



Straight from the Frog's Mouth!

The Southern Edition

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STEM - THE BLUEPRINT FOR TOMORROW'S EDUCATION

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It has been said that knowledge is power but when it comes to STEM some have suggested that the United States has fallen behind globally. In Tennessee and across the national a movement is working to counter this trend. All around Tennessee and the United States of America business, schools and communities are working together to create new ways of teaching Science, Engineering, Technology and Mathematics. Together they are creating the Blueprint for Tomorrow's Education.

One of the keys to a successful STEM program is Standards. Why Standards? Our society, economy and industry need standards because they:

- Enable products to work interchangeably or together,
- Provide assurance that a product can deliver a certain level of performance,
- Provide the tools that make it easier for designers, manufacturers and users to communicate.

STEM is the strategic integration of technology with the application of engineering thinking using an inquiry-based approach in the learning of mathematics and the sciences while developing an appreciation of the real-world applications and career readiness.

STEM education in the middle school seamlessly weaves together technology and engineering with mathematics and the sciences with the intention of enthusing students for the high school program of study. This can be achieved by offering a curriculum that is integrated, emphasizes questioning and inquiry, and gives students frequent opportunities to apply engineering design and real-world problem-solving.

Teachers using this approach have students who value the learning process and see a meaningful, personal benefit from a more rigorous program of study. Teachers will need opportunities to develop competence in the application of mathematics and science content in the strategic use of technology and the engineering design process and in facilitating scientific and mathematical investigations. Inherent in this competence is valuing and understanding an active approach to learning. Such an inquiry based approach includes, but is not limited to, the following principles:

- Promote a sense of discovery with a purpose
- Teaching for application
- Authentic assessment with students as primary evaluator of their work. Students should create
- their own rubrics.
- Teacher serves as a guide and facilitator of learning.
- Personal challenge, disequilibrium.
- Focus on reasoning, justification and sense making.
- Hands-on, engaging, student-directed learning.
- Problem-solving

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STRUCTURED NOTE-TAKING

Defining the Strategy

Research indicates that over 50 percent of content is lost within minutes of reading or hearing a passage. Structured note-taking is an excellent tool for helping students select, organize, and remember important points from their reading. Students use visual organizers to make notes or key point immediately after completing a passage. This visual framework helps students determine which details are noteworthy.

Teaching the Strategy

Objectives:

- Students use visual organizers to recall and organize details from text.
- Students improve comprehension.
- Students become proficient in identifying significant points (main ideas) and supporting details.

Materials:

- Informational text (one copy per student)
- Graphic organizer handouts
- Graphic organizer in PowerPoint, overhead, or chart.
- Computer, LCD Projects, or White Board.

Class Activity - Timeframe : 25 – 40 minutes

Preparation:

- Prepare a chart with the blank graphic organizer form.
- For guided practice, prepare a graphic organizer form with headings supplied for students from their reading.
- Introduce the note-taking strategy to students by explaining that over 50 percent of what people read is forgotten within minutes. Ask if anyone has experienced this. Tell students that this tool can help increase their ability to member information read and presented in class.

Model:

- Give students copies of a short passage.
- Read the passage aloud as students follow along silently.
- Put your graphic organizer chart or Power Point up for students.
- Ask them to complete each block of the organizer based on their memory of the reading. Add your own responses.
- Explain your responses on the graphic organizer and refer back to text to provide support.



| Date | Event |
|------------------------|---|
| October 17 - 19, 2010 | 23rd Annual Symposium |
| November 20 - 21, 2010 | TSA State Officer Executive Council Meeting |

STRUCTURED NOTE-TAKING

Guided Practice

- Give students copies of a new short passage for note-taking.
- Assign partners.
- Hand out a copy of the graphic organizer to each pair of students. For guided practice, provide the major headings so students can be successful choosing and ordering subordinate ideas.
- After partners have read the passage silently, have them discuss and complete the graphic organizer.
- Ask pairs to share their responses with the class, using text references to validate their choices.
- As groups share, add answers to a master graphic organizer in PowerPoint.

Independent Practice

- Give students copies of a new short passage to read independently.
- Hand out blank graphic organizer sheets.
- Instruct students to survey or preview text by looking for subheading, pictures, graphics, captions, etc. These will provide clues about significant points.
- Direct students to read their passage silently and complete their own graphic organizer.
- As an option, have students meet with a partner to share their graphic organizer. Direct them to use text to explain why they included certain information.
- As students become proficient with this process, guide them through a session of developing their own graphic organizers. Student-generated organizers will better suit individual learning styles.

Skills Correlations

Essential Skills Survey

- Develop processes for understanding and remembering information.
- Read for the main idea first and then read for detail.
- Identify, collect and/or select pertinent information while reading.
- Discriminate important ideas from unimportant ideas while reading.
- Preview informational text to anticipate content.
- Summarize, synthesize, and organize information while reading.

Connecting the Strategy

- Students may use completed graphic organizers to construct learning log entries, summaries of learning, research reports, study guides for test, etc. This is an effective prewriting tool for any writing applications.



Mark your calendar today for the best professional development event of the year, December 2-4 in Las Vegas. Registration and hotel accommodations are now open. For all information go to <http://acteonline.org/convention.aspx>

STRUCTURED NOTE-TAKING

Safety Reading Assignment - Asbestos Awareness



Asbestos is the name applied to six naturally occurring minerals that are mined from the earth. They tend to break into very tiny fibers so small that many must be identified using a microscope. They are so small that once they are released into the air, they may stay suspended for hours or even days.

All removal and abatement of asbestos is conducted according to rules and regulations set forth by the Oklahoma State Department of Labor. These regulations require that only asbestos workers, licensed by the state, are permitted to remove asbestos.

Never try to take a sample yourself.

Asbestos is abated only when required for renovation, remodeling or maintenance. Not every pipe and ceiling tile contains asbestos, but whether it does or not cannot be determined at a glance. Every sample is positive until proven otherwise.

At Oklahoma State University asbestos is most likely to be found in:

- Sprayed-on insulation in mechanical rooms, on steel reinforcing beams, and some ceilings in older buildings
- Ceiling tiles in buildings built prior to 1981.
- Most 9" and a few 12" floor tiles in buildings built prior to 1981 as well as the glue or mastic
- Insulation around pipes and boilers
- Interiors of fire doors

Buildings that have asbestos-containing materials in them will have notices posted near the main entrances, frequently near the fire alarm panel.

Pipe and boiler insulation that contains asbestos will be labeled with identifying stickers and placards. Asbestos-containing ceiling tiles will not be labeled or marked. These tiles cannot be differentiated from other tile by visual means--they must be analyzed by a laboratory test.

When is it dangerous?

The most common way for asbestos fibers to enter the body is through breathing. In fact, asbestos-containing material is not generally considered to be harmful unless it is releasing dust or fibers into the air where they can be inhaled or ingested. Many of the fibers will become trapped in the membranes of the nose and throat where they can be removed, but some may pass deep into the lungs, or, if swallowed, into the digestive tract. Once they are trapped in the body, the fibers can cause health problems. Symptoms of asbestos-related diseases may not occur until 20 or 40 years after exposure.

Asbestos-containing ceiling tiles, floor tiles, undamaged laboratory cabinet tops, shingles, fire doors, siding shingles, etc. will not release asbestos fibers unless they are disturbed or damaged in some way. If an asbestos ceiling tile is drilled or broken, for example, it may release fibers into the air. If it is left alone and not disturbed, it will not. Asbestos pipe and boiler insulation is not hazardous unless the protective canvas covering is cut or damaged and the asbestos underneath is actually exposed to the air.

STRUCTURED NOTE-TAKING

Water damage, constant vibration, aging and such physical acts as drilling, grinding, buffing, cutting, sawing or striking can break the materials down making it more likely that asbestos fibers will be released.

The EHS Asbestos Abatement Department has surveyed all campus buildings for the presence of asbestos. If you need to do work that might involve asbestos (lifting ceiling tiles, repairing insulated pipelines, etc.), check with EHS to find out what can be done safely. Proceed with your work only when given the "all-clear."

Housekeeping Safety

Housekeepers and custodians should never sand or dry-buff asbestos-containing floor tiles, and only wet stripping methods may be used during stripping operations. Low abrasion pads should be used at speeds below 300 rpm. Broken and fallen ceiling tiles should be left in place until identified. Only after they have been identified as safe may they be removed. Asbestos abatement workers will remove asbestos tiles.

Asbestos workers must also be the ones to remove broken and damaged asbestos floor tiles. Report any suspect broken tiles to EHS at x4-7241.

If you are ever accidentally exposed to asbestos, you must file an Employee Exposure Report form within 24 hours (or as soon as possible) with the Environmental Health & Safety Department.

Graphic Organizer

Write Topic Here

Write Topic Here

Asbestos Awareness

What are the dangers of asbestos?

Where is asbestos most likely to be found?

What is asbestos dangerous?

What are is the importance of asbestos housekeeping safety?

VEX ROBOTICS

WHAT IS VEX?

The VEX Robotics Design System offers students an exciting platform for learning about areas rich with career opportunities spanning science, technology, engineering and math (STEM). These are just a few of the many fields students can explore by creating with VEX Robotics technology. Beyond science and engineering principles, a VEX Robotics project encourages teamwork, leadership and problem solving among groups. It also allows educators to easily customize projects to meet the level of students' abilities. The affordable VEX platform is expanding rapidly and is now found in middle schools, high schools and university labs around the globe. Robotics hobbyists also appreciate the advanced capabilities of the VEX System.

TSA's partnership with VEX Robotics has will offer many new opportunities for TSA. At the past national TSA conference in Baltimore, Maryland, the inaugural TSA VEX Robotics "Swept Away" championship occurred. For this competition, schools built special robots. At the conference, these robots play "Swept Away," where they must dump soccer balls and footballs onto the opposing team's field. The game is won by the team with the least number of balls on their side.

TSA and VEX Robotics began their partnership in 2009 to create a competition that could challenge students and enable them to be innovative through the study of robotics. In spring 2010, several states hosted the TSA VEX competition at the state level. For the 2010-2011 school year, chapters can compete in the TSA VEX Robotics competition by registering as a VEX team for cost of \$75.

Visit www.tsaweb.org/Vex-Robotics-Competition to get started.

STEM - Blueprint for Tomorrow - Continued from page 1

- Communication
- Teaching for an outcome
 - Engineering thinking - a strategy for attacking a problem - much like Inquiry Learning Cycle and Polya's Problem Solving Steps
- Career Awareness
 - Integrations with Mathematics & Science
 - Participation in STEM Internships and/or STEM Research Projects
 - Teachers
 - off-campus industry
 - on-campus community
- Emphasis on the common methods through which mathematics and science investigations are carried out and understood.
 - Curricula and instruction is structured to encourage five essential forms of learning: relating, experiencing, applying, cooperating, and transferring (REACT). (CORD)
 - Relating to the sub-disciplines
 - Relating to the real world
- Systems-based approach to thinking.
 - Strategic integration of technology
 - for instruction
 - for career readiness
 - project-based learning, using models - computer simulated models, etc.

COMPETENCY ATTAINMENT RUBRIC

Rubric Vision Statement

Course competency checklists, which are aligned to industry standards, have been created for every Career and Technical Education (CTE) course in Tennessee. Existing course competency checklists in each CTE program of study have been modified to include four levels of performance at the end of each competency. One common Rubric has been developed to assist teachers in rating students on each competency in all CTE courses. The CTE Competency Attainment Rubric is grounded in the work of Webb's Depth of Knowledge (DOK) to assist teachers in determining a student's level of proficiency based on student work and the complexity of assignments given.

The Tennessee CTE Competency Attainment Rubric will serve the following purposes:

- Facilitate student progression through a program of study
- Facilitate student progression into industry and/or postsecondary education
- Increase the reliability and validity of competency checklists
- Increase teacher consistency in using competency checklists and rating student competencies
- Generate electronic student and classroom data that will lead to instructional improvement

As teachers rate students on each individual competency, they will refer to the holistic Rubric. The four performance level descriptors are: Advanced, Proficient, Basic, and Below Basic. The descriptors will help teachers understand what a proficient CTE student should know and be able to do. The descriptors are based on career and postsecondary readiness standards. The CTE Rubric will assist local education agencies to meet final agreed upon local and state established CTE benchmarks.

Training will be provided to program area consultants, field service representatives, CTE directors, and CTE teachers on how to report and use new data results generated in 2010-2011. When this Rubric is placed in the hands of teachers, the goal is for them to respond by saying, "I wish I had this Rubric last year because the competency checklist makes more sense and is more meaningful with the Rubric."

Webinar Series

These links can be found on the CTE website, (CTE Rubric - Competency Attainment) as well as presentation slides. After clicking on webinar, be patient as adobe will need to open presentation.

- (1) eTIGER Data Reporting Steps:
https://admin.na6.acrobat.com/_a828793869/p91471548/?launcher=false&fcsContent=true&pbMode=normal
- (2) Why and How to Apply Rubric:
https://admin.na6.acrobat.com/_a828793869/p61493457/?launcher=false&fcsContent=true&pbMode=normal
- (3) Looking at Student Work Tuning Protocol:
https://admin.na6.acrobat.com/_a828793869/p58716514/?launcher=false&fcsContent=true&pbMode=normal

Train the Trainer materials

CTE Rubric Wikispace (Log onto eTIGER and select "View CTE Courses" to find competency profiles). All Rubrics, Presentation, Better Lesson - Better Results, Looking at Student Work, and FAQ can be found @ http://www.state.tn.us/education/cte/ad/rubric/cte_rubric.shtml

Quality Career and Technical Education Programs

Quality Program Indicator # 9

There are ten (10) **Quality Program Indicators**. The **Quality Program Indicators** set as a minimum standard for Achieving quality program status for Perkins funding. The Career and Technical Student Organization (CTSO) are an integral part of each of our program areas. Number nine (9) is: **Programs having a career and technical student organization as an integral part of the instructional program.**

The Indicators are:

- Lesson plans indicating the integration of CTSO leadership skills and activities in all classes/courses
- State and national membership rosters demonstrating affiliation (Levels II, III and IV)
- Scrapbook and/or compilations of CTSO competition participation/results, community service activities, student led projects
- and activities, other projects.

The bulleted items listed are required documentation to verify that a CTE program has met the minimum requirement.

Note: Levels II, III and IV: The program must have an affiliated and active chapter evidenced by an official state and national roster to receive Perkins funds. ("Active"=Students are given the opportunity to participate in CTSO activities at the regional, state, and national levels.)

Note: Each level should include the previous level(s) plus an extra activity.

Level IV (Commendation/Next Step above Level III plus Levels I, II, III) Activities: School-based activity, community-based activity, classroom activities and presentations, CTSO competition at national level, CTSO Activity at National Level. **Students excelling in Level III will have the opportunity to participate at Level IV.**

Possible Documentation: Official state and national membership roster, documentation of each activity, results, who participated, classroom-based, school-based, community-based, CTSO national level

Level III (Commendation/Next Step above Level II plus Levels I, II) Activities: School-based activity, community-based activity, classroom activities and presentations, CTSO competition at state level, CTSO activity at state level. **Students excelling in Level II will have the opportunity to participate at Level III.**

Possible Documentation: Official state and national membership roster, documentation of each activity, results, who participated, classroom-based, school-based, community-based, CTSO state level

Level II (Commendation/Next Step above Level I plus Level I) Activities: School-based activity, community-based activity, classroom activities and presentations, CTSO competition at regional level, CTSO activity at regional level. **Students excelling in Level I will have the opportunity to participate at Level II.**

Possible Documentation: Official state and national membership roster, documentation of each activity, results, who participated, classroom-based, school-based, community-based, CTSO regional level

Level I (Basic/Required/All Students) Activities: School-based activity, community-based activity, classroom activities and presentations, CTSO competition at school level. **Level I is included in the course curriculum. All students enrolled in the course will participate in Level I.**

Possible Documentation: Documentation of each activity, results, who participated, classroom-based, school-based, community-based, CTSO local competition.

Quality Career and Technical Education Programs

Quality Program Indicator # 9

The leadership standard is not an optional standard. All students enrolled in a CTE course are required to complete the leadership standard.

Examples:

Agriculture program in the **Agriscience (HQ)** course (Indicator 10.5) *Demonstrate the ability to conduct a meeting in accordance with Robert's Rules of Order.* This indicator provides that all students have the opportunity to develop and conduct a business meeting according to **Roberts's Rule of Order**. This allows the student to develop teamwork, problem solving, prioritizing, and communication skills and at the same develops leadership skills for advancement in FFA awards programs.

Business Technology program in the **Keyboarding** course (Indicator 8.7) *Examine the goals and principles of Future Business Leaders of America.* The Performance Indicator indicates that the student will **Composes, keys, and formats informative articles for publication in the local and state FBLA chapter newsletters.** This Performance Indicator provides all students in the class the opportunity to research, compose, and format one or more articles about the goals and objectives of FBLA, activities, leadership positions, competitive events, etc.

Family and Consumer Sciences program core course **Family and Consumer Sciences** (Indicator 1.4) *Apply leadership, citizenship, and teamwork skills as an integral part of classroom, workplace, and community involvement* gives all students in the course the opportunity to participate in activities involving multiple soft skills applications through the study of FCCLA.

Health Science program core course **Health Science Education** (Indicator 8.2) *Diagram the organizational levels of HOSA* gives all students in the course the opportunity to plan a HOSA week, and develop teams to market and teach HOSA background information to the community and new members.

Marketing program core course **Marketing and Management I Principles** (Indicator 8.1) *Demonstrate knowledge of DECA* in Marketing and Management I Principles student have the opportunity to solve problems using role-play, team decision-making and complete DECA projects.

Technology Engineering Education core course **Foundations of Technology** (Indicator 1.5) *Identify personal, teamwork and leadership skills used in various occupations* provides an opportunity for all students to work with a team to develop, implement and evaluate the effectiveness of a community or school service project relating to TSA.

Trade and Industrial Education program core course **Career Success Management** (Indicator 7.2) *Participate in a student organization directly related to their program of study as an integral part of classroom instruction* gives the students activities that refine oral presentation skills as they present the creed, purposes, motto, and emblem of their student organization directly related to personal and professional development using SkillsUSA **Professional Development Program.**

Activities, such as the above examples, not only integrate the program associations in the curriculum but serve as a great recruitment opportunity for the local organizations. Giving all students this opportunity provides students with a leading edge for future employment.

You may contact your CTSO Youth Consultant or Program Consultant for assistance in implementing the Leadership Standard by going to but serve as a great recruitment opportunity for the local organizations. Giving all students this opportunity provides students with a leading edge for future employment.