Profiles for Technology Literate Students

A major component of the NETS Project is the development of a general set of profiles describing technology literate students at key developmental points in their pre-college education. These profiles reflect the underlying assumption that all students should have the opportunity to develop technology skills that support learning, personal productivity, decision-making, and daily life. These profiles and associated standards provide a framework for preparing students to be lifelong learners who make informed decisions about the role of technology in their lives.

The Profiles for Technology Literate Students provide performance indicators describing the technology competence students should exhibit upon completion of the following grade ranges:

- *Grades PreK–2*
- *Grades 3–5*
- *Grades 6–8*
- *Grades 9–12*

These profiles are indicators of achievement at certain stages in PreK–12 education. They assume that technology skills are developed by coordinated activities that support learning throughout a student's education. These skills are to be introduced, reinforced, and finally mastered, and thus, integrated into an individual's personal learning and social framework. They represent essential, realistic, and attainable goals for lifelong learning and a productive citizenry.

The standards and performance indicators are based on input and feedback from educational technology experts as well as parents, teachers, and curriculum experts. In addition they reflect information collected from the professional literature and local, state, and national documents.

Profile for Technology Literate Students

GRADES 3–5

Performance Indicators:

All students should have opportunities to demonstrate the following performances.

Numbers in parentheses following each performance indicator refer to the standards category to which the performance is linked. The categories are:

1. Basic operations and concepts
2. Social, ethical, and human issues
3. Technology productivity tools
4. Technology communications tools
5. Technology research tools
6. Technology problem-solving and decision-making tools

Prior to completion of Grade 5, students will:

1. *Use keyboards and other common input and output devices (including adaptive devices when necessary) efficiently and effectively. (1)*
2. *Discuss common uses of technology in daily life and advantages and disadvantages those uses provide. (1, 2)*
3. *Discuss basic issues related to responsible use of technology and information; and describe personal consequences of inappropriate use. (2)*
4. *Use general purpose productivity tools and peripherals to support personal productivity, to remediate skill deficits, and to facilitate learning throughout the curriculum. (3)*
5. *Use technology tools (e.g., multimedia authoring, presentation, web tools, digital cameras, scanners) for individual and collaborative writing, communication, and publishing activities to create knowledge products for audiences inside and outside the classroom. (3, 4)*
6. *Use telecommunications efficiently and effectively to access remote information and communicate with others in support of direct and independent learning and for pursuit of personal interests. (4)*
7. *Use telecommunications and on-line resources (e.g., email, online discussions, web environments) to participate in collaborative problem-solving activities to develop solutions or products for audiences inside and outside the classroom. (4, 5)*
8. *Use technology resources (e.g., calculators, data collection probes, videos, educational software) for problem-solving, self-directed learning, and extended learning activities. (5, 6)*
9. *Determine when technology is useful and select the appropriate tool(s) and technology resources to address a variety of tasks and problems. (5, 6)*
10. *Evaluate the accuracy, relevance, appropriateness, comprehensiveness, and bias of electronic information sources. (6)*

Curriculum Examples and Scenarios

GRADES 3–5

Scenario 1:

Global Learning and Observations for a Better Environment (GLOBE)

Grade Levels: 3–5

Technology Profile Performance Indicators: 2, 3, 4, 5, 6

Subject Areas: Science, Social Studies

Source: NASA Classroom of the Future Program.

Ms. Smith and her class have made extensive use of online resources such as Exploring the Environment (ETE) found at (http://www.cotf.edu./ete) and Global Learning and Observations for a Better Environment (GLOBE) found at (http://www.globe.gov). She uses ETE to access classroom tested problem-based learning modules that extend and sometimes replace her old paper-based activities. These self-contained resources have provided a new spark of vitality into her science and interdisciplinary periods as they grapple with real-world issues and current data.

Using the GLOBE structure, Ms. Smith has been able to have her students collect information from environmental observations around the school and vicinity, report the data to a processing facility through GLOBE, and use global images created from their data to study local environmental issues. The students have been contributing to an environmental database used by research scientists to improve our understanding of the global environment.

Recently, her students used GLOBE and other electronic resources to research a hot local issue. The community was debating whether to allow a biotechnology firm to locate nearby. Her students chose to analyze this issue very carefully. Students working in groups engaged in collecting and analyzing data about the proposed plant. Ms. Smith set forums in the class so that the students could present their findings and engage in debate. Then students created Web pages to present their findings and arguments to the community. She reports that because of the authenticity and relevance of the issue, her students were even more engaged as they used technology in researching the issues. Parents were pleased to see their children's work on the school's Web site, as viewing the materials at home helped parents feel closer to what the students did in school. Parents also reported subtle changes in their children's attitudes when they were immersed in this hands-on, minds-on, technology-infused classroom.