

**2005 TECHNOLOGY EDUCATION  
SPECIFICATIONS FOR THE**

**2006-2007 FLORIDA STATE ADOPTION  
OF INSTRUCTIONAL MATERIALS**

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# Florida Perspective

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## **Florida's A+ Plan for Education**

Florida has created a school improvement and accountability initiative to reform education in its public schools. The goal of this initiative is to raise student achievement to world-class levels. To this end, high-level academic standards, called the Sunshine State Standards, were created delineating expected achievement by all students. Florida's reform effort is based on a commitment to continuous quality improvement in every school across the state. As such, it calls for improvement teams in schools to articulate a fundamentally new direction for instruction and to re-examine the ways in which the day-to-day business of schools is conducted.

Education reform is about developing the capacity at the local level to identify and solve problems related to raising student achievement. Raising student achievement requires both (1) raising expectations through high academic standards grounded in a foundation of reading, writing, mathematics, and science applied in real world contexts; and (2) improving the environment for effective teaching and learning based on current research about how people learn.

## **Priorities for Reading in the Content Area**

All instructional materials programs submitted for adoption consideration must integrate with other areas of instruction by supporting the notion that students in grades K-2 are learning to read, and in grades 3-12 are reading to learn. Throughout each of these grade levels, student vocabulary development, cognitive reasoning, and reading acquisition are not yet fully developed. Additionally, reading is a complex process and highly utilized in content area assignments. Therefore, all submissions must integrate and carefully scaffold reading and literacy instruction to directly align with the corresponding text within each lesson. Both reading and writing instruction and assignments must interface with all content area instruction. Just as reading is a tool for learning and evaluation, writing must also be integrated into any submission, as must mathematics, science, music, and the arts.

Since student use of both text materials and the reading process are expected, the instructional materials must systematically include both content and processes for reading within each of the three instructional stages related to text: the pre-reading, during reading, and post-reading stage of a lesson. In the pre-reading lesson, the instructional materials must provide word exercises and practice that directly align with those words that students will see in the subsequent text passages. To adequately prepare students for learning, reading, and comprehending content area vocabulary, the pre-reading exercises must carefully scaffold prior and new knowledge in at least each of the following:

- Structural analysis of content area words
- Morphological approach to vocabulary development
- Explicit and systematic instruction of content area vocabulary
- Content area word mapping
- Meaningful dialogue and writing with new content area vocabulary

Following the pre-reading stage of a lesson, the instructional materials must provide teacher guidance to intersperse questioning techniques and strategies that follow concepts throughout the text passages. Since research indicates that inappropriate or inadequate chunking of text hinders student reading comprehension, the manner in which a teacher interacts with both the student and text during the reading process to construct meaning is extremely important. Therefore, the proposal must include such research-based practices as reciprocal teaching and questioning-the-author to effectively assist the teacher in dialogue that precipitates student construction of meaning.

By the conclusion of a content area lesson, students have been introduced to new word pronunciations and meanings, and they have read these same words in context of the content area passage to construct meaning. As the teacher interacts with both the student and text in meaningful dialogue, what once was a new word begins to evolve into a concept. In order to further clarify and refine this newly developed knowledge, both the content and processes of the post-reading stage of the lesson must align with that of the previous two stages. Without limitation, the post-reading portion of the lesson must provide additional opportunities for students to use what has been introduced in the pre-reading and during text reading stages of the lesson. Post-reading exercises can include the following:

- Graphic organizers such as Venn diagrams
- Semantic feature analysis
- Timeline projects
- Meaningful written responses to reading
- Ideas and available resources for extended reading
- Cooperative projects for further research and investigation
- Technology-based presentations

Development of specific literacy skills requires explicit and systematic instruction in vocabulary and cognitive skills. Since the rate of reading development varies significantly between students at all grade levels, all submissions must accommodate variance in students' independent and instructional reading levels with the inclusion of differentiated instruction as part of the instructional plan. Ample opportunities for student practice of integrating new with prior knowledge are essential to the learning process.

Explicit instruction includes successful modeling of the following reading and thinking skills:

- Listening skills (listening for meaning)
- Vocabulary
- Comprehension
- Questioning strategies and techniques for meaningful student-teacher dialogue
- with text
- Prediction
- Main idea
- Details
- Sequence
- Causal relationships
- Comparison
- Conclusions
- Reasoning strategies including deductive search strategies and use of reference materials
- Strategies for writing in response to reading
- Reading for information and pleasure

Brief, frequent practice activities and games must be provided through careful scaffolding to procure mastery of each of the processes and skills listed above. Activities must include alternatives for students with disparity in abilities and backgrounds, providing teachers with variation to teach all students the required skills and content. Practice opportunities must reinforce and develop the following student abilities:

- Reading of passages
- Building schemata
- Questioning techniques
- Predicting events/effects within text
- Locating evidence/details within a passage
- Clarifying
- Summarizing
- Comparing
- Inductive thinking
- Deductive thinking
- Analysis
- Abstracting
- Drawing conclusions

## **Florida's Continuous Improvement Model (FCIM)**

Improving student achievement and ensuring that our children receive a quality education are the top priorities of the state of Florida. Our goal is that each student will gain a year's worth of knowledge in a year's time in a Florida public school and that no student will be left behind. It is the intent of the Department of Education to provide the necessary resources to our schools so that these priorities will become a reality. The publishing industry, our partner in education, plays a vital role in this effort. Instructional materials that are research-based and correlated not only to Florida's Sunshine State Standards, but also to the strategies involved in continuous improvement are a necessary component provided by the publishing industry.

The following steps of continuous improvement are being implemented in Florida's schools.

- Disaggregate Student Performance Data
- Develop Timeline and Instructional Focus Calendar based on highest needs of students
- Deliver Focused (FCAT-assessed) Benchmark Lessons
- Administer Mini-Assessments of Focus Benchmarks
- Provide Tutorials for Non-Mastery Students
- Provide Enrichments for Mastery Students
- Monitor Instructional Delivery
- Maintain Efficacy of the Process

Florida's schools must initially disaggregate their student data using a variety of available sources – and examine the data by school, by subject, by classroom and ultimately by individual student.

Once the school has examined all available data and ranked FCAT-assessed standard/benchmark performance from weakest to strongest, an Instructional Focus Calendar is developed by school staff with specific timeframes.

### Focused Benchmark Lessons

In order for our schools to effectively implement the Instructional Focus Calendar, staff must have available high quality Focus Benchmark Lessons to target instruction on the identified weak benchmarks. Publishers submitting programs for adoption consideration are encouraged to develop Focus Benchmark Lessons and Activities as part of a comprehensive instructional program. Required Correlations Charts must reflect locations and/or page numbers where specific Focus Benchmark Lessons and Activities can be found.

### Mini-Assessments

Mini-Assessments must not be confused with standard assessment protocols such as FCAT. Mini-Assessments of three to five questions should be designed and aligned to Focus Benchmark Lessons to obtain immediate feedback on instruction. Ease of use and administration is essential.

The Publisher's Correlation Chart will also reflect precise locations for their integrated Mini-Assessments.

### Tutorials

Publishers are encouraged to develop and include Tutorials for those students who show non-mastery of the Benchmarks based upon the Mini- Assessments. Research in quality instructional design clearly indicates that re-teaching methods must reflect differentiated approaches. If a student has not mastered content using prior delivery or teaching methods, then different approaches must be engaged. Publishers are encouraged to include effective and creative Tutorials for a variety of different learning modalities. Again, each Publisher's Correlation Chart will reflect precise locations for access to Benchmark-based Tutorials.

### Enrichments

Enrichment Activities must be included for students who have mastered the benchmarks and require more challenging work. Just as Tutorials reflect an array of instructional strategies, Enrichments must address the needs of different learning styles and actively engage students in the learning process.

### Required Correlations

An expectation of continuous improvement is that no matter the subject area, focused lessons on FCAT-assessed benchmarks in reading and math will be taught when and where appropriate. Therefore, publishers are asked to correlate instructional materials of any subject-area to the reading and math FCAT-assessed benchmarks when appropriate and possible.

### Professional Development

Teachers must be provided professional development opportunities when student tutorials are not effective. These opportunities are delivered via chat rooms, streaming video of master teachers, on-line professional development, or training from publisher consultants.

## **Universal Design for Curriculum Access**

Because Florida will not have a separate call for special education students, publishers who submit material for consideration will be required to incorporate strategies, materials, activities, etc. that consider the special needs of these students. In providing for students with special needs, Florida evaluators will be guided by the research reported in the document *Universal Design for Curriculum Access*. The following Web sites can be accessed for detailed information on this research:

<http://www.trace.wisc.edu/>

<http://www.cast.org>

<http://www.uoregon.edu/~ncite/>

Although Florida is not having a separate call for ESE, that is not to say that all materials will be equally suitable for all children. Florida's State Adoption Committees may, as always, identify some submissions as "especially suitable" for a particular group of students. Some groups may

be reading below grade level or above grade level, may include reluctant readers or may have disabilities. Committee comments appear with adopted titles in the Florida Catalog of Adopted Materials and serve as a guide for teachers and/or administrators in search of materials. Each State Adoption Committee has at least one member, though usually more than one, who is or has been a certified teacher of ESE students.

### Accommodations and Modifications

The following summary of information from the Department of Education guide *Accommodations: Assisting Students with Disabilities* (2003) is of help in addressing the ways that materials may be developed or changed to meet the needs of students of varied abilities:

*Accommodations* are changes that can be made in HOW students learn. Accommodations are really “whatever it takes” to assure students with disabilities the opportunity to participate as fully as possible in the general curriculum and ultimately earn a diploma.

Accommodations:

- do not lessen achievement expectations.
- are a wide range of techniques and support systems that help students with disabilities work around any limitations that result from their disability.  
Examples include Braille textbooks or books on tape.
- may be needed by one student but frequently can benefit many or most students in a classroom.
- should be enabling, necessary, and used congruently for both instruction and assessment

Accommodations may be provided in five general areas:

- Instructional methods and materials
- Assignments and classroom assessments
- Time demands and scheduling
- Learning environment
- Use of special communication systems

Specific suggestions for accommodations in instructional materials and methods based on area of need are found in Chapter 3: What Can You Change.

*Modifications*, on the other hand, are changes that can be made to WHAT students are expected to learn. They are used primarily for students who cannot meet the Sunshine State Standards for their grade level and require a modified curriculum. Modifications change the goals and expectations for students.

Modifications may include:

- partial completion of program or course requirements
- curriculum expectations below age or grade level
- alternate assessment criteria
- alternate curricular goals



# Florida's Vision for Technology Education

*All Floridians will possess the knowledge, skills, attitudes, and abilities to become technologically literate.*

The Florida Curriculum Frameworks for Technology Education are based on the national standards: *Standards for Technological Literacy: Content for the Study of Technology* as well as the Florida *Sunshine State Standards*. The national standards promote technological literacy for all students in kindergarten through grade twelve. Technological literacy is defined as the ability to use, manage, understand, and assess technology. This can be accomplished through a series of technological experiences that build upon a student's development within the following areas:

- The Nature of Technology: how students modify the world around them to meet their needs and wants.
- Technology and Society: how the use of technology affects society and the environment, as well as how society influences the development of technology, and how technology has changed and evolved over the course of human history.
- Design: how students develop solutions to a problem, while considering criteria and constraints, aesthetics, applicability, and feasibility of the solution.
- Abilities for a Technological World: the development of abilities to use the design process, using and maintaining technological products and systems, and assessing products and systems.
- The Designed World: understanding how resources – materials, tools and machines, people, information, energy, capital, and time – are processed to become usable products.

Broadly speaking, technology is how people modify the natural world to suit their own purposes. Technology Education is a study of technology which provides an opportunity for students to learn about the processes and knowledge related to technology that are needed to solve problems and extend human potential.

Technology Education is concerned with the broad spectrum of technology which encompasses, but is not limited to such areas as: design-making, problem solving, technological systems, resources and materials, criteria and constraints, processes, controls, optimization and trade-offs, invention, and many other human topics dealing with human innovation. Technology Education in Florida encompasses those technological areas that are vital to the state's economic development and support its educational mission, while providing a sound foundation of technological literacy to make informed career choices about emerging opportunities that may not yet exist.

Rapid advances in technology are forcing changes in educational content and methodology and are pointing out the necessity for preparing students who need to be technologically literate and ready for the future. We are in the midst of a technology explosion that will continue into the

22nd century. It is altering our lifestyle and our work style. Citizens of Florida must understand technology as an integral part of our everyday lives. That is why teaching about technology and its impact on all of us is of vital importance at all grade levels in our schools. It is a fundamental area of study for all persons, regardless of educational or career goal.

Technology Education is responding to the realities of a new age that requires students to be prepared with universally transferable technological skills for life and success in a modern world. It is an educational program that teaches students how to survive in a modern world. It is an educational program that teaches students how to survive in an economy that needs, uses, and rewards an array of human talents much wider than the narrower academic and occupational skills that are traditionally taught. Technology Education provides a setting to strategically teach essential skills. It is a logical link in the educational process that treats both academic and vocational skills in a theoretical and applied way. Students are provided optimum experiences, both abstract and concrete, through the applied study of technological tools, materials, systems, and processes. This is a type of learning that allows students to make sense out of their world and provides the correct balance of depth and breadth to enable them to deal with a world of boundless change and complexity. Students in Technology Education learn to apply problem-solving skills to the solution of community, industry, life problems, and technological issues facing Florida. They develop an attitude that learning is a lifelong process. They recognize the consequences of technology on the individual and society. The end result is a new educational essential called technological literacy. It not only enables our youth to be technologically informed, but also to have technological understanding. It enables our youth to be technologically wise, as well as technologically smart.

The program of Technology Education is organized around, but not limited to, the technological categories of drafting, electronics, communications, construction, production, power, transportation, aerospace, engineering, and supporting content areas. Applied learning activities are conducted in a laboratory setting using hands-on experiences with technological tools, machines, instruments, materials, processes, and systems.

Consistent with individual abilities, interests, and needs, the Technology Education student will:

1. Establish knowledge of and appreciation for the importance of technology.
2. Apply technological tools, machines, instruments, materials, processes, and systems safely and effectively.
3. Develop the skills, creative abilities, positive self-concepts, and individual capabilities to use a variety of technologies.
4. Develop problem-solving and decision-making abilities using technical means.
5. Apply other school subjects appropriate to technology content, instruction, and laboratory activities.
6. Uncover and develop individual talents and interests.
7. Become a wiser consumer.
8. Develop a positive attitude toward lifelong learning.

9. Demonstrate positive human relations, leadership skills, organizational abilities, and technological literacy through participation in the Florida Technology Student Association (FL-TSA).
10. Become confident in their technological abilities.
11. Explore and become aware of various career choices and options in our technological world.
12. Develop competencies to adapt to living in a changing world and a strong foundation for advancement to post-secondary education in a technological field.

It is essential to understand that a quality program incorporates opportunities for application of mathematical and scientific concepts in the solutions to problems. In addition, the curriculum frameworks are correlated with the Sunshine State Standards in Mathematics, Science, Language Arts, and Social Studies to ensure the academic relevance of the content being covered.

Instructional materials for Technology Education should be based upon accepted principles of learning and be consistent with current and confirmed research in Technology Education. Proposed activities, procedures, examples, and strategies should be supported by what is known about learners' physical, emotional, and intellectual development. It is vital that the materials include provisions for varied learning styles and cultural experiences. Where appropriate, teacher's materials should reference specific research to assist the instructor in making informed choices.

A balanced program is one that contains a variety of instructional activities to support comprehensive learning in technology. While most Technology Education instruction begins with research and design, the materials should also foster creative thinking, technological processes, construction, analysis and evaluation, cultural and historical connections, and real life connections. In addition, Florida State Law requires that Career and Technical Student Organizations (CTSO) shall be an integral part of the vocational instructional program. The Florida Technology Student Association is the appropriate CTSO for providing leadership training experiences and reinforcing specific academic and vocational skills within Technology Education.

Instructional materials must be authentic to all academic disciplines and support and reinforce Florida's *Technology Education Curriculum Frameworks* and support and reinforce Florida's *Sunshine State Standards* and *Grade Level Expectations* in other subject areas. Research emphasizes the importance of connecting classroom learning to real-life situations. It is vital that the connections are relevant to students' lives and maintain the integrity of all subject areas addressed. In addition, the submitted materials, whenever feasible, should reflect and support content area standards in other subject areas.

The materials should include assessment materials that identify groups as well as individual learning and progress and suggest strategies for remediation and extension. They should be developmentally appropriate and lend themselves to assessing what students should know and be able to do as they develop their proficiency in various areas of Technology Education.

Parents, business, industry, government, the military, and community organizations are demanding better performance from all learners. Today's students must learn how to think, make decisions, work on teams, and continue to learn, as well as read, write, and follow directions. Youth and adults entering or reentering the workplace must be equipped with necessary skills for the workplace. Education must enable children to become independent and successful in their future life and career goals.

# Florida's Call for Publisher Submissions for the 2006 Technology Education Adoption

*Florida will accept for consideration Technology Education materials configured as follows:*

## **Grades 6-9**

### **8600000 Integrated Technology Studies**

- 8600010 Introduction to Technology
- 8600020 Exploring Technology
- 8600030 Exploration of Communications Technology
- 8600040 Exploration of Production Technology
- 8600050 Exploration of Aerospace Technology
- 8600250 Exploration of Power & Energy Technology
- 8600240 Exploration of Transportation Technology

## **Grades 9-12**

### **8600400 Technology Systems**

- 8600410 Communication systems
- 8600420 Power and Transportation Systems
- 8600430 Production Systems
- 8600440 Drafting and Design
- 8600450 Electronics Systems
- 8600460 Engineering Systems
- 8600470 Applied Technology Systems
- 8600480 Home Technology Systems

### **8600080 Aerospace Technologies**

- 8600580 Aerospace Technologies I
- 8600680 Aerospace Technologies II
- 8601780 Aerospace Technologies III

### **8601000 Communications Technology**

- 8601010 Communications Technology I
- 8601020 Communications Technology II
- 8601030 Communications Technology III

### **8600700 Construction Technology**

- 8600710 Construction Technology I
- 8600720 Construction Technology II
- 8600730 Construction Technology III

**8600800 Drafting/Illustrative Design Technology**

- 8600810 Drafting/Illustrative Design Technology I
- 8600820 Drafting/Illustrative Design Technology II
- 8600830 Drafting/Illustrative Design Technology III

**8600900 Electronics Technology**

- 8600910 Electronics Technology I
- 8600920 Electronics Technology II
- 8600930 Electronics Technology III

**8607000 Engineering Technology**

- 8600570 Engineering Technology I
- 8600670 Engineering Technology II
- 8601770 Engineering Technology III

**8601100 Materials and Processes Technology**

- 8601110 Materials and Processes Technology I
- 8601120 Materials and Processes Technology II
- 8601130 Materials and Processes Technology III

**8601300 Power and Energy Technology**

- 8601310 Power and Energy Technology I
- 8601320 Power and Energy Technology II
- 8601330 Power and Energy Technology III

**8604000 Production Technology**

- 8600540 Production Technology I
- 8600640 Production Technology II
- 8601740 Production Technology III

**8601200 Transportation Technology**

- 8601210 Transportation Technology I
- 8601220 Transportation Technology II
- 8601230 Transportation Technology III

**8600100 Technology Studies**

- 8600510 Technology Studies I
- 8600610 Technology Studies II
- 8601710 Technology Studies III

## **General Description for Publishers' Submissions**

All Technology Education instructional materials should foster an understanding of the development of technology, the design process, terminology, career opportunities, and connections with other curricular areas. Submissions should include any related materials that can enhance the classroom experience, such as age-appropriate graphics, media, and software.

The materials should include activities to promote interaction among students and be designed to include both classroom and laboratory activities, with emphasis placed on hands-on, problem solving, design activities and experiences.

The instructional materials must address, but not be limited to, the intended outcomes of Florida's *Technology Education Curriculum Frameworks* and student performance standards contained therein for each of the specific courses. These will be found at [http://www.myfloridaeducation.com/dwdframe/0506/te/te\\_frame05.htm](http://www.myfloridaeducation.com/dwdframe/0506/te/te_frame05.htm).

### **Florida will accept submissions from publishers for individual courses in the following technology education programs:**

#### **Integrated Technology Studies, Grades 6-9**

The purpose of this program is to provide students with a foundation of knowledge and technically oriented experiences in the study of the applications of technology and its effect upon our lives and the choosing of an occupation. The content and activities will also include the study of entrepreneurship, safety, and leadership skills. This program focuses on transferable skills and stresses understanding and demonstration of the technological tools, machines, instruments, materials, processes and systems in business and industry.

The emphasis of this program is on developing awareness of future needs, developing technological competence, confidence and awareness through interaction with technologies, developing awareness of other vocational programs, interacting with business, industry and community organizations, applying basic skills in learning activities, and developing self-awareness of individual abilities, needs and interests. The courses are intended to help students develop their problem-solving skills and creativity while learning about technology and careers. Students will learn to gather data through research and testing, as well as to record the results of their laboratory experiments.

## **Technology Systems, Grades 9-12**

The purpose of this program is to provide students with a foundation of knowledge and technically oriented experiences in the study of the applications of technology and its effect upon our lives and the choosing of an occupation. Students will be introduced to the concepts that underlie technological systems and the influence of technological systems at home, school, and the world of work. This program focuses on transferable skills and stresses understanding and demonstration of the technological tools, machines, instruments, materials, processes and systems in business and industry.

## **Aerospace Technologies, Grades 9-12**

The purpose of this program is to provide students with a foundation of knowledge and technically oriented experiences in the study of Aerospace Technologies, its effect upon our lives, and the choosing of an occupation. The content and activities will also include the study of safety and leadership skills. This program focuses on transferable skills and stresses understanding and demonstration of the technological tools, machines, instruments, materials, processes and systems in business and industry.

Aerospace Technology represents the current and expanding aeronautical and aerospace technologies. The content includes, but is not limited to a study of the processes, uses, and technical skills found in aerospace technologies including and understanding of the concepts of flight and the technologies that enable space exploration.

## **Communications Technology, Grades 9-12**

The purpose of this program is to provide students with a foundation of knowledge and technically oriented experiences in the study of communications technology. This program focuses on transferable skills and stresses understanding and demonstration of the technological tools, machines, instruments, materials, processes and systems in business and industry.

Communications Technology represents the current and expanding digital technology. The content includes, but is not limited to a study of the processes, uses, and technical skills found in visual technologies (both conventional and digital procedures), multimedia production, computer animation and graphics, web page design, electronic media and other new and emerging technologies.

## **Construction Technology, Grades 9-12**

The purpose of this program is to provide students with a foundation of knowledge and technically oriented experiences in the study of construction technology. This program focuses on transferable skills and stresses understanding and demonstration of the technological tools, machines, instruments, materials, processes and systems in business and industry.

The content includes, but is not limited to, a study of the tools, materials, processes, and technical skills of construction technology. The content and activities will also include the study of entrepreneurship, safety, and leadership skills.



### **Drafting/Illustrative Design Technology, Grades 9-12**

The purpose of this program is to provide students with a foundation of knowledge and technically oriented experiences in the study of drafting and design technology. This program focuses on transferable skills and stresses understanding and demonstration of the technological tools, machines, instruments, materials, processes and systems in business and industry.

The content includes, but is not limited to, a study of the purposes, instruments, processes, and technical skills of drafting technology, including technical drawing, mechanical design, architectural design, three-dimensional modeling, and engineering. The content and activities will also include the study of entrepreneurship, safety, and leadership skills.

### **Electronics Technology, Grades 9-12**

The purpose of this program is to provide students with a foundation of knowledge and technically oriented experiences in the study of electronics technology. This program focuses on transferable skills and stresses understanding and demonstration of the technological tools, machines, instruments, materials, processes and systems in business and industry.

The content includes, but is not limited to, the theory, use, and technical application of electronics technology. The content and activities will also include the study of entrepreneurship, safety, and leadership skills.

### **Engineering Technology, Grades 9-12**

The purpose of this program is to provide students with a foundation of knowledge and technically oriented experiences in the study of the applications of engineering and its effect upon our lives and the choosing of an occupation. The content and activities will also include the study of entrepreneurship, safety, and leadership skills. This program focuses on transferable skills and stresses understanding and demonstration of the technological tools, machines, instruments, materials, processes and systems in business and industry.

The content includes, but is not limited to, a study of the engineering design concepts involved in a variety of technical fields, and understanding of the career opportunities in engineering and engineering technology, and the scientific and mathematical application of concepts to solve engineering problems.

### **Materials and Processes Technology, Grades 9-12**

The purpose of this program is to provide students with a foundation of knowledge and technically oriented experiences in the study of the technology of materials and processes. This program focuses on transferable skills and stresses understanding and demonstration of the technological tools, machines, instruments, materials, processes and systems in business and industry.

The content includes, but is not limited to, a study of the pre-processing, processing, and post-processing of wood, metal, plastic, composites, and other materials. The content and activities will also include the study of entrepreneurship, safety, and leadership skills.

### **Power and Energy Technology, Grades 9-12**

The purpose of this program is to provide students with a foundation of knowledge and technically oriented experiences in the study of power and energy technology. This program focuses on transferable skills and stresses understanding and demonstration of the technological tools, machines, instruments, materials, processes and systems in business and industry.

The content includes, but is not limited to, a study of power systems and the types and sources, uses, and impacts of energy. The content and activities will also include the study of entrepreneurship, safety, and leadership skills.

### **Production Technology, Grades 9-12**

The purpose of this program is to provide students with a foundation of knowledge and technically oriented experiences in the study of production technology and its effect upon our lives and the choosing of an occupation.

This program focuses on transferable skills and stresses understanding and demonstration of the technological tools, machines, instruments, materials, processes and systems in manufacturing business and industry. The content and activities will also include the study of entrepreneurship, safety, and leadership skills.

### **Transportation Technology, Grades 9-12**

The purpose of this program is to provide students with a foundation of knowledge and technically oriented experiences in the study of transportation technology. This program focuses on transferable skills and stresses understanding and demonstration of the technological tools, machines, instruments, materials, processes and systems in business and industry.

The content includes, but is not limited to, a study of transportation modes, systems and subsystems and their impacts on society. The content and activities will also include the study of entrepreneurship, safety, and leadership skills.

## **Technology Studies, Grades 9-12**

The purpose of this program is to provide students with a foundation of knowledge and technically oriented experiences in the study of the applications of technology and its effect upon our lives and the choosing of an occupation. The content and activities will also include the study of entrepreneurship, safety, and leadership skills. This program focuses on transferable skills and stresses understanding and demonstration of the technological tools, machines, instruments, materials, processes and systems in business and industry.

Again, publishers will find the standards for each of these courses at [http://www.myfloridaeducation.com/dwdframe/0506/te/te\\_frame05.htm](http://www.myfloridaeducation.com/dwdframe/0506/te/te_frame05.htm).

# Major Priorities for Instructional Materials

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## Content, Presentation, Learning

The priorities as described in this specification document were developed from research findings about what makes instructional materials effective. These priorities have undergone review by individuals who have served on state and district committees, by curriculum specialists, by instructional designers, by evaluation specialists, and by administrators of the statewide adoption system.

Instructional materials must be effective in three major priority areas: content, presentation, and learning. The following sections describe essential features for each of these priority areas. These features generally apply to all formats of instructional materials, whether print or other media/multiple media formats.

## Content

Some features of content coverage have received progressively more attention over the past decade. These features include:

- A. ALIGNMENT WITH CURRICULUM REQUIREMENTS**
- B. LEVEL OF TREATMENT OF CONTENT**
- C. EXPERTISE FOR CONTENT DEVELOPMENT**
- D. ACCURACY OF CONTENT**
- E. RELEVANCE OF CONTENT**
- F. AUTHENTICITY OF CONTENT**
- G. MULTICULTURAL REPRESENTATION**
- H. HUMANITY AND COMPASSION**

**The following sections describe the content features expected for each of these priority areas.**

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## **A. ALIGNMENT WITH CURRICULUM REQUIREMENTS**

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**Content must align with the state’s standards for the subject, grade level, and learning outcomes. See Florida Statutes 1006.34(2)(b); 1006.38; 1006.31; 1006.42**

The instructional materials content must include and be aligned with the Curriculum Frameworks for Technology Education. Specific courses within the program areas are found within the program frameworks.

The Curriculum Frameworks for Technology Education are arranged by program area. Each program contains specific courses and student performance standards appropriate for each course that are more specific and not prescriptive. The Curriculum Frameworks are approved by the State Board of Education, and according to Florida statute, the instruction of these standards must be implemented and provided by Florida’s public school districts. These standards can be accessed at the Department of Education web site at

[http://www.myfloridaeducation.com/dwdframe/0506/te/te\\_frame05.htm](http://www.myfloridaeducation.com/dwdframe/0506/te/te_frame05.htm)

**Correlations.** Publishers are expected to provide correlation reports in the provided form to show exactly where and to what extent (mentioned or in-depth) the instructional materials cover each required student performance standard within the Curriculum Frameworks for Technology Education. Publishers will want to correlate instructional materials of any subject-area to the reading and math FCAT-assessed benchmarks when appropriate and possible.

**Scope.** The content should address Florida’s required curriculum standards for the subject, grade level, and learning outcomes, including thinking and learning skills.

**Completeness.** The content of the major tool should be complete enough to stand on its own. To be useful for classroom instruction, instructional materials must be adaptable to the instructional goals and course outlines for individual school districts, as well as the state standards. Content should have no major omissions in the required content coverage. They may include concepts and topics that enrich and extend technological literacy but should be free of unrelated facts and information that would detract from achievement of Florida’s specified Curriculum Frameworks for Technology Education.

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## **B. LEVEL OF TREATMENT OF CONTENT**

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**The level of complexity or difficulty of content must be appropriate for the standards, student abilities and grade level, and time periods allowed for teaching.**

**See Florida Statutes 1006.31(4)(e); 1006.34(2)(a); 1006.34(2)(b)**

**Objectives.** Content should be simple, complex, technical, or nontechnical enough for the intended objectives.

**Students.** Content should be developmentally appropriate for the age and maturity level of the intended students. It should contain sufficient details for students to understand the significance of the information presented and to engage in reflection and discussion.

**Time.** The level of complexity or difficulty of content also should allow for its coverage during the time periods available for teaching the subject.

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### **C. EXPERTISE FOR CONTENT DEVELOPMENT**

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**Expertise in the content area and in education of the intended students must be reflected in the authors, reviewers, and sources that contributed to the development of the materials.**

**See Florida Statutes 1006.38(15)**

**Authorship.** The authors, consultants, and reviewers must have actually contributed to the development of the instructional materials and should have credentials that reflect expertise in the subject area, course, course category, grade level, pedagogy, education, teaching, or classroom instruction. Qualifications may include expertise in educational psychology or instructional design.

**Sources.** Primary and secondary sources should reflect expert information for the subject, such as relevant data from research journals, and other recognized scientific sources. The type of sources considered appropriate will vary with the particular subject area.

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### **D. ACCURACY OF CONTENT**

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**Content must be accurate in historical context and contemporary facts and concepts. See Florida Statutes 1006.38; 1006.31(4)(e)**

**Objectivity.** Content that is included in the materials should accurately represent the domain of knowledge and events. It should be factual and objective. It should be free of mistakes, errors, inconsistencies, contradictions within itself, and biases of interpretation. It should be free of the biased selection of information. Materials should distinguish between facts and possible interpretations or opinions expressed about factual information. Visuals or other elements of instruction should contribute to the accuracy of text or narrative.

**Representativeness.** The selection of content should not misrepresent the domain of knowledge and events. It should include the generally accepted and prevalent theories, major concepts, laws, standards, and models used within the discipline of the subject area.

**Correctness.** Presentation of content should be free of typographical and visual errors. It should include correct grammar, spelling, linguistics, terminology, definitions, descriptions, visuals, graphs, sounds, videos, and all other components of the instructional materials.

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### **E. RELEVANCE OF CONTENT**

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**Content must be up-to-date for the academic discipline and the context in which the content is presented. See Florida Statutes 1006.37(1)(e); 1006.38**

**Dates or editions.** Copyright dates for photographs and other materials and editions should suggest sufficient currentness of content. Copyright dates and editions serve as indicators about currentness. However, neither the copyright date nor the edition guarantees currentness. Subsequent editions should reflect more up-to-date information than earlier editions.

Informed examination of the text, narrative, and visuals contained in the materials provides the most direct information about currentness of the materials.

**Context.** Text or narrative, visuals, photographs, and other features should reflect the time periods appropriate for the objectives and the intended learners.

- Sometimes context should be current. For example, a photograph used to show stages of human growth and development will be more relevant when the clothing, hairstyles, and activities reflect present-day styles.
- Sometimes context should be historical. For example, illustrations and photographs of historical events should reflect the historical time period.
- Sometimes context should be both current and historical. For example, historic images alongside modern ones would convey changes in styles over time.
- At all times the context should be relevant to the learner, to the Curriculum Frameworks for Technology Education, and to the concept presented.

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## F. AUTHENTICITY OF CONTENT

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**Content should include problem-centered connections to life in a context that is meaningful to students. See Florida Statutes 1006.31(e); 1006.31(4)(b); 1003.42**

**Life connections.** Instructional materials should include connections to the student’s life situations in order to make the content meaningful. Students might be expected to deal with time constraints, consider risks and trade-offs in decision-making, and work with teams. Connections may be made to situations of daily home life, careers, vocation, community events and services, and leisure or recreation.

**Interdisciplinary treatment.** Instructional materials also should include interdisciplinary connections in order to make content meaningful. Examples of situations that connect a variety of subject areas include building projects, playing sports, retrieving information or objects, balancing budgets, creating products, and researching information. In addition to subject area connections, instructional materials should connect the course or course category to other disciplines.

Examples of approaches to interdisciplinary connections include:

- explanations and activities for using skills and knowledge from other academic disciplines
- assignments that require students to relate learning from other disciplines rather than to isolate knowledge or skills
- the focus on common themes across several subject areas (infusion, parallel, transdisciplinary, or multidisciplinary instruction)

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## G. MULTICULTURAL REPRESENTATION

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**Portrayal of gender, ethnicity, age, work situations, and various social groups must include multicultural fairness and advocacy. See Florida Statutes 1003.42; 1006.31(4)(a); 1006.341**

**Multicultural fairness.** Through balanced representation of cultures and groups in multiple settings, occupations, careers, and lifestyles, the materials should support equal opportunity without regard for age, color, gender, disability, national origin, race, or religion. It is not the number of pages devoted to diversity, equity, or work roles, but the substance of what is stated and portrayed that matters most. For this reason, it can be misleading to count the number of pages or illustrations devoted to a social issue or group. It is more important to focus on the integration of social diversity throughout a set of instructional materials.

In addition to balanced representations, the portrayal of individuals and situations must exclude biases and stereotypes. These portrayals must promote an understanding and appreciation of the importance and contributions of diverse cultures and heritage.

**Multicultural advocacy.** The understanding and appreciation of multiple cultures extends beyond fair representation. It involves embracing a multicultural context, not just through pictures, but through information about ways to honor differences and deal with conflicts, promote a positive self-image for members of all groups, and provide for the development of healthy attitudes and values.

Effective treatment of multicultural issues requires consideration of the age and ability levels of students and whether or not it is appropriate to include multicultural issues in the study of a particular topic, such as the memorization of a formula or equation. Overall, however, materials should reflect both multicultural fairness and advocacy.

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## H. HUMANITY AND COMPASSION

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**Portrayal of the appropriate care and treatment of people and animals must include compassion, sympathy, and consideration of their needs and values and exclude hard-core pornography and inhumane treatment. See Florida Statutes 1003.42; 1006.31(4)©; 1006.34(2)(b)**

**Inclusion of compassion.** When providing examples in narrative or visuals, materials sometimes depict the care and treatment of people and animals. Generally, this means showing in some way a measure of compassion, sympathy, or consideration of their needs and feelings.

**Exclusion of inhumanity.** In the context of personal and family values, Florida expressly prohibits material containing *hard-core pornography*. In addition, although the definition of *inhumane treatment* can sometimes appear to be controversial, as in science research, there is general agreement that instructional materials should not advocate any form of inhumane treatment.

As with the evaluation of multicultural representation, it is important to consider the context of the subject and the age and abilities of the students.



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## REFERENCES FOR CONTENT FEATURES

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*For a complete list of references and citations, please refer to **Destination: Florida Classrooms—Evaluator’s Handbook**, or request a list of references from the Department of Education, Bureau of School Improvement.*

## Presentation

Features of presentation affect the practical usefulness of materials and the ease of finding and understanding content. These features include:

- A. COMPREHENSIVENESS OF STUDENT AND TEACHER RESOURCES**
- B. ALIGNMENT OF INSTRUCTIONAL COMPONENTS**
- C. ORGANIZATION OF INSTRUCTIONAL MATERIALS**
- D. READABILITY OF INSTRUCTIONAL MATERIALS**
- E. PACING OF CONTENT**
- F. EASE OF USE OF MATERIALS**

The following sections describe the presentation features expected for each of these areas.

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### **A. COMPREHENSIVENESS OF STUDENT AND TEACHER RESOURCES**

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**Resources must be complete enough to address the targeted learning outcomes without requiring the teacher to prepare additional teaching materials for the course. See Florida Statutes 1006.34(2)(a); 1006.34(2)(b)**

Materials should contain support for students in completing instructional activities and assessments and for teachers in implementing all of the instructional elements. A variety of components can accomplish this purpose. Typically, materials will include test items, study guides, outlines and strategies for teaching, media supplements, learning activities, and projects.

The major components generally expected for student and teacher resources are listed below.

**Student resources.** Student materials typically include the major text or program with text or narration, visuals, assignments, and assessments. Formats may include print, audio, visual, computer, or other media.

Effective instructional materials generally integrate the use of reference aids (e.g., index, glossary, maps, bibliography, graphic organizers, and pictures) with the topic being studied. Items that guide students through materials might include clearly labeled materials, directions and explanations, and assignments with menus of choices.

Review and practice activities might include participation activities such as simulations, role-playing situations, investigations, and hands-on practice assignments. Review activities might include self-checks or quizzes. Formats might include worksheets, workbooks, journals, lab books, lab logs, charts, or maps. Feedback might be in the form of answer keys in student materials or in teacher materials.

Review works best as a logical extension of content, goals, objectives, and lessons, with increased similarity to real-life situations. Review activities should require students to recall or apply previously taught knowledge and skills. Frequent short reviews over time or space improve learning more than a concentrated review. Assignments and stages of small practice improve speed and accuracy.

Other components might include enrichment and remediation activities, additional resources, and tests and assessment tools either in the student materials or in the teacher's guide or edition.

**Teacher resources.** Teacher materials typically include a teacher's edition with the annotated student text and copies of supplementary written materials with answer keys, worksheets, tests, diagrams, etc., so that the teacher has to use only one guide. Inservice training, workshops, and consulting services should be made available by publishers to support teachers in implementing instructional materials. Professional development is essential to the success of any program, especially when a program contains non-traditional elements. Publishers should clearly indicate the recommended amount and types of professional development that they will provide, and they should work with districts and schools to ensure that teachers receive the support that they need. The materials for the teacher should support continued teacher learning.

Support, guidelines, resources, or features such as the ones described below should be available to help teachers effectively implement materials in classroom and school settings.

- (1) **Components and materials are easy to use:** Examples include clearance, license, or agreement for copying and use of materials; clear description and accurate directions for use of required equipment, facilities, resources, and environment; clearly labeled grade, lesson, content, and other information to identify components; correct specifications for making instructional media and electronic programs work effectively.
- (2) **Materials support lesson planning, teaching, and learning:** Examples include overview of components and objectives; background for lectures and discussions; technical terminology, and reinforcement and review strategies; scope and sequence chart for activities and planning; sample lesson plans; suggestions for individualized study, small-group and large-group presentations and discussions, school-to-work activities, field or laboratory experiences, safety procedures, and other extension activities; suggestions for integrating themes across the subject area or course curriculum and forming connections to other disciplines; and suggestions for parental and community involvement.
- (3) **Suggestions are provided for adapting instruction for varying needs:** Examples include alternative approaches to teaching, pacing, and options for varied delivery of instruction such as media, tools, equipment, and emerging technology; strategies for engaging all students, such as open-ended questions to stimulate thinking, journals,

hands-on investigations, explorations, and multisensory approaches; suggestions for addressing common student difficulties or adapting to multiple learning styles; and alternative reteaching, enrichment, and remediation strategies.

- (4) **Guidelines and resources are provided on how to implement and evaluate instruction:** Examples include answers to work assignments, practice activities, and tests; sample projects or research results; suggestions for using learning tasks for classroom assessment; guidelines for alternative assessments, such as sample checklists, rubrics, peer or performance assessments, and portfolios.
- (5) **Resources are provided to use in classroom activities:** Examples include technology resources ; lists of resources and references, reading strategies, materials to use for displays or photocopies ,classroom management strategies and documentation on how to manage the entire instructional program; in-service workshops or consultation support from the publisher.

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## **B. ALIGNMENT OF INSTRUCTIONAL COMPONENTS**

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**All components of an instructional package must align with each other, as well as with the curriculum. See Florida Statutes 1006.29(4)**

All components of an instructional package—teacher’s edition and materials, student’s edition and materials, workbook, supplementary materials, and others—must be integrated and interdependent and must correspond with each other. For example, support materials in the teacher’s edition should align with student activities or assignments. They must match in content and progression of instructional activities.

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## **C. ORGANIZATION OF INSTRUCTIONAL MATERIALS**

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**The structure and format of materials must have enough order and clarity to allow students and teachers to access content and explicitly identify ideas and sequences. See Florida Statutes 1006.34(2)(a); 1006.34(2)(b)**

Providing an explicit and teachable structure can double the amount of information remembered. Clear organization allows students and teachers to discriminate important pieces of information through skimming, reading, or browsing.

Clear organization may be accomplished through a combination of features, but generally not through one feature alone.

**Access to content.** Some features help in searching and locating information, such as a table of contents; menu or map of content; directions on how to locate information or complete assignments; an index for quick reference; goals and/or objectives, outlines, lists, or checklists for major sections; bibliographies and lists of resources; glossaries for quick access to major

terms; introductions, key concepts and themes, visual cues, illustrations, labeled examples, and labeled reviews or summaries.

**Visible structure and format.** At-a-glance features should signal the organization of content. The following features are desirable:

- chapter or unit titles and/or frames; headings and subheadings;
- typographic cues such as bold, italics or changes in size of type;
- divisions of content such as borders, boxes, circles, highlighting, visual signposts, icons, or color cues;
- diagrams, labels, and visuals placed near the related content; and numbering of pages and other components.

Objectives or a content outline may serve a similar purpose by introducing main ideas, providing guideposts to use in searching for key information, or serving as a checklist for self-assessment.

Certain types of brief narrative sections also contribute to clear organization. For example, the statement of a clear purpose with content organized around main ideas, principles, concepts, and logical relationships supports the unity and flow of information. Introductions also play a major role when they include anchoring ideas, a list of key points, or conceptual schemes such as metaphors. Summaries also can assist students in understanding the logical order of topics presented.

**Logical organization.** The pattern of organization of the content should be consistent and logical for the type of subject or topic. Patterns of organization may include comparison and contrast, time sequence, cause-effect or problem-solution-effect, concrete to abstract, introduction-review-extension (spiral structure), simple-to-complex, whole-part or part-whole, generalization-examples-review-practice, and conflict-inside view-structure.

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## D. READABILITY OF INSTRUCTIONAL MATERIALS

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**Narrative and visuals should engage students in reading or listening as well as in understanding of the content at a level appropriate to the students' abilities. See Florida Statutes 1006.31(e); 1006.34(2)(a); 1006.34(2)(b)**

**Language style.** Language style and visual features can influence the readability of materials. Yet, a popular tool for assessing readability has been the use of a *readability formula* of one type or another. These formulas tend to focus only on a few *countable* characteristics of language style such as the length of words, sentences, and/or paragraphs.

Other features are more important in establishing the readability of instructional materials, such as

- organized, coherent text
- language and concepts familiar to the student
- language that clarifies, simplifies, and explains information
- transition words such as “yet,” “also,” “next,” “for example,” “moreover,” or “however”
- other phrases that create logical connections

- words with concrete and specific images
- active rather than passive voice
- varied sentence structures and avoid both choppy sentences and unnecessary words
- specific questions or directions to guide student attention to visuals or key information

**Visual features.** Visual features that improve readability include

- print that is dark and clear, with good contrast
- paper with clean-cut edges without glare, or computer screens without glare
- margins wide enough on a page or screen to allow easy viewing of the text
- chunking text (Sentence ends on same page as it begins.)
- visuals that are relevant, clear, vivid, and simple enough for students to understand
- quantity of visuals suitable for the intended students—both lower ability students and higher ability students tend to require more visuals
- unjustified text (ragged on the right) rather than justified (lined up on the right)
- visuals that contain information in a form different from the text
- graphs, charts, maps, and other visual representations integrated at their point of use
- colors, size of print, spacing, quantity, and type of visuals suitable for the abilities and needs of the intended students

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## E. PACING OF CONTENT

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**The amount of content presented at one time or the pace at which it is presented must be of a size or rate that allows students to perceive and understand it. See Florida Statutes 1006.31(e); 1006.34(2)(a); 1006.34(2)(b)**

It is important that materials contain “bite-size” chunks or blocks of information. The chunks should not be so large, nor the pacing so fast, as to overwhelm students. Neither should the chunks be so small, nor the pacing so slow, as to bore them.

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## F. EASE OF USE OF MATERIALS

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**Both print and other media formats of instructional materials must be easy to use and replace and be durable enough for multiple uses over time. See Florida Statutes 1006.29(4); 1006.38(3)(a); 1006.34(2)(a); 1006.34(2)(b); 1006.38(5); 1006.38(6)(7)(8)(9)**

**Warranty.** The actual physical and technical qualities of materials should match the description contained in the publisher’s warranty.

**Use.** Materials must be designed for practical use in the classroom and school environments. They must be easy to identify and store. Teachers and students must be able to access and use the materials. Some of the factors influencing their ease of use include number of components, size of components, packaging, quality of materials, equipment requirements, and cost to purchase or replace components.

The best choice about weight, size, and number of volumes depends on several factors, such as the organization of the content, how well separate volumes may fit time periods for instruction, and the ages of students. Technical production requirements, such as page limits or different types of bindings, may lead to multiple volumes.

Examples of classroom use include repeated copying of consumable materials and repeated use of other materials by students over time. Students should be able to easily use the materials and take home, in a convenient form, most of the material they need to learn for the course.

Technology-rich resources should work properly without the purchase of additional software and run without error. Electronic media for student use should be encoded to prevent accidental or intentional erasure or modification. As with textbooks, electronic media should allow students to easily access and interact with them without extensive supervision or special assistance.

The physical and technical qualities of materials should match with the resources of the schools. Materials such as videos, software, CD-ROMs, Internet sites, and transparencies may serve instructional purposes well, but have little value unless they can be implemented with the school's equipment. Publishers should include training, inservice, and consultation to help in effective use of the materials.

**Durability.** Students and teachers should be able to have materials that will be durable under conditions of expected use. For example, boxes, books, or other materials should not fall apart after normal classroom use. The packaging and form of materials should be flexible and durable enough for multiple uses over time. Durability includes considerations such as

- high-quality paper, ink, binding, and cover
- back, joints, body block, and individual pages
- worry-free technology that runs properly, with easy to hear, see, and control audio and visuals, and
- the publisher's guarantee for replacement conditions and agreements for reproduction needed to effectively use the materials

**Cost.** *Florida's Commissioner of Education will consider the impact of cost in making final decisions.* Cost, while not a direct factor in ease of use, influences the ease with which materials can be obtained or replaced. The impact of cost can be complex to estimate. It requires considering the number of materials available at no additional cost with the purchase of the major program or text, the cost over the adoption period of several years, and the number of free materials to support implementation. Attractive features such as higher quality paper and visuals and greater use of color may escalate cost, without enhancing learning effectiveness.

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## REFERENCES FOR PRESENTATION FEATURES

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*For a complete list of references and citations, please refer to **Destination: Florida Classrooms—Evaluator's Handbook**, or request a list of references from the Department of Education, Bureau of School Improvement.*

# Learning

The following features have been found to promote learning and apply to most types of learning outcomes.

- A. MOTIVATIONAL STRATEGIES
- B. TEACHING A FEW “BIG IDEAS”
- C. EXPLICIT INSTRUCTION
- D. GUIDANCE AND SUPPORT
- E. ACTIVE PARTICIPATION
- F. TARGETED INSTRUCTIONAL STRATEGIES
- G. TARGETED ASSESSMENT STRATEGIES

The following sections describe the learning features expected for each of these priority areas.

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## A. MOTIVATIONAL STRATEGIES

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**Instructional materials must include features to maintain learner motivation. See Florida Statutes 1006.31(e); 1006.34(2)(a)(b); 1006.38(4)**

**Expectations.** Materials should positively influence the expectations of students. Examples include:

- positive expectations for success
- novel tasks or other approaches to stimulate intellectual curiosity
- meaningful tasks related to student interests, cultural backgrounds, and developmental levels
- activities with relevance to the student’s life
- thought-provoking challenges such as paradoxes, dilemmas, problems, controversies, and questioning of traditional ways of thinking
- challenges that are neither too difficult to achieve nor so easy that students become bored
- hands-on tasks in a concrete context, and images, sounds, analogies, metaphors, or humorous anecdotes
- variety, including the opportunity for students to ask their own questions, set their own goals, and make other choices during learning

**Feedback.** Materials should include informative and positive feedback on progress. Examples include:

- frequent checks on progress, including testing

- explanatory feedback with information about correctness of responses, how to avoid or correct common mistakes, and/or different approaches to use
- varied forms of assessments (self-assessment, peer assessment, and some learning tasks without formal assessments)

**Appearance.** Materials should have an appearance generally considered attractive to the intended students.

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## **B. TEACHING A FEW “BIG IDEAS”**

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**Instructional materials should thoroughly teach a few important ideas, concepts, or themes. See Florida Statutes 1006.31(e); 1006.34(2)(a)(b)**

**Focus.** Thoroughly teaching a few big ideas provides focus for the learner’s attention. It provides an organizing framework for integrating new information.

**Completeness.** The thorough teaching of a few big ideas may focus on developing a deeper and more complete understanding of the major themes of a discipline, the content of the subject area, relationships to other disciplines, and the thinking and learning skills required for achieving the specified learning outcomes.

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## **C. EXPLICIT INSTRUCTION**

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**Instructional materials must contain clear statements of information and outcomes. See Florida Statutes 1006.31(e); 1006.34(2)(a)(b)**

**Clarity of directions and explanations.** To support success in learning, instructional materials should include clear presentation and explanations of

- purposes, goals, and expected outcomes
- concepts, rules, information, and terms
- models, examples, questions, and feedback

For example, development of specific thinking skills requires an explicit statement of the particular *thinking skills* to be learned, along with the *strategies* or *steps to follow*. Explicit instruction for thinking skills might also involve showing *examples* of successful thinking contrasted with examples of poor thinking processes.

Similarly, the development of learning skills requires explicit directions about *when* and *how* to do activities such as notetaking, outlining, paraphrasing, abstracting and analyzing, summarizing, self-coaching, memory strategies, persistence, preview and questioning, reading and listening, reflecting, and reciting.

**Exclusion of ambiguity.** Instructional materials should avoid terms and phrases with ambiguous meanings, confusing directions or descriptions, and inadequate explanations.



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## D. GUIDANCE AND SUPPORT

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**Instructional materials must include guidance and support to help students safely and successfully become more independent learners and thinkers. See Florida Statutes 1006.31(e); 1006.34(2)(a)**

**Level.** The type of guidance and support that helps students to become more independent learners and thinkers is sometimes referred to as *scaffolding*. Scaffolding is a solid structure of support that can be removed after a job has been completed. As students gain proficiency, support can diminish, and students can encounter more complex, life-centered problems. Information and activities should provide guidance and support at the level that is needed—no more and no less. Too much can squelch student interest, and too little can lead to failure.

Guidance and support can be accomplished by a combination of the following features:

- organized routines
- advance organizers or models such as
  - (1) condensed outlines or overviews
  - (2) simplified views of information
  - (3) visual representations of new information during initial instruction
  - (4) sample problems
  - (5) questions to focus on key ideas or important features
  - (6) examples of solved problems
  - (7) explanations of how the problems were solved
  - (8) examples of finished products or sample performances
  - (9) analogies, metaphors, or associations to compare one idea to another
- prompts or hints during initial practice
- step-by-step instructions
- immediate and corrective feedback on the accuracy of performance of each step or task, on how to learn from mistakes, and on how to reach the correct answer
- simulations with features for realistic practice
- opportunities for students to do research, and to organize and communicate results

**Adaptability.** Guidance and support must be adaptable to developmental differences and various learning styles. For example, young children tend to understand concepts in concrete terms and over-generalize new concepts. Some students need more time, some tend to be more impulsive than reflective, some have trouble distinguishing relevant from irrelevant information, and some have better written than spoken language skills.

Approaches for developmental differences and learning styles of students, include

- a variety of *activities* such as
  - (1) structured and unstructured activities
  - (2) independent and group work
  - (3) teacher-directed and discovery learning
  - (4) visual and narrative instruction
  - (5) hands-on activities

- (6) open-ended activities
  - (7) practice without extrinsic rewards or grades
  - (8) simple, complex, concrete, and abstract examples
  - (9) variable pacing or visual breaks
- a variety of *modalities* for the various learning styles of students, such as
    - (1) linguistic-verbal
    - (2) logical-mathematical
    - (3) musical
    - (4) spatial
    - (5) bodily-kinesthetic
    - (6) interpersonal
    - (7) intrapersonal
    - (8) naturalist

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## E. ACTIVE PARTICIPATION OF STUDENTS

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**Instructional materials must engage the physical and mental activity of students during the learning process. See Florida Statutes 1006.31(e); 1006.34(2)(a)**

**Assignments.** Instructional materials should include organized activities of periodic, frequent, short assignments that are logical extensions of content, goals, and objectives.

**Student responses.** Assignments should include questions and application activities during learning that give students opportunities to respond. Active participation of students can be accomplished in a variety of ways. For example, information and activities might require students to accomplish the types of activities listed below.

- respond orally or in writing
- create visual representations (charts, graphs, diagrams, and illustrations)
- generate products
- generate their own questions or examples
- think of new situations for applying or extending what they learn
- complete discovery activities
- add details to big ideas or concepts from prior knowledge
- form their own analogies and metaphors
- practice lesson-related tasks, procedures, behaviors, or skills
- choose from a variety of activities

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## F. TARGETED INSTRUCTIONAL STRATEGIES

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**Instructional materials should include the strategies known to be successful for teaching the learning outcomes targeted in the curriculum requirements. See Florida Statutes 1006.31(e); 1006.34(2)(a)(b); 1003.42**

**Alignment.** Research has documented the strategies that effectively teach different types of learning outcomes. The learning strategies included in instructional materials should match the findings of research for the targeted learning outcomes. Different types of learning outcomes require different strategies. For example, a strategy for memorizing verbal information might be helpful, but it would not align with the strategies required for learning a concept or for learning how to solve a problem.

**Completeness.** Not only should strategies be aligned, but they also should be complete enough to effectively teach the targeted outcomes. For example, while the explanation of a problem-solving method or model would be appropriate, other strategies also would be necessary in order for students to learn how to resolve different types of problems.

**Research summary.** Researchers sometimes use different terms for some similar outcomes. For example, *thinking skills* and *metacognition* refer to some of the same types of skills. The following alphabetical list includes terms as they have appeared in research, even though some terms clearly overlap with each other.

- attitudes
- cognitive strategies
- comprehension/  
understanding
- concepts
- creativity
- critical thinking
- insight
- metacognition
- motor skills
- multiple intelligences
- problem solving
- procedural knowledge,  
principles, and rules
- scientific inquiry
- thinking skills
- verbal information,  
knowledge, or facts

The following section summarizes the research findings for each of these types of learning outcomes.

### ***Effective Teaching Strategies***

- **Teach Attitudes**
  - Explain and show consequences of choices, actions, or behaviors.
  - Provide relevant human or social models that portray the desired choices, actions, or behaviors

- **Teach *Reading***
  - Provide appropriate reading strategies
  - Link instruction to effective reading
- **Teach *Cognitive Strategies***
  - Monitor and reflect upon the effectiveness of the reading process used.
  - Encourage and/or teach (a) organizing and summarizing information; (b) self-questioning, self-reflection, and self-evaluation; (c) reference skills; and (d) when and how to use these different skills.
- **Teach *Comprehension/Understanding***
  - Outline, explain, or visually show what will be read/learned in a simple form.
  - Explain with concrete examples, metaphors, questions, or visual representations.
  - Require students to relate new readings to previously learned information.
  - Require students to paraphrase or summarize new information as it is read.
  - Require students to construct a visual representation of main ideas (map, table, graphs, Venn diagram, etc.).
  - Give students opportunities to add details, explanations, or examples to basic information.
  - Require application of knowledge or information.
- **Teach *Concepts***
  - Provide clear understanding of each concept.
  - Point out important and features or ideas.
  - Point out examples of the concept, showing similarities and differences.
  - Include practice in organizing and classifying concepts.
  - Include a wide range of examples in a progressive presentation from simple to more complex examples.
  - Emphasize relationships between concepts.
- **Teach *Creativity***
  - Provide examples of creativity.
  - Include models, metaphors, and analogies.
  - Encourage novel approaches to situations and problems.
  - Show and provide practice in turning a problem upside down or inside out or changing perceptions.
  - Encourage brainstorming.
  - Include open -ended questions and problems.
  - Provide opportunities of ungraded, unevaluated creative performance and behavior.
- **Teach *Critical Thinking***
  - Create conflict or perplexity by using paradoxes, dilemmas, or other situations to challenge concepts, beliefs, ideas, and attitudes.

- Focus on how to recognize and generate proof, logic, argument, and criteria for judgments.
  - Include practice in detecting mistakes, false analogies, relevant v. irrelevant issues, contradictions, discrepant events, and predictions.
  - Provide practice in drawing inferences from observations and making predictions from limited information.
  - Explain and provide practice in recognizing factors or biases that may influence choice and interpretations such as culture, experience, preferences, desires, interests, and passions, as well as systematic thinking.
  - Require students to explain how they form new conclusions and how and why present conclusions may differ from previous ones.
- **Teach *Inquiry***
    - Emphasize technological design as inquiry and include discovery activities.
    - Provide opportunities for experimental design.
    - Provide opportunities for critical thinking.
    - Facilitate the collection, display, and interpretation of data.
    - Promote careful observation, analysis, description, and definition.
- **Teach *Metacognition***
    - Explain different types of thinking strategies and when to use them.
    - Encourage self-evaluation and reflection.
    - Include questions to get students to wonder why they are doing what they are doing.
    - Guide students in how to do systematic inquiry, detect flaws in thinking, and adjust patterns of thinking.
- **Teach *Technology***
    - Provide a mental and physical model of desired performance.
    - Describe steps in the performance.
    - Provide practice with kinesthetic and corrective feedback (coaching).
- **Teach *Multiple Intelligences***
    - Verbal-linguistic dimension focuses on reasoning with language, rhythms, and inflections, such as determining meaning and order of words (stories, readings, humor, rhyme, and song).
    - Logical-mathematical dimension focuses on reasoning with patterns and strings of symbols (pattern blocks, activities to form numbers and letters).
    - Musical dimension focuses on appreciation and production of musical pitch, melody, and tone.
    - Spatial dimension focuses on activities of perceiving and transforming perceptions.
    - Bodily kinesthetic dimension focuses on use and control of body and objects.
    - Interpersonal dimension focuses on sensing needs, thoughts, and feelings of others.

- Intrapersonal dimension focuses on recognizing and responding to one’s own needs, thoughts, and feelings.
- **Teach *Problem Solving***
  - Assure student readiness by diagnosing and strengthening related concept, rule, and decision-making skills.
  - Provide broad problem-solving methods and models.
  - Include practice in solving different types of problems.
  - Begin with highly structured problems and then gradually move to less structured ones.
  - Use questions to guide thinking about problem components, goals, and issues.
  - Provide guidance in observing and gathering information, asking appropriate questions, and generating solutions.
  - Include practice in finding trouble, inequities, contradictions, or difficulties and in reframing problems.
- **Teach *Procedural Knowledge, Principles, and Rules***
  - Define context, problems, situations, or goals and appropriate procedures.
  - Explain reasons that procedures work for different types of situations.
  - Define procedures—procedures include rules, principles, and/or steps.
  - Provide vocabulary and concepts related to procedures.
  - Demonstrate step-by-step application of procedures.
  - Explain steps as they are applied.
  - Include practice in applying procedures.
- **Teach *Scientific Inquiry***
  - Explain process and methods of scientific inquiry.
  - Explain and provide examples of (a) hypotheses formation, (b) valid procedures, (c) isolating variables, (d) interpretation of data, and (e) reporting findings
  - Encourage independent thinking and avoidance of dead ends or simplistic answers.
  - Require students to explain, verify, challenge, and critique the results of their inquiry.
- **Teach *Thinking Skills***
  - Introduce different types of thinking strategies.
  - Explain context or conditions of applying different strategies.
  - Provide definitions, steps, and lists to use in strategies.
  - Include examples of different types of thinking strategies, including how to think with open-mindedness, responsibility, and accuracy.
  - Emphasize persisting when answers are not apparent.
  - Provide practice in applying, transferring, and elaborating on thinking strategies.
  - Integrate metacognitive, critical, and creative-thinking skills.
- **Teach *Verbal Information, Knowledge, or Facts***
  - Provide a meaningful context to link new information and past knowledge.

- Organize information into coherent groups or themes.
- Use devices to improve memory such as mnemonic patterns, maps, charts, comparisons, groupings, highlighting of key words or first letters, visual images, and rhymes.
- Identify main ideas, patterns, or relationships within information or sets of facts.

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## G. TARGETED ASSESSMENT STRATEGIES

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**Instructional materials should include assessment strategies that are known to be successful in determining how well students have achieved the targeted learning outcomes. See Florida Statutes 1006.31(e); 1006.34(2)(a)(b); 1006.38(4)**

**Alignment.** The assessment strategies should match the learner performance requirements for the types of learning outcomes that have been targeted for the subject matter, course, or course category. Different strategies are appropriate for assessing different types of learning outcomes. For example, a strategy for testing the acquisition of verbal information would not match the requirements for testing whether or not a student has learned a concept or learned how to solve a problem.

The term “assessment,” as used in this section, refers to testing or other strategies that assess student progress as a result of learning activities. The results of such assessment provide information about where to strengthen instruction. But it is very important to ask the right questions. If the type of question matches the type of learning outcome, then students and teachers have relevant information about learning progress.

**Completeness.** In addition to including assessment strategies that align with the performance requirements of the targeted learning outcomes, the strategies should be complete enough to effectively assess the learner’s performance with regard to the targeted outcome. For example, a test item that requires the student to state a rule does not assess whether or not the student knows how to *use* the rule.

**Research summary.** The research summary for effective assessment strategies for different types of learning outcomes follows the same alphabetical sequence as the previous section.

### *Effective Assessment Strategies*

- **Assess Attitudes:**
  - Provide various situations.
  - Require choices about behaviors.
- **Assess Cognitive Strategies:**
  - Provide learning tasks.
  - Require students to choose good strategies for learning and/or to learn new materials without teacher guidance.
  - Require students to discuss and explain methods used for various learning tasks.

- **Assess *Comprehension/Understanding*:**
  - Provide topic.
  - Require summary or restatement of information.
  - Provide new context.
  - Require application of information.
  - Provide several statements using words different from the initial teaching.
  - Require identification of the correct meaning.
- **Assess *Concepts*:**
  - Provide new examples and non-examples.
  - Require identification or classification into the correct categories.
- **Assess *Creativity*:**
  - Provide new problems to “turn upside down,” study, or resolve—these could be performances, presentations, or products.
  - Require products or solutions to fit within the particular functions and resources.
  - Provide situations requiring novel approaches.
- **Assess *Critical Thinking*:**
  - Require students to evaluate information or results.
  - Require the use of analysis and research.
- **Assess *Insight*:**
  - Provide situations for inquiry and discovery.
  - Provide situations for manipulation.
- **Assess *Metacognition*:**
  - Provide different situations or problems.
  - Require students to identify types of thinking strategies to analyze and evaluate their own thinking.
- **Assess *Multiple Intelligences*:**
  - Provide situations in the modality that is targeted, e.g., verbal-linguistic, musical, or other modality.
  - Provide situations in several modalities, to allow choice
  - Require performance in the targeted or chosen modalities.
- **Assess *Motor Skills*:**
  - Provide situations and resources for performance of the skill.
  - Include checklist for evaluation.
- **Assess *Problem Solving*:**
  - Require students to choose types of problem-solving strategies for different situations.
  - Require solutions to structured and unstructured, simple and complex problems.



- **Assess *Procedural Knowledge, Principles, and Rules*:**
  - Provide situations that require students to recognize the correct use of procedures, principles, or rules with routine problems.
  - Require students to state procedures, principles, or rules.
  - Require students to choose which procedures, principles, or rules to apply in different situations.
  - Provide situations that require students to demonstrate the correct use of procedures, principles, or rules with routine problems.
- **Assess *Scientific Inquiry*:**
  - Provide situations or problems that require speculation, inquiry, and hypothesis formation.
  - Provide research, hands-on activities, and conclusions.
- **Assess *Thinking Skills*:**
  - Require students to summarize different types of thinking strategies.
  - Provide situations that require students to choose the best type of thinking strategy to use.
  - Require students to detect instances of open- v. closed-mindedness.
  - Require students to detect instances of responsible v. irresponsible and accurate v. inaccurate applications of thinking strategies.
  - Provide situations that require the student's persistence in order to discover or analyze information to obtain answers to specific questions.
  - Require students to apply specific thinking strategies to different real-world situations.
- **Assess *Verbal Information, Knowledge, or Facts*:**
  - Require students to recall information.
  - Require students to restate information
  - Require students to understand information.

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## REFERENCES FOR LEARNING FEATURES

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*For a complete list of references and citations, please refer to **Destination: Florida Classrooms—Evaluator’s Handbook**, or request a list of references from the Department of Education, Bureau of School Improvement.*

## **Criteria for Evaluation**

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The instructional materials adoption process must be fair to all publishers who take the time and expense to submit their materials. Applying evaluation criteria consistently to each submission assures that the materials will be judged fairly.

Regardless of format or technology, effective materials have certain characteristics in common, and the basic issues, important for the evaluation of instructional materials, apply to all subject areas and all formats. These issues are addressed in Florida's list of priorities and the criteria as detailed in the previous pages of this document. Evaluators will use a criteria-based instrument to engage in systematic reflection of the processes they follow and decisions they make about the quality of materials submitted by publishers.

The extensive research base and review processes used to identify these criteria establish their validity as an integral part of Florida's instructional materials adoption system. Applying these criteria consistently to each submission helps assure that the materials submitted by publishers will be judged fairly.

## **2005-06 Technology Education Career Education Curriculum Frameworks**

The Student Performance Standards that publishers will correlate their materials to will be found at [http://www.myfloridaeducation.com/dwdframe/0506/te/te\\_frame05.htm](http://www.myfloridaeducation.com/dwdframe/0506/te/te_frame05.htm).

### **8600000 Integrated Technology Studies**

<http://www.firn.edu/doe/dwdframe/0506/te/pdf/210122ex.pdf>

- 8600010 Introduction to Technology
- 8600020 Exploring Technology
- 8600030 Exploration of Communications Technology
- 8600040 Exploration of Production Technology
- 8600050 Exploration of Aerospace Technology
- 8600250 Exploration of Power & Energy Technology
- 8600240 Exploration of Transportation Technology

### **Grades 9-12**

#### **8600400 Technology Systems**

<http://www.firn.edu/doe/dwdframe/0506/te/pdf/210128pa.pdf>

- 8600410 Communication systems
- 8600420 Power and Transportation Systems
- 8600430 Production Systems
- 8600440 Drafting and Design
- 8600450 Electronics Systems
- 8600460 Engineering Systems
- 8600470 Applied Technology Systems
- 8600480 Home Technology Systems

#### **8600080 Aerospace Technologies**

<http://www.firn.edu/doe/dwdframe/0506/te/pdf/21011800.pdf>

- 8600580 Aerospace Technologies I
- 8600680 Aerospace Technologies II
- 8601780 Aerospace Technologies III

#### **8601000 Communications Technology**

<http://www.firn.edu/doe/dwdframe/0506/te/pdf/21010600.pdf>

- 8601010 Communications Technology I
- 8601020 Communications Technology II
- 8601030 Communications Technology III

**8600700 Construction Technology**

<http://www.firn.edu/doe/dwdframe/0506/te/pdf/21010200.pdf>

- 8600710 Construction Technology I
- 8600720 Construction Technology II
- 8600730 Construction Technology III

**8600800 Drafting/Illustrative Design Technology**

<http://www.firn.edu/doe/dwdframe/0506/te/pdf/21010300.pdf>

- 8600810 Drafting/Illustrative Design Technology I
- 8600820 Drafting/Illustrative Design Technology II
- 8600830 Drafting/Illustrative Design Technology III

**8600900 Electronics Technology**

<http://www.firn.edu/doe/dwdframe/0506/te/pdf/21010400.pdf>

- 8600910 Electronics Technology I
- 8600920 Electronics Technology II
- 8600930 Electronics Technology III

**8607000 Engineering Technology**

<http://www.firn.edu/doe/dwdframe/0506/te/pdf/21011700.pdf>

- 8600570 Engineering Technology I
- 8600670 Engineering Technology II
- 8601770 Engineering Technology III

**8601100 Materials and Processes Technology**

<http://www.firn.edu/doe/dwdframe/0506/te/pdf/21010700.pdf>

- 8601110 Materials and Processes Technology I
- 8601120 Materials and Processes Technology II
- 8601130 Materials and Processes Technology III

**8601300 Power and Energy Technology**

<http://www.firn.edu/doe/dwdframe/0506/te/pdf/21010501.pdf>

- 8601310 Power and Energy Technology I
- 8601320 Power and Energy Technology II
- 8601330 Power and Energy Technology III

**8604000 Production Technology**

<http://www.firn.edu/doe/dwdframe/0506/te/pdf/21011400.pdf>

- 8600540 Production Technology I
- 8600640 Production Technology II

8601740 Production Technology III

**8601200 Transportation Technology**

<http://www.firn.edu/doe/dwdframe/0506/te/pdf/21010500.pdf>

8601210 Transportation Technology I

8601220 Transportation Technology II

8601230 Transportation Technology III

**8600100 Technology Studies**

<http://www.firn.edu/doe/dwdframe/0506/te/pdf/21010100.pdf>

8600510 Technology Studies I

8600610 Technology Studies II

8601710 Technology Studies III

# **REQUIREMENTS FOR BRAILLE TEXTBOOK PRODUCTION**

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## **INSTRUCTIONS FOR PREPARING COMPUTER DISKETTES AND CDs REQUIRED FOR AUTOMATED BRAILLE TEXTBOOK PRODUCTION**

### **STATUTORY AUTHORIZATION**

Chapter 1003.55(5), Florida Statutes, states that, "...any publisher of a textbook adopted pursuant to the state instructional materials adoption process shall furnish the Department of Education with a computer file in an electronic format specified by the Department at least 2 years in advance that is readily translatable to Braille and can be used for large print or speech access. Any textbook reproduced pursuant to the provisions of this subsection shall be purchased at a price equal to the price paid for the textbook as adopted. The Department of Education shall not reproduce textbooks obtained pursuant to this subsection in any manner that would generate revenues for the department from the use of such computer files or that would preclude the rightful payment of fees to the publisher for use of all or some portion of the textbook."

### **OBJECTIVE**

Electronic text (etext) is needed to accelerate the production of textbooks in Braille and other accessible formats through the use of translation software. Some embedded publisher formatting commands help speed the conversion of English text to Braille or other accessible formats. Therefore, the objective of these instructions is to prompt publishers to provide textbook data in a format that will be useful to Braille and other accessible format producers while at the same time allowing each publisher the flexibility of using existing composition or typesetting systems. Publishers may produce etext files in one of three formats, as shown in the specifications below.

By April 1, 1998, publishers of adopted student textbooks for literary subjects must be able to provide the computer diskettes UPON REQUEST. Publishers shall provide nonliterary subjects when technology becomes available for the conversion of nonliterary materials to the appropriate format.

The requested computer diskettes shall be provided to the Florida Instructional Materials Center for the Visually Impaired (FIMC), 5002 North Lois Avenue, Tampa, Florida 33614; (813) 872-5281; in Florida WATS (800) 282-9193 or (813) 872-5284 (FAX). The center will contact each publisher of an adopted textbook and provide delivery instructions.

## SPECIFICATIONS

### FORMAT (Three Options):

- a. A full implementation of Standard Generalized Markup Language (SGML).
- b. XML-Extensible Markup Language
- c. ASCII – (Last Resort!)

2. OPERATING SYSTEM: Windows

3. DISKETTE SIZE: 3.5, CD, Zip100

4. DISKETTE CAPACITY: Double-sided/high density

### 5. DISKETTE LABELING:

- a. Sequential Number/ISBN
- b. Book Title
- c. File Name
- d. Name of Publisher
- e. Name of Typesetting Company/Contact Name
- f. Format Option and Version
- g. Copyright Date
- h. Wording such as: “All rights reserved. As described in Chapter 233.0561(5), Florida Statutes, no use may be made of these diskettes other than the creating of a Braille, Large Print, or Recorded version of the materials contained on this diskette for students with visual impairments in the State of Florida.”

### 6. REQUIRED CONTENTS:

- a. Title Page
- b. List of Consultants and Reviewers (if appropriate)
- c. Table of Contents
- d. All Textbook Chapters
- e. All Appendices
- f. All Glossaries
- g. Indices

7. FILE STRUCTURE: Each chapter of a textbook will be formatted as a separate file.

8. FILE LIST: A separate file listing the structure of the primary files must be provided. This file should be labeled DISKLIST TEXT. In addition, all special instructions (e.g., merging of materials kept in a separate file) should be noted in this file.

9. LOCATION OF SPECIAL DATA: Marginal notes, footnotes, captions, and other special items must be placed consistently within each text file.

10. CORRECTIONS AND CHANGES A conscientious effort should be made to update files to exactly duplicate the adopted printed version of the textbook (including corrections and changes). If this cannot be accomplished in a timely and cost effective manner, the publisher will coordinate with the FIMC Supervisor and provide to the Supervisor one set of marked tearsheets of all corrections and changes not included in the files.