

Learning with 21st Century Tools

The 2009-2012 Vermont Educational Technology Plan

Release 3/30/09



Standards & Assessment
(802) 828-5149

Contents

Introduction.....	1
<i>Vermont’s Vision for Learning Technology.....</i>	<i>2</i>
I. The 2009-2012 Vermont Educational Technology Plan.....	3
Goal 1: Student-centered learning	3
Goal 2: Leadership in a student-centered environment	4
Goal 3: Flexible Learning Environments.....	4
Goal 4: Engaged Community Partners	5
Goal 5: Effective Local Technology Plan Evaluation	6
II. A Framework for Local Planning	8
<i>Connecting the State Transformation Plan to Local Technology Initiatives.....</i>	<i>8</i>
<i>Key Points for Local Plan Creation.....</i>	<i>9</i>
<i>Sample Action Plan Template.....</i>	<i>10</i>
Guidance and Templates for Creating Local Goals and Action Plans.....	12
<i>Student-centered learning.....</i>	<i>13</i>
Organizing Question for This Goal	13
Essential Questions for Creating Local Action Steps.....	13
VT DOE’s Background and Rationale for This Goal.....	14
Action Plan Template	15
<i>Leadership in a Student-centered learning Environment</i>	<i>16</i>
<i>FLEXIBLE LEARNING ENVIRONMENTS.....</i>	<i>18</i>
<i>Engaged Community Partners.....</i>	<i>20</i>
<i>Effective Local Technology Plan Evaluation.....</i>	<i>22</i>
Background.....	22
Creating Indicators.....	22
Collecting Data	24
<i>Pulling It All Together: Compiling an Evaluation Report.....</i>	<i>25</i>
<i>Evaluation Report Template</i>	<i>26</i>
<i>Signature Page.....</i>	<i>28</i>
Appendix A: Successes from Past Tech Plans	29
Appendix B: Sources: NCLB and the Partnership for 21st Century Skills.....	32
Appendix C: Resources: To Assist in Local Planning.....	34
Acknowledgments and Thanks	36

Introduction

The Vermont Department of Education and the State Board of Education recently collaborated to produce *The Transformation of Education in Vermont*, a guiding framework for initiatives aimed at shaping Vermont's K-12 schools into vibrant centers for 21st century learning. Adopted by the State Board in July 2008, *The Transformation of Education in Vermont* calls for the central focus of our transformation work to be student-centered learning, with technology playing a supporting role by enabling students to engage actively with their learning environment, to access resources beyond school walls, and to communicate globally. This approach has long been embraced by the education-technology community — and *The Transformation of Education in Vermont* supplies all Vermonters with a timely and welcome platform for continuing the discussion about the role technology can play in our schools and communities.

With this visionary work having set the stage, in summer 2008 a small group of Vermonters took on the challenge of generating ideas for further integrating technology into Vermont K-12 education. Building on the important work around the state that was shaped by the Vermont educational technology plans of 2004-2007, and guided by the Transformation framework, the team worked with the state Department of Education to craft this new document, *Learning with 21st Century Tools: The Vermont Educational Technology Plan 2009-2012*.

An important basis for this plan is the fact that in virtually all Vermont schools, access to broadband communications has been achieved. Coupled with improved access to technology tools, widespread access to network resources has opened up enormous possibilities for learning. The central focus of this new plan addresses how Vermont schools — teachers, students, and administrators — can make the fullest, wisest, most powerful use of this opportunity that has been created for Vermont children.

It is no longer enough to focus on technology *skills*, as it is clear every day that most students have or are quick to acquire these skills. What still holds many Vermont schools back is the continuing separation of technology from the rest of the school curriculum. Technology must become the transparent component that is integrated seamlessly in all areas of the curriculum. As *The Transformation of Education* describes the vision: “Digital learning tools will largely replace textbooks and teacher lectures as the way students access new information. Technology links students to the world, with teachers as their guides and coaches as they explore and experience.”

This plan presents five basic goals that, if achieved and implemented, can meet the needs of schools throughout Vermont for guidance in meaningfully integrating technology in all aspects of teaching and learning. These goals are *Student-Centered Learning*, *Leadership in a Student-Centered Learning Environment*, *Flexible Learning Environments*, *Engaged Communities*, and *Effective Local Technology Plan Evaluation*.

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Coupled with improved access to technology tools, widespread access to network resources has opened up tremendous possibilities for learning ... What still holds many Vermont schools back is the continuing separation of technology from the rest of the school curriculum.

Vermont's Vision for Learning Technology

*The aim of 21st century education is **learning** — creative, powerful, personal, and open-ended in our lives. Technology should be the water, ever-present yet almost invisible, in which our students' learning swims.*

Nearly all our workplaces have been transformed by technology, and this change continues alongside the near-constant creation of new knowledge, new careers, and new industries. We can't know for sure today what job-specific knowledge and skills our young people will need when they join the workforce; but we can be confident in knowing what underlying skills and learning experiences will equip them to succeed, and to contribute as citizens, in this fast-evolving century.

Our young people must learn to communicate, to collaborate, to work creatively, to embrace new technologies, and to continue gaining new knowledge and educating themselves throughout their lives. With Vermont's strong learning-technology infrastructure, our state is positioned to meet this challenge, to give our K-12 students the chance to thrive in today's globalized learning environment. But the intensity of this environment, and the competitive challenges our graduates will face, demand that we act boldly and with vision to shape our schools into true centers for 21st century learning.

Good teaching makes learning possible and powerful for all students — and technology supports and empowers good teaching. Yet too often, for a variety of reasons, we separate teaching and technology from each other in our schools. Vermont's vision is for technology to play a much stronger role, to be interwoven within the processes of teaching and learning. When schools and teachers engage all students in using technology effectively, not just to do old tasks in speedier ways but to help them think, create, and communicate in new ways, then educational technology becomes integrative and transforming.

Good teachers understand that technology “can be a means to access content on any topic, a tool for thinking and creating, a connection to peers and experts, and a window into other cultures” (*Maximizing the Impact: The Pivotal Role of Technology in a 21st Century Education System*, State Education Technology Directors Assoc. (SETDA), 2007). Good teachers use this understanding to enhance the work they do in classrooms, bringing new relevancy and authenticity to the subjects they teach.

Twenty-first century learning engages students through technology in these key ways:

- Students learn actively, engaging in and completing projects about which they have cause to care.
- Students work together, in pairs and groups, meeting challenges that call on their creativity.
- Students interact and communicate with others — peers, educators, and experts within or outside school — and they build the feedback they receive into their work.
- Students access information in virtually limitless ways.
- Schools embrace technology as a powerful force in students' lives, and open new doors to accessibility.
- Adults in schools are open to seeing relevant uses within the classroom for the technology tools that students are using outside school.

When these connections are woven schoolwide between good teaching, thoughtful uses of technology, and appreciation for the relevancy of global access to information and communication, then we have truly begun to transform our schools for the 21st century, and for all our students' futures.

This is Vermont's vision. It's simple and powerful. And its time is now.

I. The 2009-2012 Vermont Educational Technology Plan

The 2009-2012 Vermont State Technology Education Plan has five goals. Here they are, together with information on how the State Department of Education will work with supervisory unions toward achieving them.

Goal 1: Student-Centered learning

Goal:	Teachers create a learning environment in which Vermont students use information and communication technologies to engage in learning tasks that are meaningful, relevant, and authentic, in ways that engage their interest and foster independent and collaborative learning. Best practices lead to activities not always dependent on direct instruction and teacher-imparted knowledge.
DOE will:	<ul style="list-style-type: none"> • Provide guidance to the schools in the use of the Vermont Grade Expectations in Information Technology. Adoption of the NETS-S 2007 will be coupled with strategies to address student-centered learning in content areas. • Continue to define student-centered learning and the ways that schools can approach technology acquisition and utilization to support it. • Provide, as available funding allows, grant opportunities for student-centered activities that involve the expansion of school-based access to technology (putting technology into the hands of students). • Provide, as available funding allows, quality professional development for teachers in the area of student-centered learning concepts.
The SU will:	<ul style="list-style-type: none"> • Provide a robust, cross-curricular, student-centered learning environment that uses modern technology tools to engage individual learning styles, extend learning opportunities, support individual learning plans, and provide access to resources not typically found in the school environment. • Become familiar with standards in 21st century skills, and include these updated standards in planning activities. • Explore ways to develop student-centered learning activities that take advantage of technology-rich applications. • Work toward student-centered learning practices that take advantage of effective technology use and the ways in which technology can enrich and expand the learning environment. • Provide professional development opportunities, with the expectation that teachers will learn and use these tools. • Create assessments for all learning content areas that integrate technology skills as a part of the assessed student learning.

Goal 2: Leadership in a Student-Centered Environment

Goal:	Vermont school administrators foster the development of teacher and student leaders for student-centered learning through technology.
DOE will:	<ul style="list-style-type: none"> • With help from other relevant state entities, VSBA, VPA, VSA, etc., provide guidance to leadership in the acquisition of technology. • Continue to explore ways through federal funding to impact leadership professional development in technology integration, as well as the use of online tools for communication and collaboration. • Provide opportunities for school leadership that continue the discussion of the <i>Transformation of Education in Vermont</i>, and how it impacts school technology programs. • Support the development of teacher and student leadership for effective use of technology for student-centered learning.
The SU will:	<ul style="list-style-type: none"> • Build awareness of student use of technology beyond school walls, and seek ways to integrate these tools into everyday instruction and student learning plans. • Develop expectations for district professional development activities that require the integration of 21st century tools and a focus on student-centered learning in classrooms. • Model the use of technology in everyday practice. This may include the effective use of online communication tools for communicating with parents and the community. • Strive to devise innovative, meaningful ways to provide technology for teachers as a necessary tool for their daily work. • Strive to provide adequate access for students to technology tools for learning in student-centered environments.

Goal 3: Flexible Learning Environments

Goal:	Vermont schools use technology to provide robust educational opportunities to students, including distance learning, and provide resources in ways that allow for varied access during and beyond the traditional school day. Access to multiple forms of learning resources on a 24/7 basis becomes a common goal for schools.
DOE will:	<ul style="list-style-type: none"> • Continue to foster and support a robust videoconferencing system that is available to schools statewide. This videoconferencing system will be expanded continually, to bring rewarding curricular materials to all schools. • Continue to explore and promote a direction for broadband access that envisions a statewide network that can be utilized to leverage maximum gain for E-rate reimbursement; and provide services that will continue to grow Vermont’s broadband capacity. (Future services might include robust videoconference connectivity, services for SIS, spam/email filtering services, etc.) • Continue to pursue and develop the expansion of learning opportunities for students beyond the regular school day. This expansion includes, but is not

	<p>limited to, online course opportunities, continued pursuit of online and virtual high school programs, and the use of collaborative tools (Web 2.0) for student communication and collaboration.</p> <ul style="list-style-type: none"> • Provide mechanisms with which to encourage teachers to become involved in collaborative learning projects with other teachers throughout the state, nation, and world.
<p>The SU will:</p>	<ul style="list-style-type: none"> • Develop resources that provide learning opportunities that students can access via technology beyond their school day. This may include websites, podcasts, and online course environments. • Provide robust broadband access for school campuses, and provide reliable, cost-effective digital devices for student use. • Explore scenarios for students to utilize student-owned technology on the school campus. • Become aware of the variety of rich opportunities available through distance learning, and encourage its use by teachers and students. • Extend learning opportunities by using technology to collaborate with others locally, regionally, statewide, nationally, and internationally to solve problems, create new knowledge, and develop 21st century skills. • Explore opportunities for creating and maintaining physical environments conducive to technology-rich collaboration. Examples might include: Wireless access points throughout school buildings, common student areas that allow for collaborative learning, and bright, well-lit common spaces for presentations and larger group gatherings.

Goal 4: Engaged Community Partners

<p>Goal:</p>	<p>Vermont schools use technology tools to develop all manner of partnerships within the local, regional, state, and global communities. These partnerships are founded with the aim of providing a rich resource to students, building opportunities for learning, and helping foster overall community growth. They also assist schools in sharing relevant information with parents, community members, school partners, and other school sites.</p>
<p>DOE will:</p>	<ul style="list-style-type: none"> • Provide education opportunities and relevant grant resources to build community partnerships with state, national, and global entities. • Foster and support communication between school communities in a variety of ways. • Continue to foster connections to other regions, entities, and global partners through the use of the Learning Network of Vermont. • Continue to provide and support initiatives that draw on local and regional resources through the use of electronic means. • Provide and showcase examples, when possible, that exemplify best practices in the engagement of community partners.

<p>The SU will:</p>	<ul style="list-style-type: none"> • Provide online resources for fostering parent involvement in school communities. These may involve, for example, day-to-day communication with parents via email, providing electronic access to student files and individual learning plans and examples of work, and providing regular access to student information system data on their child’s progress. • Become a model of collaborative communication for local communities, with students involved in the creation, development, and maintenance of websites and other collaborative tools for local projects and entities.
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Goal 5: Effective Local Technology Plan Evaluation

This goal is presented in a different format, because expectations for how it will be implemented at the local level vary from the previous four goals. Goal 5 has two components:

1. That technology will be employed both as a tool for student assessment and as a mechanism for distributing data that is used for educational decision-making.
2. That local districts will formatively monitor the degree to which local technology plans are implemented. *However, the VT DOE is not requiring regular reporting of district technology-plan evaluations to the Department.*

As for the first component, the DOE considers the development of assessments of students’ technology skills, as well as the use of technology to support assessment in all content areas, to be part of achieving Goal 1, Student-Centered Learning. The use of technology to drive and support decision-making is part of achieving Goal 2, Leadership in a Student-Centered Environment. This integration is in keeping with the overall concept that technology tools and systems are simply mechanisms that support the core goals of learning, leading, etc.

The second part of Goal 5 asks that the local districts develop measures to monitor their progress in implementing their technology plans. As part of this planning, they are urged to develop performance indicators of each of the four primary goals. The setting of these indicators, and the gauging of local progress toward meeting them, will together reflect the local degree of accomplishment of Goal 5.

More detail on the local evaluation process is included in Part II of this document, in the section on Effective Local Technology Plan Evaluation.

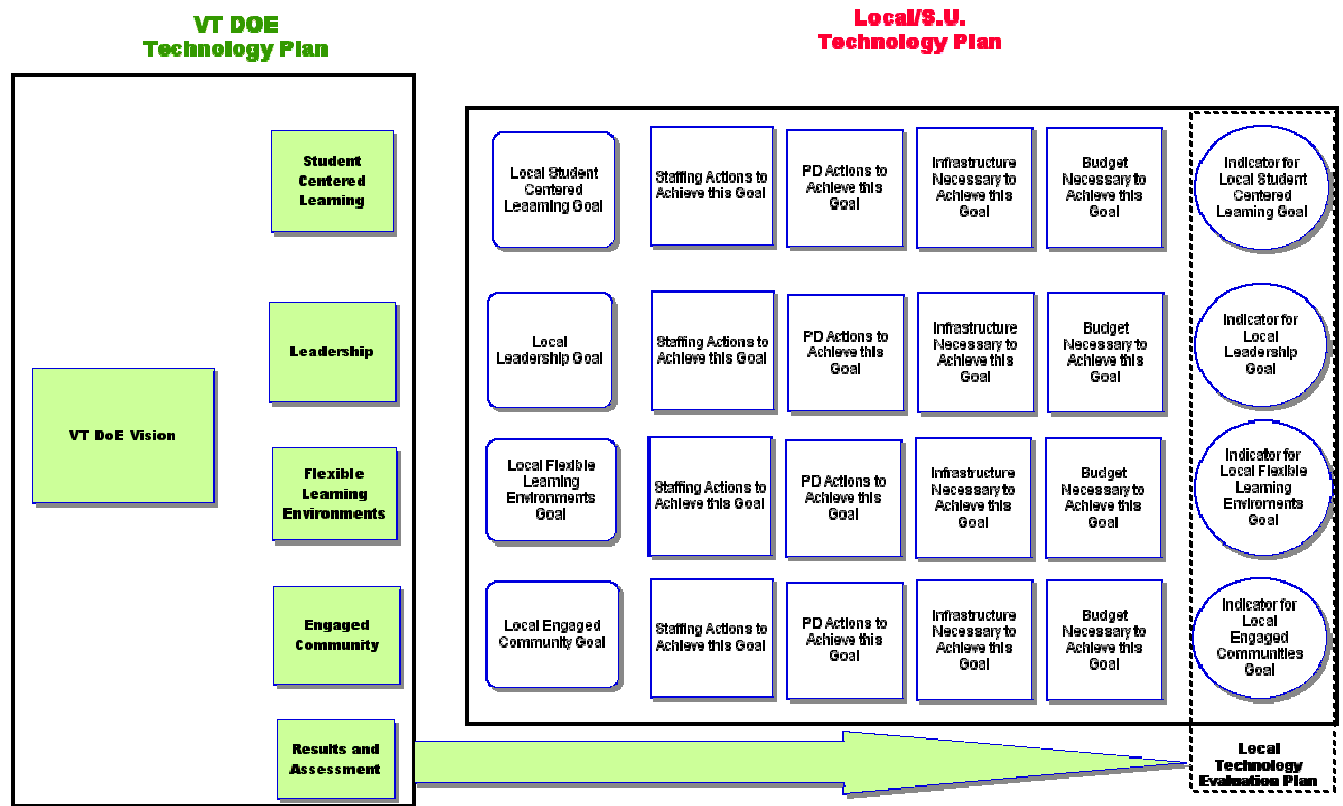
Learning with 21st Century Tools
Part II: The 2009-2012 Local Technology Plan
Guidance, Templates, and Resources

I. A Framework for Local Planning

Connecting the State Transformation Plan to Local Technology Initiatives

The main tenets of *The Transformation of Education in Vermont* provide an excellent framework within which to set goals and develop guiding questions for planning around educational technology. These “drivers of transformation” create the five goal areas for local educational technology planning across Vermont.

Each local educational technology plan, as developed at the SU level, will address each of these five areas with a local planning goal and a related series of action plans for the three years covered by this current round of technology planning. Here is a schematic illustration of this overall planning structure:



The local plan will include a description of each planned action as well as the technology infrastructure, staffing, professional development, and budget required to complete the action. Taken as a composite across all of a district’s action plans, these descriptions of infrastructure, staffing, professional development, and budget will constitute three-year plans for addressing these components of local educational technology implementation. The goals associated with these action plans will convey the rationale for engaging in the plans, and will connect each local plan to the statewide Transformation components.

Linked to each local goal will be an indicator of success that describes the district’s intention for what it will look like annually when each goal is accomplished, to the extent that it can be ideally each year. Districts should plan to use this data to further inform their program needs in each year of the current technology plan.

Key Points for Local Plan Creation

- Local planning should be carried out by an *S.U.-based technology planning team* that is representative of stakeholders in the local educational process. Teachers, administrators, parents, community members, technology staff, and students should be represented appropriately on the committee.
- Local planning teams should write *at least one goal for each of the four component areas*. More than one goal per area (e.g., one that focuses on teachers and another on students) is possible, but not mandatory. Whenever possible, reflect on goals from your previous plan, and adapt them when appropriate to the four current categories.
- Each goal should have a related action plan that details the action steps necessary to achieve the goal *over the course of the three-year planning period*. Some action steps may last only a portion of the three years, while others may take more years to complete. There is no limit to the number of action steps that can be created for each goal.
- Every action in the plan should include consideration of related *staffing, technology infrastructure, budget, and professional development* needs. Many districts will find it useful to aggregate, for example, the staffing components of each goal into a single staffing plan. This will make it possible to view the comprehensive infrastructure plan for the three years as a single document.
- For each goal in their plan, teams should develop and include one or more *indicators of success*. The data types listed in the “Data Collection” column of each action plan, for each action step, should support these indicators.
- *Goals and related action plans for 2009-2012 are to be submitted to VT DOE by June 30, 2009*, using the template provided here. Should districts wish to use a different format, this will suffice as long as the goal areas can be correlated with the template provided. DOE suggests, but does not require, that each June thereafter through 2012, SUs conduct a review to evaluate their goals and their progress towards meeting them. This review should be used to drive decisions about further program decisions. DOE hopes that this annual summative evaluation, along with more frequent, internal, formative evaluation, will drive the local planning committee to update and revise its action plans. This updating work is considered to be a locally useful process: *It is not necessary for SUs to submit annually updated technology plans to DOE*. Should a review entail significant changes to the current plan on file with the VTDOE, the Department suggests that an updated plan be submitted.

Sample Action Plan Template

The following page offers a sample completed local Action Plan template. This sample provides guidance for how to complete the blank template that follows, together with the discussion of each goal, in the next chapter.

This example shows only two completed action steps of what would in reality be a larger number. The example text (exemplary of what the SU would create) is shown in **blue text**. Explanatory notes are made in **red text**.

Goal 1: Student-Centered Learning (*This is the state plan goal group. You need at least one action plan for each of these goals*)

Local Goal: Our SU will utilize technology to support the development of 21st Century skills in students and teachers. (*Your local team creates this goal statement, which articulates your SU's local intent for this goal group.*)

Action Step	Description	Staffing	Infrastructure	Budget	PD	Y1/Y2/Y3	Data Collection
1	Develop technology education unit for lower elementary grades	<ul style="list-style-type: none"> • Tech Integration specialists • Tech skills committee 	none	\$2000 for subs and course fees	<ul style="list-style-type: none"> • Attend VTFest • UVM Online Tech integration course 	Y1	<ul style="list-style-type: none"> • Interview committee members • Review developed unit
2	Implement technology education unit in lower grades	<ul style="list-style-type: none"> • Tech integration specialists • Classroom teachers • SU curric & inst admin 	<ul style="list-style-type: none"> • Elem school labs • Network • Smart Boards 	<ul style="list-style-type: none"> • \$10,000 per school for hardwire • \$20,000 for tech integ spec time. 	<ul style="list-style-type: none"> • Orientation workshop for all elem teachers • VTFest presentation 	Y1 (2 nd semester) and On-going (y1 – 3)	<ul style="list-style-type: none"> • Teacher focus group • Teacher/ Parent survey • Class observations
3	STEM module for MS students						
4	Develop online research skills curriculum for social sciences						
etc.	<i>Remember, you can have as many action steps as you need to achieve the goal by 2012.</i>						

Indicators of Success for this Goal: All students and teachers seamlessly utilize technology effectively to support learning across the curriculum by consistently integrating a variety of technologies and technology-infused techniques into classroom curriculum. Classroom activities exhibit compelling evidence of technological tools and instructional methods that utilize technology. All teachers, and students master real-world applications of technology and 21st century skills by selecting and appropriately using technological tools. Teachers, administrators, and staff utilize technology effectively and inventively throughout their day, to improve productivity across the system in communication, daily tasks, assessments, data analysis, and other routine duties.

(See the Evaluation section for help in creating Indicator statements.)

Guidance and Templates for Creating Local Goals and Action Plans

The following sections, one for each of the five component goals for local plans, offer guidance for the creation of local goals and action plans. Each section starts with a brief vignette that gives a sense of the types of work, challenges, and images related to the focus area. These vignettes illustrate the sorts of things that local school/SU goal(s) and action plans for each area will address.

Each section then provides a background description of how this component goal from *The Transformation of Education in Vermont* relates to the technology goals created locally for this goal area. An organizing question is provided for local planning teams to consider when writing their goals, along with the essential questions that drive the sorts of action steps that local teams would create (and populate their template with) for each component area.

Guidance for creating the local formative evaluation plan, and the indicators of success for each goal, follows the goal-by-goal information. A blank template is included with the material on the first goal, with the suggestion that it be copied and used for each succeeding goal as well.

Student-Centered Learning

Students at Red River Valley School suspect there is a problem with the school water supply. With support from their science teacher, they decide to investigate. Using their research skills, they find out the crucial tests that need to be conducted to test their water. They contact local and state officials and schedule time so they can learn about water quality issues. Using tools they find on the Web, they conduct their own tests and analyze them in science class. The students decide that the best solution for the school is to bring in bottled water. They organize a presentation and bring it to the school board for consideration in budget plans. Through this work, students are empowered and begin to make connections between government and civic action that can bring results for all citizens, as long as those citizens act after preparing themselves with the relevant information.

Organizing Question for This Goal

What is your SU's intent for how students, teachers, and administrators will use technology to support the development of 21st century skills in all students?

Essential Questions for Creating Local Action Steps

The local plan should include action steps that address and/or create responses to these questions:

- In what ways will schools use technology to promote, support, and manage student-centered learning?
- How will the SU promote teaching methods and strategies that best support the use of technology in student-centered learning?
- How will the SU create technology policies and procedures that support student-centered learning?
- How will technology "specialists" in schools support student-centered learning?
- How will Web 2.0 tools and sites be used to support student-centered learning?

VT DOE's Background and Rationale for This Goal

In aligning the goals for learning technology with *The Transformation of Education in Vermont*, both this state plan and local plans are organized around this central concept of student-centered learning. This concept encompasses much of what lies at the core of education for the 21st century.

When learning is student-centered, it is:

- Relevant for students
- Robust and challenging
- Actively engaging (“hands-on/minds-on”)
- Inquiry-based
- Collaborative (locally, regionally, and globally)

When technology is used effectively to support learning in a student-centered environment, it provides a means for engaging students, challenging them, and developing their capacities as new-century learners. Vermont teachers, administrators, students, and parents must become steadily more familiar with the range of possibilities that technology offers for enhancing education — and they must all be provided with opportunities to develop their own skills and capacities.

As Vermont moves forward with the meaningful integration of technology in education, and develops a clearer vision for the role of grade expectations around technology within the content areas, *assessment* — both of and with technology — will play an increasingly important role in student-centered learning.

Action Plan Template for Goal __

Local Goal: Our SU will:

Action Step	Description	Staffing	Infrastructure	Budget	PD	Y1/Y2/Y3	Data Collection
1							
2							
3							
4							
etc.							

Indicators of Success for this Goal:

Leadership in a Student-Centered Learning Environment

When it came time for the Wharton North Supervisory Union to develop its technology plan, the working group of principals, teachers, a technical coordinator, and a school-board member engaged the community through what's been called "Web 2.0" — tools that allow the Web to be used for sharing and collaborating on a work in progress.

The group posted drafts of the plan on a "wiki," a Web page that permits visitors to modify or comment on its content. From across the SU, suggestions and feedback came in from board members, teachers, and others. Once that process was complete, the committee submitted for board approval a plan, for how best to integrate technology into local schools, to which people all over the supervisory union had contributed their ideas and experience.

Organizing Question for This Goal

How will school leaders in your SU exercise and display leadership in using technology as a tool for effective teaching and learning?

Essential Questions for Creating Local Action Steps

The local plan should include action steps that address and/or create responses to these questions:

- How will the SU create and implement professional development programs rich in content-based technology integration?
- How will SU leaders model technology use for both staff and students, in a variety of contexts?
- How does the SU insure that school leaders follow guidelines put forth by the ISTE NETS-A (for Administrators)?
- In what ways will school leaders build awareness by highlighting solid examples of student-centered learning?
- How will the SU offer professional development that builds on the concept of the teacher as a facilitator in a classroom where technology can provide access to rich teaching and learning resources?
- In what ways will SU leaders lead the design and utilization of data-driven decision-making to impact financial aspects, curriculum, and student-performance?
- How will school leaders become knowledgeable about the various available distance-learning opportunities, and take steps to promote opportunities among teachers and students?

VT DOE's Background and Rationale for This Goal

Our state has a lengthy history of educational accomplishments of which we can be justifiably proud. But we need to keep accelerating the accomplishments in order to provide all Vermont students with the skills and opportunities they need to succeed.

The Transformation of Education in Vermont

The leaders we need embrace the realization that skillful and powerful integration of technology into everyday learning is key to transforming schools into centers for new-century success. They understand that teachers and staff need access to technology for a rich and wide range of learning purposes. They advocate with their school boards and communities to build and develop the resources that these uses require. They support the creative and flexible use of technology within their schools — and they model this in many of their own daily tasks. To communicate within their schools, they use email and intranets; to connect with parents and the community, they make frequent, creative use of email, blogging, and/or other online means. Our best school leaders understand the strong connection between effective teaching, powerful learning, and the skillful use of 21st century tools.

What's more, leadership for 21st century learning is not only about administration from the main office: it must be fostered among teachers, students, and parents alike. Teachers need to become educational leaders and facilitators by encouraging, inspiring, challenging, shaping, and guiding technology-rich projects for student-centered learning. Students should be encouraged to become leaders by taking the initiative in their own learning, through collaborative projects in particular. Students can lead one another in making the most of technology, helping each other as they explore the possibilities for all they can now discover, create, investigate, and do.

Another component of effective leadership in a student-centered learning environment relates to the strategic use of data for informed decision-making. Done properly, data-driven decisions and planning can improve the effectiveness of nearly all SU, district, or school functions, including instruction, student assessment, and evaluation of systemic needs.

Flexible Learning Environments

In Mapleton, a math teacher started a sixth-grade project called Snack Express. Students used the school's email system to survey students, asking what snacks they might like, did these need to be prepackaged, etc. They entered the answers into a database, developed a menu, and used email to collect daily orders from throughout the school. The students used graphic-design software to create ads, and spreadsheet software to analyze sales and calculate profits. Starting their project with a loan from the PTO at 5% interest, the sixth graders repaid that and earned a \$1,600 profit. They decided to give half to the local United Way, and to use the rest on a celebration party.

Organizing Question for This Goal

What will your SU do to provide a flexible environment for both student and professional learning?

Essential Questions for Creating Local Action Steps

The local plan should include action steps that address and/or create responses to these questions:

- In what ways will the SU continue to pursue and develop broadband capacity to support learning opportunities for all schools?
- In what ways will the SU promote awareness of distance-learning opportunities for the community, parents, school leaders, teachers, and students, along with the effective use of Web 2.0 tools?
- How will the SU provide professional development for the effective use of distance learning and Web 2.0 tools/sites?
- In what ways will the SU require or encourage teachers to become involved in collaborative learning projects with teachers throughout the state, nation, and world?
- How will the SU make a connection to the Learning Network of Vermont (LNV), and encourage its purposeful and effective use?
- In what ways will the SU provide access to school technology resources for all students, beyond the traditional school day and year?
- In what ways will the SU ensure flexibility in staffing and scheduling student learning opportunities?

VT DOE's Background and Rationale for This Goal

A transforming educational system will be less bound by schedules and facilities, and instead will promote more flexible learning environments. ... Students will be encouraged to develop the kind of complex problem-solving skills that are required in today's world.

The Transformation of Education in Vermont

Technology provides a ready vehicle for students pursuing their own course of learning, and supports the idea that there are multiple pathways and learning opportunities that students can follow to meet graduation requirements. This is a crucial component of student-centered education.

A flexible learning environment supported by technology is one that opens and encourages connections to resources and expertise beyond the school walls. Network technology allows students ready access to the resources they need to support their learning — any time, from any location.

The Vermont DOE aims to support schools in the development of flexible learning environments that will enable students to communicate, access resources, collaborate, think in new ways, create new knowledge, and manage their work as members of a globally linked community of learners.

Engaged Community Partners

At Winningham Central School, a grades 7-8 social studies teacher and a local university intern co-created a unit on climate change that called for each student to create a blog on an alternative energy source, then use technology to get advice and feedback from a professional in that field. Earlier in the year, a group of students within the class had created their own blogs, along with a PowerPoint presentation on how blogs work, what issues they raise, and how they can benefit learning. Those students now oriented their classmates, who each got parental permission to start a blog.

The students used online tools to calculate their own carbon footprint, and posted those. As each began researching a report on a source of alternative energy, their teacher organized field trips to wind, hydro, and composting sites — and recruited adults who work with wind power, hydropower, solar energy, and biofuels to serve as expert advisors. Students posted report drafts on their blogs, and communicated with their experts on a regular basis — by cell phone, email, and on the blog — to get detailed feedback and insightful advice.

Organizing Question for This Goal

How will your SU utilize technology to connect to and engage with local, regional, state, and global communities?

Essential Questions for Creating Local Action Steps

The local plan should include action steps that address and/or create responses to these questions:

- What will the SU do to promote digital citizenship among students and staff?
- How will the SU develop communication resources, and support existing resources such as the Learning Network of Vermont?
- In what ways will the SU enable students to learn in 21st century contexts (e.g., through project-based or other applied work)?

VT DOE's Background and Rationale for This Goal

Learning will not be confined to a classroom, but will extend to immersion in community, workplace, and service environments. Civic and personal responsibility will be as important an outcome as building academic skills.

The Transformation of Education in Vermont

Technology is continually redefining community, providing new settings for connecting common interests — yet in Vermont, many communities are still barely tapped as human resources for student learning. To be active 21st century learners, students must have access to community members of all kinds, both locally and worldwide.

In fostering these relationships and collaborations, schools can enable students to build valuable communication and collaboration skills that will serve them well in an increasingly competitive global environment.

Effective Local Technology Plan Evaluation

This section is intended as a suggested template or guideline for local technology plan evaluation. *Assessments or evaluations of local technology plans do not need to be submitted to the Vermont Department of Education.*

When schools are taking advantage of the E-rate program, regulations of the Universal Service Administrative Company (USAC), the E-rate authority, do require an assessment process. But in all cases, the DOE recommends that each local system develop a plan for formatively assessing the results of its technology plan. This assessment should be based on the Indicators written as part of the action plan for each goal.

Background

In essence, evaluation is the process of:

- gathering data on and from activities,
- using this data to formulate a picture of performance, and
- comparing this to an ideal picture or statement of performance.

When this assessment process is done on an ongoing basis, concurrent with the performance as it occurs over time, this is known as *formative* assessment or evaluation.

The logic of strategic planning states that activities, actions, are carried out to achieve goals — so data that comes from those activities must drive the evaluation of how well the goals are being achieved. In relation to a strategic plan for educational technology, this means that activities such as implementing curriculum units (teaching), professional development, and changes to infrastructure will all generate data that are then used to fill in the “performance picture” for the goals for which the actions were made.

However, it means little just to note each accomplished action in a sort of checklist and assume that accomplishing an action means achieving a goal. In technology plans, the whole (the goal) is greater than the sum of its parts (the actions). This is why local planning groups are asked to create indicator statements – performance pictures — that describe performance toward each goal.

Creating Indicators

In creating indicators for each goal, the local committee’s basic task is to develop a detailed, highly descriptive account of the conditions you would find in your system when your goal is achieved. Indicators should include visual terms that clearly describe to the reader *how your system will look* when the goal is fulfilled. Descriptions of these optimal conditions will vary according to local interpretation and circumstances, just as the actions needed to achieve a goal will vary from system to system.

For example, for a local goal relating to Student-Centered Learning, the performance indicator would describe in detail the ways in which students and teachers make optimal use of technology throughout the day to support mastery of content-area standards. It might account for the uses of various 21st century technologies within student-centered learning environments, and could describe how teachers across the system have mapped the connections of technology to

curricular objectives. An indicator for Student-Centered Learning might describe how technology is used to differentiate instruction, manage student data, communicate with parents, or provide students with 21st century skills.

It is essential that the ideal described in each performance indicator for each goal is one that the local planning committee agrees represents full attainment of that goal *in your local system*. The picture of ideal performance that these indicators paint must be reflective of the action steps that relate to their particular goal in the local plan. Without the support of clear, specific, targeted actions, it's difficult to turn a performance ideal into reality.

Questions to Consider When Writing Indicator Statements

1. Student-Centered Learning

- When this goal is achieved, how and why will students interact with technology? What will they use it *for* (communication? analysis? presentation? constructing knowledge? reaching content standards?)? *Describe the types of use patterns, skills, and attitudes students will display toward technology when your ideal for this goal has been achieved.*
- When this goal is achieved, in what ways will technology impact teachers' work (admin? planning? instruction? communication? e-learning?)? *Describe how classroom instruction, class management, and other teaching tasks will look and be carried out when your ideal for this goal has been achieved.*
- How will professional development be offered/designed/evaluated (times, methods, topics, compensation?)? *Describe an ideal PD program that provides teachers with the support they need to acquire new skills and strategies, and to advance the use of technology among staff and students.*

2. Leadership in a Student-Centered Learning Environment

- When this goal is achieved, how will local SU leaders demonstrate their leadership on technology issues? How will they support a technology-infused, student-centered learning environment? What sorts of skills, attitudes, and behaviors will technology-using leaders demonstrate in their own work?
- How will local SU leaders employ technology for collecting, analyzing, and disseminating data for decision-making? What will it look like when their decisions are data-driven?
- How do you envision professional development being offered/designed/evaluated? *Describe an ideal PD program that provides leaders with the support they need to acquire new skills and strategies, and to advance the use of technology among staff and other administrators.*

3. Flexible Learning Environments

- When this goal is achieved, how will your SU create and support a learning environment that makes use of 21st century learning technologies?

- What will your infrastructure look like? What will be available, and where? On what cycle will it be replaced or updated? What percentage of the budget is allocated to technology equipment and services? *Describe the conditions that will be present when technology receives optimal support in your district.*
- Leadership: When this goal is achieved, what policies and budgets will be in place for improving use and access of technology in and beyond local schools? *Describe how district leadership will leverage resources and connections to advance the use of technology in the wider community.*

4. Engaged Community Partners

- When this goal is achieved, how will an engaged community support and extend the SU's learning environment? In what ways will this support show itself, or be measurable? What will the SU be doing to encourage and extend this support?
- When this goal is achieved, how will students have benefited from their connection to this wider learning community?

Collecting Data

Systems should use a variety of data-collection mechanisms to gather data that measures their progress toward meeting each goal's indicators. Data collection should be systemic and integrated wherever possible with system data-collection procedures. It should therefore occur throughout the school year. Among the various data-collection procedures and tools that may be used are these:

- *Surveys*
- *Interviews* (of teachers, administrators, and others, individually and collectively in focus groups)
- *Observations* (of teachers teaching, working in professional development, etc.)
- *Analyses* of work products (by students and teachers).

Local plans should provide insight into what data will be collected for each action item. Collectively, this data will add up to an assessment of each goal's progress. The Action Plan Template that follows includes space for addressing data collection for each action.

Pulling It All Together: Creating an Evaluation Report

This section is a guide to creating an evaluation report, as each SU is urged to do for information, guidance, and continuing progress in achieving the local goals of its plan.

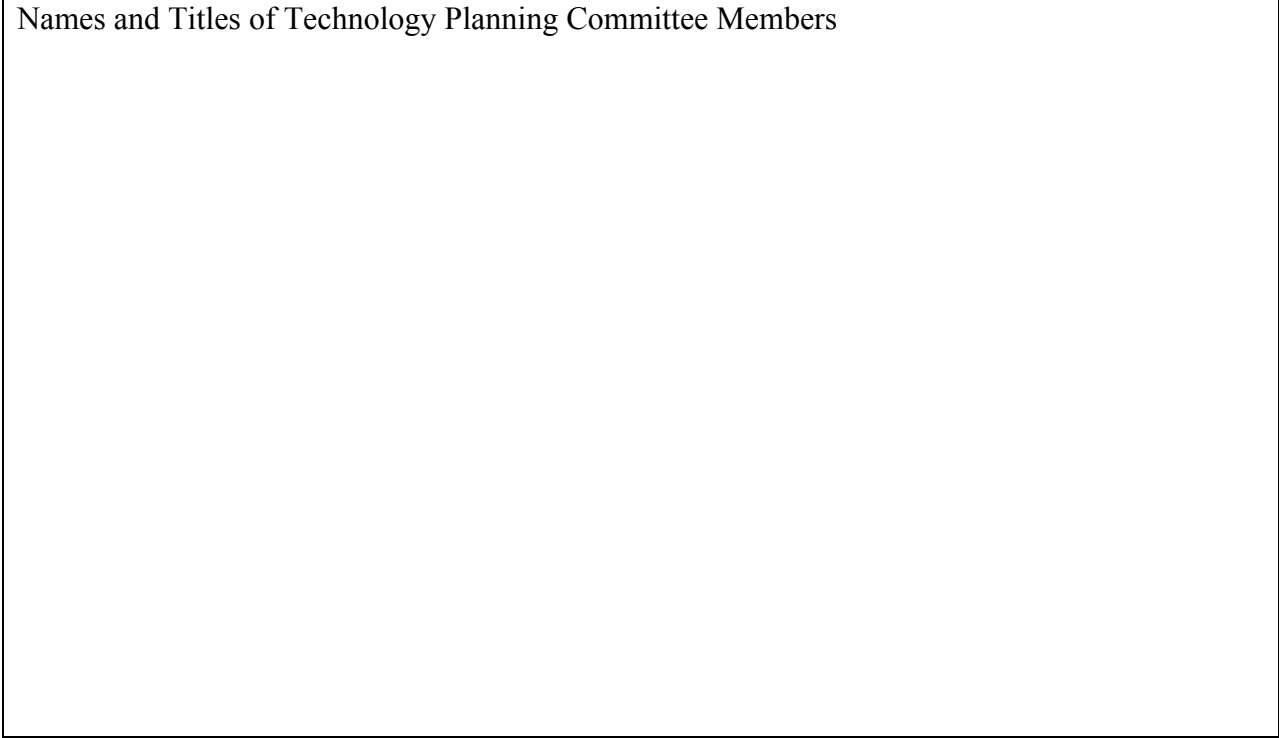
An evaluation report should be a brief, reflective summary of progress, firmly rooted in the local plan's performance indicators for each goal. Essentially, this report asks:

- What progress has the system made toward meeting its indicators?
- How has this progress been documented?
- What adjustments, if any, does the system anticipate making to improve its performance?

What follows is a suggested template for assembling and documenting this evaluation report.

Evaluation Report Template

Names and Titles of Technology Planning Committee Members



GOAL __

Statement of Goal:
This Goal's Performance Indicator:
Summary of Current Performance (Findings) Relative to this Goal:
List of Data Sources that Support this Finding:
Additional Comments (Optional, but can include statements about what your system plans on doing to improve performance in meeting this goal):

Signature/Certification Page

General Information: The signature (below) certifies that this school, district, or supervisory union meets all requirements for Informational Technology planning as defined by the State of Vermont under the federal “No Child Left Behind” legislation.

Name of supervisory union or school(s) covered by this Technology Plan:

Technology Contact Person: _____ Phone: _____

Title: _____ E-mail address: _____

Check here if you do **NOT** wish to be added to the Department of Education’s “Ed Tech” listserv. This listserv is one of the primary means of communication between the DOE and schools.

Contributors to this Educational Technology Plan and their affiliations. We recommend involvement by a breadth of stakeholders — including school administrator, community member, teacher, student, paraprofessional, and other interested parties.

Certifications: Select one

This Educational Technology Plan was approved by our School Board on: _____

This Educational Technology Plan will be approved by our School Board on: _____

Children’s Internet Protection Act (CIPA) certification: One box (below) must be checked for the school to qualify for funds under this program.

- The school certified CIPA compliance in it’s last E-Rate application
- The school did not certify compliance with CIPA in it’s last E-rate application, but does certify, as part of this technology plan, that it meets CIPA requirements
- The CIPA requirements do not apply because no funds made available under this program are being used to purchase computers to access the Internet, or to pay for direct costs associated with accessing the Internet.

Signature: _____ Date: _____

(Superintendent/CEO)

Mail this page only to: Peter Drescher, Vermont Department of Education, 120 State Street, Montpelier, VT 05620-2501

Appendix A

Successes from Past Vermont State Technology Plans

Our Vermont educational technology plans that covered the time between 2004 and 2009 — a full three-year plan and an additional, interim plan — contained a number of goals that the Vermont educational system has made significant strides toward meeting.

Some of the accomplishments from these past five years include:

Standards for Students, Teachers, and School Leaders

- Significant work accomplished with the Performance Assessment Tasks and the accompanying Instructional Guide that assists locals in assessing skills at grade levels.
- The Vermont Commons for Information Technology Educators (Vtcite) took on the task of bringing together the information technology community for a variety of work related to advancing standards, developing best practices, and re-establishing a viable network of educators working to bring technology into the content fold.
- LEAD-IT, in working with school leaders, was able to bring the technology standards and the importance of technology integration to groups of educators and administrators. LEAD-IT's Summer Institute program at UVM brought current thinking around technology and learning to a wide variety of Vermont educators.
- Professional development around standards was strengthened statewide through multiple avenues, including work by regional ESAs.

Access and Infrastructure

- E-rate was studied to begin identifying benefits of a statewide network. Results showed that more Vermont schools than previously thought are taking advantage of the E-Rate program offered through the State Library's Schools and Libraries Division (SLD), but a comprehensive statewide network could bring more diversified services to locals.
- Reimplementation of the past Interactive Learning Network to the new Learning Network of Vermont brought many schools back on line. Videoconferencing provides a very viable communication tool, and a powerful delivery system for classroom services and professional development.
- Initial steps towards statewide network were addressed with regards to statewide purchasing power for broadband services.

Professional Development

- Vtcite began making significant in-roads to professional development and the embedded integration of technology into content areas.

- Performance assessment tasks helped move schools toward a cultural shift in the use of Title IID formula funds to support more high-quality professional development in technology integration.

Program Support

- Public/Private partnerships with IBM for the Teachers Workplace were successful, and continue with new work in the Riverdeep Learning Village.
- Vermont-based VTEL provided six school districts with 10 megabyte Internet connectivity, and provided the DOE itself with a 100 MB Line as well.
- Though continually diminishing, Title IID formula funds supported solid school-based initiatives at the local level.
- Guidelines were established for distance learning programs.
- Legislator conversations took place regarding distance learning and 1:1 computing initiatives.

Assessment

- Teachers Workplace and Riverdeep Learning Village assisted locals with assessment goals.
- The Vermont Data Warehouse began making inroads to schools with the outcome of data-based decision-making.
- Vtcite developed ways to vet resources and units of study that integrated technology on many levels.

Program Policies and Plans

- Guidelines for distance learning were established.

As we move forward into our new plan, there are areas that carry over from our past work. Some of the goals that are continual include:

Moving toward aggregation of broadband services for schools.

The DOE is exploring movement towards creating a statewide network opportunity for schools. This effort needs to begin with a consortium that addresses the maximum benefit that Vermont could realize from E-rate. From that beginning, we can build in incentives and cost effective benefits to bring more services to schools and reduce overall costs of telecommunications.

Continuing to work on distance learning opportunities for schools and students, both within and outside school walls.

The DOE must continue to promote and expand the Learning Network of Vermont, our statewide videoconferencing network. Plans for robust professional development as well as content for students must continue to be developed.

Working to provide a robust online portal for the sharing and dissemination of exemplar units of study, licensure portfolios, teaching and learning resources, and the development of online communities.

The DOE must continue to explore the Riverdeep Learning environment for the use and utilization of all schools in Vermont.

Continuing to explore funding opportunities to increase access to technology at the school level. DOE must continue providing and exploring other means to assist schools in acquiring hardware (SPARK grants, student laptop acquisition options, handheld devices) for student use.

Appendix B

Sources: NCLB and The Partnership for 21st Century Skills

The federal driver for local and state educational-technology planning remains the No Child Left Behind Act of 2001, particularly its Enhancing Education Through Technology (EETT or Title IID) portion. While changes within this legislation may have an impact on future technology plans at both the state and local levels, NCLB continues to hold relevant areas for the planning of technology programs. Some of that legacy is inherent in this document. To learn about the NCLBA areas that were outlined in our '04-'09 plan cycles, visit <http://www.ed.gov/policy/elsec/leg/esea02/pg34.html#sec2402>.

To continue our movement forward, this state plan borrows quite heavily from language developed by the Partnership for 21st Century Skills, a prominent advocacy organization that brings together business, education, and policymakers to promote infusing 21st century skills into education. While NCLB provides accountability in utilizing funds for effective impact on student learning with technology, the Partnership makes clear the importance of marketability, employability, and readiness for citizenship among our students. This plan has sought to draw from both resources, and from *The Transformation of Education in Vermont*, to provide a comprehensive vision.

Some of the 21st century skills identified by the Partnership include:

- Thinking critically and making judgments
- Solving complex, multidisciplinary, open-ended problems
- Creativity and entrepreneurial thinking
- Communicating and collaborating
- Making innovative use of knowledge, information, and opportunities
- Taking charge of financial, health, and civic responsibilities.

As Vermont schools consider the challenges posed by the overall Transformation effort, it is possible to begin seeing how technology can be utilized to meet the learning needs of all students. Student needs vary, the speed at which students learn varies, the places and people they learn from are unique to each individual — and the ways in which students demonstrate learning ought to also be unique and personal. When technology is well-blended within a student-centered learning environment, it can provide a rich array of ways for students to take control of these aspects of their learning.

It's possible to argue that the core mission of educators and schools is to make learning personally relevant and meaningful for each student. Technology provides a powerful set of tools for achieving this goal, for learning core subjects and applying skills in ways that are personally empowering and meaningful.

Some examples of technology in action in a 21st century learning environment include:

- Applied, project-based, and interdisciplinary learning
- Collaborative learning

- Inquiry and investigation
- Personalized learning plans that differentiate instruction
- Authentic real-world, real-time experiences
- Creative approaches to all phases of learning, from research to presentation.

As you consider your local direction for technology planning, student-centered learning should be at the heart of your plan.

Appendix C

Resources: to assist in your local planning

This is a brief list to get you started in researching around local technology program planning.

Vermont's Transformation of Education

<http://education.vermont.gov/new/html/dept/transformation.html>

21st Century Learning

Partnership for 21st Century Skills

<http://www.21stcenturyskills.org/index.php>

21st Century Learning site

http://www.tltguide.ccsd.k12.co.us/teaching_learning/21st_century/21st_century.html

21st Century Literacy

<http://www.noodletools.com/debbie/literacies/>

Maximizing the Impact: Technology in 21st Century Education

http://www.setda.org/c/document_library/get_file?folderId=191&name=P21Book_complete.pdf

Metiri Group on 21st Century Learning

<http://www.metiri.com/features.html>

Related Documents from Partnership for 21st Century Skills

Preparing Americans for the Global Skills Race

http://www.21stcenturyskills.org/documents/p21_transition_paper_nov_24_2008.pdf

21st Century Skills, Education and Competitiveness

http://www.21stcenturyskills.org/documents/21st_century_skills_education_and_competitiveness_guide.pdf

ISTE National Education Technology Standards

<http://www.iste.org/AM/Template.cfm?Section=NETS>

Eschool 21st Century Learning Resources

<http://www.eschoolnews.com/resources/measuring-21st-century-skills/>

Leadership in a Student-centered Environment

ISTE National Education Technology Standards Administrators

http://www.iste.org/Content/NavigationMenu/NETS/ForAdministrators/2002Standards/NETS_for_Administrators_2002_Standards.htm

Class of 2020 Action Plan for Education (SETDA)

<http://www.setda.org/web/guest/2020>

Flexible Learning Environments

International Association for K-12 Online Learning

<http://www.inacol.org/>

Results and Indicators of Success

National Center for Educational Statistics

<http://www.nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2003313>

General Resources for articles on best practices, technology integration, and innovative ideas

Technology Standards: National Education Technology Standards NETS-2007

http://www.iste.org/Content/NavigationMenu/NETS/ForStudents/2007Standards/NETS_for_Students_2007_Standards.pdf

International Society for Technology in Education

<http://www.iste.org/>

Vermont Commons for Information Technology Educators

<http://vtcite.org>

Edutopia

<http://www.edutopia.org>

T.H.E. Journal

<http://www.thejournal.com/>

The Technology in Education Resource Center

<http://rtec.org/>

Acknowledgments and Thanks

The following people contributed in significant ways to the development of this plan. Thanks to each of them for generously giving time and energy to the effort:

Bill Romond
Ed Barry
Paul Irish
Mike Lambert
Heather Chirtea
Paul Smith
Robert Sargent
Charlie Wilson
Lauren Baker
John Minelli
Susan Monmaney
Jeff Everett
Frank Watson
Arlyn Bruccoli
Jeff Sun
Doug Wilhelm
Pat Fitzsimmons
Gail Taylor
Vita-Learn and its Board