TVET CERTIFICATE III in CARPENTRY

BASIC FURNITURE

CAPBF301 Make Basic furniture

Competence :

Credits: 120

Learning hours: 120

Sector: CONSTRUCTION

Sub-sector: CARPENTRY

Module Note Issue date: November, 2020

Purpose statement

This module describes knowledge and skills required to make basic furniture. It describes the skills, knowledge and attitudes required for the trainee to prepare tools, materials and equipment as per furniture and assemble furniture.

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Learning Unit 1 – Prepare tools, materials and equipment as per furniture

LO 1.1 – Identify furniture (non- upholstered)

1. **INTRODUCTION TO FURNITURE**

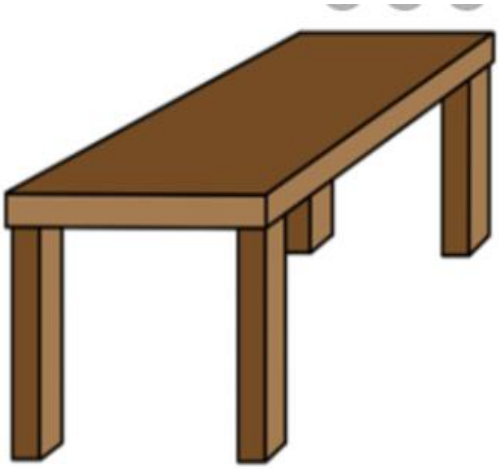
1.1 Definition: the movable articles that are used to make a room or building suitable for living or working in such tables,chairs or desk.

1.2 **Functions of furniture**

Furniture is also used to hold objects at a convenient height for work (as horizontal surfaces above the ground,such as tables and desks) or store things e.g.cupboards and shelves. Furniture can be a product of design and is considered a form of decorative art.

- Content/Topic 1: Types of furniture

- **Table:** A piece of furniture with a flat horizontal working or activity surface supported on legs or a base of some sort/a piece of furniture with a flat top and one or more legs,providing a level surface of eating or writing .



- **Bed:** a piece of furniture designed for sleeping in. A piece of furniture for sleep or rest,typically a framework with a mattress.

- **Cabinets:**A piece of furniture, often freestanding and ornamented, containing shelves, drawers or doors and used for displaying or storing objects of value, drawings, documents etc.

- **Chairs:**A seat for one person, usually with a backrest./a separate seat for one person,typically with a back and four legs

- **<u>Wardrobe</u>**: A piece of furniture or built-in cupboard with shelves and a rail for the storage of clothes./a large ,tall cupboard or recess in which clothes may be hung or stored.

- **Desks**: A worktop or counter for the service of customers in an office or shop./a simple of furniture with a flat or sloping surface and typically with drawer at which one can read,write or do other work.

A piece of furniture with a sloping or horizontalsurface, a table for reading and writing.

- **Benches:** A hard seat of stone, timber, metal or plastics for a number of people, with or without a back.

- **Cupboard:**A freestanding piece of storage furniture with closable doors and shelves.

A storage space with a closable door, built in to a recess.
A recess or piece of furniture with a door and typically shelvesused for storage.


- **Bookshelves:** The shelves which used to store the different books

- **Racks:** A framework typically with rails, bars hooks or pegs for holding or storing things.

- **Sideboard:** A flat-topped piece of furniture with cupboard and drawers used for storing crockery, glasses and table line.

- **Stool:** simple seat with three or four legs and no backrest/ a seat without a back or arms,typically resting on three or four legs or on single pedestal.

- **Mirror frame**: is the wood, metal or plastic that is fitted around it, especially when it is displayed or hung on a wall.

- **Planters:** A vessel or container of concrete, clayware, timber or plastics for decorative planting, placed on or built into hard landscaping, balconies, pedestrian areas etc.

LO 1.2 – Prepare materials, tools and equipment

- Content/Topic 1: Selection and preparation of woodworking materials

In making basic furniture, they are many different materials needed like:

- Timber
- Glue
- Nails
- Screws

- Hinges
- Varnish
- Sanding sealer
- Knobs and handles
- Locks and latches, etc

How to select timber for project?

There is usually a best wood for any project you make. Study the characteristics of wood and you will see that all are not alike.

Here are something to think about as you select the wood for a project:

1. Consider the **function** of the project: Does its use affect the choice of wood? Where will it be used, in door or out door?
2. Consider the **workability** of the wood: Will the project be made by machine or by hand?
3. Consider the **cost**: Does the project deserve a scarce, high priced wood or will a more common one be appropriate?
4. Consider the **beauty**: Is the beauty of grain pattern and color important in the project? Is the design of project such that it will show off the beauty of the wood?
5. Consider the **finish**: Will a painted finish be used? Should the finish be water proof? Is a clear, natural finish preferred?
6. Consider the **defects**: Watch for shakes, warps, knots, etc
7. Consider the **size of house**: The furniture should be able to fit in your home and leave enough space to allow free movement.
8. Consider the **availability:** Is this type of timber available easily?

You have to remember that some wooden glue are water resistant, others are not. That is why before selecting a good glue to use in your project, you should not ignore that. Even nails and screws you have consider where the furniture will be used because if you don't consider it sometimes it can rust.

Use Waterproof Glue for Outdoor Projects

If your carpentry project might get wet, use glue that stands up to water. Glues labeled 'water resistant' are fine for things that'll only get wet occasionally. For most outdoor projects, however, choose 'waterproof' glue

Laminated materials: Is structural materialswith marked unit strength. When subjected to large shearing stresses, they exhibit greater strength than composite materialsreinforced with unidimensional elements (fibers).

Some of them:

- **Plywood:** The standard size of plywood is1.2*2.4 meters
- **MDF(Medium Density Fiberboard):** The standard size of MDF islength-2.4 to 2.7m,width from 150 to 900 mm thickness from 3 to 60mm
- **Chipboard**, most often, the weight is indicated in kilograms per square meter of stove.

Preparation of woodworking materials to the required size
Operations involved in preparing to the required size

- ✓ Measuring and marking
- ✓ Planing and Cutting
- ✓ Preparing the joints
- ✓ Boring
- ✓ Mixing adhesives

Learning Unit 2 – Assemble furniture

LO 2.1 – Perform dry and permanent assembly

Content/Topic 1: Techniques of connecting and assembly different members.

Techniques of connecting different members respecting their marking symbols

Before assembling any furniture permanently, you should first assemble it as test before applying on a glue. If you see that is fitted well and correct, you now apply on glue.

Techniques of assembly

- ➢ **Application of wooden glue**

Each of wood adhesives offers varying degrees of open time, cure time and viscosity to match specific application requirements. These applications require different methods of gluing to maximize the performance of the adhesive.

Cover Bar Clamps with Wax Paper

When you use steel bar clamps or pipe clamps, and wood glue comes in contact with the clamp, the moisture in the glue can cause the steel to leave a dark mark on your wood. Lay a sheet of wax paper over the clamps to prevent this “dark spot” problem. It will also catch glue drips that would otherwise get all over your clamps and workbench.

Rub the Joint

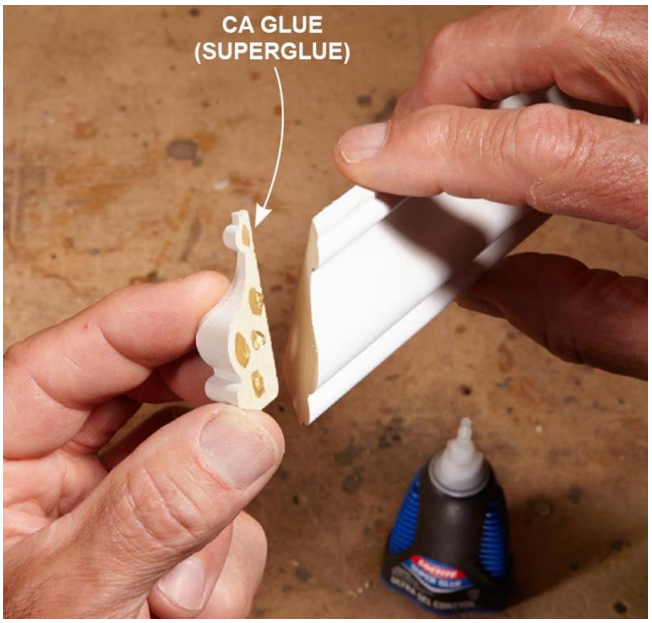
One good way to ensure a strong glue joint is to use the ‘rub joint’ method. Simply apply glue to the edges of one or both boards and rub them together to help spread the glue evenly before clamping.

Add One Board at a Time

When you’re gluing several boards together, it can be difficult to get all the top surfaces perfectly aligned. Here’s a tip that solves the problem. Rather than glue and clamp all the boards at once, add one board at a time. Let the glue joint set for about 20 to 30 minutes (depend on type of glue), then release the clamps and add another board. This method will take a little longer. But it makes it a lot easier to keep all of the boards’ top surfaces flush, which makes for much easier flattening and sanding of the surface.

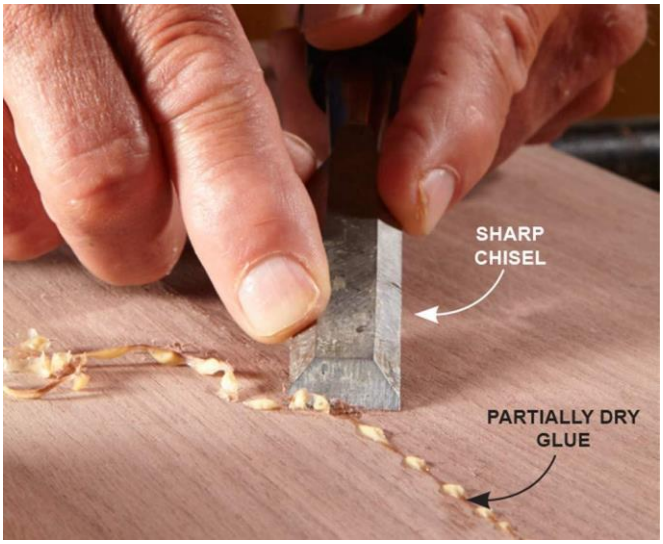
Attach Small Pieces with Superglue

Of course you reach for a superglue (cyanocacrylate glue, or CA) to fix a broken teacup handle. But did you know that it works on wood, too? In fact, CA glue is really handy for attaching small trim pieces that would be hard to clamp. Just put three or four drops onto the parts and stick them together. We like the gel version of CA glue because it doesn't run off and make a mess.



Let It Jell, Then Shave It Off

Look at any woodworkers' forum and you'll likely find a debate about the best way to remove glue squeeze-out. Some woodworkers insist that you should clean it up immediately with a damp rag. Others let it dry completely, then scrape it off. We think that in most cases the best method is to wait about 30 to 60 minutes—just until the glue turns a darker color and changes to a gel—and then shave it off with a sharp chisel. This will remove almost all of the glue without making a mess. You may still have a little cleanup to do, but it's a lot less work than cleaning up wet glue or removing hard glue.



The Right Amount of Glue

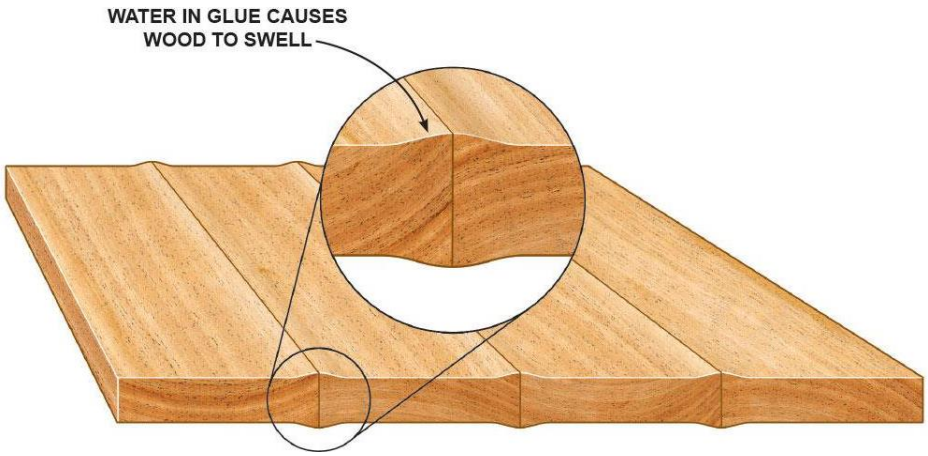
With a little experience, you'll develop a feel for how much glue is just enough. Too little glue creates a "starved joint," which will be weak. Too much glue makes a mess and wastes glue. With practice, you'll know just how much to apply. You should see a continuous line of small glue beads. When this perfect glue joint sets a little, you'll find it easy to scrape off the jelled excess, and you'll have very little cleanup to do.

Glue + Sawdust = Wood Filler

When you need wood filler that matches the color of your project, mix some fine sawdust and glue together until it forms a paste, which you can use to fill small gaps and cracks. For best results, use sawdust from the same species of wood as your project; you can get some from the bag on your electric sander. Just don't try this trick for large gaps or patches—they'll stick out like a sore thumb.

Avoid Sunken Joints

PVA glue has lots of water in it, and that water will cause the wood edges at glue joints to swell. If you plane or sand glued-up panels too soon, you could be left with sunken joints after the wood dries and shrinks to its original state. Most water-based glues reach full cure in about 24 hours, but it can take several days for swollen glue joints to shrink back to size. If you're gluing up a fine piece of furniture that you hope will become a family heirloom, wait a few days after gluing up your project before sanding or planning.



- **Fixing with ironmongery**

They are many types of iron monger that can be used in furniture assembly like:

- Nails
- Hinges
- Screws
- Locks and padlocks

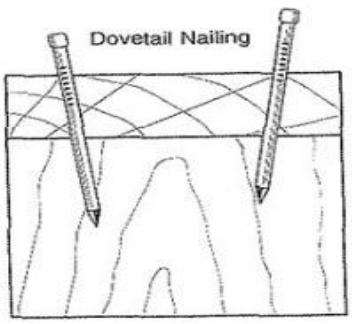
- Handles, knobs and latches

Nails can be driven by using hammers while screws should be driven by screwdrivers.

- **Face-Nailing.** This is the rudimentary nailing we learned first. It can be used in the widest variety of situations, when the nail is driven straight into the face of the workpiece, through to the second piece. Face-nailed joints aren't particularly strong (especially when the workpieces being fastened are perpendicular to one another), but the technique is fast and easy.

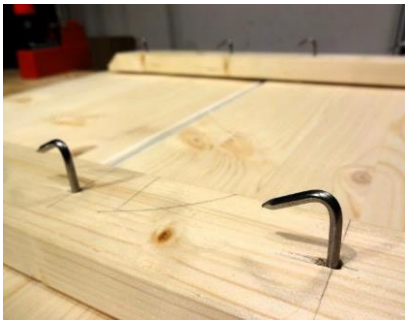
- **Toe-Nailing.** In contrast, toe-nailing produces a strong joint. The technique requires a pair of nails, driven at opposing 45-degree angles. It isn't suitable for all joints, as the grain of one workpiece needs to be at an angle to the other.

- **Dovetail nailing.** This technique is a kin to toe-nailing, as it involves driving nails on a bias. Nailing pairs or sets of nails at alternate angles strengthens the nailed joint. In this case, however, it is the face of the board that is nailed (rather than the opposite sides of the board).



- **Clinch Nailing.** A common place technique in the past, this is less often employed today. A clinched (or clenched) nail is driven through the pieces being joined, and the protruding tip is bent and

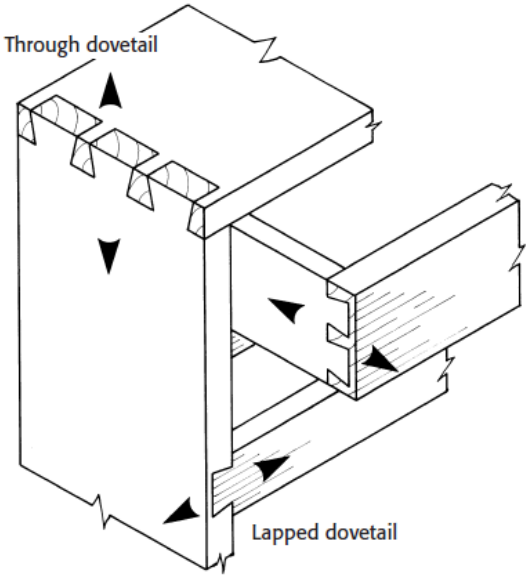
nailed flush for extra holding power. Batten doors were traditionally made using this technique, leading to the cliché “dead as a doornail.”



Measuring and marking

Cutting and sawing

Temporary assembling and adjusting /correction in order to be fitted well. Checking if the joints are fitted well.



In this stage, all pieces to be joined should be finished by sand, and marked by symbols for avoiding any hesitation that can take place during the assembling period.

Because you have tested by dry assembly that the furniture you needed is found, you should dismantle it again and follow the following steps:

- Preparation of tools and equipment needed(clamps, hammer, etc)
- Preparation of materials needed like glue, nails or screws.
- Application of glue on the pieces.
- Assembling of pieces
- Application of holding power by clamps.
- Nailing, screwing or doweling
- Waiting the glue to stick.
- Removal of clamps and start the finishing activities.

Reference(s):

- ✓ **Carpentry and joiner by Brian Porter third edition/volume 1**
- ✓ **Carpentry and joiner by Brian Porter third edition/volume 2**
- ✓ https://www.familyhandyman.com/woodworking/wood-joints/how-to-glue-wood/ ,14/04/2019
- ✓ https://www.bobvila.com/articles/1202-nailing-techniques/