Assessing Psychomotor Performance

Psychomotor objectives in occupational education may involve a process, a product, or both. It is important to select evaluation devices that will effectively measure the most critical aspects of each objective.

Psychomotor objectives involve motor or skill-centered activities. This type of objective (thread a sewing machine, light a blowtorch, correct a typing error, install a piston) typically involve:

1. following a particular procedure, or sequence of steps.
2. performing the procedure to a certain level of competency.
3. creating an end product or result that meets certain criteria.

Any one or all of these three areas can be evaluated through observation.

Objectives that are primarily concerned with skills are recognizable by their use of action verbs that indicate a very specific motor skill. The following are examples of such verbs:

- Adjust
- Apply
- Assemble
- Blend
- Calibrate
- Carve
- Conduct
- Connect
- Construct
- Convert
- Cut
- Decrease
- Demonstrate
- Dissect
- Fasten
- Feed
- Fit
- Fix
- Grind
- Grow
- Guide
- Hammer
- Handle
- Heat
- Hook
- Increase
- Insert
- Keep
- Lengthen
- Limit
- Make
- Manipulate
- Mind
- Mix
- Mold
- Nail
- Operate
- Peel
- Pin
- Plant
- Position
- Prepare
- Raise
- Remove
- Replace
- Report
- Reset
- Rip
- Roll
- Sand
- Saw
- Set
- Sew
- Shake
- Sharpen
- Shorten
- Shovel
- Shut
- Strip
- Slide
- Spread
- Start
- Stock
- Straighten
- Strike
- Switch
- Tear
- Transfer
- Trim
- Tune
- Turn
- Twit
- Type
- Weave
- Weigh
- Wipe
- Wrap
Evaluation Devices

When you, as an instructor, want to determine whether a learner has acquired a desired skill, you may look at the process the learner went through, the final product that the learner produced, or perhaps both.

Sometimes, following the correct process is all important -- for example, when a child-care worker teaches children a new game or when a receptionist handles a client who wants an appointment. At other times, it is far better to evaluate the final product (e.g., a threaded pipe, a pressed garment, or manicured fingernails) to see if the learner has achieved the skill.

Some skills must not only result in a product of acceptable quality, but must be performed in a very carefully prescribed way. In taking a dental X-ray, for instance, not only must the developed X-ray be technically correct, but the picture-taking procedure must be followed exactly in order to prevent injury to patient and technician.

According to some educators, there are two types of evaluation devices that are most commonly used to evaluate the processes used and products produced by learners: checklists and rating scales. These devices are similar in appearance and use, they both contain explicit criteria, or standards, for measuring performance.

These educators state that a checklist calls for a simple yes/no judgment and is most suitable for evaluating procedures (processes). A rating scale, on the other hand, allows the observer to indicate the degree to which a characteristic is present or the frequency with which a behavior occurs. Thus, it is most suitable for evaluating products.

It may be an oversimplification, however, to view these two instruments as having such discrete characteristics and purposes. In this lesson, we will treat both of these devices as one, a performance checklist, but one that can accommodate different rating options and evaluation purposes.

According to our definition, a performance checklist will include a list of process and/or product criteria. These criteria may include quality standards, degrees of accuracy, steps to be completed, sequence of steps to be followed, time standards, or safety standards, depending on the performance being evaluated. The criteria should be designed to help the evaluator to focus his or her observations on the critical aspects of the objectives and to ensure that these observations are as objective as possible.

And, according to our definition, a performance checklist will include a rating scale. This rating scale may be a simple yes/no rating scale that allows only for indicating whether the desired characteristic or step is either present or absent. Or it may be a multi-level rating scale that allows for indicating the degree to which a characteristic is present or the frequency with which a behavior occurs.

Thus, instead of dealing with two types of evaluation devices, we are dealing with one device (the performance checklist), which can involve the use of two types of rating scales.

The type of rating scale you use for your performance checklist will depend on the
type of performance (process/product) involved, as well as on your need to
differentiate between levels of performance achieved For example, if a learner is
being evaluated on the procedures used in preparing a cake, an item on the
performance checklist might be, *stirred batter until smooth*. If occupational standards
require that absolute smoothness is essential -- that anything less than absolute
smoothness is not acceptable -- then a yes/no rating scale may be appropriate. Yes,
it is smooth; or no, it is not.

On the other hand, if a learner's final product -- the cake -- is being evaluated, you
might want to be able to evaluate variations of *quality* in the performance. For
example, one of the items on the performance checklist might be, *The texture of the
cake was uniform*. The uniformity of the texture could then be rated on a scale from 1
to 5, from *nonuniform and/or lumpy to very uniform and smooth*.

In other words, the type of rating scale selected could depend on the *tolerances*
allowed for successful performance in the occupation — the degree to which a
learner can deviate from the stated criteria and still be successful. Where
tolerances are close (e.g., in setting up a drill press for operation), or where
either/or performances are involved, the yes/no rating scale could be more useful.
Where qualitative judgments are important (e.g., in judging the flavor and
consistency of a prepared dish), the multi-level rating scale could be the more
useful device.

The type of rating scale you use is also a philosophical issue, however. Some
educators maintain that, given occupational standards, the learner's performance
should be rated only on whether he or she did indeed achieve the stated criterion
The rating scale for each criterion should, therefore, be a simple go/no-go type
(yes/no; mastery/no mastery, acceptable/not acceptable) This has simplicity in its
favor but has limits of usefulness. It also forces the instructor to draw a fine line
between acceptable and unacceptable performance.

Multi-level rating scales that permit a degree of latitude in rating the performance
(e.g., the 1 to 5 rating scale mentioned earlier) are much preferred by other
educators. This type of rating scale has the following advantages:

- It allows a minimum acceptable level of performance to be specified.
- It permits the instructor to recognize unusual achievement — to
differentiate among levels of overall performance and reward excellence.
- It gives a learner more information about the quality of his/her performance
  -- about how near or far he/she is from achieving the standard.
- It allows the learner to recycle and work toward higher ratings.

The use of *performance checklists* is especially appropriate when:
- You are administering a performance test.
- When you are evaluating learner psychomotor performance in the
classroom, laboratory, or on the job.

A discussion of these situations follows.

**Performance Tests**
One of the most useful methods for determining the level of the learners’ skill is by giving a performance test. This method is especially valuable when you wish to evaluate both process and product. In this type of test, a problem or task (e.g., weld an aluminum casting) is specified. The learners are then required to solve the problem or perform the task using the supplies and equipment furnished to them. As each learner performs, you would observe and evaluate the procedures followed. At the conclusion of the performance, you would also evaluate the finished product.

Performance tests can sometimes be used as pretests to determine the level at which learners can perform particular skills prior to instruction. By determining this, you can then base instruction on the learners’ need for additional skill. There is little point in teaching a skill if the learner can already do it. By the same token, it makes little sense to teach a skill for which learners do not have the prerequisite skills.

While performance tests are valuable for pretesting, you must exercise extreme caution if any safety hazards are involved in the performance being tested. You may need to test for knowledge of proper safety precautions first and then closely supervise the actual performance.

Performance tests can also be used to preassess the level of learner performance when it would be costly or uncorrectable for a mistake to be made during the process. For example, a learner could be asked to spray-paint a spare fender before spraying a customer’s automobile.

You may also find it useful to use performance tests at the end of a demonstration, when only simple skills are involved (e.g., using basic tools correctly). This allows you to get immediate feedback on the effectiveness of the demonstration and how much each learner learned from it.

In the case of more complex skills, learners need an opportunity to practice the skills before being given a performance test. In other cases, such as with typing or shorthand skills, it is useful to administer performance tests on the same skills periodically over a space of time (e.g., a semester).

Some abilities require mastery. It is essential, for instance, for a nurse to master the critical task of giving a patient a hypodermic injection or for a pilot to master landing an airplane successfully. In such cases — those in which everyone must reach a given level defined as mastery — it is imperative that such abilities be evaluated by performance tests.

Planning and Administering the Tests

Performance tests need to be carefully planned. In planning such tests, you may need to do all or most of the following:

- Develop a learner task sheet in which you explain the tasks to be completed.
- List the materials, equipment, and tools that will be available to the learner.
- Establish criteria, or standards, for evaluating the psychomotor performance.
- Decide what type of evaluation device to use.
- Develop the performance checklist; i.e., list the criteria to be met and select the type of rating scale to be used.
- Devise -- using the learner performance objectives as a basis — the situations or problems the learners will be required to complete.

You need to prepare learners in advance for any upcoming performance test. You should inform them about the purpose of the test, the procedure to be used, and the time of the test. If learners are to be tested individually, the other members of the class need to know what they will be expected to do when they are not involved in the testing.

**You also need to give learners time to practice** the skills on which they will be tested. During their practice time, learners can be provided with copies of the performance checklist to use in self-evaluating their own competency. This not only gives them feedback that will allow them to correct errors. It also helps to develop their ability to recognize acceptable procedures and products.

In competency-based education (CBE) programs, performance testing is a basic and essential component. Usually, the performance checklists are included in the learning packages (e.g., learning guides or modules) that the learners often complete in such programs. As a result, learners know prior to instruction what performance is required of them and what standards they will be expected to achieve. They can thus study and practice until they think they are ready to demonstrate the skill. At that point, they arrange with the instructor for the time and place of the performance test.

When performance tests are used to evaluate **process**, they are usually administered to one learner at a time, since it is essential to check the performance step by step. If the performance does not involve very small (i.e., hard to see) manipulations, however, it may be possible to administer a performance test to a small group of learners, providing you can be positioned so that you can observe every learner.

In situations in which the product is the primary concern, close observation of the procedures followed may not be necessary. In that case, learners can work independently and simply turn in the product to you when it is completed.

When setting up the testing situation, you need to attend to the physical arrangements. You need to be sure that you have all necessary materials and equipment available and properly placed for the test ahead of time.

During testing, you should make sure that other learners are not working in the same physical area in which the testing is being conducted and that their activities will not distract, or interfere with, the learners being tested.

If you are rating the procedures the learners followed, you should conduct a **follow-up conference** with each learner after the testing to discuss your assessment of his/her performance. This can help learners to understand their
progress and the areas of their performance needing improvement.

If you are rating only the product, it is very desirable for you to rate it in the learner's presence. In this way, you can suggest improvements, and the learner can ask questions about the work if necessary.

**Testing Situations**

In the classroom, performance testing can be used to evaluate the efficiency and effectiveness of learners' skills in performing such operations as using a calculator, drawing plans, or taking shorthand.

Performance checklists could be developed for making written observations concerning the accuracy of the performance, the time spent in completing a specified amount of work, or the general neatness of the products.

In laboratory situations in which learners are practicing to improve their levels of performance, they can use performance checklists to self-evaluate the procedures used and the products produced. You can then use these same devices in conducting the final performance test.

The evaluation of learners' psychomotor performance in on-the-job situations can be shared by the employer and the learner, since you are not present to observe the learner at all times.

If you decide to use employers or on-the-job instructors to help you rate learner performance on the job, you need to explain to them (1) how to use the performance checklists, (2) what standards of performance the rating scale levels represent, (3) how these devices relate to the achievement of the objectives of the on-the-job experience, and (4) what methods can be used to involve learners in the evaluation process.

You may also need to suggest that a time schedule be developed for conducting these performance evaluations. This ensures that, when you make your on-the-job visits, you will be able to see what progress your learners have made to date.
CONSTRUCTING PSYCHOMOTOR PERFORMANCE TEST

Properly developed performance tests are excellent devices for evaluating learners’ achievement of psychomotor skills in an occupational education program.

Six major steps should be followed in constructing a performance test to measure achievement of a psychomotor skill. When the psychomotor skill is complex, all these steps need to be carefully followed. However, in the case of simple tasks, some of the steps (e.g., Steps 2 and 3) may be omitted.

<table>
<thead>
<tr>
<th>Six Steps to Test Construction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Devise Situations or Problems</td>
</tr>
<tr>
<td>Develop a Task Sheet</td>
</tr>
<tr>
<td>List Materials, Tools, and</td>
</tr>
<tr>
<td>Equipment</td>
</tr>
<tr>
<td>Develop Criteria for</td>
</tr>
<tr>
<td>Performance</td>
</tr>
<tr>
<td>Devise an Evaluation Strategy</td>
</tr>
<tr>
<td>Develop the Evaluation Instrument</td>
</tr>
</tbody>
</table>

**Step 1: Devise Situations or Problems**

Let us say that you want to use a performance test to evaluate learners’ achievement of the following objective:

**Objective:** Given fabric, shears, and a measuring device, cut a piece of fabric a given length.

Your first step would be to devise a situation or problem that involves the desired skill. When developing statements describing a situation or problem, you need to be sure that specific details are given and that the solution involves the psychomotor performance (skill) you want to measure. For example:

**Situation:** You are preparing to do sales work. Right now, you are working in a fabric shop. A customer has just asked you for a quarter of a yard of velvet fabric.

In this situation, the specific role assigned to learners is described as preparing to do sales work by working in a fabric shop, and the problem situation is described as a customer has just asked you for a quarter of a yard of velvet fabric.

**Step 2: Develop a Task Sheet**

Your next step would be to develop a task sheet for the learners -- one that contains the situation or problem that you have developed (Step 1) and directions for the task the learners are to perform to solve the problem. In addition you will need to add to the task sheet the list of materials, tools, and equipment (Step 3) and criteria for performance (Step 4) as you develop them.

In developing your task directions, you will need to decide how detailed an explanation you
want to give. You can give a very brief description, requiring the learner to then fill in the
details using knowledge and experience from previous instruction, or you can provide the
needed details for the learner. The following are two examples of task directions for the
situation previously described:

Task: Cut a quarter yard of velvet fabric for the customer

or

Task: Cut a quarter yard of velvet fabric. Remember that velvet fabric doe
not tear easily and that shears should therefore be used for culling the
fabric.

Step 3: List Materials, Tools, and Equipment

When administering a performance test, you will usually furnish the materials, tools, and
equipment that the learner will need. These items should be listed on the task sheet. This is
especially helpful to learners who are using performance tests for practice and self-
evaluation. For example, the list developed for the previous situation would probably read as
follows:

Materials and Equipment:
Bolt of velvet fabric
Shears
Flat surface at least one yard square, with yard-measuring marker

Step 4: Develop Criteria for Performance

The performance criteria, which are usually stated as part of the psychomotor objective,
serve as a standard for evaluating overall learner performance. In the objective we have
been considering, the criteria are that the cut piece of fabric be the correct length and
grain-straight.

Standards for many psychomotor objectives have already been established by
manufacturers of the equipment being used, by businesses in which the skill is used, or by
textbook and manual authors. Some labor unions also have established minimum levels of
performance. Vocational instructors are often also exposed to standards of performance in
the technical courses they take at the postsecondary or college level.

The criteria stated within the objective need to be further broken out into sub criteria of
greater specificity. Sub criteria are not part of the statement of the objective: they are listed
separately They spell out in more detail the procedures, key points, and standards of
performance you (Or the learner who is self-evaluating) should be looking for as the learner
performs the overall skill

These sub criteria can be included in the performance checklist for evaluating leamer
psychomotor performance. They should also be included on the task sheet. Sub criteria for
the fabric-cutting objective could be specified in the following illustration:
I. Sub criteria: Process

- Fabric was placed flat on a horizontal surface that was free from dust and other damaging particles.
- End of fabric was examined to see whether it was grain-straight, if it was not, it was then cut grain-straight.
- Fabric was placed flat against the table yard-measuring marker.
- Shears were used to snip the edge of the fabric exactly nine inches from the end.
- With the fabric flat, the shears were used to cut the fabric along the grainline.

II. Sub criteria: Product

- The cut material is free from dust and other damaging particles.
- The ends of the material are cut grain-straight.
- The edge of the material is smoothly and evenly cut.
- The cut material measures a full quarter yard (nine inches) in length.

Step 5: Decide on an Evaluation Strategy

In developing a performance test, sometimes you will want to evaluate one or more of the following aspects of the performance, depending on the specific objectives to be met:

- The process followed
- The product produced
- Time standards
- Safety standards

And even though we are focusing here on psychomotor skills, often a performance test will include items measuring desired attitudes associated with the performance. By including items regarding actions that indicate the presence of desired attitudes, we can ensure that learners cannot only perform the skill required, but that they perform in the way required.

You would need to evaluate the **product** if

1. the result is more critical than the procedures used.
2. there is more than one acceptable process that may be used.
3. the process is difficult to observe and evaluate (e.g., developing film in complete darkness).

You would need to evaluate the **process** if

1. you want to be sure a learner can use tools and equipment correctly.
2. the time used to complete the process is of concern.
3. there are health or safety hazards involved in the process.
4. the final product cannot be evaluated without destroying the work.
In some performance testing situations, you may want to establish points in advance at which you can halt learner performance if necessary. For instance, if expensive material would be ruined if the learner were to continue on his or her present course, or if an important safety precaution were to be overlooked by the learner, the performance should be stopped immediately.

You would evaluate safety and time standards as part of the process/product evaluation. Clearly, if goggles should be worn during a welding process, you would not want to evaluate the process without including that safety requirement as part of the evaluation criteria. Similarly, if time is important (e.g., typing 45 words per minute, cooking a three-minute egg), then the process/product criteria would contain items relating to standards of time to be met.

In the case of the velvet-cutting situation, your performance checklist would probably be designed to cover both the cutting process and the finished product—the cut cloth.

Safety concerns related to the use of shears could be included, lime, however, might not be a concern, although a person working in a fabric shop cannot take too much time to perform such a task or customers could have to wait an unnecessary length of time for service. You could also establish points in the process for stopping the performance if it looked as if the velvet would be ruined if the learner continued.

**Step 6: Develop the Evaluation Instrument**

Once you have completed the first five steps, the development of the performance checklist is a fairly straightforward task. You have determined what you will evaluate process, product, time, safety, or a combination thereof. And you should already have your checklist items written; you will notice that, in sample 1, the checklist items come directly from the sub criteria established for the process in Step 4.

There are, however, some guidelines that should be observed in developing items from sub criteria:

- Each item should be clearly and simply stated so that it communicates easily to learners, instructors, and employers or on-the-job instructors.
- Each item should be stated in observable performance terms.
- The items must not be trivial or cover common knowledge (e.g., the learner used the shears with the proper hand). They should be important parts of the skill.
- The items should represent all the critical process/product criteria involved, and only the critical criteria should be included.
- Items should be listed in a logical sequence (e.g., process items should be listed in the order in which they are usually performed).
- A reasonable number of items should be included; too lengthy or detailed a checklist can be difficult to use.

There are, too, some additional decisions to be made: (1) what general format will be used and what will it include, and (2) what type of rating scale or scales will be used.

**Format.** In general, the performance checklist should contain the following elements:

- Space for the learner’s name to be recorded
- Space for the date to be recorded
• Directions for using the checklist
• A descriptive title
• Performance criteria
• Rating scale
• Statement explaining the minimum level of performance required

One other element sometimes included in a checklist is space for comments beneath each item. This practice is strongly recommended, in that it allows you to specify exactly what was wrong with the learner’s performance relative to a given item (sub criterion). Such information can be very helpful in providing the learner with feedback following the performance.

It is important to make the checklist self-explanatory so that it can be used by learners for self-evaluation purposes, by an employer or on-the-job instructor, as well as by you.

**Rating scale.** Given the nature of the performance, you need to determine whether a yes/no rating scale or multi-level rating scale should be used. In making this decision, you would need to consider the following questions:

- Would it be sufficient to measure only whether the desired characteristic or step is either absent or present?
- Must an absolute standard be met?
- Are close tolerances for successful performance required?

<table>
<thead>
<tr>
<th>PERFORMANCE CHECKLIST</th>
</tr>
</thead>
<tbody>
<tr>
<td>VELVET CUTTING: PROCESS</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Learner’s Name: __________________________ Date: ___________________</th>
</tr>
</thead>
</table>

**Directions:** Check ( ) the YES or NO box to indicate whether the learner performed each task as indicated or not.

<table>
<thead>
<tr>
<th>The learner:</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. placed the fabric on a <strong>horizontal</strong> surface that was free from dust and other damaging particles</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. examined the end of the fabric to see whether it was grain-straight; if it wasn’t, the learner cut it so that it was</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. placed the fabric flat against the table yard-measuring marker</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. snipped the fabric exactly nine inches from the end with a pair of shear</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. used shears to cut the fabric along the grainline, keeping the fabric flat while cutting</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

If your answers to these questions are yes, then a yes/no rating scale would be appropriate. In using a yes/no rating scale, it may be helpful to provide a third column marked **N/A** (not applicable) to be checked in situations in which the criteria are inappropriate or do not apply (e.g., where learners may be performing on a variety of...
machines with slightly different controls).

If your answers to the following questions were **yes**, then a multi-level rating scale would be appropriate.

- Is it important to measure the degree to which a characteristic is present or the frequency with which behavior occurs?
- Is it important to evaluate the relative quality of the performance or product?
- Are broad tolerances for successful performance allowed?

In some cases, you might choose to have a two-part (or more) checklist. For example, Part I could include process items with a yes/no rating scale. Part II could include product items with a multi-level rating scale. This is perfectly acceptable. It would not be acceptable, however, to mix rating scale types within a section of the checklist, or from one individual item to the next.

Authorities say that at least five **levels of quality** should be specified in a good multi-level rating scale, with descriptions given for at least three of the five levels. In addition, there are three major types of multilevel rating scales from which to choose: numerical, graphic, and descriptive graphic.

In the **numerical scale**, a series of numbers is given to the right of each item. An explanation of the standard or level of performance each number represents is usually provided in the directions. The following is an example of the directions provided to explain a numerical scale:

<p>| | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>—</td>
<td>excellent, meets all standards</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>—</td>
<td>very good, meets most standard</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>—</td>
<td>good, meets some standards</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>—</td>
<td>fair, meets a few standards</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>—</td>
<td>poor, not up to standard</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

In the graphic scale, each characteristic is followed by a horizontal line, with response categories marked on the line. Ratings are made by placing a check in the appropriate location on the line, as shown in the following example.

The **descriptive graphic** scale is like the graphic except that the descriptions except that the descriptions provided in the scale are thumbnail sketches of student behaviors at each level on the scale. For example:
Cut edges are generally on the uneven; generally of f-grain cuts.

Other variations are also possible, using elements of the three major types of multi-level rating scales, as shown in the following examples:

<table>
<thead>
<tr>
<th>Poor</th>
<th>Fair</th>
<th>Good</th>
<th>Very Good</th>
<th>Excellent</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

LEVEL OF PERFORMANCE

You can design your performance checklist so that both you and the student can rate his/her performance; simply include two complete rating scales to the right of your items. For example:

<table>
<thead>
<tr>
<th>Student’s Rating</th>
<th>Instructor’s Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 4 3 2 1</td>
<td>5 4 3 2 1</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

After both you and the student have rated the performance, a follow-up conference can be held to discuss differences in the ratings, to resolve any questions the student may have, and to determine whether the performance needs to be repeated.

A performance checklist prepared for evaluating the product resulting from the velvet-cutting situation is shown in sample 2. A multi-level rating scale was used, and again, the
items in the checklist were drawn directly from the sub criteria developed in Step 4.

Regardless of the type of rating scale to be used or whether you are measuring process or product, it is important that any performance checklist you develop be both valid and reliable. And further, you may need to be able to translate your results into letter grades.

Validity. A valid device measures what it is supposed to measure. In determining validity you should check the device against the objective and the instructional content. Be sure that the device includes all the critical items that the student needs to perform or all the critical characteristics that the product must exhibit.

You can also check the items in the device against those listed in manuals or textbooks to be sure that none are omitted. In addition, you can have other teachers review your device for clarity and for completeness.

Reliability. A reliable device consistently measures what it is intended to measure. You will determine this largely by your personal experience with the device. The items need to be clear and detailed enough that your interpretation of an item is consistent each time you use the device. In addition, if several people are using the device, they should each be able to interpret the items in the same way.

You may need practice in observing performance or recording your observations, especially in a busy laboratory or shop or in situations in which you must observe students' performance in a group setting.

Sometimes you may find that you can only spot-check performance because of limits of time or group size. In such cases, you need to be sure that you make enough observations to be able to assess accurately how well each student is performing.

Grading. Depending on your school's policies, it may be necessary for you to translate marks on a rating scale into a letter grade. How you do this will depend to a certain extent on your personal standards and the philosophy of the school concerning grading procedures. You might decide that a grade of A requires a perfect performance, a B will be given if one or two items receive unsatisfactory ratings, a C will be given if three or four items receive unsatisfactory ratings, and so on.

Or if a numerical rating scale is used, you can obtain a mean score by adding the ratings received on each item and then dividing by the number of items. Letter grades could then be given in accordance with this mean score (e.g., 5 A 4.5 = B, and so on).

These are dangerous practices, however. For any specific task or skill, trying to arrive at a mean or average score or to place students' performance on a curve tends to ignore the nature of the performance test. If all items on your performance checklist were derived from performance criteria and are in fact, critical to the performance, then meeting the criteria constitutes competence in the skill.
PERFORMANCE CHECKLIST
VELVET CUTTING: PRODUCT

Student's Name: ____________________________ Date: ______________

Directions: Rate the student’s performance in cutting a quarter yard of velvet, using the scale given below. Check ( ) the appropriate box, 1-5, to indicate how well the student performed each item. The ratings in the scale are as follows:

5 - excellent
4 - very good
3 - good
2 - fair
1 - poor

<table>
<thead>
<tr>
<th>The cut of fabric:</th>
<th>5</th>
<th>4</th>
<th>3</th>
<th>2</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. is free from dust and other damaging particles</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. is cut grain-straight along the ends</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. has smoothly and evenly cut edges</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. measures a full quarter yard (nine inches) in length</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Averaging a student’s performance on these criteria, however, implies that it is acceptable to meet some of the criteria and not others. In reality, a student receiving an unsatisfactory rating on any item should recycle until his/her performance is satisfactory on all items. Thus, all students would continue to recycle until a better grade of A was achieved.

A more acceptable method of assigning letter grades, if you must, is to use a multi-level rating scale. You could then require that, in order to receive a passing grade (e.g., A, B, C), every item must receive a satisfactory rating. However, you could assign grades of A, B, and C according to how satisfactory the performance was (e.g. acceptable, good, excellent).

No matter what grading system is used, students should be clearly informed about it before they proceed with the performance test. In all student evaluation, but especially in testing psychomotor skills, there should be no mystery or doubt about what is to be expected of the student.
Skill Assessment Checklist:

**The Performance Test**

1. The problem or situation is appropriate for the psychomotor objective.
2. The problem or situation is clearly stated.
3. The problem or situation is complete—all needed details are included.
4. The needed supplies and equipment are specified.
5. Sub criteria for performance are specified.
6. Appropriate evaluation devices are specified.

**The Performance Checklist**

7. A clearly descriptive title is provided.

8. Space is provided for the instructor to do the following:
   a. Record students name
   b. Record the date
   c. Make written comments about the learner’s performance.

9. Directions are provided that:
   a. Clearly explained how the checklist is to be used.
   b. Clearly explained the rating scale to be used.

10. The checklist items:
    a. Are derived from the objectives to be achieved.
    b. Inside all essential criteria (process, product, time, safety) or all essential processes.
    c. Include only essential criteria
    d. Is stated and would be easily interpreted by all users.
    e. Are arranged in a logical sequence.

11. The rating scale:
    a. Is appropriate for the type of performance involved.
    b. Allows the instructor to measure accomplishment or quality as needed.
    c. Includes at least a five-point scale, with descriptors provided for at least three ratings, if multi-level rating scale is used.

12. The overall checklist:
    a. Is reasonable in length.
    b. Includes an appropriate level of performance.