysis • Define standards and proficiency benchmarks • Develop assessment instrument and protocol • Conduct pilot study of assessment • Analyze results of pilot • Facilitate use of assessment instrument and resulting data 	<p>Documentation of</p> <ul style="list-style-type: none"> • Needs assessment and analysis • Tools, techniques and resources associated with the assessment instrument and pilot activities • Professional development materials and participation • Pilot study results, adjustments of instrument, data analysis • Outreach and dissemination records
<p>What is the quality of the work?</p> <ul style="list-style-type: none"> • Resources • Services • Products 	<ul style="list-style-type: none"> • Surveys of participants and end users of assessment tools, resources, and technical assistance • Professional development observation, pre- and post-activity surveys
<p>What are the project outcomes?</p>	<ul style="list-style-type: none"> • Number of district participants; extent of participation • Degree of consensus on standards and proficiency benchmarks; • Qualitative and quantitative data on pilot study participation; • Data analysis of pilot study results; • Evidence of outreach beyond participating districts; evidence of assessment data use and analysis resulting from project activities • Evidence of impact on educators' and students' learning

Project Development and Product Evaluation

The evaluator will develop data collection instruments suitable to the project needs and subject to approval by the project leadership. An early meeting of project participants will focus on defining the elements of a successful TL assessment instrument. This measure of quality, developed in collaboration with project participants, will guide the development and piloting process. Quarterly reports will include recommendations and provide the impetus for program reflection and discussion. The final report will include an assessment of success in reaching project objectives, along with recommendations for future efforts.

Section C: Management Plan

20 pts.

Project Implementation and Activities

In keeping with the restrictions of the RFP, *this proposal seeks funding for only one year*, although a thorough TL project will ultimately require more than a year. Even with the experience obtained by the project consortium in developing a three-standard assessment during 2007-08 (see Appendix D), it is not possible to develop and implement a comprehensive TL assessment within a year, much less to meet the larger needs the assessment is intended to address — including analysis of assessment results, incorporation of TL into content learning, development and implementation of effective TL teaching and learning, and refinement (and updating) of the assessment instruments. (The multi-year nature of the project is further addressed in the section on Sustainability.) The project timeline presented in this section encompasses more than one year of activity in order to help grant readers and CDE staff frame this proposal in a larger context. But *only the “Project Year One” section of the timeline applies to the specific funding request proposed in this application.*

As the timeline indicates, a one-year project can reasonably expect to produce and conduct a pilot assessment. The experience and results obtained through the first year can inform full development and implementation of a comprehensive TL assessment program as well as use of TL assessment results (along with analyses of those results) to improved technology, information, and content instructional design.

The applicants plan to submit a Year Two proposal to CDE in spring 2009 to obtain funding that will enable this project to be more fully completed, including a comprehensive TL assessment instrument and procedure that has been tested through pilot implementation and can be made available to all Colorado school districts by April 2010.

	Activity	Activity Dates	Details/Comments
Prior Work	Collaborative development of a limited-response assessment on three CDE-endorsed standards	September 2007 – May 2008	<ul style="list-style-type: none"> • Form collaborative partnership among several districts (See Appendix D) • Devise assessment questions • Analyze questions for validity and reliability • Adapt assessment for diverse students • Conduct and analyze pilot assessment • Conduct and analyze complete assessment • Analyze assessment results

	Activity	Activity Dates	Details/Comments
Project Year One — Only year for which funding sought in this proposal	Strategic and logistical arrangements	July-August 2008	<ul style="list-style-type: none"> • Constitute project executive board • Select project manager • Select project support staff • Finalize project first-year plan and timeline • Finalize first-year project budget • Contract with consultant specialists for assessment design and analysis • Invite private school participation • Review and refine evaluation plan
	Needs analysis	August-October 2008	<ul style="list-style-type: none"> • Conduct preliminary examination of school districts' TL assessment needs • Conduct preliminary examination of districts' capacities for implementing TL assessment
	Instrument development for pilot assessment	September 2008 - January 2009	<ul style="list-style-type: none"> • Design/Develop instruments for TL assessment • Conduct validity and reliability studies on assessment elements
	Procedure development for pilot assessment	November 2008 - March 2009	<ul style="list-style-type: none"> • Determine options and steps for assessment delivery • Develop or acquire platform(s) and methods for reporting assessment results • Draft manuals and guides
	Window for conducting pilot assessment	April-May 2009	Only applies to project years. In subsequent years districts will conduct assessment annually but at times of their own choosing.
	Professional learning; Dissemination	January-June 2009	<ul style="list-style-type: none"> • Create webpage, webinars, video, and workshop presentations • Provide information regarding the pilot assessment • Provide learning in assessment analysis and incorporation in instructional design
	Analysis of pilot assessment results	May-June 2009	<ul style="list-style-type: none"> • Analyze pilot assessment data • Analyze testing instrument and process (including validity and reliability confirmation)
	Project completion	May-June 2009	<ul style="list-style-type: none"> • Report analysis of pilot assessment • Report analyses of data produced by assessment • Finalize technical reports, administrative guide, and scoring guide • Finalize dissemination and professional learning plan • Final report and recommendations to CDE

	Activity	Activity Dates	Details/Comments
(Tentative) Project Year Two — if funding available	Strategic and logistical arrangements	July-August 2009	<ul style="list-style-type: none"> • Re-constitute project executive board • Re-constitute project staff and consultants • Finalize second-year project plan and timeline • Finalize second-year project budget
	Needs analysis	August-October 2009	<ul style="list-style-type: none"> • Conduct comprehensive examination of TL assessment needs of school districts • Conduct comprehensive examination of districts' capacities for implementing TL assessment • Conduct preliminary examination of curricular and instructional implications from pilot assessment • Review evaluation of Year One project • Review findings from pilot assessment
	Instrument development for assessment	November 2009 - March 2010	<ul style="list-style-type: none"> • Design/Develop instruments for TL assessment • Pilot TL assessment at selected sites in representative districts
	Procedure development for assessment	February 2010	<ul style="list-style-type: none"> • Determine options and steps for implementation • Develop or acquire platform(s) and methods for reporting assessment results • Develop any PD resources needed for implantation
	Window for conducting assessment	April 2010	<ul style="list-style-type: none"> • In subsequent years, districts will conduct assessment annually but at times of their own choosing.
	Curriculum development	September 2009 - May 2010	<ul style="list-style-type: none"> • Develop TL curriculum scope and sequence based on pilot assessment results • Develop strategies for integrating TL curriculum with content-area curriculum
	Analysis of assessment results	May-June 2010	<ul style="list-style-type: none"> • Conduct professional learning in analysis and application of assessment results to support student achievement and development of 21st century learning.
	Project completion	May-June 2010	<ul style="list-style-type: none"> • Final report and recommendations to CDE • Make plans for project follow-up by participating districts

Professional Learning and Dissemination

Effective use of the TL assessment depends as much on professional learning connected to the assessment as research-based design of the assessment instrument. Professional learning conducted by the TL project will go far beyond how to administer the instrument and report the resulting data. The more important professional learning will examine how to make meaning of

the assessment results (e.g., data dialogue and analysis workshops) and how to incorporate assessment results into improving curricula and instruction.

The project plans to work with the Colorado Consortium for Data-Driven Decision (C2D3) to design and implement four to eight regionally located assessment analysis workshops as well as online professional development opportunities (including webinars and courses). Using the specific assessment products and results created through the project, these workshops and online services will enable educators to learn how to examine assessment results and to apply assessment (and results) to instructional design. The professional development sessions will examine specific items and assessment results, applying the learning concretely and adapting it especially well to performance-based assessment. This professional learning builds directly on the four years of work already performed by C2D3, through which that organization has gained a national reputation for insight and high-quality professional learning.

The project's webpage, in addition to hosting the online professional development opportunities, will also provide extensive information and other resources related to delivery and use of TL assessment in general (not just the project's instrument).

Project participants — staff, leadership, technical committees, and consultants — will also engage in professional learning in order to deepen and extend their work. This professional learning will focus primarily on the design and development of the assessment instrument and on analyzing and applying assessment results. The learning design will target the specific work in which project participants are engaged, building knowledge from a contextual base. The learning experiences will emphasize onsite coaching rather than offsite workshops.

All professional learning opportunities, including the workshops and online presentations, will be available to educators across the state, regardless of whether the educators' districts are members of the TL Consortium or use the TL instrument created through this project. In developing both the professional development opportunities and the webpage, the project plans to work with districts that have already created (or will create) their own assessments — with particular interest in those assessments that are performance-based. This collaboration will extend the reach and value of the professional learning, as well as help to coordinate assessment efforts statewide and enhance sustainability.

Technology Infrastructure

The project will evaluate methods and modes of online delivery of the developed assessment. These may include either consortially developed systems, or partnering with either commercial, or non-commercial providers. Priorities will be to provide a web based delivery, scoring, and reporting system that can be used by all schools and districts. For districts without the infrastructure to adequately support an online delivery, a paper and pencil version of the assessment will be developed.

Technology considerations will include bandwidth utilization, user friendly interface, security of data and communication, ease of integration and management, and the ability to meet diverse technical needs and specifications of districts. The online system will ideally be web based, with some server supported options included. Current programming standards will be incorporated

into the development of the system, which will assist in optimal performance, user interaction and feedback, and data warehousing and reporting.

The consortium will build on its expertise and success in using online delivery systems piloted during 2007-08. Although these systems were commercial products, delivery and reporting system was highly successful, and much insight was gained in the use of this system. The consortium's evaluation data of piloted systems will be incorporated into the development of the new online system.

Reported experience in the Florida assessment project is instructive. Among other lessons, Florida created significant elements of the instrument using Flash software to minimize connectivity and infrastructure demands on districts in an online delivery.

Project Participation and Leadership

TLC — The Technology Literacy Project Consortium — Initial consortium participants include Widefield School District, St. Vrain Valley School District, Jeffco Public Schools, Denver Public Schools, and Centennial BOCES (and member school districts). Additional partners include Northeast BOCES, Thompson School District, Lewis-Palmer School District, and Aurora School District. Centennial BOCES will serve as the consortium's fiscal agent. Initial consortium districts include more than 150 high need schools (according to CDE criteria) and a diverse range of district characteristics (ranging from 15 rural districts to the keystone urban district of Denver). The additional partners extend that diversity. Other districts have expressed substantial interest in joining the project; the list of participating districts is expected to expand significantly before the end of summer 2008.

Private schools within the boundaries of the participating districts will be invited to have meaningful participation in the project — including use of the produced assessment instrument and access to all professional learning related to the use of the assessment, as well as participation in the consortium's advisory council and technical committees — in the first month of the project, as part of the project's initial strategic and logistical arrangements. The invitation will be communicated via e-mails to these schools and a video conference arranged and hosted by the project. All TLC districts have already committed, through Title II-D fiscal agreements with CDE, to provide opportunities for private schools within their boundaries to share in II-D funds and programs.

Executive Board — A seven-member board, meeting monthly, will make policy related to development and implementation of the assessments, and maintain oversight of all project activities. Individual board members, selected from participating LEAs in the project consortium, will also have specific policy, implementation, and oversight responsibilities related to various aspects of the project. Board membership will reflect diversity in the location and nature of participating consortium districts. Board members or their districts will be compensated by the project for their service.

Advisory Council — Consortium districts or BOCES that are not represented on the Executive Board will have representation on the Advisory Council, which will meet quarterly for general

oversight of the project and to facilitate development and dissemination. Council participation will be provided as in-kind support by consortium members.

Technical Committees — The project’s work will be supported, in an advisory capacity, by staff members from various consortium districts who have expertise in particular areas related to the development and implementation of the assessment. Such committees have proven to be invaluable in the existing consortial TL assessment project (see Appendix D — Existing Consortial Technology Literacy Assessment Project). Technical committee participation will be provided as in-kind support by consortium members. Technical committees will include:

- *Assessment Development* — dealing with issues related to the nature and quality of the assessment instrument (e.g., validity and reliability);
- *Platform Development* — issues related to the nature and quality of the online platform and alternative delivery modalities (e.g., infrastructure requirements);
- *Assessment Analysis* — examination and use of assessment results to improve curriculum and instruction;
- *Curriculum Development* — curriculum that supports TL and integrates TL into content-area learning;
- *Professional Learning* — enhancing the ability of educators to use assessment results and implement TL-related curricula.

These committees will meet every two months; a member of the Executive Board will serve on each committee. Between committee meetings, individual members of committees will work with project staff and consultants.

Project Director (.5 FTE) — Selected by and reporting to the Executive Board, this person will provide daily policy direction, work with the Executive Board to refine the project vision, translate the project vision into strategic and action plans, supervise all project consultants and staff, set and monitor the project budget (with Executive Board supervision), and liaison the project with other organizations and initiatives. This person’s authority and policy direction will come through the Executive Board.

Project Manager (PM - .5 FTE) — Selected by the Project Director (with Executive Board approval), this person will coordinate all project activities (e.g., specific staff and consultant tasks; timelines; budget management; accounts management; resource management; procurement). The PM will be an FTE employee in one of the consortium partners, with the person’s FTE assignment to the project specified. To the extent of the specified FTE assignment, the PM will report to, and be supervised by, the Project Director.

Project Office and Fiscal Support (.5 FTE) — Through the Project Director, the project will employ a person who will be assigned specific project support roles (e.g., budget and accounting, accounts payable, clerical, and administrative support services). This staff person will be an FTE employee in one of the consortium partners, with a specified .5 FTE assignment to the project. To the extent of the specified FTE assignment, staff will report to, and be supervised by, the Project Director.

Consultant Specialists — The consortium will contract with consultants who specialize in various areas of the project's work. These consultants will provide the primary expertise and development leadership related to project activities. Although some of the work for which consultants will be hired could be done by staff from one or more of the consortium members, the use of consultants is preferred so that they can focus on the project work and avoid the distraction of in-house business (or politics). Particular areas of consultant work include:

- Assessment design and development
- Assessment analysis and application
- Research into promising practices, instruments, process and progress in various district or states, platforms, incorporation into broader standards, and
- Technical developers (e.g., assessment delivery and reporting infrastructure);
- Professional learning design and implementation
- Curriculum and instructional design
- Dissemination and communication
- Project evaluation

Partnerships

The project consortium will actively seek to work with other organizations that have particular expertise in the areas of assessment, technology (and information) literacy, curriculum and instructional design, and/or professional development. Such organizations may include (without limitation):

- The Center to Transforming Teaching and Learning (CTLT, formerly C2D3 — Colorado Consortium for Data-Driven Decisions) — www.cctl.org
- Council on 21st Century Learning — www.C21L.org
- Partnership for 21st Century Skills — www.21stcenturyskills.org/
- Denver Area School Superintendents Council (DASSC) — assessment task force
- International Society for Technology in Education (ISTE) — www.iste.org/
- Technology Leadership Forum (TLF) — co-tlf.org/aahome.html
- Colorado Association of Leaders in Educational Technology (CALET) — www.co-case.org/displaycommon.cfm?an=1&subarticlenbr=580
- Colorado Association of School Executives (CASE) — www.co-case.org/
- Colorado Association of School Boards (CASB) — www.casb.org
- Colorado Association of School Libraries (CASL) — <http://casl.wordpress.com/about/>

Important potential partners include states or education-service organizations — e.g., the Florida Department of Education (FLDOE) and The Institute for Library and Information Literacy

Education, at Kent State University¹⁶ — that have already developed, or are in the process of developing, TL assessments. The work in Florida is especially important because the FLDOE, with substantial financial support from the federal government has created an online-delivered, performance-based, individualized assessment instrument that addresses all six of the ISTE/NETS standards.¹⁷

Also worth considering are vendors (e.g., InfoSource Learning and Learning.com) that want to adapt their assessments according to Colorado criteria and/or can offer a significant cost-savings in assessment development and continuation. (See Appendix B — Assessment Developments Elsewhere.) In addition, several information literacy or thinking skills assessments have been developed by postsecondary educational organizations (e.g., the Educational Testing Service¹⁸ and the Council for Aid to Education¹⁹). These organizations, which generally indicate interest in aligning their assessments with (or adapting them to) K-12 education standards (and students), could help incorporate technology literacy work into content area standards and learning.

Consortium members have, for example, already conducted exploratory conversations with one potential partner, ALTEC, The Advanced Learning Technologies project at the University of Kansas Center for Research on Learning.²⁰ With federal funding ALTEC has created several assessment tools, including the state’s standards-based assessments of K-12 student progress, and delivers these online. Their experience demonstrates the feasibility of online delivery and reporting of assessments and could be invaluable to this project.

In addition, the consortium will actively seek to work with CDE, the several CDE- and legislatively-created committees, and the other state policymakers and education stakeholders. In particular, the consortium will work with these organizations to incorporate students’ acquisition of TL into content area teaching and learning.

¹⁶ TRAILS — Tool for Real-Time Assessment of Information Literacy Skills, www.trails-9.org/index.php.

¹⁷ Based on his notes from at a NECC “Birds-of-a-Feather” session in June 2007, Len Scrogan, Director of Educational Technology for Boulder Valley School District, reports that an interesting feature of the Florida assessment strategy is that the state’s education agency reports to the U.S. Department of Education only the overall percentage of Floridian 8th graders who are technologically proficient — not providing the federal agency individual district statistics. Instead, those are reserved for the districts themselves to analyze and use. According to *Education Week*, “Florida has taken the customization idea to the nth degree, having its technological-literacy assessment built to suit at Florida State University’s Florida Center for Interactive Media, in Tallahassee. ...’ You can’t build something that’s one-size-fits-all,’ said Kate J. Kemker, the state’s bureau chief for instruction and innovation. (From “Tests of Tech Literacy Still Not Widespread Despite NCLB Goals,” in *Education Week*, 1-30-08, pp. 1, 12; www.edweek.org/ew/articles/2008/01/30/21techtests.h27.html (For more on assessment work in other states, see Appendix B — Assessment Developments Elsewhere.)

¹⁸ At present the ETS markets the iSkills assessment primarily to postsecondary institutions. According to *Education Week*, only 5% of iSkills assessments were taken by precollegiate students, and ETS does not have plans to create an assessment for younger students. (See “Tests of Tech Literacy Still Not Widespread Despite NCLB Goals,” in *Education Week*, 1-30-08, pp. 1, 12; www.edweek.org/ew/articles/2008/01/30/21techtests.h27.html.

¹⁹ Collegiate Learning Assessment (CLA), http://www.cae.org/content/pro_collegiate.htm In an e-mail to Stevan Kalmon, then Coordinator for Information Literacy and Technology for Denver Public Schools, the CLA program director, Richard Hersh, stated that his organization was interested in partnering with K-12 educators to adapt the CLA to pre-collegiate students.

²⁰ www.altec.org/index.php?PHPSESSID=9e9ca360a324605df8e9c15a75e6afbd

Sustainability

The consortium partners have already demonstrated their commitment to sustaining this project in the work they have undertaken during 2007-08 to create a limited-response TL assessment (see Appendix D). In addition, these districts have committed substantial funds (through Title II-D and other sources) to professional learning dedicated to professional learning in use of technology to improve student achievement and build 21st century skills. Denver Public Schools, for example, provides year-round professional development in these areas, applying more than \$300,000 in Title II-D and mill levy funds.

Although the project will require two years to develop and implement a statewide TL assessment, even this work will not be sufficient without a long-term state commitment. This commitment must include:

- Continuing to provide a TL assessment without charge to all districts that want to use it;
- Continuing to update and revise the TL assessment (e.g., writing new assessment items);
- Continuing to maintain and update a platform and database for delivering the assessment and recording, storing, reporting, and distributing assessment results.
- Ongoing professional learning in analysis and use of assessments;
- Integration of TL learning with content-area standards and learning.

ET-IL Alignment

Since all school districts in the state are required to report technology literacy status of their students completing the 8th grade, TL assessment is a given in all districts' ET-IL plans. More importantly, the current understanding of TL, encompassing not only the combination of technology with information literacy but the application of both in the service of broader learning, fits precisely with the vision that guides ET-IL planning. In addition, successful ET-IL programs require incorporation of ET-IL (or ICT) literacies into content-area curricula and instruction, which is a specific goal of this project.

Section D: Resources, Budget, and Budget Narrative

Budget Narrative

Total Request = \$599,165

The TL project budget is focused on two primary areas — development and implementation of the pilot assessment; professional learning related to implementation and use of the TL assessment.

Pilot assessment design and development \$ 104,000

Nine-tenths of the funding in this category applies to staff and consultant work on the TL assessment instrument — including drafting and revision, validity and reliability studies, and beta testing.

Pilot assessment delivery and reporting of results \$ 66,000

Three-quarters of this amount applies to staff and consultant work to create and refine the delivery modalities, so that the project accommodates widely divergent district capacities and needs. Remaining funds in this category apply primarily to web and platform development — for delivery of the assessment and reporting/storage of results.

Professional development and dissemination \$ 152,250

Professional development covers four areas:

- contextual learning for project staff, consultants, and others involved in design and development of the assessment instrument and/or the delivery and data collection modalities;
- information and support for educators who will deliver the assessment to students in their schools/districts;
- work in assessment analysis (e.g., data dialogue) that enables educators to make meaning of the assessment results;
- incorporation of assessment results in curriculum and instructional designs as well as ET-IL planning.

The professional development also includes funds for video recording and editing of workshops and other forms of professional learning, as well as additional website development and maintenance, so that the learning can be more widely disseminated — through webinars, streaming video, and other digital modes.

Project evaluation and dissemination \$ 60,000

Evaluation is ten percent of the total budget request. This enables the evaluator to play a more active role in the project — emphasizing a formative assessment approach rather than a summative one, so that the project’s work is continuously informed by the evaluator’s input.

Project administration	\$ 153,000
<p>Three-fourths of the amount in this category covers salaries and benefits for the three primary staff positions — Project Director, Project Manager, and Office-Budget Support person. The remaining money goes to a range of project supports — from staff expenses to Executive Board stipends and expenses.</p>	
Equipment and supplies (other than for professional development)	\$ 30,000
<p>Two-thirds of the amount in this category applies to purchase of the assessment delivery and reporting platform (and data warehouse).</p>	
Indirect Costs (fiscal agent)	\$ 33,915
<p>Centennial BOCES has offered a reduced indirect rate of 6% to support the project. The indirect rate reduction reflects in-kind support, although it is not listed below..</p>	

In-Kind Contributions

By their nature, in-kind contributions tend to be difficult to quantify, and actual contributions usually far outweigh the amounts estimated. With that caveat in mind, the following estimates (accompanied by a designation of the project participant primarily responsible for the contribution) suggest the commitment made by the project participants.

Existing TL assessment project	\$ 120,000
Technical infrastructure support (Centennial BOCES)	\$ 20,000
Advisory Committee participation (all districts)	\$ 15,000
Technical Committee participation (all districts)	\$ 20,000
Pilot assessment delivery facilitation and support (all districts)	\$ 30,000
Facilities for meetings and workshops (several districts)	\$ 10,000
Office space for project staff (Centennial BOCES; Denver Public Schools)	\$ 22,000
Staff time for professional learning	\$ 50,000
Internet connectivity (including EagleNet access)	<u>\$ 15,000</u>
Total	\$ 302,000

CDE Summary Budget Form

0809 v1a	6a Budget Summary	Sheet 3a
	Technology Competitive Grant FY 2008-09	Sheet 4a
1010 - Colorado Springs 11		Sheet 5a
Original Budget 06/13/08		
Line	Description	\$
1	Amount Awarded	0
Project Support (Programs 2100, 2200, 2600, 2700, 2800, 2900, and 3300)		
2	Salaries (0100)	90,000
3	Employee Benefits (0200)	28,500
4	Purchased Professional & Technical Services (0300)	192,500
5	Other Purchased Services (0500)	14,000
6	Supplies (0600)	5,000
7	Other (0800)	28,000
8	Subtotal Support Program (lines 1 through 7)	358,000
Professional Development (Improvement of Instructional Services, Program 2210)		
9	Salaries (0100)	0
10	Employee Benefits (0200)	0
11	Purchased Professional & Technical Services (0300)	135,250
12	Other Purchased Services (0500)	25,500
13	Supplies (0600)	7,000
14	Other (0800)	7,000
15	Subtotal Professional Development (lines 9 through 14)	174,750
16	Property (0735) - non-capitalized	32,500
17	Administration (Enter amount requesting)	358,000
18	Subtotal Direct Costs (lines 8, 15, 16 and 17)	565,250
19	Applicable Indirect Cost Rate	0.06
20	Indirect Cost Rate Calculation (0869) (line 18 times line 19)	33,915
20a	<i>Indirect Cost Amount Override</i>	
21	Property-(0730) - capitalized	0
22	Total Budget (lines 18, 20 or 20a, 21)	599,165
23	Difference - Line 1 less line 22	-599,165

Appendix A — Current District Efforts to Assess Technology Literacy

Sample Reporting of TL Assessments across Colorado	
District	Type of Assessment
Academy 20	Standards-based grade reports that incorporate TL standards
Adams 12	Limited-response exam, designed within district
Aurora	Limited-response exam, Consortium designed* and student self-rating survey, locally designed
Boulder Valley	Standards-based grade reports that incorporate TL standards
Cherry Creek	Demonstration of TL proficiency within middle school history courses
Denver	Limited-response exam, Consortium designed*
Eagle	Performance-based assessment, designed by Learning.Com
Elizabeth	Limited-response exam, designed by TRAILS^ (Performance-based exam initially used but rejected as too difficult to implement.)
Jefferson County	Limited-response exam, Consortium designed*
Lewis-Palmer	Limited-response exam, Consortium designed*
Mesa County	Student self-assessment, designed within district
Park County	Limited-response exam, Consortium designed*
Roaring Fork	Standards-based grade reports that incorporate TL standards
St. Vrain	Standards-based grade reports (Reading Std 5; Applied Tech)
Thompson	Limited-response exam, Consortium designed*
Valley	Limited-response exam, Consortium designed*
Widefield	Limited-response exam, Consortium designed*
Harrison	Limited-response exam, Consortium designed*
Weld County 1	Student self-assessment, via survey designed within district
Windsor	Performance assessment, designed within district
^ TRAILS — Tool for Real-Time Assessment of Information Literacy Skills; http://www.trails-9.org/index.php * Consortium designed — Refers to the assessment created in 2007 by the consortium of Aurora, Denver, Jeffco, Lewis-Palmer, Thompson, and Widefield.	

Appendix B — Assessment Developments Elsewhere

Multiple States' Reports

A TLF NCLB Update — NECC 07

Submitted by Len Scrogan
Boulder Valley School District

Background

At the recent NECC Conference held in Atlanta in July, a significant number of sessions were dedicated to NCLB assessment themes. I attended every session, except one by the Chicago Public Schools (because I was already familiar with what they have been doing). I also attended a large, unpublished, ad hoc special interest session on this topic. In an effort to bring this information back to our state in the absence of CDE leadership (due to recent budget cuts), please consider this information in your district planning.

Critical Finding

NCLB Technological Literacy is **not** likely to go away in the reauthorization because it is not a core content area and has no large group action behind it.

Three Common Misconceptions

Many technology leaders (state, district, local) continue to exhibit three common misconceptions about NCLB TL as they design an “8th grade test for computer proficiency.”

1st misconception: *8th grade*. The law states by the end of the 8th grade, not 8th grade. Schools with viable programs at earlier grades remain confused by an insistence of an 8th grade exam, as opposed to a portfolio review or coursework over multiple grade levels.

2nd misconception: *test*. It is surprising how many school leaders think this legislation requires a multiple choice, CSAP-like test. The law states “assess,” not “test,” which can certainly be accomplished via more authentic assessment avenues.

3rd misconception: *computer proficiency is technological literacy*. It is clear that most districts are narrowly defining technology literacy as computer proficiency. Information literacy, STEM and pre-engineering efforts, and 21st Century learning themes are not commonly considered (although they should be).

Interesting Findings

- Michigan offers a 50 test item MC test
- One rural Georgia presenter uses a 36-question MC test
- Cobb County GA uses a performance-based approach with Learn.com; many other districts in Georgia have been looking at performance-based systems
- The Georgia Dept of Ed pushes various options to schools statewide, not a single option
- University of Pennsylvania person prefers a portfolio approach, and they are working on one.

- One GA district has working on a rubric assessment
- North Carolina has a Test of Tech skills in 8th grade. They have had it since 1998. It is now a graduation requirement Their past test had 70 questions MC with a performance part. They are switching to a new online test, with a generic set of non-commercial applications.

Best New Models

TECHYES MODEL <http://genyes.com/programs/techyees/research>

TECHYES has developed an integrated, project-based approach for meeting this NCLB requirement. They don't like it when "testing and technology become the END." They prefer that "technology should be a beginning." Suffice it to say, they don't like multiple choice or online assessment of technology skills, but prefer more 'authentic' assessment. They have developed a working model that is built on ISTE standards, involves peer mentoring, and can be tackled in almost any school setting.

FLORIDA MODEL <http://www.flinnovates.org/sttl/default.htm>

The state of Florida has had an in-house, online FCAT test for years, so they assumed they would take the same approach with this NCLB requirement. But instead of beginning with student assessment, they started with teacher tech literacy first. They created standards first, then piloted online, performance-based assessments later. All teacher assessments were also aligned with state-wide individual professional development plans. Only after this initial work was completed did they start work on a student tool for tech literacy, starting with standards first. The student tool is based on 5 indicators:

- Essential Operational Skills
- Constructing and demonstrating knowledge
- Independent Learning
- Communication and Collaboration
- Ethical, Legal and Safety Issues

Field tested in fall, this tool aims to be a FORMATIVE tool that all districts can use to measure student capabilities. While the state or districts can pull summative data from the tool to be used for NCLB reporting purposes, its use in schools was designed to be fun for kids, visually pleasant, and useful for schools to determine where kids are at. The hope is to create a tool that can help identify priorities for creating equity, funding, and formative learning... but not an accountability tool. Since this project was funded by a NSF grant, any state can obtain their test free of charge. It is flash-based. One notion must be repeated: In the words of the state director, this test is "used not to produce test results or accountability, but to move the state forward.

Notes from Stevan Kalmon and Dixie Good, taken from Internet reports, June 2008

Florida's Student Tool for Technology Literacy

<http://www.flinnovates.org/sttl/default.htm>

“The interactive and performance based Student Tool for Technology Literacy (ST2L) is currently in the stages of creation. The traditional, research based procedures for instrument development are being followed. The team of developers consists of measurement experts who will build and evaluate items. The advisory group consists of education and technology experts through out the state that will be continually evaluating items during the development process. The expert review panel has been working closely with the development team to make final revisions and decisions on indicators.

“The tool will be able to gauge students’ existing level of technology skills. Teachers will be able to use the tool to gather data on students’ current level of technology proficiency. Other applications include using the tool as a pre and post test in combination with classroom experiences to guide students’ technology skill acquisition. The tool will be field tested near the end of the 2005/2006 school year, and it is anticipated to be available for use by all districts some time during the 2006/2007 school year.” (quoted material from “Tool” webpage, <http://www.flinnovates.org/sttl/tool.htm>)

TechYES - Student Technology Literacy Certification Program

Produced by GenYes

www.genyes.com/programs/techyес/ (accessed 6-11-08)

Grades 6-9

TechYES is an innovative way for schools and community organizations to offer a technology certification program to students in grades 6-9. As with all Generation YES products, students are at the center of the solution - backed up with solid research and extensive resources.

In TechYES, students show technology literacy by creating projects that meet state and local technology proficiency requirements. As part of TechYES, a structured peer-mentoring program assists the teacher or advisor, and provides student leadership opportunities that serve to further strengthen the program and enrich the learning community.

Meets the NEW ISTE NETS Standards for Students

TechYES is a revolutionary program that provides middle school and after-school educators everything needed to offer students an authentic path to technology literacy certification. TechYES helps schools meet the ISTE NETS technology standards for students and satisfy the NCLB technology literacy requirement for eighth graders.

Project--Based Learning Designed for the Middle Years

TechYES is highly flexible, allowing schools and community organizations to choose materials and practices that suit their specific needs. Program materials have been designed

specifically for middle school students -- not watered down from adult vocational technology certifications.

Flexible Implementation Models

- Technology classes
- Integration into core classes
- After-school programs
- Community organizations
- Clubs and homeschools

TechYES encourages all students to complete technology projects that are creative and personally involving. The projects can also meet requirements for core curriculum classes or community service. These projects are the basis for the TechYES evaluation and certification. The program includes all necessary resources: individual student guidebooks, customized teacher/advisor materials, handouts and resources, access to a fully interactive support website, and certificates of completion.

Based on extensive research, these materials are the basis for creating a self-sustaining program focusing on significant student leadership through peer mentoring. This student involvement, combined with a cost-effective, 3-stage certification process, moves all students towards technology competency even if a school cannot schedule a required technology class for all students.

Schools can offer the TechYES Student Technology Literacy Certification program as part of an existing technology class, integrated into any subject class, or after school.

KSDE Guidelines for 8th Grade Technology Literacy Assessment (9-26-06), published by Kansas State Department of Education; available at www.google.com/search?safe=vss&q=%22technology%20literacy%20assessment%22&domains=www.ksde.org&site=www.ksde.org (accessed 6-8-08).

Recommended Curriculum

KSDE developed state technology standards (located with in the Kansas Model Curricular Standards for Library Media & Technology) in 2006 based primarily on the NETS for Students. It is recommended that districts use this document as the primary resource and adapt it for developing benchmarks, indicators, and instructional activities at each grade at the local level.

Assessment Methods

The method of assessment used is determined at the local level. The assessment method can be:

- knowledge based (test)
- grades in a required 8th grade course
- performance based (checklist/rubric)
- e-portfolio based (collected over a period of years)

- project based
- combination of any of the above

These assessment methods can be used with each standard individually or clustered where it is appropriate. They can be done in content areas or they can be done as a stand-alone effort.

Blog comments from NECC '07: Assessing Student Technology Literacy, June 27th, 2007 by Jill [last name unknown]

edtechavenue.com/2007/06/27/necc-07-assessing-student-technology-literacy/

Sylvia Martinez - Generation YES

Looking for authentic assessment of kids being center of technology called “Tech YES.” Assessment is always the tail that wags the dog. Student guides the process (peer assessment), they use criteria that matches the ISTE NETS standards. Talks about sharing, writing, creativity and project-based collaboration skills. Students should be using real technology for a real purpose - personally meaningful. Authentic assessment is hard, takes time and teacher focus. Working in a number of states. There is only one way to perform assessment. Each school and grade may be different.

“The test means it’s over.” Technology literacy should open the doors, not indicate you are done.

Mia Murphy - NC Dept. of Juvenile Justice & Delinquency Prevention
Mia Murphy presentation

Kate Kemker - Florida Dept. of Education

Built their own Florida assessment - outsource with separate company. Years ago created inventory for teachers with performance-based assessment. Skills performed are scored as the test progresses. Worked with researchers to get standards. Broke into six sections similar to NETS, came up with performance indicators to track proficiency in those areas. Survey to make sure others agreed on the important issues. Pilot allowed for feedback from various teachers with different researchers (design and focus groups). Also involved the teacher’s union. Implemented, aligned with their professional development plans. Teachers could do the assessment at their leisure, taking different sections at different times if they wanted. Then teachers can take their results into building their professional development.

Student Tool for Technology Literacy then developed that mirrored the same process using NETS. Framework has five sections: essential operational skills, missed, missed, independent learning, independent ethical issues.

“Tests of Tech Literacy Not Widespread Despite NCLB Goals,” by Scott Cech, in *EdWeek*, 1/30/08, pp. 1, 12;

online in *edweek.org* at www.edweek.org/ew/articles/2008/01/30/21techtests.h27.html

“While that term has no universal definition, the core idea could be boiled down to this: Technologically literate students not only know how to operate hardware and software—they can also analyze the information flowing through it, evaluate that digital content’s relative merit and relevance, and use it creatively and ethically in communicating with others.”

Arizona Pioneers Statewide Measurement of Students’ Technology Literacy Skills, from Learning.Com, <http://www.learning.com/casestudies/arizona.htm>

“Breaking new ground, Arizona is the first state in the U.S. to formally measure its students’ proficiencies with technology using TechLiteracy Assessment (TLA) by Learning.com. A spring 2006 pilot program administered Learning.com’s online TLA instrument to more than 24,000 fifth and eighth graders statewide. And from the results, similar numbers of Arizona grade 5 and 8 students will use TechLiteracy Assessment in the 2006-07 school year.” ...

“Arizona schools administered TechLiteracy Assessment over a span of about seven weeks. Students used their school’s computer labs to take the online test during a single class period. By all accounts, it was an easy process for all.

“Teachers who proctored the assessment noted that students seemed “very engaged” by the online TLA test. One responded that she would’ve loved to have had a video camera with her to document the phenomenon. Another mentioned how amazingly quiet the computer lab was during the assessment.

“When taking the online test, students interact with assessment content in ways that allow them to demonstrate their proficiencies. Often, they must perform actions via simulations, rather than pick answers from among multiple choices. Thus, students must be able to format a paragraph, apply a spreadsheet formula, or conduct a database search. And they must demonstrate durable skills via generic menus and commands, not through brand-specific memorized shortcuts.”

Issue: The Online Assessment of Technology Literacy

Soapbox Executive Summary

The Online Assessment of K-12 Technology Literacy

IAETE (The Institute for the Advancement of Emerging Technologies in Education at AEL), www.iaete.org/soapbox/summary.cfm (2001-2004)

“Though there was not wide agreement on the scope of the word technology, all panelists did share an understanding of literacy as something significantly beyond basic skills. Ripley has a particular interest in the higher order thinking that high-tech tools make possible. Observing that schools now focus more on developing student computer skills to support learning across curricula rather than studying about computers, Ripley asks,

“So, can we usefully ponder what subject will replace IT, and why? My view is that the subject must change its outlook from training students predominantly in the skills and capabilities that arise from the existence of personal computers. Instead we should look for

the subject IT to concern itself increasingly with the growing range of technologies (mobile devices, blogs, video). It should concern itself with the uses to which technology is put (work, leisure, recreation, purchase). And it should concern itself with the facilities (or capabilities) that those technologies provide to students and adults (voice, visual communication, decision making, choice, responsibility).’

“Ripley's assessments take place in the virtual world of Pepford, where work assignments arrive via e-mail and a "walled garden" provides a virtual world of Web sites and applications. Writes Ripley,

“The use of simulations is a key development. A simulator provides the context within which authentic assessment tasks can be designed and delivered to students. It also facilitates the development of assessment tasks that invite students to combine a range of capabilities and skills. The combination of these two aspects enables us to assess higher order IT capabilities, such as choice or communication.

“The test records and scores the actions that the student takes while completing the test. For example, a higher order capability for a 14-year-old student in England includes designing a system for someone else to use. That capability in turn includes an assessment of the end-user's requirements. This we assess dynamically in the virtual world of Pepford by collecting evidence of the student researching into those requirements, by sending and receiving emails to ask about requirements, by the student refining the system to meet requirements and so on. To achieve this we have worked with an extensive range of teachers to document the processes that students go through when producing eloquent or satisfactory responses to the task set. We use this [data from teachers] to create a matrix of plausible routes that a student will take when en route to complete a satisfactory (or better) response.’

“Simulation, of course, is not the only possible method to assess technology literacy. As Pearson points out, "I first will disagree slightly with Mary's contention that assessment of higher-order thinking requires 'new' assessments. Assessments that get at the more complex aspects of student thinking already exist in instruments that creatively use extended and open-ended response items, and in some portfolio techniques." He points to an assessment of design capability by the International Baccalaureate as an example. And Pearson observes that while portfolio assessments are often viewed as limited in terms of providing valid and reliable data in a high-stakes arena, they could face fewer problems "if the rubrics for evaluating them are carefully thought through and teachers/evaluators are trained on the rubrics' use." Honey's report also identifies an array of assessments for the 21st Century Skills other than ICT literacy.”

**From iSkills Overview, Educational Testing Service,
www.ets.org/portal/site/ets/menuitem.1488512ecfd5b8849a77b13bc3921509/?vgnnextoid=159f0e3c27a85110VgnVCM10000022f95190RCRD&vgnnextchannel=e5b2a79898a85110VgnVCM10000022f95190RCRD**

ETS organized the 2001 International ICT Literacy Panel — an international group of leaders in education, business and government — to analyze issues and approaches to measuring ICT

literacy. From this research, ETS partnered with a consortium of institutions of higher education to develop the *iSkills*[™] assessment.

The *iSkills* assessment helps you ensure your students are ready for success in academia and the workforce. The *iSkills* assessment:

- measures your students' **ability to navigate, critically evaluate and make sense of the wealth of information** available through digital technology — so you can make the necessary changes to narrow skill gaps
- is **the only ICT literacy** test that **assesses critical thinking** in the digital environment
- tests the range of ICT literacy skills **aligned with nationally recognized** Association of College and Research Libraries (ACRL) standards
- helps you identify where further **curriculum development** is needed so students have the ICT literacy skills they need to succeed

Who should use the iSkills assessment?

Any curriculum, department or resource library class can use the *iSkills* assessment to gain valuable information about student ICT literacy. The assessment is offered at 2 levels of difficulty to measure ICT literacy at different stages of a student's academic career.

Core Assessment

- Appropriate for students transitioning into 4 year college programs or completing their freshman or sophomore undergraduate studies
- Identifies the technical skills needed to complete entry-level coursework

Advanced Assessment

- Appropriate for students transitioning to upper-level coursework or the workplace
- Designed with more challenging tasks to help rising juniors and institutions determine student readiness for advanced-level study
- Evaluates mastery of skills necessary for workplace success

Collegiate Learning Assessment, http://www.cae.org/content/pro_collegiate.htm

“The Collegiate Learning Assessment (CLA) is an innovative approach to assessing your [postsecondary] institution's contribution to student learning developed by CAE with the RAND Corporation. Our measures are designed to simulate complex, ambiguous situations that every successful college graduate may one day face. Life is not like a multiple choice test, with four or five simple choices for every problem. So we ask students to analyze complex material and provide written responses. The CLA measures are uniquely designed to test for reasoning and communications skills that most agree should be one outcome of a college education.

“Most CLA participants assess their institution cross-sectionally, testing a sample of first year students in the fall and a sample of seniors in the spring. You receive two reports, the first after fall testing that looks at how your entering class compares to other CLA

participants (adjusted for SAT or ACT scores). Then after testing of seniors in the spring, you receive a full Institutional Report that evaluates your school's value-added on a comparative basis. Testing every year allows you to measure for effects of changes in curriculum or pedagogy.

“For additional information about the assessment, please review the CLA Brochure. We also encourage you to review an Annotated Sample Institutional Report, which presents excerpts of a sample institutional report and accompanying explanations. If you’d like to review a list of institutions that are currently participating in the assessment, please click here.

“Performance-based assessments are anchored in a number of psychometric assumptions different from those employed by common multiple-choice exams. As such, initiatives like the Collegiate Learning Assessment (CLA) represent a paradigm shift, the technical underpinnings of which remain unfamiliar to many faculty and institutional researchers. Please refer to the CLA Technical FAQs for more information about the development, scoring, and reliability of CLA tasks, as well as other frequently asked questions.”

Vendor Pitch — InfoSource Learning

From: Mala Chakravorty [mailto:mchakra@infosourcelearning.com]

Sent: Tuesday, May 20, 2008 9:21 AM

To: Masson Connie

Subject: RE: InfoSource Learning

Student Assessment from InfoSource Learning

Objective: To meet NCLB Part D, Section 2402 requirement that schools must assess the technology proficiency of all students before the student reaches the 8th grade.

This Module comprises a 60 question test (a pre-assessment and a post-assessment) mapped to ISTE's NETS-S standards. The tests are designed to help technology coordinators and instructors assess and report on the technology proficiency of 8th graders in a simple way, saving them time and effort.

The ISTE NETS-S are divided into the following six sections:

Standard 1: Basic Operations and Concepts

Standard 2: Social, Ethical, and Human Issues

Standard 3: Technology Productivity Tools

Standard 4: Technology Communications Tools

Standard 5: Technology Research Tools

Standard 6: Technology Problem-solving and Decision-making tools

The Test has different versions for Mac and Windows users and contains 10 questions from each of the above sections. Questions contain Multiple Choice, Matching, True False, and Performance Based (hot spots). We will create a testing site for you to enable you to conduct a pre-assessment for students at the start of the school year, plan instruction based on the results, then conduct a post assessment at the end of the school year. Your administrators can pull results whenever needed

The cost of the Test is as follows:

\$5.00 per student if purchased in May 2008 (minimum 100 students)

\$7.50 if purchased in June 2008 (minimum 100 students)

\$10.00 after July 1st, 2008 (minimum 100 students)

Mala Chakravorty, Ph.D.
Senior Account Executive
InfoSource Learning

☎ toll-free 800.393.4636 x 206

☎ direct 407.796.5206

🌐 <http://www.InfoSourceLearning.com>

Assessment of Information and Technology Literacy (report from 2001)
From Washington Dept. of Education, depts.washington.edu/infolitr/links.htm
Links and References

PRIMARY LINKS

Washington State House Bill 2375

http://www.leg.wa.gov/sl/2375_sl.pdf

ACRL Information Literacy Standards

<http://www.ala.org/acrl/ilstandardlo.html>

ACRL Instruction Section, Objectives for Information Literacy Instruction by Academic Librarians

<http://www.libraries.rutgers.edu/is/projects/objectives/>

Washington State K-12 Essential Skills for Information Literacy

<http://www.wlma.org/literacy/eslintro.htm>

PORTAL SITES AND LISTS

Florida International University Libraries. Information Literacy at FIU.

[<http://www.fiu.edu/~library/ili/index.html>]. July 2000.

Florida International University Libraries. Information Literacy on the WWW.

[<http://www.fiu.edu/~library/ili/iliweb.html>]. February 2000.

Holmes, J. W. Tutorials Online. [<http://faculty.washington.edu/jwholmes/tutorial.html>]. May 1999.

University of South Florida. Directory of Online Resources for Information Literacy.

[<http://www.cas.usf.edu/lis/il/>]. December 1999.

University of South Florida. Programs, Projects, and Initiatives concerning Information Literacy in Higher Education. [<http://www.cas.usf.edu/lis/il/academic.html>]. November 1999.

Washington Library Media Association Online. Information Literacy. [<http://www.wlma.org/literacy/infoskil.htm>]. April 2000.

ARTICLES

Angeley, R., and Purdue, J. "Information Literacy: An Overview." *Dialogue*. [<http://www.ac.wvu.edu/~dialogue/issue6.html>]. May 2000.

Bruce, C. Seven Faces of Information Literacy in Higher Education. [<http://www.fit.qut.edu.au/InfoSys/bruce/inflit/faces/faces1.htm>]. 1997.

Bundy, A. Drowning in Information, Starved for Knowledge: Information Literacy, not Technology, is the Issue. [<http://www.library.unisa.edu.au/PAPERS/drowning.htm>]. February 2000.

National Research Council. Being Fluent with Information Technology. [<http://books.nap.edu/html/beingfluent/>]. 1999.

Oberman, C., Lindauer, B. G., and Wilson, B. Integrating Information Literacy into the Curriculum: How is Your Library Measuring Up? [<http://www.ala.org/acrl/nili/integrtg.html>]. August 2000.

Shapiro, J., and Hughes, S. K. Information Literacy as a Liberal Art [<http://www.educause.edu/pub/er/review/reviewarticles/31231.html>]. March/April 1996.

Stanford, L. "An Academician's Journey into Information Literacy." *New Directions for Higher Education*, 1992, 78.

Unitech. Towards Competency. [<http://hobbes.unitechnology.ac.nz/competency/>].

Appendix C — CDE Statement of Technology Literacy Reporting Requirement

TO: Technology Directors
Superintendents
District Assessment Coordinators
Consolidated Application Coordinators

FROM: Office of Special Services/Consolidated Federal Programs Unit
DATE: August 22, 2007
RE: NCLB Technology Reporting Requirements

NCLB requires states to report technological literacy data to the U.S. Department of Education. As a part of the ET-IL plans, the Colorado Department of Education (CDE) gave the task of developing a method of assessment, definition of technological literacy, and performance indicators for determining technological literacy to each individual school district. This task has been challenging for districts as well as the Colorado Department of Education.

To help make this process easier, CDE held a forum to discuss technological literacy, reporting requirements, and data collection. The information gathered from the forum was sent out for comment to each district in the state. CDE would like to extend a special thanks to those who participated in this process.

Based on the information received during the forum discussion and the responses received from districts, CDE is prepared to provide additional guidance regarding the technological literacy assessment requirement.

State Definition of Technological Literacy

Below is the CDE definition of Technological Literacy that will be used for NCLB purposes. This definition was created by modifying the State Education Technology Directors Association (SETDA) definition of technological literacy.

Technology literacy is the ability to responsibly use appropriate technology to communicate; solve problems; and access, manage, integrate, evaluate, design, and create information to improve learning in all subject areas and to acquire lifelong knowledge and skills in the 21st century.

Standards for Students

Attached you will find the CDE Standards for Students that will be used for NCLB purposes. These standards were created by modifying the new refreshed ISTE National Education Technology Standards for Students (NETS•S) to include higher-level technical experience such as engineering and technological design.

Resources

The U.S. Department of Education (USDOE) is requiring each state to report the number of 8th grade student's that are considered to be technological literate, not literate, as well as the number assessed. Even though the USDOE is not requiring states to report the type of assessment used, CDE finds that it is important to ensure that the information collected from each district is

comparable. To obtain comparable data, each district would need to assess students in the same manner.

However, given considerations of cost, timeline, and plans already underway in districts, CDE feels it is inadvisable to launch a common assessment methodology for the 2007- 2008 reporting cycle. Instead, CDE has established the assessment parameters that follow in this memo.

To assist districts with their assessments efforts, CDE will launch a Technological Literacy Resource Bank. This Bank will provide information on assessing students by providing sample rubrics, assessment questions, and links to companies that provide assessment services. The Technological Literacy Resource Bank can be found at www.cde.state.co.us/edtech/index.htm.

Assessment Parameters

Information received during the forum underscored the need to provide parameters for assessment. It is necessary that the assessments given are meaningful and provide data that can be useful to districts.

Acceptable Assessments:

- Program based - Literacy is determined by the completion of all courses, with a passing grade, that have technology embedded into the curriculum
- Paper pencil - Literacy is determined by a test which includes questions that address technological literacy
- Performance based - Literacy is determined based on how well the student performs a technological task
- Portfolio - Literacy is determined by a collection of a student's work which incorporates technology
- Projects - Literacy is determined by an end of the year project that incorporates technology
- Online assessment program - Literacy is determined by assessing students with an "off the shelf" software program specifically designed to assess technological literacy

Unacceptable Assessments:

- Grades from courses that are not aligned with district or state standards
- Classroom observation – Literacy is determined by the teachers observation of a student using technology
- Straw Polls – Literacy is determined by polling students with a show of hands

CDE understands that Colorado school districts were asked to create method of assessment, a definition of technological literacy, and adopt or develop technology standards for students. These guidelines are intended to assist districts through this process. Therefore, CDE expects districts to make a reasonable effort to address the standards provided so that the assessments given, while different, can be focused around the same standards. CDE will continue to consider a common assessment tool for the 08-09 reporting period.

Timeline

CDE has begun collecting 2006-2007 technological literacy data from districts as part of the 07/08 consolidated application. This information, while preliminary, will be reported to the US Department of Education and will satisfy the 06/07 reporting requirement.

The collection will likely take place in fall of 2008 based on spring, 2008 results. CDE will provide an online reporting system and will collect the following data:

# of students assessed for technological literacy	###
# of students technologically literate by the completion of the 8 th grade	###
# of students not technologically literate by the completion of the 8 th grade	###
Type of assessment used (selection from a list)	###

The required information will be reported to the US Department of Education in the fall of 2008 or early in 2009.

If there are any comments or concerns regarding the information provided, please contact DeLilah Collins at 303.866.6850.

Thank you for your continued support!

Standards for Students

I. Creativity and Innovation

Students demonstrate creative thinking, construct knowledge, and develop innovative products and processes using technology. Students:

- A. apply existing knowledge to generate new ideas, decisions, processes, products or solutions.
- B. create original works as a means of personal or group expression.
- C. use models and simulations to explore complex systems and issues.
- D. identify trends and forecast possibilities.

II. Communication and Collaboration

Students use digital media and environments to communicate and work collaboratively, including at a distance, to support individual learning and contribute to the learning of others. Students:

- A. interact, collaborate, and publish with peers, experts or others employing a variety of digital environments and media.
- B. communicate information and ideas effectively to multiple audiences using a variety of media and formats.
- C. develop cultural understanding and global awareness by engaging with learners of other cultures.
- D. contribute to project teams to produce original works or solve problems.

III. Research and Information Fluency

Students apply digital tools to gather, evaluate, and use information. Students:

- A. plan strategies to guide inquiry.
- B. locate, organize, analyze, evaluate, synthesize, and ethically use information
- C. evaluate and select information sources and digital tools based on the appropriateness to specific tasks.
- D. process data and report results.

IV. Critical Thinking, Problem-Solving & Decision-Making

Students use critical thinking skills to plan and conduct research, design and manage projects, solve problems, engineer solutions and make informed decisions using appropriate digital tools and resources. Students:

- A. identify and define authentic problems and significant questions for investigation.
- B. plan, design and manage activities to develop a solution or complete a project.
- C. collect and analyze data to identify solutions and/or make informed decisions.
- D. use multiple processes and diverse perspectives to explore alternative solutions.

V. Digital Citizenship

Students understand human, cultural, and societal issues related to technology and practice legal and ethical behavior. Students:

- A. advocate and practice safe, legal, and responsible use of information and technology.
- B. exhibit a positive attitude toward using technology that supports collaboration, learning, and productivity.
- C. demonstrate personal responsibility for lifelong learning.
- D. exhibit leadership for digital citizenship.

VI. Technology Operations and Concepts

Students demonstrate a sound understanding of technology concepts, systems and operations. Students:

- A. understand and use technology systems.
- B. select and use applications effectively and productively.
- C. troubleshoot systems and applications.
- D. transfer current knowledge to learning of new technologies

Appendix D — Existing Consortial Technology Literacy Assessment Project

In order to comply with NCLB reporting requirements and to inform their technology, information, and content instructional designs, a consortium of school districts formed in September 2007 to create a limited-response (aka multiple choice) technology literacy assessment for administering in the districts' schools in spring 2008. The consortium invested at least \$120,000 in staff time, consultant expenses²¹, and technology and other resources. The 36-item assessment addresses three of the six CDE-endorsed TL standards (Research & Information Fluency, Digital Citizenship, and Technology Operations & Concepts). It can be administered online or in paper-pencil format. The assessment instrument also contains a brief survey of student demographics and technology use patterns, which the districts use in analyzing the literacy test results.

Assessment directors and staff from participating districts participated actively in the design and development of the instrument. Significantly, these assessment experts guided validity and reliability studies of the questions, including evaluation of the language, context, grade-level appropriateness, readability, and prediction value. The evaluation included beta and pilot testing of the instrument with students in 7th and 9th grades in order to measure predictability before and after the target 8th grade delivery.

Some of the consortium members partnered with Edusoft for delivery and scoring/reporting of the assessment. One consortium member utilized Blackboard for online delivery and scoring. The consortium experimented with both online and paper-pencil delivery of the assessment. In the paper-pencil format, Scantron sheets were used, and assessment results were scanned to the Edusoft platform.

The consortium has made the assessment available at no charge to any district in the state that requests it. Approximately 15 non-consortium school districts have taken advantage of this offer. A sample of these districts is shown in Appendix A — Current District Efforts to Assess Technology Literacy.

The timeline for the consortium's work in developing, validating, and implementing the assessment is shown in the table on the next page.

²¹ The consortium's primary consultant was Bernajeane Porter, a nationally recognized expert in technology literacy and assessment design. See www.bjpconsulting.com/index.html

Timeline of Assessment Development — 2007-08

Stages of Process	Calendar	Details
Initial meeting	September 2007	<ul style="list-style-type: none"> • Determine definition of Technology Literacy proficiency • Decide Purpose for assessment • Identified needs • Discuss Design, Delivery, and function of assessment • Identify what will actually be assessed? • What standards will be assessed? • What are the critical skills/concepts within these standards? • Begin to develop Test Bank of questions <ul style="list-style-type: none"> ○ Look at what other districts have done ○ Begin to cull questions from other resources • What will we do with results?
Development Work	October 2007	<ul style="list-style-type: none"> • Develop framework for assessment • Re-write and tweak questions • Rank questions in order of difficulty • Format the layout of questions • Delivery Options • Look at language of questions • Get feedback from districts • Define a process for validation of assessment • Set timelines/deadlines
Planning Meeting	November 2007	<ul style="list-style-type: none"> • Questions reviewed in category format • Questions/Answers reviewed for readability • Decisions made about number of questions and types to be included
Think-Aloud Review	November 2007	<ul style="list-style-type: none"> • Questions organized by standard • Details provided on implementation process • Conducted “Think-Alouds” with individual 8th grade students <ul style="list-style-type: none"> ○ One male ○ One female ○ ELL or disability • Modifications according to feedback
Planning Meeting	December 2007	<ul style="list-style-type: none"> • Information and recommendations from Think Aloud reviewed and applied • Core Test designed • Planning for Beta and Pilot delivery and scoring — how to collect and pull information together.

Development Work	December 2007	<ul style="list-style-type: none"> • Questions assembled, and order determined for CORE assessment • Questions to correlated standards, benchmarks, concepts • Excel spreadsheet template created for recording assessment data
Beta Assessment Instrument	January 2008	<ul style="list-style-type: none"> • Beta assessment given to five 9th grade students • Beta purpose- <ul style="list-style-type: none"> ○ Determine how long to take the assessment ○ Determine level of difficulty ○ Determine effectiveness of process
Planning Meeting	January 2008	<ul style="list-style-type: none"> • Revise test based on Beta results • Build in accommodations • Plan for the sharing of the assessment with other districts • Initial draft of Performance indicators of Tech Literacy: Advanced, Proficient, Partially Proficient, or unsatisfactory) • Reference CDE and Office of Learning documents with NETS Performance Indicators • Develop process for socializing the assessment within participating districts- Peer sharing • Add survey questions to assessment
Pilot Assessment	February 2008	<ul style="list-style-type: none"> • Distribution of Scantron sheets • Selection of demographically representative classrooms within each district to pilot assessment • Conduct pilot assessments; report data
Group Meeting	March 2008	<ul style="list-style-type: none"> • Complete final assessment instrument • Determine proficiency cut points • Finalize performance descriptors • Plan for delivery of assessment • Finalize support documents <ul style="list-style-type: none"> ○ Cover Letter ○ Talking Points ○ Directions for Administration ○ Proficiency framework • Distribute assessment instrument to participating districts after March 10th
Full Administration	April-May 2008	Participating districts conduct assessments
Group Meeting	June 2008	<ul style="list-style-type: none"> • Item Analysis of assessment results • Consideration of next steps

The sample of assessment items presented on the next page addresses only one of the three standards assessed. It is provided more to show the nature of the instrument and question/answer

design than to demonstrate the range of the assessment's coverage. A complete version of the assessment and arrangements for online or paper-pencil delivery may be obtained by contacting representatives of the districts that have participated in its creation.

1. Plagiarism is _____. A. the act of copying other people's ideas or writing without giving credit to the author B. the act of linking to other people's work as part of a blog C. the act of sending unwanted instant messages or e-mails to many people at the same time
2. Which of the following personal information is safe to share on a web site such as My Space? A. Age and home town B. Name and school C. Screen name only
3. A student locates an essay on the Internet, copies it, and submits it to the teacher as his or her own work. A. This is okay because the information was online and found while at school. B. This is not okay because it is using someone else's work as your own. C. This is okay because everyone does it.
4. Which of the following is legal when you buy one license of a software program? A. You can burn copies of the software and give to all your friends B. You can load the software on any number of computers. C. You can only load the software on one computer.
5. Domingo was setting up an account on MySpace and needed to establish a password. Of the choices, which password would be the most secure? A. An unrelated word such as...Drag0Nf11 B. A short version of his name...mingo C. His name with birth year...domingo1991
6. You found a MySpace page that had pictures and very negative comments about you that was posted by a classmate at school. What should you do? A. Call the classmate and make threatening remarks. B. Create a page about the classmate that is just as bad. C. Inform an adult at home or school.
7. A student opened a teacher's electronic gradebook and changed grades without the teacher knowing. This act is _____ A. against school rules, but is legal. B. illegal and may have consequences from the school and police. C. not illegal.