Colorado Department of Education

Guidelines and Examples for the Implementation of Performance-Based Standards for Colorado Teachers

Standard Seven: Knowledge of Technology

Standard Seven: Knowledge of Technology: The teacher is skilled in technology and is knowledgeable about using technology to support instruction and enhance student learning.

The teacher has demonstrated the ability to:

7.1   Apply technology to the delivery of standards-based instruction.

7.2   Use technology to increase student achievement.

7.3   Utilize technology to manage and communicate information.

7.4   Apply technology to data-driven assessments of learning.

7.5   Instruct students in basic technology skills.

The Guidelines and Examples for Standard Seven were developed by a committee of Colorado educators skilled in the application of technology to classroom instruction. The guidelines provide specificity and resources for teacher preparation programs as they provide opportunities for teacher candidates to develop and demonstrate proficiency in applying technology to student learning. *Teacher candidates are not expected to demonstrate proficiency in each of the sub-points listed in the guidelines, but rather in each standard element, incorporating the sub-points as appropriate.*

Teachers must be skilled in technology applications and knowledgeable about using technology to support instruction and enhance student learning. Upon completion of approved teacher preparation programs at Colorado institutions of higher education, teacher candidates will be able to demonstrate the knowledge and skills in Standard Seven. The mere ability to operate various hardware and software will not constitute an acceptable level of proficiency. It is essential that each new Colorado teacher be able to demonstrate an ability to integrate telecommunications and other technology tools into their standards-based curricula to improve student achievement and provide students with the skills they will need as they further their educational careers and/or enter the workplace. Additionally, all new teachers must be able to use various technologies to improve their teaching skills; communicate with their students and their parents, their colleagues and their communities; and provide themselves with the information they, as teachers, need to collect and analyze student achievement data to improve their teaching practices.

This document identifies essential skills that all Colorado teachers should possess prior to their entry into the teaching profession. Strategies for assessing these skills during and immediately following Colorado teacher preparation programs should be authentic and measurable. They may differ from institution to institution, but the bottom line must be that each teacher candidate must demonstrate the

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ability to effectively use technology tools to improve student achievement. Assessments strategies may include, but will not be limited to, evaluating teacher candidates' ability to: develop mock lessons in their primary content areas which effectively integrate technology for presentation to their peers; design mini-lessons which incorporate technology to be taught to small groups of students; analyze student achievement data using spreadsheets and other electronic tools; and integrate technology into the instruction of students in content specific, standards-based curricula during student teaching and other field experiences.

7.1   The teacher will have demonstrated the ability to apply technology to the delivery of standards-based instruction. He/She will:

    7.1.1   Identify, evaluate and select specific technology tools and resources available at the school and district, such as:
- Computers
- Calculators
- Software
- Peripherals
- World Wide Web-based resources

    7.1.2   Create and implement a plan to manage technology resources, such as:
- Scheduling
- Room arrangement
- Environmental control (sound, lighting, etc)
- Student work centers
- Student demonstrations
- One vs. multi-computer classrooms
- Demonstrations vs. hands-on applications

    7.1.3   Design, deliver and assess standards-based lessons that draw upon current research on teaching and learning with technology and utilize various technologies and resources to meet their instructional needs.

7.2   The teacher will have demonstrated the ability to use technology to increase student achievement. He/She will:

    7.2.1   Use various technology tools to individualize and extend instruction and expand the classroom, using such strategies as:
- Collaborative learning
- Self-directed learning
- Problem solving
- Individualized learning
- Higher order thinking skills
- Distance and distributed learning
- Incorporating information literacy skills as defined in the Colorado Department of Education's Information Literacy Guidelines

7.2.2 Have knowledge of and appropriately select and use a broad range of technology resources and strategies to:
- Adapt instruction to different learning styles.
- Address differences in children's learning and performance;
- Support learning for children with special needs; and
- Support learning for children whose primary language is not English.

7.2.3 Make purposeful use of assistive technologies to enable all students, regardless of special needs, to participate in learning; know when and where to find assistance in helping students with special needs learn.

7.3 The teacher will have demonstrated the ability to utilize technology to manage and communicate information. He/She will:

7.3.1 Have knowledge of and use a variety of information management tools, such as:
- Grade books
- Spreadsheets
- Databases
- Test generators
- Student information management systems

7.3.2 Select and apply appropriate tools for various information management tasks by creating, storing, accessing, distributing, presenting and integrating information.

7.3.3 Have knowledge of and use a variety of communication tools, such as:
- Web pages
- Desktop publishing
- E-mail
- Voice mail
- Presentation software
- Word processing
- Video
- Evolving technologies

7.3.4 Select and apply appropriate tools to communicate information with various audiences, such as:
- Staff members
- Administrators
- Students
- Community members
- Parents

7.4 The teacher will have demonstrated the ability to apply technology to data-driven assessments of learning. He/She will:

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7.4.1 Have knowledge of and select appropriate technologies to access or collect and analyze data on student performance, such as:
- Grade books
- Databases
- Spreadsheets
- Student information management systems

7.4.2 Design technology-based assessment tasks used to collect data on student performance.

7.4.3 Use technology tools to access or collect student achievement data, including:
- State assessments
- District assessments
- Classroom assessments

7.4.4 Use technology tools for analyzing student performance information.

7.4.5 Use technology tools to interpret information, analyze trends, recognize patterns and draw conclusions about classroom performance to improve instructional practice.

7.5 The teacher will have demonstrated the ability to instruct students in basic technology skills. He/She will:

7.5.1 Basic technology skills for students are defined in *National Education Technology Standards for Students: Connecting Curriculum and Technology* (NETS) by the International Society for Technology in Education's (ISTE). The six standards are:
- Basic operations and concepts
- Social, ethical and human issues
- Technology productivity tools technology communications tools
- Technology research tools
- Technology problem-solving and decision-making

7.5.2 All teacher candidates will demonstrate the introductory technology literacy knowledge, skills and concepts described in "Technology Foundation Standards for Students" in NETS as described in 7.5.1.

7.5.3 All teacher candidates will instruct students in basic technology skills by imbedding them in their standards-based, content instruction.