

Lesson 5.10: Meet the Machine: Parts, Safety, Threading, and Paper Drills

Unit: Unit 5, Make It, Mend It, Wear It (Apparel and Textile Production and Design) **Topic:** 5.2 Hand and Machine Sewing Skills **Grade:** 6 to 8 (written at grade 7; see Differentiation for the grade 6 support and grade 8 stretch) **Days:** 3 class periods of 40 minutes (days 126, 127, and 128 of the year) **Room:** FACS lab with sewing machines for most of the class at once, plus the hand station. A no-machine version is below.

Three days, and no fabric touches a machine on any of them. Day 1 is parts, rules, and each student meeting the one machine that will be theirs all unit. Day 2 is threading, top and bobbin, with a buddy check. Day 3 is control: sewing paper lines with no thread, where the needle holes show exactly how straight the driving was. The hand skills from Lessons 5.6 to 5.9 are the diagnostic that already happened: a student who could not thread a hand needle or hold a straight backstitch gets extra eyes at the machine, because the machine multiplies whatever control a student brings to it.

This lesson carries the machine management layer for the whole unit, and it is taught as content, not housekeeping: numbered machines with each student assigned the same number all unit, the threading buddy system, and the machine doctor tag that moves a student to a spare machine or the hand station when a machine jams, so one jam never stalls a lesson.

Standards

- NYS module line: NYS ATPD 2. Production a) Identify common equipment and supplies used in hand and machine sewing
- NYS module line: NYS ATPD 2. Production b) Demonstrate safe use and storage of equipment used in hand and machine sewing
- CTE theme line: CTE HSW 4. Classroom and Workplace Safety c) Apply safety practices when using tools, machines, and equipment
- CTE theme line: CTE HSW 4. Classroom and Workplace Safety i) Demonstrate development of workplace safety skills through practice of these skills in a variety of classroom applications
- NYS FACS Learning Standard 2 (Intermediate), Key Idea: Students will know the basic principles of home and community safety. They can demonstrate the skills necessary to maintain their homes and workplaces in a safe and comfortable condition. They can provide a safe and nurturing environment for themselves and others.; Performance Indicator: Students use age-appropriate techniques to select and maintain clothing.
- CDOS Standard 3a Universal Foundation Skills: Technology. Students select and use appropriate technology to complete a task.
- CDOS Standard 3a Universal Foundation Skills: Personal Qualities. Students demonstrate an understanding of the relationship between individuals and society and interact with others in a positive manner.

- National FCS 3.0: 16.4.1 Work skillfully with traditional and newer equipment, tools, and supplies to construct, alter, repair, and recycle textiles and apparel.

Note on the citations: HSW 4. i) is cited in Topic 5.2 because the topic practices the same safety routine across hand days and machine days, and the sampler's tool safety row in Lesson 5.11 is where it is scored. ATPD 2. c), the construction line, is met in Lesson 5.11 when fabric meets the machine; these three days are 2. a) and 2. b) done properly.

Enduring understanding and essential question

Big idea: A machine does the same stitch your hands do, faster, and it demands more respect because it does not stop when your finger is in the way. Control comes before speed, and the machine you understand is the machine that does not scare you. **Essential question:** What does a machine give me that my hands do not, and what does it take away?

Objectives

By the end of this lesson, students will be able to:

1. (Low: remember or understand) Identify seven parts of a sewing machine at their own assigned machine and state the four machine safety rules and the machine close-down routine from memory.
2. (Mid: apply or analyze) Thread the top thread and load the bobbin on their assigned machine, verified by a threading buddy against the guide, and bring the bobbin thread up.
3. (High: evaluate or create) Drive an unthreaded machine along a straight line, a curve, and a square with pivots on paper, then evaluate their own hole line against the drawn line and name where control was lost.

Vocabulary

Tier 2 (general academic): control, assign, verify, license, drill Tier 3 (FACS): presser foot, feed dogs, bobbin, take-up lever, hand wheel, foot pedal, needle plate, backstitch lever, tension, pivot. See the unit vocabulary list (Vocabulary 05.md) for Turkish, Portuguese, and Spanish.

Materials and setup

- Sewing machines, one per student where the room allows, numbered with a taped card: machine 1, machine 2, and so on. The assignment list pairs each student with one machine number for the whole unit, and the same list pairs each student with a threading buddy at the next machine. Post the list; it does not change.
- One or two spare machines, tested and threaded, parked at the side with a SPARE card. These are where a student goes when the machine doctor tag comes out.
- The machine doctor tag: a red card that hangs on a jammed machine. The rule is one sentence long: tag it, tell me, move to the spare or the hand station, keep working. I fix tagged machines after school, not mid-lesson.

- The hand station: one table with the Lesson 5.5 station kit, counted, for any student whose machine is down, whose path is hand sewing, or who needs it.
- Handout, one per student: Handout 05.10 - Machine Parts and Threading Guide.md (diagram, threading steps, the four rules, the close-down routine, and the paper drill sheets)
- Practice paper, three sheets per student, printed from the drill pages of the handout: a straight line page, a curve page, and a square-with-corners page
- One spare bobbin per machine, wound ahead; one spare needle per machine; a small screwdriver; the machine's own manual, printed or the relevant pages copied, in a binder at each machine
- Power strips taped down, cords run away from walkways and taped
- Assessment 05.2 is not used in this lesson; it lands at the end of Lesson 5.11
- Slides: Slides 05.10 - Meet the Machine Parts Safety Threading and Paper Drills (Day 1, Day 2, and Day 3 labeled)
- Timer visible to the class

Setup notes: test every machine yourself with thread on scrap the week before, and wind every bobbin ahead. A machine that skips stitches or eats fabric on a student's first day teaches that student that machines are the enemy, and that costs more than the hour of testing. Number the machines before Day 1 and write the assignment list to match; a student who sits at the same machine every day learns its habits, notices when something changed, and stops blaming the machine. *[Sal: count the working machines and write the number in the unit plan, Section 10. The plan assumes most of the class can sit at a machine at once, with the hand station and the spares absorbing the rest.]*

Pre-assessment

Day 1's do now is a parts-naming guess against the diagram, which tells me who has used a machine before; those students become the first threading buddies to be verified. The four-box clipboard record from Lessons 5.6 to 5.9 already told me who has control trouble; those students get the hand wheel path on Day 3 first and the pedal second.

Do now and hook (Time: 5 min Day 1, 4 min Days 2 and 3)

Day 1. On the board with the machine diagram on the slide: "Seven parts of this machine are numbered. Write what you think each one does. Guess. Then star the one you think is the most dangerous." Debrief: most students star the needle, which is right, and nobody stars the pedal, which is the other right answer, because the pedal is what makes the needle move when a hand is in the wrong place. Then the hook: sew four inches of straight seam on scrap in about three seconds, and hold it next to a hand-backstitched seam from Lesson 5.7. "Same stitch. Three seconds against twenty minutes. Here is the trade: the machine does not know your finger is there. These three days are how you earn the pedal."

Day 2. On the board: "Write the threading path in order, as far as you remember it, top thread only. Do not look at the handout yet."

Day 3. On the board: “What are the four rules? Write them without looking. Then write the close-down routine.”

Procedure

Day 1: the parts, the rules, and your machine

Step	Teacher will	Students will	Time
1. Direct instruction: the seven parts and the four rules	At one machine with the class in a ring, or under the document camera. Name and point to seven parts: the needle (it goes up and down and it does not care what is under it), the presser foot (holds the fabric down so the feed dogs can move it), the feed dogs (the metal teeth that pull the fabric through, which is why you guide and never push), the bobbin (the bottom thread, in a case under the needle plate), the take-up lever (the arm the top thread rides), the hand wheel (turns the needle one stitch at a time, always toward you), and the foot pedal (the gas). Then the four safety rules, said with the machine off. (1) Both hands stay to the sides of the needle, never in front of it, and they guide, they do not	Label the seven parts on the handout diagram and copy the four rules.	13 min

	push. (2) One foot on the pedal, the other flat on the floor. (3) Power off before you change a needle or reach under the needle plate. (4) Hair back, sleeves clear, cords taped, nothing loose near the wheel. Then the habit that is not a rule: turn the hand wheel toward you to see what a stitch does before you ever touch the pedal.		
2. The machine assignment and the close-down routine	Post the assignment list and send each student to their numbered machine. Teach the close-down routine at the machines, everyone doing it on their own machine as it is said: presser foot down, power off, chair in. Then the broken needle rule, which is the one nonnegotiable: a broken needle is reported and handed to me, both pieces, flat on an open palm. It is never thrown out and never left on the floor, because the floor is where knees and hands go. Then the machine doctor tag: if your machine	Find their machine, write its number on the handout, run the close-down routine once, and sign the machine rules line: the four rules, the close-down routine, the broken needle rule.	12 min

	jams or acts wrong, tag it, tell me, move to a spare or the hand station, and keep working. Nobody loses a period to a jammed machine.		
3. Meet the machine, hands on, power off	Machines stay off. At their own machine, students find and touch each of the seven parts, raise and lower the presser foot, turn the hand wheel toward themselves and watch the needle and the take-up lever move together, and open and close the bobbin cover. The buddy pairs check each other: point to the part I name.	Locate all seven parts on their own machine and pass the buddy point-check.	7 min
4. Close	Every machine through the close-down routine, said out loud as it is done. Exit line at the door: one part and what it does.	Run the close-down routine and give the exit line.	3 min

Day 1 total: 5 plus 13 plus 12 plus 7 plus 3 = 40 minutes. The close-down routine in Step 4 is the closure.

Day 2: threading, top and bobbin, and the buddy check

Step	Teacher will	Students will	Time
1. Demonstration: threading, twice	Thread one machine slowly under the camera, narrating every step, then a second time at	Number the threading steps on the handout diagram while watching.	8 min

	normal speed so students see what routine looks like. Top thread: spool on the pin, through the first guide, down and around the tension dial, up through the take-up lever from back to front, down through the lower guides, through the needle eye front to back. Bobbin: take a wound bobbin, drop it in the case the way the arrow shows, pull the thread through the slot, close the plate, hold the top thread, turn the hand wheel one full turn toward you, and pull the loop of bobbin thread up and back under the foot. Say the manual rule: every machine is a little different, and the manual at your machine is the authority, not me.		
2. The threading drill	Release to assigned machines, power off, threading only. Each student threads the top, loads the bobbin, and brings the bobbin thread up. The threading buddy checks the path against the handout's	Thread top and bobbin at their own machine, check their buddy against the steps, earn both initials.	22 min

	numbered steps and initials the buddy line only when every step matches. Then the roles swap. I verify pairs as they finish: pull the top thread gently to feel the tension, check the bobbin drop, initial the license line on the handout. A student with an initialed license line may sit at a threaded machine in Lesson 5.11; a student without one sews at a machine I threaded until the license is earned, and there is no shame in that, only a redo of the drill.		
3. Unthread, rethread, close	The fastest finishers unthread their machine completely and rethread it from nothing, which is the real test. Everyone runs the close-down routine. Exit line: the one threading step you will forget tomorrow, said out loud so you do not.	Rethread if time allows; run the close-down routine; give the exit line.	6 min

Day 2 total: 4 plus 8 plus 22 plus 6 = 40 minutes. The close-down routine and the exit line are the closure.

Day 3: paper drills, no thread

Step	Teacher will	Students will	Time
1. Demonstration: driving on paper	At one machine, no thread, paper in:	Watch, then read the three drill pages	7 min

	sew the straight line at the slowest steady pedal speed, hands to the sides guiding, eyes on the line just ahead of the needle, not on the needle. Then the curve: slow down, small steering, never push. Then the corner: stop with the needle down in the paper, lift the presser foot, pivot the paper around the needle, foot down, continue. Needle down, foot up, pivot, foot down: say it as a chant. Show what the holes tell you: hold the sewn paper up to the light and the hole line is the record of every wobble.	and their targets.	
2. Practice: line, curve, square	Release to assigned machines, no thread anywhere. Sheet 1: the straight line, three passes. Sheet 2: the curve. Sheet 3: the square with a pivot at each corner. Circulate with the clipboard and the three control boxes per student: hands to the sides, steady speed, holes on the line. A student who cannot keep hands to the sides drives	Complete the three drill sheets, hold each up to the light, circle their own worst section.	22 min

	with the hand wheel until they can; that is a technique, not a penalty. The hand station runs the same drills on paper with an unthreaded hand needle and a ruler edge.		
3. Self-check and close	Students trade sheets with their buddy and mark the straightest two inches and the wobblest two inches on each other's square. Collect the squares; they are the record that the license is real. Close-down routine on every machine. Exit line: where did you lose control, the line, the curve, or the corner?	Trade, mark, hand in the square sheet, run the close-down routine.	7 min

Day 3 total: 4 plus 7 plus 22 plus 7 = 40 minutes. The buddy trade and the close-down are the closure.

Questions to ask

Monitor understanding:

- What do the feed dogs do, and what does that mean about pushing?
- Which way does the hand wheel turn?
- Your hands are where? Show me.
- What happens before anyone changes a needle?
- The needle just broke. What are the two things you do, in order?
- Your machine is jamming. Walk me through the tag rule.

Deepen learning:

- Why does the class thread with the power off when the machine cannot sew without the pedal anyway?

- The holes on your square drift outward after every corner. What is happening at the pivot?
- Why is the same machine yours all unit? What would you lose if you drew a random machine every day?
- A shop with ten sewing jobs has one machine that eats fabric. What does the shop lose if nobody reports it?

Check for understanding

Day 1: the buddy point-check and the signed rules line. Day 2: two initials on the license line, buddy and mine, and I feel the tension on every machine myself. Day 3: the three control boxes per student on the clipboard, and the square sheet with the student's own worst section circled, which tells me whether they can see their own driving. A student missing a box repeats that drill in Lesson 5.11 Day 1 while the class cuts fabric, and sews their first seam on my pre-threaded machine with me beside them.

Closure

Each day closes with the close-down routine run on every machine, out loud, plus the exit line named in the day's procedure. The routine is the point: by day 129 it has to be automatic, because from then on there is fabric and thread in the room.

Differentiation and supports

- ELL: the parts diagram and the threading path are numbered picture steps that can be followed without English; the four rules and the close-down routine are posted in English, Turkish, Portuguese, and Spanish (see Vocabulary 05.md); the buddy check is a point-and-name task that works in any shared language, and buddy pairs can be matched by language where that helps.
- IEP and 504 (general): the hand wheel replaces the pedal for any student who cannot manage pedal pressure, one stitch at a time, and every drill can be completed that way with the same three boxes; a student with a startle response to machine noise starts at the hand station with ear protection available and joins a quiet corner machine when ready; extended time means the threading license can be earned at lunch the same week; the rules and routine may be recited orally instead of written.
- Grade 6 support: the threading drill is done in two halves, top thread on one pass and bobbin on a second pass, each verified separately; the drill sheets get a slower target and a second straight-line sheet before the curve.
- Grade 8 stretch: thread the machine from nothing using only the manual, then teach the threading to one other student, which is the best test of knowing a procedure; on Day 3, a second square half the size, where every side is shorter and every pivot comes faster.
- UDL checkpoint used: multiple means of representation (diagram, live demonstration, numbered picture steps, the machine's own manual) and multiple means of action and expression (pedal or hand wheel, written or spoken rules, the license earned on any of three days).

- No-machine alternative: if the machines are not usable, these three days compress to one day of parts and rules taught from the diagram and the slides (the honest sentence out loud: I cannot teach you to run a machine we do not have, but you will meet one in high school or a job, and you will know what every part does), and Lessons 5.10 and 5.11 revert to the archived hand-sewn build; the archived lesson is in [00_admin/_archive/2026-09-14 Unit 5 pre-machine revision/](#). Reduced-dexterity alternative: hand wheel driving, pre-wound bobbins, a buddy who pulls the bobbin loop up, and the paper drills done with the paper taped in place.

Assessment

Objective	Standards met	Learning task	Assessment (formative or summative; tool)
1. Identify seven parts and state the four rules and the close-down routine	ATPD 2. a); HSW 4. c); CDOS 3a Technology	Day 1 Steps 1 to 3	Formative; labeled diagram checked for seven correct labels, signed rules line, buddy point-check
2. Thread top and bobbin, verified by a buddy	ATPD 2. b); HSW 4. c), 4. i); CDOS 3a Personal Qualities; National FCS 16.4.1	Day 2 Step 2	Formative; the license line with two initials, buddy and teacher
3. Drive line, curve, and pivoted square on paper and evaluate the hole line	ATPD 2. b); HSW 4. c); CDOS 3a Technology; National FCS 16.4.1	Day 3 Steps 2 and 3	Formative; three control boxes on the clipboard plus the collected square sheet with the student's own worst section circled

Topic 5.2's formal checks land in Lesson 5.11: the finished bag on the 20-point item rubric and the sampler card on Assessment 05.2. Nothing in this lesson is summative on purpose: these are the three days a student is allowed to be bad at it.

Homework

None. Optional: find one sewing machine in your life, at home, at a relative's, in a shop window, and name three parts to whoever is nearby.

Connections

Technology and engineering: a sewing machine is a cam, a linkage, and a feed mechanism, and a technology teacher can open the cover and show the inside in five minutes; the pivot drill is the same tool-path thinking a CNC or 3D printer lesson uses. Career awareness: machine competence is a hiring line in costume shops, upholstery, alterations, and small manufacturing, which is the bridge to Lesson 5.19. Community: a local quilt shop, costume

shop, or sewing circle will often lend a machine or a volunteer; a volunteer at one machine during the threading drill doubles the verification speed. *[Sal: that ask is worth making before this week.]*

Sources

- NYS Middle Level CTE FACS Content Module 03, Apparel and Textile Production and Design (nyctecenter.org, June 2018), lines 2. a) and 2. b). Copy in 02 Standards/NYS Module PDFs/.
- NYS Middle Level CTE Theme Module 04, Health, Safety, and Wellness, lines 4. c) and 4. i). Text per 02 Standards/NYS ML CTE FACS Modules - verbatim extract of all twelve.md.
- NYS Learning Standards for Health, Physical Education, and Family and Consumer Sciences (1996), Standard 2, Intermediate, Key Idea and PI C. Wording per the crosswalk, Part A.6.
- CDOS Standard 3a, Technology and Personal Qualities, Intermediate, per the crosswalk, Part A.7.
- National Standards for Family and Consumer Sciences Education 3.0 (LEAD FCS Education, 2018), competency 16.4.1, per 02 Standards/STANDARDS SOURCES - web research.md, section 4.16.
- Machine part names, threading order, and the paper-drill technique are standard beginner sewing instruction; every machine's own manual is the authority for that machine and is cited on the handout as such. Written new for this course.

Teacher notes

- Test every machine with thread on scrap the week before. Wind every bobbin ahead. One bad machine on day one costs a student's confidence for the unit.
- Paper with no thread is the single best control exercise there is, and students think it is a joke until they hold their own crooked line of holes up to the light. Do not skip it to get to fabric faster.
- The rule that gets broken is hands in front of the needle. Say it, show it with a pencil where a finger would be, and enforce it by moving a student to the hand wheel.
- The assignment list is the discipline system. Same student, same machine, all unit: when machine 4 comes up unthreaded or out of adjustment, I know exactly who sat there, and so does the class. Say that out loud on Day 1, kindly.
- Keep the machine doctor tags where students can reach them. The tag is a permission, not a confession: the message is that reporting a problem is what a professional does.
- By the end of Day 2 I have a list of licensed threaders. Before Lesson 5.11 Day 1, I pre-thread every machine myself anyway, because the first fabric day should spend its minutes on sewing, not threading; from 5.11 Day 2 on, the licensed threaders thread their own and the buddy system covers the rest.
- *[Sal: this lesson assumes machines for most of the class at once, per D19. Write the real machine count in the unit plan, Section 10, and adjust the buddy list to match.]*