
TEXTILES TECHNOLOGY

TOPIC #9: Textiles Equipment Technology

TIME PERIOD: 3 days

CORE STANDARD #3: Technology: The students will identify the relationship of new technology to the home, community, and school/workplace.

OBJECTIVE: The students will demonstrate the use of a conventional sewing machine, a serger, and a rotary cutter and mat.

INDEPENDENT LIVING SKILLS (COMPETENCIES):

- | | |
|--------------|--|
| 20.0001-0306 | Identify the basic parts of a conventional sewing machine and the function of each part. |
| 20.0001-0310 | Operate various types of textile equipment (conventional sewing machine, rotary cutter, and serger). |

LIFE SKILLS:

- * Lifelong Learning
- * Complex Thinking
- Effective Communication
- Collaboration
- * Responsible Citizenship
- * Employability

RELATED CAREERS:

Sewing Equipment Repair Person

Sewing Equipment Operator

OCCUPATIONAL CLUSTER:

Technical/Equipment Operation and Repair;
Family and Consumer Sciences

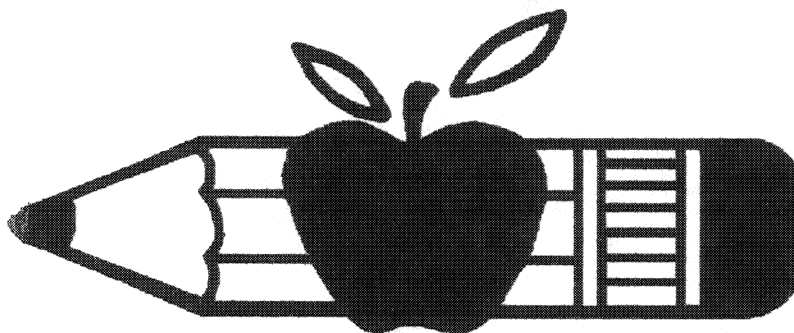
Technical/Equipment Operation and Repair;
Family and Consumer Sciences



LIST OF STUDENT ACTIVITIES:

SUPPLIES REQUIRED:

1.	T-L-C- Sewing Permit and License (Motivator)	Copies of student activity guide (9.11) for each student Project samples (from Topic #10)
2.	The Sewing Machine	Sewing machines Sewing machine diagrams Sewing machine rules posted in area (9.12)
▶ A.	Parts of the Sewing Machine	Copies of student activity guide (9.13-9.15) for each student
B.	"Crazy Stitching"	Copies of student activity guide (9.16-9.17) for each student Fabric pieces printed and ready for stitching (pattern = 9.18)
C.	Sewing Machine Parts Crossword Puzzle	Copies of student activity guide (9.19-9.20) for each student
▶ D.	Winding a Bobbin	Copies of student activity guide (9.22) Bobbins Thread
▶ E.	Threading the Sewing Machine	Copies of student activity guide (9.23) Bobbins Thread
F.	Sewing Machine Tidbits	Background information (9.24) Copies of student activity guide (9.27- 9.28) for each student
3.	The Rotary Cutter and Mat	Rotary cutters and mats Fabric for cutting Patterns for cutting fabric (Topic #10) 6-inch wide plastic ruler Rotary cutter rules posted in area (9.25)
▶ 4.	The Serger	Sergers Serger rules posted in serger area (9.26) Practice fabric
5.	Identification of Related Careers	Career information (9.31) Career posters (9.32-9.33)

TOPIC #9: Textiles Equipment Technology**Teacher Information****VERY IMPORTANT TEACHER INFORMATION:**

This topic covers the three main pieces of sewing equipment used in this unit. The sewing projects are outlined in Topic #10: Textile Occupational Skills. All of the projects are very basic, and all require the use of the rotary cutter and mat, serger, and conventional sewing machine. The teacher can determine how much equipment knowledge he/she wants the students to have before starting a project, and/or how he/she would like to integrate the two topics of study. Because of differing educational settings, schedules, etc., each teacher will need to mesh these two topics and adapt this material for his/her own situation.

Thus, the learning activities and materials identified in this topic DO NOT need to be taught separately from the learning activities and materials in Topic #10. It is recommended that Topics #9 and #10 be integrated for maximum effectiveness.

The textiles unit, Topics #9 through #11, is conducive for use in a round-robin method of instruction, depending upon the facilities, size of class, etc. However, if a round-robin method of instruction is used, it is important that the students have completed instruction in the following categories before beginning the round-robin:

1. Winding the sewing machine bobbin
2. Threading the sewing machine
3. Insert bobbin in bobbin case, place in machine, and bring up lower thread.

It is important that the teacher demonstrate these procedures and allow the students to practice them before starting the round-robin.



PROCEDURE

CONCEPT: Learning to operate sewing equipment is an important part of textile-related careers.

1. **T-L-C SEWING PERMIT AND LICENSE (MOTIVATOR)**

Introduce the students to the Textiles Technology unit by giving them a copy of the student activity guide, T-L-C SEWING PERMIT AND LICENSE (page 9.11), and explain that sewing is a lot like driving a car—before you can drive, you must first learn how to operate the car. The same is true with sewing equipment—before you can sew, you must first learn how to operate the sewing equipment. This ensures: 1) safety for the operator(s), and 2) proper use and care of the equipment. Have the students put their names on their permits and explain that as they learn to use the various pieces of sewing equipment, you will initial that part of their sewing permits. When everything on their permits is initialed, the students can turn in their permits and obtain their sewing licenses (the bottom portion of the page) from the teacher!

The teacher should introduce the students to the three main pieces of equipment they will be learning to use:

- 1) the conventional (lockstitch) sewing machine
- 2) the rotary cutter and mat
- 3) the serger

It is also recommended that the teacher show the students examples of the sewing projects included in the unit to foster excitement for the unit. The teacher should demonstrate the basics of each piece of equipment and cover the rules for using that piece of equipment. It is recommended that the teacher make this brief enough to maintain student interest yet thorough enough to cover necessary information. The introduction to the equipment will probably take two days of instruction time.

2. **THE CONVENTIONAL (LOCKSTITCH) SEWING MACHINE**

♦ A. Parts of the Sewing Machine

The student activity guide, PARTS OF THE SEWING MACHINE, is on pages 9.13-9.15. The teacher will need to obtain illustrations and instructions from his/her sewing machine manuals and put them in the space provided. Make sure the graphics are clear enough that they can be read easily. Go through the basic machine parts and their functions with the students and/or have the students follow the directions on the student activity guide.



NOTE: Because of the variations between makes and models of machines, a rather large list of machine parts has been provided (page 9.14). However, it is recommended that each teacher choose the ten (10) or twelve (12) parts he/she thinks are the most important and reduce the list to the smaller number.

After the students have completed this activity, have them take the PARTS OF THE SEWING MACHINE QUIZ (page 9.13) as provided by the teacher.

It is suggested that your rules for operating the sewing machines be enlarged and posted in the sewing area for teacher and/or student reference.
(See page 9.12.)

B. Crazy Stitching

This exercise has been included as an introduction to the sewing machine. This exercise is done without the machine being threaded! For the crazy stitching, the teacher will need to have a diagram of the sewing machine(s) in his/her department on a poster in the machine area, with the basic parts labeled. The stitching designs (page 9.18) need to be transferred onto heavy muslin, pella, or similar fabric with a felt-tip marker or a permanent transfer pencil so they can be used repeatedly. (This eliminates paper stitching and gives students the true feel of how fabric works with the machine.) The teacher will need to have the practice fabrics prepared before class to help this activity run smoothly.

It is recommended that the teacher demonstrate sewing the "Crazy Stitching," and the student instructions for sewing the "Crazy Stitching" (pages 9.16-9.17) should be posted near the machines.

C. Sewing Machine Parts Crossword Puzzle

While the students wait for assistance from the teacher and/or teacher's aid during the winding the bobbin and threading process, have the students complete the student activity guide, SEWING MACHINE PARTS CROSSWORD PUZZLE (pages 9.19-9.20), to help the students learn the correct names of the sewing machine parts.

◆ D. Winding A Bobbin

The teacher should demonstrate how to "wind a bobbin" for the students, following the student activity guide (page 9.22). The teacher will need to obtain illustrations and instructions from his/her sewing machine manuals and insert them in the space provided. Again, make sure the graphics are clear enough they can be read easily.



► E. Threading the Sewing Machine

The teacher should demonstrate how to "thread the sewing machine" for the students, then have the students complete the student activity guide (page 9.23). Again, the teacher will need to obtain illustrations and instructions from his/her sewing machine manuals and put them in the space provided. Once more, make sure the graphics are clear enough they can be read easily.

F. Sewing Machine Tidbits

Some historical information about the conventional (lockstitch) sewing machine is provided (page 9.24) for use with the TEXTILES EQUIPMENT student activity guide (pages 9.27-9.28).

3. **THE ROTARY CUTTER AND MAT**

Some suggested procedures and/or rules for using a rotary cutter and mat are:

1. Only one student at a time is allowed in the cutting area.
2. Place the mat on a flat surface in a corner or a confined area.
3. Place your fabric on the mat.
4. A 6-inch wide plastic ruler should be used as a guide for cutting straight edges for accuracy and safety.
5. Place the pattern on the fabric. Use weights instead of pins to hold the pattern in place.
6. Cut the fabric by pressing down on the rotary cutter. Some cutters have a lock on the blade of the cutter. It must be unlocked before the cutter will work. Other cutters are built to hide the blade until you place pressure on it. When pressure is placed on the cutter, the blade is exposed and will cut the fabric.
7. Use a one-way stroke to cut, not a back-and-forth motion.
8. Push the guard back over the blade when you have finished cutting.

It is suggested that these rules be enlarged and posted in the cutting area for teacher and/or student reference.

Each student will need to have the opportunity to use a rotary cutter and mat. It is suggested that the teacher have the fabric and the cutting patterns* ready for the projects in Topic #10 so that the students will have the opportunity to actually cut something they will be working with later. The rules for operation should be on a large poster above the cutting area.

The teacher will also need to discuss cutting on the grainline and to explain the concept of "straight of grain," along with demonstrating how to cut at the edge of the fabric (instead of the middle) to conserve fabric.



- * The cutting pattern sizes are given at the beginning of each construction project in Topic #10. If these can be made of masonite or some type of hard plastic, it will facilitate the cutting by the students. The patterns will need to be marked to identify project, size, number of pieces, etc.

Some information about the rotary cutter and mat is provided (page 9.25) for use with the TEXTILES EQUIPMENT student activity guide (pages 9.27-9.28).

4. **THE SERGER**

Some suggested procedures and/or rules for using the serger are:

1. Report any repairs needed.
2. If the machine comes unthreaded, tell the teacher.
3. The hand wheel turns the direction of the arrow on the handwheel—some turn toward the back and some turn toward the front.
4. Keep fingers back away from stitching line!
5. The presser foot must always be in the "down" position for sewing.
6. Never sew paper in the serger.
7. DO NOT USE PINS IN THE SERGER AREA! PLEASE!
8. Don't force or pull the fabric—the serger will feed it automatically.
9. Leave a thread tail to be cut with scissors.
10. Check the foot control position.

It is suggested that these rules be enlarged and posted in the serger area for teacher and/or student reference.

Each student should have the opportunity to use the serger. The rules for operation should be on a large poster in the serger area.

Some information about the serger is provided (page 9.26) for use with the TEXTILES EQUIPMENT student activity guide (pages 9.27-9.28).

5. **IDENTIFICATION OF RELATED CAREERS**

Using the career information (page 9.31) and the career posters (pages 9.32-9.33), identify and discuss some careers related to textiles equipment technology.

SUMMARY:

Operating sewing equipment is a lot like driving a car—one must know how to operate the vehicle before getting on the road. This insures safety for the operator(s) and proper use of the equipment.



CORE TEST QUESTION BANK

UNIT: TEXTILES TECHNOLOGY

TOPIC #9: TEXTILES EQUIPMENT TECHNOLOGY

20.0001-0306 ***Identify the basic parts of a conventional sewing machine and the function of each part.***

1. Match the parts of a sewing machine listed on the left with their functions on the right by putting the letter of the correct term in the space before the definition.

a.	Bobbin	_f_	Lowers and raises the feed dog
b.	Bobbin case	_b_	Holds the bobbin; allows the bobbin to turn and form the stitch; provides bobbin thread tension
c.	Bobbin winder spindle	_e_	Moves the fabric along as you sew
d.	Bobbin winder tension	_c_	Holds the bobbin while winding it
e.	Feed dog	_a_	Holds the thread inside the machine
f.	Feed-dog control	_d_	Provides tension on the thread when winding the bobbin

2. Match the parts of a sewing machine listed on the left with their functions on the right by putting the letter of the correct term in the space before the definition.

g.	Foot or knee control	_j_	Turns the light off and on
h.	Handwheel	_i_	Stops needle movement during bobbin winding
i.	Handwheel release	_h_	Controls the movement of the take-up lever and needle; can be controlled by power or hand; should be turned toward you
j.	Light switch	_g_	Controls how fast the machine sews



TEST QUESTIONS

3. Match the parts of a sewing machine listed on the left with their functions on the right by putting the letter of the correct term in the space before the definition.
- | | | | |
|----|-----------------|--------------|---|
| k. | Needle | <u> n </u> | Moves the needle to different positions: center, right, and left |
| l. | Needle clamp | <u> m </u> | Fits around the feed dogs; the needle goes through it; has a seam guide on it |
| m. | Needle plate | <u> l </u> | Holds the needle in place |
| n. | Needle position | <u> k </u> | Carries the thread and pierces the fabric |
4. Match the parts of a sewing machine listed on the left with their functions on the right by putting the letter of the correct term in the space before the definition.
- | | | | |
|----|--------------------|--------------|---------------------------------------|
| o. | Power switch | <u> p </u> | Holds fabric in place while you sew |
| p. | Presser foot | <u> r </u> | Allows the machine to stitch backward |
| q. | Presser foot lever | <u> q </u> | Lifts and lowers the presser foot |
| r. | Reverse control | <u> o </u> | Turns the sewing machine on or off |
5. Match the parts of a sewing machine listed on the left with their functions on the right by putting the letter of the correct term in the space before the definition.
- | | | | |
|----|---------------------------------------|--------------|---|
| s. | Spool pin | <u> s </u> | Holds the spool of thread in place |
| t. | Stitch length control | <u> v </u> | Sets the width of the zigzag stitch |
| u. | Stitch pattern selector | <u> t </u> | Sets the length of the stitch |
| v. | Stitch width control (zigzag control) | <u> u </u> | Shows you which type of stitch the machine will sew |



TEST QUESTIONS

6. Match the parts of a sewing machine listed on the left with their functions on the right by putting the letter of the correct term in the space before the definition.
- | | | | |
|----|------------------------|--------------|--|
| w. | Take-up lever | <u> y </u> | Holds the thread in place on the sewing machine |
| x. | Thread cutter | <u> x </u> | A place to cut the thread(s) without using scissors |
| y. | Thread guides | <u> z </u> | Adjusts the tension on the thread as required for a particular project |
| z. | Thread tension control | <u> w </u> | Pulls thread from the spool |

20.0001-0310 *Operate various types of textile equipment (conventional sewing machine, rotary cutter, and serger).*

- The rotary cutter and mat is a fairly recent invention for use in the textile industry.
 - * True
 - False
- The rotary cutter and mat are used instead of _____ for cutting out sewing projects.
 - Pins
 - * Scissors
 - Measuring tapes
 - Pinking shears
- A serger is different from a conventional sewing machine. Put a check by each item listed that is different. (There are four (4) correct answers.)

<u> * </u>	a.	It takes more than one spool of thread to operate
<u> </u>	b.	It operates on only one spool of thread
<u> * </u>	c.	It has a small knife that trims the fabric as it sews
<u> * </u>	d.	It makes a nice finished edge on the fabric so it doesn't fray
<u> * </u>	e.	It uses a lot more thread and sews much faster
<u> </u>	f.	It uses a lot less thread and sews much slower
- Sergers are used a lot in the sewing industry because:
 - They can sew so much faster
 - They can do several operations at once
 - * Both "a" and "b" are correct
 - They are so easy to thread