



## LABORATORY AND FIELD EXPERIENCES IN TEXAS SCHOOLS

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The Texas Education Agency Texas Administrative Code (TAC) Title 19, Part II Chapter 112 Required Curriculum, states "The Texas Essential Knowledge and Skills for Science require that as part of the regular instruction in science, students participate in and conduct investigations." In addition to the requirements found in the Texas Essential Knowledge and Skills for science, the State Board of Education defined the percentage of instructional time that is to be used specifically in laboratory instruction: "high school courses shall include at least 40% hands-on laboratory investigations and field work using appropriate scientific inquiry." To access the state law regarding 40% laboratory and field requirements at the high school level visit:

<http://www.tea.state.tx.us/rules/tac/chapter074/ch074a.html#74.3>

### *LABORATORY AND FIELD REQUIREMENT*

#### *Texas Education Code: TEC Section 28.002 Required Curriculum*

- (j) *The State Board of Education by rule may require laboratory instruction in secondary science courses and may require a specific amount or percentage of time in a secondary science course that must be laboratory instruction*

#### *Texas Administrative Code: Chapter 74 Curriculum Requirements Subchapter A Required Curriculum*

##### *(b) Secondary Grades 9-12*

- (2) (C) *science- ....courses shall include at least 40% hands-on laboratory investigations and field work using appropriate scientific inquiry\*.*

*\*passed by the SBOE, April 1996*

Laboratory and field experiences are vital at the elementary, middle, and high school levels. Hands-on experiences help assure student retention of critical knowledge and skills. Examples of science equipment and supplies to be used in teaching science are listed in Texas Essential Knowledge and Skills (TEKS) 4(A) at grades K-8 and can be viewed at:

<http://www.tea.state.tx.us/rules/tac/chapter112/index.html> These TEKS contain the knowledge and skills required for student success on Texas Assessment of Knowledge and Skills (TAKS) Science Assessments given at grades 5, 10 and Exit Level, grade 11. Soon the state will also be testing middle school science at grade 8.

The suggested list of materials, equipment, and supplies for each grade level and science course can be found in Appendix H at:

[http://www.tenet.edu/teks/science/safety/safety\\_manual.html](http://www.tenet.edu/teks/science/safety/safety_manual.html)

While the state of Texas does not specifically define a laboratory or a field experience, it does rely on the carefully delineated definitions by national science groups such as the National Science Teachers Association. You can access definitions by national science groups at:

<http://www.nap.edu/readingroom/books/nses/html/>

Texas teachers have worked to make the national definitions specific to the state regulations and their work lead to the “Texas Safety Standards” publication of January 2000. This publication was commissioned to help Texas educators with laboratory safety issues and to give teachers a handbook that would serve as a guide to laboratory equipment, forms, laws, and specifications. You can access the work done by this group at: [http://www.tenet.edu/teks/science/safety/safety\\_manual.html](http://www.tenet.edu/teks/science/safety/safety_manual.html)

Scientists across the state and nation have noted the growing use of computer generated data collection and investigation. The quality of some computer software and hardware is now an integral part of most science classes. Students enjoy and can gain knowledge from the use of computers in science. It is now permissible to include some level of simulations and computer generated laboratory experiences as science laboratory time. It is important, however, that these simulations, demonstrations, and two dimensional laboratory experiences do not dominate the student experience in science. The very nature of science warrants student manipulation of equipment, earth materials and organisms that engage all of the student’s senses in a way that no computer program can simulate.

It is important for local schools to develop their own policies for types of science activities that will ensure sound science programs suitable to the needs of their own students.