

CENSUS OF TECHNOLOGY – FREQUENTLY ASKED QUESTIONS

December 2008

The following questions and answers about the Missouri Census of Technology (COT) present the case for why ed-tech data are collected, describe some of the key data elements, provide technical assistance for the more difficult questions, and address use of the data at local, state, and national levels. To review COT forms, directions, and annual state summary reports, see: <http://dese.mo.gov/divimprove/instrtech/statefunded/census/>.

Q: “What is the Census of Technology?”

A: The Census of Technology (COT) is designed to assess Missouri’s continuing investment in K-12 education technologies and to help guide forward efforts. It provides important data for the Department of Elementary and Secondary Education (DESE) to share with state and national decision-makers to increase public awareness and advance public policy and support for education technology. It provides local school districts with data to help identify needs and develop strategies to facilitate school improvement processes and compare district progress with statewide data. The COT is aligned with the *Missouri Education Technology Strategic Plan* (METSP), the *Missouri School Improvement Program* (MSIP), and the *National Educational Technology Standards* (NETS), and is a primary data source for measuring progress toward meeting the state goals and objectives.

Q: “Who completes the Census? How, and when?”

A: COT is an online census (or survey) administered each spring via DESE Core Data-April Cycle *Screens 30* and *31*. *Screen 30* is a district-level census, completed by district-level administrators and/or technology specialists; it collects information for all Missouri school districts and charter LEAs, focusing on technology for the district/LEA as a whole. *Screen 31* is a school building census, completed by building administrators and/or technology staff; it assesses technology planning and training needs for individual school buildings, hardware and levels of Internet connectivity in computer labs, libraries, and classrooms, and technology usage statistics for building administrators, teachers, staff, and students. All attendance centers, including preschools, elementary schools, middle schools, junior high schools, high schools, area career centers, complete *Screen 31*.

Q: “Why do schools have to complete the Census? How are the data used? How are schools held accountable?”

A: COT is the primary data source for the Department in charting progress toward meeting state ed-tech plan goals as well as state and federal program mandates. As district and school personnel complete the COT, it is understood there is evidence on-hand to support responses. Some of the data is also used in the MSIP process, particularly for those standards addressing access to appropriate instructional resources in classrooms and library media centers. DESE Instructional Technology staff examine local documentation as part of MSIP and ed-tech program monitoring.

Districts use COT data in preparing and evaluating local ed-tech plans. They can examine local data against established targets set by the district, state, and/or nation. Districts can also compare local data against state averages (provided in annual COT Summary Reports).

Q: “What information is collected? Where can I find instructions, key definitions?”

A: The COT collects data pertaining to technology planning, professional development, hardware and support, Internet connectivity and distance learning, usage and instructional support, and budgeting. State definitions for key elements, as well as item-by-item instructions for completing the COT, are provided in the Core Data Manual. [See the COT website to download instructions specific to completing *Screens 30 and 31* – and Word versions of the survey forms.] Examples of some of the key data elements follow:

Education technology standards (*District Census item 2*): Having local, board-approved standards is important because standards define a common agreement on what ought to be taught and learned, provide guidelines for developing curriculum, and guide teacher and student behavior. While the Show-Me Curriculum Standards have technology embedded, and a great many of the districts indicate using the Show-Me technology standards, they are few, broad in scope, and not readily defined. For these reasons, the state ed-tech adopted the National Educational Technology Standards (NETS). The International Society for Technology in Education (ISTE) directed the NETS projects that established specific standards for students, teachers, teacher education programs, and school administrators. The NETS for students itemizes expected student behaviors by grade spans.

Curriculum integration (*District Census item 6*): Curriculum integration is defined as “written curriculum that incorporates content and processes (teaching, professional development, and assessment) related to technology resources, equity of resources, research and workplace-readiness skills. Technology supports overall goals and objectives and makes possible and enhances the use of multiple instructional resources and teaching strategies (e.g., use of project-based learning, collaborative and cooperative learning, ongoing questioning, expert assistance, and critical analysis).”

Integration in instruction: Missouri definitions pertaining to technology integration are based on the NETS and the eMINTS instructional model. Schools teaching from curricula aligned with the state’s definition and/or widely implementing the eMINTS instructional model meet the curriculum and instruction integration requirements. Teachers **fully integrating technology** (*Screen 31 Technology Usage item 4*) are able to use multiple and varied strategies that promote authentic project-based learning opportunities, student teamwork, collaboration, and communication using technology in the classroom curriculum.

Education technology standards and technology curriculum integration provide the underpinnings and guide development of student and educator technology proficiency and appropriate use of education technologies. **8th-grade student technology literacy** (*Screen 30 item 8*) refers to students who are able to use appropriate technologies to communicate, solve problems, and access, manage, integrate, evaluate and create information to improve learning, and acquire lifelong knowledge and skills.

Technology proficient educators (*Screen 31 Training item 1*) possess Intermediate or Advanced skills. An *Intermediate* teacher makes regular use of applications, software, and Internet resources for increased productivity and the use of applications including word-processor for student writing, research on the Internet, computer-generated presentations; an *Advanced* teacher has complete integration and mastery of the technology, using it effortlessly as a tool to accomplish a variety of learning, instructional, and/or management tools. Teachers completing eMINTS or an eMINTS-like professional development would meet the teacher and student technology literacy standards.

Q: “What data are reported to the U.S. Department of Education by the state and/or districts?”

A: The federal *No Child Left Behind Act (NCLB), Title II, Part D* (Ed Tech or EETT) Program established a number of goals for states and districts, as detailed in the box below. State agencies are expected to collect appropriate data from the districts to chart progress toward meeting these goals and to file annual reports to the U.S. Department of Education (ED) through the *EDFacts* data collection system.

NCLB Title II Part D Goals
1. PRIMARY GOAL: The primary goal is to improve student academic achievement through the use of technology in elementary schools and secondary schools.
2. ADDITIONAL GOALS:
(A) To assist every student in crossing the digital divide by ensuring that every student is technologically literate by the time the student finishes the 8th grade, regardless of the student’s race, ethnicity, gender, family income, geographic location, or disability.
(B) To encourage the effective integration of technology resources and systems with teacher training and curriculum development to establish research-based instructional methods that can be widely implemented as best practices by state Educational Agencies and local educational agencies.

Specifically, the Department reports on four *EDFacts* data elements. The table below cross references the *EDFacts elements* and the corresponding COT items.

Data Element	EDFacts	COT
Access – Computer Table	N/X028	Screen 31,Hardware 1
Professional Development – Personnel Skilled in Technology	N/X071	Screen 31 Training 1
Curriculum Integration – Integrated Technology Status	N/X131	Screen 30 Item 6
Technology Literacy – 8th-Grade Technology Literacy *	N/X117	Screen 30 Item 8

** Districts are required to determine technology literacy for each 8th-grade student and report this information via the MOSIS data collection system.*

Q: “Are schools required to ‘assess’ technology literacy skills?”

A: No. Districts have flexibility on how they determine (i.e., assess) tech literacy for students, teachers, and others. Even for 8th-grade student technology literacy, and the *EDFacts / MOSIS* data element that asks for a district's assessment as to whether or not 8th graders are technology literate based on the state's definition of student technology literacy, districts can use a variety of means – there is NO mandate that students must take an "assessment."

Based on conversations with districts, the two most prevalent practices seem to include the use of a technology course and project-based assessments, with the difference being that the first emphasizes technology more as a subject and the second stresses using technology for specific learning activities. Other practices include multiple-choice tests, student surveys, and teacher observation checklists that, while acceptable, may not be as rigorous or reliable.

- **Project or problem-based learning event:** A district has technology embedded in the core content areas and selects the most appropriate course(s) and grade level(s) to ensure students reach "literacy" by the end of 8th grade. Students are required to complete a project that requires the use of technology. The projects/work products are scored using a rubric that looks at a number of 21st century knowledge, skills, and/or abilities, including technology literacy.

- **Exploratory technology class:** The district offers a technology-focused course. This may be a one-semester or two-semester course, and is offered at in the 6th or 7th grade (and repeated if necessary) to ensure students reach "literacy" by the end of 8th grade. All students are required to take the course and a passing grade indicates the student is technology literate. Districts determine the course content* and passing standards.

* *The November 2008 issue of Newline noted Massachusetts's technology content standards that are based on the 2008 NETS for students and address ICT literacy.*

Q: “What if I have questions or need technical assistance – who can I contact?”

A: Instructional Technology staff can help users with questions on how to access and submit the Census, how to navigate through the screens, and how to interpret and respond to specific items. Staff can be reached by telephone at (573) 751-8247, by fax at (573) 522-1134, and/or by email at instrtech@dese.mo.gov.

Q: “What Census items present the most problems to school users or generate the most questions?”

A: The most commonly asked questions deal with how to prorate shared resources and when to use whole numbers or decimals. Examples follow:

How should a school count and report resources that are shared across multiple grade spans or across buildings? *Screen 31 Hardware and Support items* survey computer-based technologies available in the school building by type/age and location, with classroom locations separated into grade spans of preK-2, 3-5, 6-8, 9-12, and area career centers (ACCs). Questions arise when a room serves more than one building and/or multiple grades.

If two or more buildings share a room, such as a library media center, the resources in that room should be prorated so they are not counted twice. A district library that serves both elementary and high school students but has distinct areas for each user group, should be able to determine easily the resources (such as computers) used by elementary versus secondary students. However, in the case of a library (or music, art, or other non-grade specific room) that serves multiple buildings or grade spans without such distinction, that room's resources need to be prorated, by users and proportion of usage. Examples follow:

- A building has a room occupied by students in grades preK-2 for roughly half the time and grades 3-5 the other half would. Split the resources evenly.
- One room serves students in grades 3-5 one hour of the day and serves preK-2 students the rest of the day. In this district, one hour represents one-sixth of the day. Prorate the resources as follows: the building would multiply the available resources (computers) by .17 (the equivalent of 1/6), round that number to the nearest whole number, and enter that number in the cell for grades 3-5 – and enter the remaining number (equal to five-sixths of computers) in the cell for preK-2.
- In a case where the number of resources is too few to divide, enter the resources in the category that “best fits”.

The Screen 31 Internet Connectivity item about bandwidth is another item where sharing resources may be an issue; however, this is treated in a different manner. In a case where a district has a single line (such as T1) that is shared by two or more buildings, each building should report having (T1) access.

When should whole numbers be used; when are decimals appropriate? COT items predominantly require whole numbers. A few items ask about the “percentage” of staff who are at certain technical skill levels, or who routinely use certain technologies for various functions.

Percentage (%): In cases where the percent sign is shown on the form, an appropriate response is a whole number, ranging from 1 through 100, representing 1% to 100%. **Do not include a decimal.** Do not report raw numbers (the actual numbers of teachers), but convert raw numbers into percentages by dividing the actual number of teachers (meeting a certain criterion or using technology in a specific manner) by the total number of teachers. Examples follow:

- Student Technology Literacy (*Screen 30 item 8*): 1.) 80 of 100 students meet the district technology literacy determination. Enter 80 (representing 80 percent of the students). 2.) 60 of 65 students are determined technology literate. Record 92 (representing 92 percent, rounded down from 92.3 percent).
- Teacher Technology Skills (*Screen 31 Training item 1*): 1.) 5 of 20 teachers have Intermediate skills. Enter 25 (representing 25 percent). 2.) 5 of 40 teachers have Advanced skills. Enter 13 (rounding up 12.5 percent).
- Technology Usage (*Screen 31 Usage items 1, 2, 4*): 1.) 5 out of 10 teachers routinely use computers to generate written products. Enter 50 (representing 50 percent of the teachers). 2.) 30 of 45 teachers fully integrate technology in their teaching. Enter 67 (representing 66.7 percent, rounded up to 67).

Full-time Equivalency (FTE). Some COT items ask for counts of the support staff in requested categories reported on an FTE (full-time equivalent) basis. It is not uncommon for a district or school building to have one or more full-time technology-related staff, or have one or more educators who have part-time staff instructional technology *assignments* [an assignment implies specific pay for specific work]. **Full-time staff are represented as whole numbers; part-time staff are represented as decimals** (such as .10, .25, or .50, and so on). Examples follow:

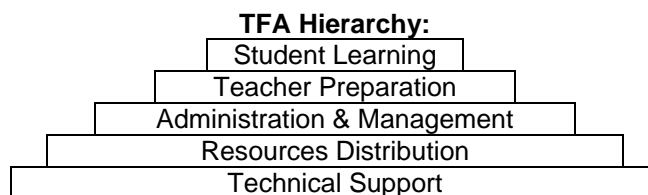
- District Technical Support (*Screen 30 item 3*): 1.) A district employs one full-time tech coordinator. Enter 1.00 FTE. 2.) A district employs three part-time technical staff. Enter 1.50 FTE (three times 0.50).
- Building Technical Support (*Screen 31 Hardware & Support item 1*): 1.) The district tech coordinator also serves as the technician for the K-6 and 7-12 buildings. Each building enters 0.50 FTE. 2.) A district employs 2 staff to specifically provide support for all 6 buildings. Each building records 0.33 FTE (two staff divided by six buildings).
- Building Instructional Tech Support (*Screen 31 Hardware & Support item 1*): 1.) A school building contracts one teacher to provide instructional tech support for other teachers in the building, designating two [of six] blocks of time for such work. Enter 0.33 FTE (representing two of six hours). 2) A district curriculum director is responsible for teachers' technology integration. The curriculum coordinator spends half of his/her time providing instructional technology support, with half of that time spent with building A's teachers. Building A enters 0.25 FTE (one half of one-half FTE).

Q: "How can districts use COT data to improve teaching and learning?"

A: According to recent national surveys, teacher and administrator respondents indicated that, "While computers can be found in virtually every public school in the nation, eight of ten teachers use them for administrative tasks, rather than as classroom instruction tools." Survey findings also indicate more teachers and administrators are using the technology to collect and manage data but aren't taking full advantage of it to enhance student learning. While administrative uses are important, the ultimate goals for using technology are improved teaching and learning.

Missouri educators working on state ed-tech plan committees have had similar views on the role of technology in education. They decided on a hierarchy of goals, known as Technology Focus Areas (TFAs), that when employed adequately, would promote effective use of education technology and guide Missouri's districts in reaching the ultimate goals of high-quality teaching and high student academic performance. Both the COT and the state's criteria for approving district plans are aligned to the TFAs. As such, districts can use COT data to develop district

plans, gauge progress in meeting state and local goals/plans, and compare district findings to statewide averages and “typical” district data.



The **Technical Support** goal establishes the base of the TFA hierarchy. As effective technology use is dependent on adequate technical support, COT items address the kinds and numbers of fulltime-equivalent staff or non-employees who are responsible for the oversight of the district’s technology holdings, training, and usage.

<i>COT Data Element</i>	<i>Screen</i>	<i>Item Number</i>
District technology coordinator/oversight	30	3
Building technical support	31	Hardware & Support 1
Technical maintenance/repair resolution	31	Hardware & Support 5
Computers in working order	31	Hardware & Support 6
Building instructional technology support	31	Technology Usage 3

The next goal involves the **Distribution of Resources** TFA. Users must have access to quality technology hardware and software, and the distribution of these resources should be extensive and equitable. The COT examines the kinds, numbers, and locations of certain technology resources made available in the district and across attendance centers.

<i>COT Data Element</i>	<i>Screen</i>	<i>Item Number</i>
LAN/WAN connectivity	30	5
Email accounts	30	7
E-rate participation and impact	30	10, 11
Access to computers, related technologies	31	Hardware & Support 2-4
Internet connectivity	31	Internet/Distance learning 1
Building computers connected to LAN/WAN	31	Internet/Distance learning 2
Access to distance learning system	31	Internet/Distance learning 3

Administration, Management, and Communications makes up the center of the TFA hierarchy. School users should be networked to one another and to the outside world and have ready access to people, data, and information that promote effective communication, decision-making, and problem-solving. COT items cover district-wide networking, Internet connectivity, electronic mail, and administrative systems.

<i>COT Data Element</i>	<i>Screen</i>	<i>Item Number</i>
Effective long-range technology plan	30	1
Established/adopted technology standards	30	2
District-supported administrative systems	30	4
LAN/WAN connectivity	30	5
Email accounts	30	7
E-rate participation and impact	30	10, 11
Access to computers, related technologies	31	Hardware & Support 2-4
Internet connectivity	31	Internet/Distance learning 1
Building connectivity to district LAN/WAN	31	Internet/Distance learning 2
Access to distance learning system	31	Internet/Distance learning 3
Technology-mediated feedback system	31	Technology Usage 5

The penultimate goal involves **Teacher Preparation**. Teachers need high-quality pre-service education and in-service professional development that focuses on how to use education technology effectively, in ways that advances their own learning and their ability to integrate the technology into curriculum, instruction, and assessment. COT items examine the kinds of technologies and the functions for which technologies are used by building teachers and administrators, and their technology skill levels.

<i>COT Data Element</i>	<i>Screen</i>	<i>Item Number</i>
Building technology plan	31	Planning 1
Educator technology standards	30	2
Administrative system support	30	4
Curriculum integration	30	6
Email accounts	30	7
Professional development	31	Training 1-3
Technical support	31	Hardware & Support 1, 5, 6
Classroom technology	31	Hardware & Support 2-4
Internet connectivity	31	Internet/Distance learning 1
Building connectivity to district LAN/WAN	31	Internet/Distance learning 2
Access to distance learning system	31	Internet/Distance learning 3
Technology usage – online resources	31	Technology Usage 1
Technology usage – productivity	31	Technology Usage 2
Instructional integration support	31	Technology Usage 3
Technology usage – integrated instruction	31	Technology Usage 4
Technology-mediated feedback system	31	Technology Usage 5

The peak of the hierarchy is **Student Learning**. Like teachers, students of the 21st century need to know how to use education technologies effectively, in ways that advance their knowledge and skills and their academic performance. COT items examine the kinds of technologies and the functions for which technologies are used by students and their technology literacy skills.

<i>COT Data Element</i>	<i>Screen</i>	<i>Item Number</i>
Student technology standards	30	2
Curriculum integration	30	6
Email accounts	30	7
Technical support	31	Hardware & Support 1, 5, 6
Classroom technology	31	Hardware & Support 2-4
Internet connectivity	31	Internet/Distance learning 1
Building connectivity to district LAN/WAN	31	Internet/Distance learning 2
Access to distance learning system	31	Internet/Distance learning 3
Technology usage – online resources	31	Technology Usage 1
Technology usage – productivity	31	Technology Usage 2
Instructional integration support	31	Technology Usage 3
Technology usage – integrated instruction	31	Technology Usage 4
Technology-mediated feedback system	31	Technology Usage 5