

Our Lady Queen of Peace Catholic School



Technology Committee

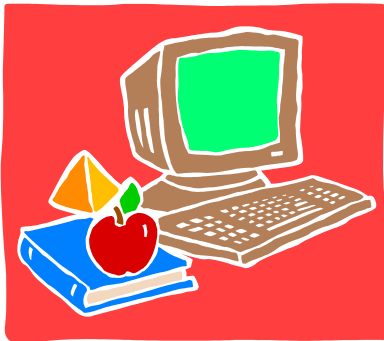
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Our Lady Queen of Peace Catholic School Technology Committee

1. Rationale



The Technology Committee for Our Lady Queen of Peace Catholic School is an adjunct of the Board of Education whose primary function is to formulate and facilitate the implementation of a school technology plan, to assess the success in implementing the plan, and to revise and update the plan in response to the changing needs of the school and its educational program, and the constantly changing developments in and availability of technology resources.

As an adjunct to the Board of Education, whose role is to enhance the learning environment for the school, it is the responsibility of the Technology Committee to plan for the acquisition of resources that support the learning process and further the goals and policies of the board and school administration, to plan for and facilitate staff training in the use of technology equipment and programs to empower staff in achieving the stated goals and implementing policies, and to provide students with a rich learning environment. The integration of technology into the classroom and learning environment is never a goal in itself. Technology resources are tools and the primary goal of the committee – and of the of integration technology into the learning process – is *to enhance learning*.

For the Technology Committee to render effective service to the school, then, it is imperative for the committee to work in close association with school administration, classroom teachers, the Board of Education, school and parish finance officers, the Home and School Association, parents, and students. These working relationships allow the committee to respond to those areas in the learning environment that competent representatives of the school community have determined to be the areas in need of improvement and to have a realistic idea of the resources available when planning what technology based solutions would contribute to school improvement.

It is also the responsibility of the Technology Committee to establish and maintain a network of contacts in the technology, business, and educational communities. These contacts provide valuable information and assistance in suggesting possible resources that would meet educational needs, resources for reasonably priced equipment and software, and best practices in integrating technology into the learning environment. With such information, the Technology Committee and reasonable plan for what is needed to serve the needs of the school and enhance the learning environment.

2. Committee Composition



A school Technology Committee is envisioned to be a *team* of representatives drawn from the learning community. The learning community includes all segments of society. Committee membership is intended to be broad based, including administration and teachers who are charged with implementing sound educational practices, school technology coordinators who are responsible for deploying and maintaining the school's technol-

ogy resources and infrastructure, other educators and advisors with technological expertise to assure best practices, and members of the larger business community with a vested interest in what they need future employees to know, what skills they expect them to have.

For Our Lady Queen of Peace Catholic School, the Technology Committee ought to include the following representation:

- **Principal**
It is the responsibility of the Principal, in conjunction with the teaching staff and the Board of Education to evaluate the state of the school and formulate a plan for improving the educational environment. The Principal, then, gives direction and focus to the work of the Technology Committee in formulating a plan for integrating technology into the learning environment to meet the educational goals of the school.
- **Technology Coordinator**
The Technology Coordinator is responsible for deploying and maintaining school technology resources and with providing training and support in the use of these resources. The Technology Coordinator is an integral part of the Technology Committee because this person is the one who should be able to determine whether current equipment can support proposed programs – both software and peripheral hardware, who can recommend what upgrades are needed and when, and who can address issues of the use or non-use of technology resources.
- **Librarian/Library-Media Specialist**
In the information age, the role of a Library-Media Specialist is critical in the learning process. It is the role of this person to support students and staff in information gathering processes as well as in the critical process of evaluating the usefulness of information. As such, this person is indispensable in determining what resources, tools, and services would best serve the school and its educational goals.
- **Learning Consultant**
In a school with a diversified student body and the need to individualize instruction in order to meet the needs of students who have varied learning styles, varied aptitudes, and varied learning differences, the committee needs the input of the

Learning Consultant in order to determine what special tools might best benefit those with special needs and allow for greater achievement for all students.

- **Classroom Teachers**

Hands-on, it is the classroom teachers who ultimately integrate technology resources into the learning experience. Just as the student body is diversified, so too is the teaching staff when it comes to expertise, comfort, and ease in using technology resources in the educational process. It is imperative, then, that the teaching staff be represented on the Technology Committee. There should be two, possibly three members of the teaching staff on the committee. One of these teachers should be someone who has some expertise in utilizing technology in the classroom. This person contributes a vision of where the school could be going in addressing the needs of students with technology resources. The second member of the committee should be someone who is not as comfortable in the use of technology. This person brings to the table the issues that need to be addressed in training and supporting the staff in the use of educational technology. Finally, it might be advisable to have the teacher primarily responsible for teaching the use of technology resources to the students as a member of the committee.

- **School Board Representative**

Representation by a member of the School Board on the Technology committee facilitates communication between these two bodies so that the Technology Committee is able to fulfill its mission of supporting the Board whose primary function is to support and enhance the educational environment of the school.

- **Parish/School Financial Officers**

Planning for and deploying technology resources is a costly endeavor. Representation by a member of the Finance Committee and/or the finance arm of the Home and School Association allows the work of the Technology Committee to proceed in a realistic fashion. An essential part of a Technology Plan is budgeting for hardware, software, and on-going training. Such planning cannot proceed independently of those actually responsible for overseeing parish and school finances.

- **Parents**

Ultimately, the parish school is accountable to the parents. It is the parents who choose to entrust their children to our care, who trust the school to meet the educational needs of their children. Parent representation on the Technology Committee is one way of remaining accountable. The input of parents into what would serve their needs and the needs of their children is critical in solidifying support for the school's academic practices and in giving parents ownership in the school and its programs.

- **Experts**

Finally, the committee should include members with expertise and experience in computers, telecommunications, and Information Technology; other professional educators; and parish/community representatives who contribute a perspective on the end result of the educational process. These members can be parents and parishioners, but do not have to be. They are people who can ask probing questions, point to sources for answers, and facilitate planning.

3. The Work of the Committee Formulating a Technology Plan¹

A. What is Technology Planning

The following is a working definition of technology planning:

A technology plan serves as a bridge between established standards and classroom practice. It articulates, organizes, and integrates the content and processes of education in a particular discipline with integration of appropriate technologies. It facilitates multiple levels of policy and curriculum decision making, especially in school districts, schools, and educational organizations that allow for supportive resource allocations.

In general, planning is an ongoing process that translates organizational policy, and technology needs into concrete actions. It allows educational organizations to take advantage of technology innovations while minimizing the negative impact of unexpected challenges. Planning provides a road map for the implementation of technology and can result in more efficient expenditure of limited resources and an improvement in student achievement.

Technology plans reflect the policy and educational environment of the archdiocese. However, a technology plan by itself is not enough to ensure change. The processes of technology plan development, implementation, and evaluation are essential components of educational reform. A well-designed technology plan is a dynamic tool providing guidance for local innovation. Technology plans also represent opportunities for dialogue and professional development that encourage local decision making.

B. Basic Principles of Technology Planning

The *Guiding Questions for Technology Planning*, is a tool designed to help begin a technology planning process, select a planning model, and move the process forward. It is considered most useful when it is used within a larger planning process and not simply as an add-on or one-time discussion. A good technology planning process can be summed up in the basic principles listed below:

Technology planning for education should:

- Be an organized and continuous process, use a simple straightforward planning model, and result in a document that improves how technology is used for instruction, management, assessment, and communications.

¹ The remainder of this document is largely plagiarized from “Guiding Questions for Technology Planning,” (<http://www.ncrtec.org/capacity/guidewww/gqhome.htm>)

- Take into account the mission and philosophy of the organization and be "owned" by that organization, its administrators, and instructors. (While outside assistance, such as that provided by a consultant, can bring a broad perspective and knowledgeable opinions to the technology planning process, the process must have the commitment of decision makers and staff.)
- Be broad but realistic in scope, with economical and technically feasible solutions.
- Involve all the stakeholders--including administrators, instructors, staff members, students, parents, community leaders, and technology experts--with experience in education.
- Identify the strengths and weaknesses of the organization and how each will impact the implementation of technology.
- Formalize the procedures and methods for making technology decisions, including the setting of priorities and the purchase, evaluation, upgrading, and use of technology.
- Be driven by educational goals and objectives rather than by technological developments.

Regardless of a school's size or experience, two essential ingredients are necessary to make planning successful. First, all administrators and instructors must understand their roles and tasks. Second, there must be an organizational commitment to both the technology plan and the technology planning process.

Therefore, before undertaking technology planning, it is important to have the support of the institutional leaders, staff, and instructors. Some simple preplanning will encourage participation in the process and minimize later setbacks. The following set of suggested activities can help educational organizations get started with technology planning:

- Decide who should be involved, what role each person will play in the planning and implementation of technology, and if a committee or advisory group should be assembled.
- Preview other planning processes that the organization has completed and identify any useful insights for improving this planning process.
- Review the planning processes of other schools and organizations to identify useful material that can serve as a model.
- Identify a lead person or "change agent" who will organize the planning process and make sure everyone involved has adequate input.
- Determine who will be responsible for writing the plan.
- Determine a timeline for completing the plan.

C. Guiding Questions for Technology Planning

1. What Is Your Vision of Learning?

A vision of learning is critical to the technology planning process. It should be the primary driver of all decisions concerning which technology is purchased and how it will be used. Without a vision of learning there is little hope that technology will contribute to improved student learning. It should reflect what an organization thinks the learning process could be like given the broad adoption of technology. The vision should be creative while at the same time realistic. The ultimate vision of learning and how technology will be applied must reflect the students and clients served, the resources available, and the commitment and willingness of the staff and students to use technology. Establishing a vision for learning will never be complete; changes and adjustments will occur. Disagreements will be numerous. But a vision is shared not individualized. The following questions should be addressed when creating a vision for learning:

- Describe what an observer would see and hear in a school in which students were actively engaged and achieving to high levels in a challenging curriculum. Consider:
 - The tasks and activities that students would be engaged in
 - How teachers would assess student learning and performance
 - What teachers would be doing
 - What materials and resources students and teachers would be using
- How is this vision of learning different from what occurs now in your school? Consider:
 - The tasks and activities that students would be engaged in
 - How teachers would assess student learning and performance
 - What teachers would be doing
 - What materials and resources students and teachers would be using
- How is your vision linked to and/or supportive of other visions of high student achievement, curriculum frameworks, assessments, special needs requirement, and mandates?
- Describe what an observer would see and hear in a school in which the professional development of teachers and staff reflected your vision of learning.

2. How Will You Use Technology to Support Your Vision of Learning?

Technology lends itself well to learning and instruction because it is a powerful tool that, when properly implemented, improves student learning and achievement. However, teachers have little incentive to tackle the technical and scheduling problems associated with technology unless they have a clear idea of how it can improve teaching and learning. Exactly which educational goals a technology plan should address and attempt to accomplish must be determined before the technology plan is implemented

Technology should not drive educational decisions or learning. Rather, decision making should be based on the learning and teaching needs of the student. Technology cannot

prescribe for a teacher which students should use the technology, how often it should be used, or how to integrate technology into existing instructional practices. Unless teachers start out with specific technology goals that support their vision of learning, technology will most likely be used to reinforce the status quo.

There is evidence that when learning and technology goals are not decided upon before technology implementation, technology can become a drain on resources and add to the burdens of teachers who are already trying to do too much. This problem can be avoided by formulating a vision for learning that connects to educational goals, values, and objectives for technology use. Once the stakeholders involved understand the vision and see how technology will make their lives better, they are likely to become more open to technology planning and implementation. The following questions should be addressed when planning how to use technology to support a vision of learning.

- How will technology be used to provide and support a challenging curriculum through engaging instructional practices (e.g., collaborative learning, problem-based learning, problem solving, critical thinking, constructivist classrooms, project-based learning, and so on)? Consider:
 - Learning tasks that are authentic, challenging, and multidisciplinary
 - Assessments that are performance-based, generative, seamless and ongoing, and equitable
 - Instructional models that are interactive and generative
 - Learning contexts that are collaborative, knowledge building, and empathetic
 - Grouping strategies that are flexible, equitable, and heterogeneous
 - Teacher roles as facilitators, guides, co-learners, and co-investigators
 - Student roles as explorers, cognitive apprentices, teachers, and producers
- What educational technology skills will be a part of your curriculum and how will teaching them to students and staff enhance and support your broader instructional goals?
- How will technology be used to support an articulated pre-kindergarten-to-adult learning program for all students?
- How will technology be used to support changes in the roles and responsibilities of students, teachers, administrators, parents, community members, and others in order to achieve your vision?
- How will technology be used to support organizational and governance structures that are consistent with your vision of learning?
- How will technology be used to support and provide meaningful professional development experiences for staff?
- How will technology be used to support your school's accountability and assessment system?
- How will technology be used to support positive home-school-community collaborations?
- How will technology be used to support the provision of comprehensive services (e.g., school-based, school-linked health and social services)?

3. Developing a Supportive Infrastructure

The infrastructure consists of two parts: human resources--which deals with professional learning and support--and technology--which deals with hardware, software, and facilities. With technological change occurring at a rapid pace, purchasers of new technology sometimes feel hard pressed to keep up. School districts, due to limited budgets and technical expertise, have a difficult time choosing and buying technology. Often they lack adequate information about the newest technologies and how to use them; or they do not take into account the level of training and staff development needed to use the technology. The key to technology planning is to make informed decisions. Without good information about the nuts and bolts of technology (i.e., the hardware and software) planners are at a disadvantage. The best way to overcome this problem is to take a broad view of technology and educate planners and staff about current and emerging technologies and their benefits and then realize that implementing technology is not a one-time thing but an ongoing and continuous process that requires a supportive infrastructure that is flexible enough to deal with the rapid pace of technological change. The following questions should be addressed when planning for a supportive infrastructure:

Professional Development, Training, Technical Support

- How will you find out what skills your staff and students currently have and what skills they will need to fulfill your plan's objectives?
- How will you design and implement a professional development and training strategy that meets the needs of your staff?
- How will you use technology to provide professional development, training, and ongoing technical support, and to support teachers as they integrate technology into the curriculum?
- Who will be responsible for ensuring and coordinating professional development?
- Who will be responsible for providing technical assistance and support?
- How will you build technical support capacity within your staff so that equipment will be maintained and kept reliable?
- What are your contingencies for providing just-in-time services when the technology breaks down?

Networking, Hardware, Software, Facilities

- What level of networking will be required to support your vision of learning?
- What hardware specifications are needed to support your vision of learning?
- How will you deal with obsolescence, maintenance, and amortization?
- How will you make use of existing technology?
- What software is required to support your vision of learning?
- How will software be reviewed and purchased?
- What building facilities exist or are needed, and what modifications must be made to support your vision of learning?
- How will you implement, maintain, and sustain the equipment, software, and the network for extended periods, and who will be responsible?

4. Understanding the Context of Your Technology Plan

Undertaking technology planning is not difficult, but many times planners behave as if they are working in a vacuum without trying to understand the broader context. This behavior is hazardous and ultimately will lead to problems or, in rare cases, failure. The best way to achieve success is to encourage participation and anticipate problems in order to minimize setbacks. An effective technology planning process should be consciously and formally organized. The following questions should be addressed when understanding the context of your technology plan:

- Who should you involve in planning from the outset in order to garner support and commitment at all levels of the school district (board members, superintendent, technology coordinator, principals, teachers, parents, and so on)?
- What supports and barriers exist within the policy, resources (human, material, funding), decision making, and other relevant contextual areas that will influence the success of your plan?
- Since a technology plan should be embedded and supportive of an overall learning plan focused on high achievement for all students, how will your plan relate to, support, and integrate with other educational plans at the school, district, state, and federal levels?

5. Garnering Public Support

Public support is essential to ensure the success and longevity of planning implementation. The following questions should be addressed when developing strategies to garner public support:

- What kinds and levels of public support are necessary to make the implementation of your technology plan successful and sustainable?
- What public relations activities will you engage in to promote the effective long-term implementation of your technology plan?
- How will you create opportunities for school staff and the community to share information in order to foster positive relationships?
- How will you garner support from community and business leadership, for example, in long-term public and private partnerships?
- How will you connect and interact with related organizations (museums, libraries, adult literacy programs, higher education, community-based organizations, and so on) to improve student learning?
- How will you leverage investments (e.g., provide training and support for parents and community members) to provide technology access and service to the wider community?
- What other human and community resources exist, including businesses and libraries, to support the plan?
- What funding policies and opportunities exist for implementing your plan?
- How and when will you report results to stakeholders?

6. Implementing Your Plan

Many planners believe their job is complete after a plan is written, but in actuality it has only begun. A written technology plan has direction and long-term technology goals. However, for each new technology introduced to an organization, there will be stages of implementation that include resource development (budget), evaluation, selection, installation, training, pilot projects, mini-implementations, and, finally, full implementation. These stages should all be reflected in a technology plan. It is also important to remember not to judge technology as ineffective when it is not implemented according to the plan. Flexibility, patience, and adaptability are essential for any kind of change process and certainly for implementing technology. The following questions should be addressed when planning the implementation of your plan:

- What is the timeline for meeting the goals of your plan?
- Who is responsible for achieving milestones on the timelines?
- What professional development strategies will you use?
- How will you provide time for ongoing staff development, including time to practice and learn new technologies?
- What is your plan for networking, acquiring hardware and software, and updating the facility?
- How will you deal with the rapid changes in technology?
- What funding is available currently?
- How will funding be provided over the life of the plan?
- How will you coordinate and leverage a variety of funding resources to support your plan?
- How will you deal with contingencies such as changes in leadership and changes in budget?
- How will you determine which program area, discipline, or staff will receive highest priorities for receiving technologies?
- Who (or what group) will be responsible for implementing the technology plan?
- What incentives and sanctions will you implement to ensure that everyone achieves a high level of technological proficiency?
- How will you ensure equity of access to technology and engaged learning experiences for all students?
- How will your instructional use of technology address district, state, and federal mandates including curriculum, special needs, minority populations, and equity issues?
- What new policies are needed to support implementation of your plan?

7. Evaluating the Implementation of Your Technology Plan

Technology implementation is a continuous process that adapts to the organization's changing circumstances and includes ongoing evaluation. Effective evaluation will force planners to rethink and adapt objectives, priorities, and strategies as implementation proceeds. Continuous evaluation also facilitates making changes if aspects of the plan are not working.

Evaluating the implementation of a technology plan can be conducted by various means. Simple observations, both negative and positive, that have been made by students and teachers using the technology are the most helpful. Interviews and informal meetings with both instructors and students can draw out the lessons that both groups have learned from using the technology. A simple written survey can assist in measuring the extent to which the plan has met its original objectives and expected outcomes. The following questions should be addressed when planning the evaluation of the implementation of your technology plan:

- How and when will you evaluate the impact your technology plan implementation has on student performance?
- Who will be responsible for collecting ongoing data to assess the effectiveness of the plan and its implementation?
- What windows of opportunity exist for reviewing the technology plan? (For example, the plan might be reviewed during curriculum review cycles.)
- How will accountability for implementation be assessed?
- How will you assess the level of technological proficiency gained by students, teachers, and staff?
- How will you use technology to evaluate teaching and learning?
- What is the key indicator of success for each component of the plan?
- How will you analyze the effectiveness of disbursement decisions in light of implementation priorities?
- How will you analyze implementation decisions to accommodate for changes as a result of new information and technologies?
- What organizational mechanism will you create that allows changes in the implementation of the technology plan and in the plan itself?

D. Conclusions

It is apparent that participation in a systematic planning process can help school districts, schools, and educational organizations capitalize on the opportunities available through the use of technology. Systematic planning--whether simple or complex--can help maximize the investment of resources in technology.

Administrative involvement and leadership are crucial to the technology planning and implementation process. If organizational leaders do not understand and support the technology plan, it will be difficult to implement and can be either intentionally or inadvertently sabotaged.

Many people perceive that without a technology champion or advocate who will take responsibility for promoting the planning process and implementing the plan, there will be no major push to make technology an integrated part of the organization. If the plan relies on only one person, however, it will almost certainly be unsuccessful. Implementation is best when tasks and duties are shared and delegated, and when individuals across the organization buy into the use of technology and the planning process.

Effective implementation of technology requires a change in culture--one that encourages people to think differently about the teaching and learning processes and the possibilities for technology use. Training and positive role modeling are important for helping to facilitate the change in attitudes and culture. Also, attention to internal and external marketing (garnering support) can help to change attitudes and build enthusiasm and participation. This kind of marketing should be based upon showing how technology will enhance the organization's purpose and goals and solve organizational and educational problems. Flexibility is also a key ingredient of the technology planning process. Planners should set priorities, follow a timeline, and continue to evaluate progress. Yet, day-to-day demands will intervene, priorities will change, and resource availability is likely to be inconsistent. It is therefore important to be flexible, to expect the unexpected, and yet to remain committed to pushing forward the technology planning and implementation process.

Finally, while financial resources are likely to be scarce, the plan should not be budget driven. Rather, the learning vision and organizational, technological, and educational objectives should drive the plan. Budgeting activities should complement and follow the planning process. They are more likely to be successful when an organization knows clearly where it is headed in terms of technology use and has a written plan outlining that use. The familiar maxim holds true for technology planning: "If you don't know where you're going, you're likely to end up somewhere else" and conversely: "If you know where you're going, you're likely to get there much more quickly."

Appendix A

Links to Sample Technology Plans

The Miller Institute for Learning with Technology
<http://www.learningtech.org/>

Technology in Education – articles and resources
<http://www.ncrel.org/sdrs/areas/te0cont.htm>

Poway Unified School District Technology Plan
http://www.powayusd.com/pusdphs/campus/tech_use_plan_2005-2008.pdf

Many High School Technology Plan
<http://www.sabine.k12.la.us/mhs1/techplan.htm>

Harmony Hill School Technology Plan
<http://www.hhs.org/technologyplan.htm>

Seattle Public Schools – Technology Plans
<http://www.seattleschools.org/area/technologyplans/index.dxml>

Corning Union Elementary School District 2005-2010 Technology Plan
<http://www.cuesd.tehama.k12.ca.us/maywood/projects/dtechplan/TechPlanEdit5.pdf>

National Center for Technology Planning – Developing Effective Plans
http://www.nctp.com/html/john_see.cfm

How to Develop an Elementary School Technology Plan
http://www.ehow.com/how_5816230_develop-elementary-school-technology-plan.html

Guidebook for Developing an Instructional Technology Plan
<http://www.nctp.com/downloads/guidebook.pdf>

Technology Integration Plan
http://www.pvusd.net/Departments/Business_Services/technology/tcip/documents/PV_plan05-08.pdf

Downer's Grove Technology Integration Plan
http://www.dg58.dupage.k12.il.us/parent/pdf/tech_plan.pdf

4Teachers – Resources for Integrating Technology
<http://4teachers.org/inttech/ta.php>

Appendix B

National Technology Proficiency Standards

Administration Standards

In 2009, the International Society for Technology Education published the following technology standards (NETS) and performance indicators for administrators:

1. Visionary Leadership.

Educational Administrators inspire and lead development and implementation of a shared vision for comprehensive integration of technology to promote excellence and support transformation throughout the organization.

Educational Administrators:

- a. inspire and facilitate among all stakeholders a shared vision of purposeful change that maximizes use of digital-age resources to meet and exceed learning goals, support effective instructional practice, and maximize performance of district and school leaders
- b. engage in an ongoing process to develop, implement, and communicate technology-infused strategic plans aligned with a shared vision
- c. advocate on local, state, and national levels for policies, programs, and funding to support implementation of a technology-infused vision and strategic plan

2. Digital-Age Learning Culture.

Educational Administrators create, promote, and sustain a dynamic, digital-age learning culture that provides a rigorous, relevant, and engaging education for all students. Educational Administrators:

- a. ensure instructional innovation focused on continuous improvement of digital-age learning
- b. model and promote the frequent and effective use of technology for learning
- c. provide learner-centered environments equipped with technology and learning resources to meet the individual, diverse needs of all learners
- d. ensure effective practice in the study of technology and its infusion across the curriculum
- e. promote and participate in local, national, and global learning communities that stimulate innovation, creativity, and digital-age collaboration

3. Excellence in Professional Practice.

Educational Administrators promote an environment of professional learning and innovation that empowers educators to enhance student learning through the infusion of contemporary technologies and digital resources. Educational Administrators:

- a. allocate time, resources, and access to ensure ongoing professional growth in technology fluency and integration
- b. facilitate and participate in learning communities that stimulate, nurture, and support administrators, faculty, and staff in the study and use of technology
- c. promote and model effective communication and collaboration among stakeholders using digital-age tools

- d. stay abreast of educational research and emerging trends regarding effective use of technology and encourage evaluation of new technologies for their potential to improve student learning

4. Systemic Improvement.

Educational Administrators provide digital-age leadership and management to continuously improve the organization through the effective use of information and technology resources. Educational Administrators:

- a. lead purposeful change to maximize the achievement of learning goals through the appropriate use of technology and media-rich resources
- b. collaborate to establish metrics, collect and analyze data, interpret results, and share findings to improve staff performance and student learning
- c. recruit and retain highly competent personnel who use technology creatively and proficiently to advance academic and operational goals
- d. establish and leverage strategic partnerships to support systemic improvement
- e. establish and maintain a robust infrastructure for technology including integrated, interoperable technology systems to support management, operations, teaching, and learning

5. Digital Citizenship.

Educational Administrators model and facilitate understanding of social, ethical, and legal issues and responsibilities related to an evolving digital culture. Educational Administrators:

- a. ensure equitable access to appropriate digital tools and resources to meet the needs of all learners
- b. promote, model, and establish policies for safe, legal, and ethical use of digital information and technology
- c. promote and model responsible social interactions related to the use of technology and information
- d. model and facilitate the development of a shared cultural understanding and involvement in global issues through the use of contemporary communication and collaboration tools

Teacher Standards

In 2008, ISTE published the following National Educational Technology Standards (NETS) for Teachers.

1. Facilitate and Inspire Student Learning and Creativity

Teachers use their knowledge of subject matter, teaching and learning, and technology to facilitate experiences that advance student learning, creativity, and innovation in both face-to-face and virtual environments. Teachers:

- a. promote, support, and model creative and innovative thinking and inventiveness
- b. engage students in exploring real-world issues and solving authentic problems using digital tools and resources
- c. promote student reflection using collaborative tools to reveal and clarify students' conceptual understanding and thinking, planning, and creative processes
- d. model collaborative knowledge construction by engaging in learning with students, colleagues, and others in face-to-face and virtual environments

2. Design and Develop Digital-Age Learning Experiences and Assessments

Teachers design, develop, and evaluate authentic learning experiences and assessments incorporating contemporary tools and resources to maximize content learning in context and to develop the knowledge, skills, and attitudes identified in the NETS•S. Teachers:

- a. design or adapt relevant learning experiences that incorporate digital tools and resources to promote student learning and creativity
- b. develop technology-enriched learning environments that enable all students to pursue their individual curiosities and become active participants in setting their own educational goals, managing their own learning, and assessing their own progress
- c. customize and personalize learning activities to address students' diverse learning styles, working strategies, and abilities using digital tools and resources
- d. provide students with multiple and varied formative and summative assessments aligned with content and technology standards and use resulting data to inform learning and teaching

3. Model Digital-Age Work and Learning

Teachers exhibit knowledge, skills, and work processes representative of an innovative professional in a global and digital society. Teachers:

- a. demonstrate fluency in technology systems and the transfer of current knowledge to new technologies and situations
- b. collaborate with students, peers, parents, and community members using digital tools and resources to support student success and innovation
- c. communicate relevant information and ideas effectively to students, parents, and peers using a variety of digital-age media and formats
- d. model and facilitate effective use of current and emerging digital tools to locate, analyze, evaluate, and use information resources to support research and learning

4. Promote and Model Digital Citizenship and Responsibility

Teachers understand local and global societal issues and responsibilities in an evolving

digital culture and exhibit legal and ethical behavior in their professional practices.

Teachers:

- a. advocate, model, and teach safe, legal, and ethical use of digital information and technology, including respect for copyright, intellectual property, and the appropriate documentation of sources
- b. address the diverse needs of all learners by using learner-centered strategies and providing equitable access to appropriate digital tools and resources
- c. promote and model digital etiquette and responsible social interactions related to the use of technology and information
- d. develop and model cultural understanding and global awareness by engaging with colleagues and students of other cultures using digital-age communication and collaboration tools

5. Engage in Professional Growth and Leadership

Teachers continuously improve their professional practice, model lifelong learning, and exhibit leadership in their school and professional community by promoting and demonstrating the effective use of digital tools and resources. Teachers:

- a. participate in local and global learning communities to explore creative applications of technology to improve student learning
- b. exhibit leadership by demonstrating a vision of technology infusion, participating in shared decision making and community building, and developing the leadership and technology skills of others
- c. evaluate and reflect on current research and professional practice on a regular basis to make effective use of existing and emerging digital tools and resources in support of student learning
- d. contribute to the effectiveness, vitality, and self-renewal of the teaching profession and of their school and community

Student Standards

In 2007, ISTE published the following National Educational Technology Standards (NETS) for Students.

1. 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, products, or processes.
- 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.

2. 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.

3. 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 from a variety of sources and media.
- c. evaluate and select information sources and digital tools based on the appropriateness to specific tasks.
- d. process data and report results.

4. Critical Thinking, Problem Solving, and Decision Making

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

Students:

- a. identify and define authentic problems and significant questions for investigation.
- b. plan 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.

5. 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.

6. 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.