Importance Of Practice

The more you practice the better you get.

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Importance of Practice

Introduction

The importance of practice is too often unappreciated. Professionals practice. Opera singers sing the scales. Guitarists and pianists do finger exercises. Painters toy with different color mixes. Writers experiment with word play. They do it because practice improves skills. You should make time to practice. Make it part of your routine work schedule.

Cutting

Practice cutting. The more time you spend practicing cutting the better you will be at cutting. As your skills improve, you relax more when cutting glass. Interesting thing about relaxing when you cut glass. The more you relax the better you get at it.

Mold Making

Practice different ways using different materials to make molds.

Coldworking

Practice ways to manually coldwork without machines. Practice using different machines to create results.

Vitrigraph

Practice better control for consistent size flow.

Writing

If you write articles or tutorials, practice ways to say more with less words. Practice ways to paint pictures with words. Practice explaining a process or technique without using any jargon.

Teaching

If you teach, practice ways to deal with problems. Make plans for contingencies. Practice ways to make your students better understand what you're teaching.

Selling

If you sell your work, practice ways to generate sales. Practice how to approach retail gift shop or art gallery. Practice ways to explain your work to a prospective customer.

Experiment

Don't just practice the ways you usually work. Experiment with entirely new and different ways.

.....Sometimes the best way to do something is the way you haven't tried yet.

Professionals practice. Be professional. Make time to practice.

Importance of Practice

Glass Cutting Myths

There are some easy ways to cut glass and there are some not so easy ways. In learning how to cut glass, and teaching others how to cut glass, it's important to understand some of the myths and misunderstandings.

Some glass is easier to cut than other
Some glass is more forgiving of a poor score. If you get a good score with even pressure, even speed and vertical cutter it makes little difference. Only the heaviest texture glass will give you grief. It's always easier when you have better cutting skills. The best way to acquire better skills is with practice. Take time to practice.

All glass cutters are the same
Not so. The quality of the metal wheel makes a difference. Also, not all cutter wheels are made at the same angle. Cutters made for scoring glass 6mm or thicker are a different angle than those for scoring the thinner glass used for glass art.

Using oil makes no difference
It makes a big difference. Although it is possible to get a good score without oil, you will always get more reliable results if you oil the cutter head. For cutting thick glass, oil isn't just important, it's essential. Not only should you oil the cutter but you should oil the glass before you score it so you score through oil.

The kind of cutter matters more than the skill of the one cutting
A good quality cutter will make it easier but the most important difference is in the skill of the person using it. For almost everything you do, the most important tools are the ones that grew off the ends of your wrists. More time spent practicing will do far more to improve your cutting than money spend on better tools.

What Glass is Easier to Cut?

More consistent chemical composition. The more consistent the chemical composition of the glass the more likely the break will follow the score. Although not universally true, glass made in larger batches will usually be a more consistent composition than that made in smaller batches.

More pressure applied in production when rolled. The more pressure that is applied to the glass rolled out the more consistent the texture of the glass will be. Machine rolled glass is almost always easier to cut than hand rolled.

Most consistent surface texture. Smoother glass is easier to get a consistent score but, with practice, even relatively textured glass can be cut with reliably accuracy.

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Reverse Engineering

Reverse Engineering has been defined as, “Taking an object apart to see how it works in order to duplicate or enhance the object.” It’s something many glass artisans do as part of their learning experience and something all glass artisans, whether amateur or professional, should do. Practicing reverse engineering is an excellent way to improve your understanding of how different glass art effects are created.

Analysis

- Is your analysis correct?
- Have you examined carefully where it might be wrong?
- Are there reasons it won’t work the way you think it was done?

Assumptions

- Have you made assumptions that might not be valid?
- Are you assuming this project was done using traditional techniques?

Alternatives

- Are there reasons those techniques would not have worked?
- Are there some other ways it could have been done?
- Are there possible more efficient ways?
- Could it have been done with different materials?
- Does it matter what order the project is done in?

Practice

Practicing reverse engineering is an exceptional way to expand your personal understanding of glass art techniques. It not only helps you understand the different processes but encourages you to apply logic and reason to understand cause and effect in glass art. Make it a habit to try to reverse engineer everything you see.

Importance of Practice

Sandblasting

There is much more to sandblasting than just blowing abrasive grit to create a frosted pattern onto something you want etched. Practicing different ways to blast will help you better understand how to create different effects.

Angle blasting

Most blasting is done straight on, usually putting special to avoid blasting at an angle. Problem with that is if you continue blasting for a length of time you created a curved bowl shape. You might want that bowl shape but if you want to etch deep at a uniform depth you must hold the nozzle at an angle – sometimes a very hard angle. You should practice producing different shapes by experiment with blasting at different angles. Practice creating different shapes from different angles. Experiment with turning the blast nozzle from side to side.

Distance variance

Instead of always blasting from a uniform distance, experiment with how you can create variable effects by varying the distance you blast from. Experiment with moving the blast nozzle in and out to change distance as you blast.

Pressure variance

The more air pressure you use the faster the material etches. Just as varying the distance you blast from you can also create variable effects by varying the distance you blast from. You can vary the effect by changing the air pressure.

Nozzle size

Nozzles with small openings blast faster than those with large openings and focus the blast on a smaller area. You should experiment with different nozzles to see how different sizes produce different effects.

Grit variance

The finer the grit the smoother the etch but the longer it takes to etch. Finer grit etch feels smoother but looks the same as coarser grit etch. Sometimes you want to etch fast for deep carving. Other times you want to etch slower for better control. A working guideline is each measure of finer grit will take twice as long to etch. 100 grit takes twice as long as 80 grit. 200 grit takes twice as long as 100 grit. Sometimes you might want to use finer grit just because it takes longer.

Kiln polishing

You can reduce the amount of texture produced by blasting by firing you sandblasted glass in a kiln. The higher the temperature you fire to, the more you remove. Firing to tack fuse temperature will remove all the texture and produce a smooth polished surface. You should experiment with firing at different temperatures to produce textures varying from satin to smooth.

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Color Creation

Instead of searching for glass in some special color you want, perhaps you should practice creating new colors by layering glass?

Darker tint

Fuse double layers of a color to create a darker tint. If you fuse 2 layers of medium blue the result will be dark blue. If you fuse a layer of medium blue onto a layer of light blue the result will be a just slightly darker blue.

Lighter tint

Fuse clear glass over a color to create a lighter tint of the original color.

Color blend

You can create colors by mixing colors the way painters do. If a painter mixes blue paint with green, they get turquoise. You can do the same with glass by layering blue glass over green. Experiment with layering different colors of transparent glass. Also, experiment with layering a color of transparent glass over a different color opalescent glass. Just as experimenting the different color combinations with paint can create original colors, so can it with glass.

Opalescent

Transparent is available in more colors than opalescent. That shouldn't be a problem for you. If you want a color of opalescent glass that is only available in transparent, you can create that color in opalescent by fusing transparent glass over white opalescent glass. You can also create entirely new colors by fusing a layer of transparent glass over a different color opalescent glass.

Do tests

There's no need to do a special firing to try different color creations. Most of your kiln firings probably have a bit of unused space on the shelf. Start a series of color test experiments with small pieces about 1 inch (2.5 cm) square ready to add to any firing that has some spare space.

- What color combinations create appealing results?
- Is tack fuse firing different than full fuse?
- What about more than 2 layers in a fuse?
- Does 2mm glass produce different results than 3mm?
- How is fusing transparent over opalescent different than 2 layers of transparent?

Make color testing a routine part of your work. Sometimes the results are just what you expected and sometimes you produce something disappointing ugly, but once in a while magic happens and you create something spectacular.

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Cutting Shapes

When cutting glass into desired shapes, there are 3 basic different ways.

Template

A copy of the desired shape is cut out of paper, wood, plastic or any material you have the tools to cut. The template is placed on the glass you want to cut the shape from. Either you run the cutter to score along the outer edge of the glass to be scored or the template is used to draw the shape onto the glass so you can score on the line you drew.

- **Advantage**. Template cutting is excellent for production work where you want many copies of the same shape. If you cut the template from a relatively hard material (glass, metal, wood etc.) and intentionally make it slightly smaller than the piece to be cut (to offset the distance from the edge of your glass cutter to the center of the cutting wheel) you can place the template on the glass to be cut and just run your cut around all edges of the template to score the desired shape.

Transfer

Drawing transfer paper (either carbon paper or art transfer paper) is placed on the glass. The pattern to but cut is placed on the transfer paper. By drawing along the pattern lines with a pencil or ball point pen you transfer the pattern to the glass. You then score on the lines you drew on the glass.

- **Advantage.** This is a quick easy way to transfer the design to the glass and is especially useful for glass too dark to see through clearly enough to trace cut.

Trace

You place the glass to be cut over a pattern. By looking through the glass you can see the pattern lines score the glass on those lines. For glass that is difficult to see through, artisans work on a light box with light shining up from beneath the glass.

- **Advantage.** Of the 3 alternatives, Trace Cutting is the most efficient. It takes the longest to become good at but once mastered will always produce the most accurate cuts in the least amount of time.

Practice all

Before you commit to one single method and use only that method, you should practice the alternatives. If you master all 3 methods you will probably use each at different times depending on how many copies you to make and how easily the glass can be trace cut.

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Soldering

Different Soldering Methods

- **Dab method.** The soldering iron is touched onto the end of the solder wire and a small amount of solder stays on the hot iron tip. The iron is then touched onto the project to apply a dab of solder. This is used for soldering seams on lead came, zinc channel and for attaching wire. It's also a great way to fill in gaps. Dabbing is also used by some artisans to deposit blobs of solder on foil seams to be spread out with the trowel method to hold foiled pieces together for foiled projects.
- **Trowel method.** A load of solder is deposited on the glass and the soldering iron used to push molten solder along like a trowel is used to push plaster. The iron can be held vertical (straight up) or horizontal (sliding sideways). This is one of the easiest ways to learn to solder but is extremely difficult to control the amount of solder applied. It usually requires several passes to produce a finished bead. Whenever you have applied too much solder, you'll have to trowel it out of the way. You can vary how you trowel by using different positions on the soldering tip. That flat face is hotter than the edge or tip.
- **Draw method.** The soldering iron is used to pull or "draw" the solder. The iron tip is slid flat along the seam on its flat face while the solder is melted onto the opposite side of the tip. The hot iron draws the solder as it deposits it. This is more difficult to master than the trowel but is quicker and reduces the likelihood a large lump of molten solder cracks the glass. By properly coordinating how fast you push solder onto the iron and how fast you move the iron, you can produce a finished bead with your first pass.

Bead Practice

To master the draw method, practice looking not in front of the iron but behind it. Watch for the shape of the bead left behind. If it's starting to bulge too much, either move the iron faster or apply the solder slower. The opposite if the bead is failing to form a full dome. Either slow down the iron or apply the solder faster.

Prebeading

When soldering copper foil, some artisans like to first run a flat bead of solder, then go back after and run the finished bead over it. If you have large gaps, it's a good practice to fill them before you can run a bead. Otherwise, prebeading is just a waste of time. Your goal should be to produce the finished bead with your first pass

Different solder

60/40 solder melts at 375°F (190°C). 50/50 solder melts at 420°F (215°C). Because 60/40 melts at a lower temperature it sets faster. That encourages it for form the dome shaped bead desired for soldering copper foil 50/50 is more like to stay hot long enough flatten out. That's why artisans often prefer it for soldering lead. That doesn't mean you can't use 60/40 for lead or 50/50 for foil. You should practice using different solder for different purposes.

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Different temperature
Each artisan has a different temperature they prefer to solder at depending on whether it's lead or foil and depending on their personal skills. It's common to solder lead at lower temperature than foil. Working at higher temperature allows you to work faster but also increased the risk of an unhappy event.

Different flux
Not all flux is the same. Some is aggressive and works well as a flux but is difficult to neutralize to clean off. Some is easy to clean but performs poorly as a flux. Some produces vile fumes that require extra ventilation when soldering. Some as few fumes but isn't aggressive enough to work properly. You should experiment with different makes and kinds of flux to learn which compromise you prefer.

Different size tips
Small soldering iron tips allow you to reach into tight spots. Large tips hold heat longer and allow you to work longer without pausing to wait for the iron to heat up again. When running a bead on copper foil, wide tips make it easier to keep the tip on the foil. When soldering lead or zinc, large tips will hold more solder. You should experiment with different size tips before deciding which you prefer.

Different kinds of soldering iron
You can work with an iron as small as 60 watt or get one as big as 250 watt. The bigger the iron, the longer it holds heat so the longer you can work without waiting for the iron to heat up again. Smaller irons are usually designed to be held vertical. Larger irons are often "hatchet" style with the handle attached at right angle to the soldering head. You might prefer a smaller light weight iron or you might be happier with a bigger higher wattage iron. Try different ones before you commit.

Suggested practice
- **Higher temperature.** Practice soldering at higher temperature to produce faster results.
- **Lower temperature.** Practice soldering at lower temperature for better control.
- **Melt it through.** Practice soldering foil intentionally running the iron slow enough to melt the solder through. This will teach you how slow is too slow.
- **Melt the lead.** Hold your iron on the end of a piece of lead until the lead melts. This will teach how little time it takes to melt right through lead and reinforce why you must work fast when soldering lead.
- **Crack the glass**. Practice soldering slow enough to crack the glass. This will reinforce the importance of working fast.

Importance of Practice

Combing Glass

Temperature
The higher the temperature the softer the glass. The softer the glass the easier it is to comb. Experiment with combing at different temperatures. How high can it be before it the pattern flows together more than you want? How low can it be before the glass is too stiff to comb?

Speed
The faster you comb the glass the less time the kiln is open. Practice doing quick efficient combs to minimize the time the kiln is open. A good way to practice is to do pretend combs outside the kiln. Practice being ready to get in quick, do the comb pass and get out quick.

Clothing & Gloves
The bigger the kiln the more heat comes out when you open it. The more heat that comes out the more protective gear you need. If you're working with a small kiln you might be surprised how little you need. I've done combing projects in a small hear wearing only cotton garden gloves.

Tools
The more heat that comes out from the kiln the further you want to be from the kiln. For a big kiln you will want a long rake. For a smaller kiln a shorter rake is enough. The shorter the rake the easier it is to control the pressure and speed on the combing pass. Practice with a small rake to see if you can work with it.

Rake angle
When you draw the rake through the glass it wants to dig it. This make is difficult to control the speed and depth of the comb. Experiment with bending the end of your combing tool on an angle. Have two rakes. One with the end bend forward and the other with the end bent back. Use the bent forward one to pull towards you. Use the bent back one to push away from you.

Bracing
When you pull or push your rake through sticky glass it's possible to pull or push the glass off the edge of your kiln shelf. Practice and experiment with ways to block and brace your project in the kiln so it can't move.

Combing Shapes
Sometimes you want to create chevron or feather designs with a combination of push and pull combing passes. Sometimes you want to make circles or swirls. Instead of opening the kiln then deciding what to do, have a design planned first. Practice combing that design before trying in the glass.

Glare
When you look at the molten glass the glow makes is difficult to see the strips of color. Wearing didymium glasses will help remove the glass.

Importance of Practice

Vitrigraph

Hole Size
The bigger the hole the bigger the stream of molten glass. Glass will flow slower but the volume of glass pouring out is faster.

- Experiment with different size holes.

Hole Shape
The shape of the glass pour depends on the shape of the hole in the pot the glass pours from. You should experiment with different shape holes in your pot.

- **Round.** A round hole will product a round pour
- **Slot.** A hole like a coin slot will produce a flat pour like a flat noodle.
- **Triangle.** A triangle shaped hole will produce a teardrop shaped pout.
- **Cross.** An X shaped hole will produce a square pour.

Temperature
The higher the temperature the faster the glass flows and the more evenly it flows but the more difficult it is for you to control the glass pour.

- Experiment with different temperatures. Try a lower temperature for a slower pour that is easier to control
- Try a higher temperature that produces a more even size flow.

Control the flow
You can manually control how fast the glass flows.

- To make it drop faster, grab it with pliers and give it a gentle tug to speed up the flow.
- To make it drop slower, either grip it with pliers or place something like a putty knife under the end of the flow to force it to slow down.

Plug or free flow
Some artisans prefer to plug the pot hole and keep it plugged until the glass in the pot is fully melted then remove the plug and let the glass flow. Others prefer to leave it open and just wait for the flow to start.

- Try both ways before you commit.

Height
Some artisans like to set their vitrigraph almost to the ceiling and left the glass drop all the way to the floor. Other's prefer to set it on a table allowing for a drop of about 3 feet. There are advantages and disadvantages to each choice.

- You should experiment with both.

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Vertical or horizontal

Most artisans prefer to let the glass pour straight down. Others prefer to catch it just below the pot when it's still soft and pull it out horizontally.

- Experiment with both ways. I make 36 ft long stringers and rods with a horizontal pull and get more consistent size than I can vertically. With a little practice you can control the size being drawn. When there is a little tension, pull a little slower to let that glass flow speed up. When there is no tension, pull a little faster to ensure the glass is a uniform size. Practice.

Patterns

The pattern in the glass pour depends on how you loaded the glass in the pot. It comes out the same design but comes out much smaller.

- Experiment with different ways to load the pot to create different designs in the glass pour.

Square pot or round pot

The advantage to a square is when you want to fill it with horizontal layers of glass it's easier to cut squares than to cut rounds to fill a round pot. That advantage is small when you consider you easy it is to make controlled size rounds by fusing stacks of squares. Also, because the middle of the pot drains first, if you plan a pattern pour you will get more a more consistent pattern from a round pot.

- Try both round and square pots before you commit.

Twists

The pattern produced in a twisted rod depends on not just how the glass was loaded in the pot but also by how fast you pull the molten glass and how fast you twist it.

- Just as you experiment with different ways to load the pot you should practice pulling slower or faster and practice twisting slower and faster.

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Torchworking

Temperature

The hotter the flame the faster the glass melts but the faster it melts the harder it is to control what happens to the glass. Some artisans prefer to work slower at lower temperature while others prefer to work faster at higher temperature.

- Practice working at different temperatures tp better understand those differences.

Flame size

Just as different temperature requires working in different ways so does the size of the flame you work in.

- Practice and experiment with working in different size flame. You're likely to find you switch to different size flame for different purposes.

Flame position

Different effects can be created by working in different parts of the flame.

- Practice working a little further out - then practice working right inside the flame.

Settings

Different gas pressure affects the heat of the flame.

- Practice working with different gas pressure.
- Practice working with different oxygen pressure

Making rods

You can buy rods sold for torchworking but you can also make your own from the same sheet glass used for fusing.

- Experiment with cutting thin strips and using them instead of rods.
- Experiment with full fusing layers of strips to create 6mm thick rods.
- For something different, fuse two different colors together and use the rod you make to work on your torch.

PRACTICE SUGGESTIONS

As with all things, the best way to improve manual skills is with practice. Practice heating a piece of glass and gently pulling it a part. Practice pulling it slower then practice pulling it faster. Practice hold a glass rod vertical and heating it until it drips. Practice moving the glass up and down in the flame to make it drop faster - then practice making it move slower. Practice to see how long you can lengthen the glass drop before it falls off. The you practice the more you will be able to control how the glass responds to the heat of the flame.

Importance of Practice

Making Paint

Powders

There are many different compounds you can buy for painting color onto glass or you can make your own by mixing powder material with a liquid to make your own. The most common are: powders used are:

- **Glass powder.** You can use glass powder or fine frit. You should experiment with both to become familiar with the different effects each produces when mixed to make paint.
- **Enamels**. Not all enamels are the same. They vary in grit from 60 to 325. The finer the grit the smoother the mixture created. Some enamels can be blended to create new colors and some when mixed with remain separated. You must experiment with different enamels to learn which can be blended and which cannot.
- **Mica.** Different colors of mica are different grit so not all will mix the same. Finer grit will produce a fine creamy mix while coarser grit no so smooth.

Liquid

Just as there are different powder materials used to paint, so are there different liquids used to mix with powders. You should experiment with different liquids to learn how each mixes with powders and how each responds to the heat of your kiln. Some I have tested that proved to work are isopropyl alcohol, aloe vera, CMC, gum Arabic, honey, soda pop and water.

- Experiment with different liquids to learn which you like most to work with.

Measure

There are different ways to measure how much liquid to add to the powder.

- **Weight.** You can carefully weigh the powder and the liquid to be sure you get and exact mix. This will give you the most accurate measure for each liquid and each powder but is not reliable for all materials. Not all liquids and powders have the same weight relative to volume.
- **Volume.** You can use a set volume of each material and mix them together. A 50/50 mix of powder and liquid makes a suitable mix and is a common way to measure for mixing. This is a quick and easy way to mix but doesn't allow for variance in texture in powders or variance in viscosity in liquids.
- **Visual.** Just pour as much powder and as much liquid as you think looks about right and mix it together. Add more powder or liquid until you get the texture you want. This method will produce the best mixes but takes some practice to be familiar with how liquid the mix should be.

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Stamping

Spectacular effects can be created by applying glue with a stamp glass then applying glass powders, enamel powder or mica powder to the glue stamped design. The quality of the end result depends entirely on your personal skill. The only way to acquire those personal skills is with practice.

Pressing into glue

If you press the stamp too hard into the glue you will get too much glue on the stamp and produce a smeared image when you press it onto the glass. If you fail to press only straight down into the glue you will get glue onto parts of the stamp you don't want glue on and get a smeared image. If you don't press the stamp firmly enough into the glue you won't apply enough to reproduce the image.

- Practice pressing just firmly enough to apply glue to the face of the stamp and only the face of the stamp.
- Practice pressing the stamp straight down onto the glass.

Pressing onto glass

When you press the glue onto the glass if you press too hard you will smear the image. If you fail to press just straight down you will smear the image. If you don't press down firmly enough you won't reproduce the image.

- Practice pressing the stamp with glue on it firmly enough to apply the design to the glass but not so hard you smear the image.
- Practice pressing the stamp straight down onto the glass and only straight down.
- As an alternative method, practice sitting the stamp face up and lowering the glass onto the stamp.

To check to see if you have applied a clean crisp image on the glass it helps if your turn the glass on a 45 degree angle and look at it. If the image isn't satisfactory, wash the glue off and practice some more.

Applying the powder

You can't just sprinkle the powder on but must dab it on with a brush to have it stick to the glue. It's easy to get too much or too little. The only way be become skilled at applying just the right amount is with practice.

- Practice tilting the glass vertical and gently brushing off any powder that isn't on the glue image.

Wiping off excess powder

Any powder that is not stuck to the glue will fuse to the glass and can easily shift off the design during the kiln firing. You must remove any excess powder. That is usually done by gently brush it off or wiping it off with a soft cloth. This is the part of stamping that requires the most manual skill so is the part that requires the most practice.

- Practice removing unwanted powder with a wetted paint brush or Q-tip.

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Freeze & Fuse

There are different ways to make freeze & fuse castings.

Premix or layer
You can premix the water and powder and pour into the mold or mix together in the mold.
- Experiment with both ways to see how each produces different results.

When add water?
You can start with water then add the powder, you can start with dry powder than add the water or you can add powder and water in layers in the mold.
- Practice experimenting with different ways.

Layering
You can create color variations by applying the powder in layers.
- Practice layering different colors to learn how it creates different results.

How much moisture?
You can remove a little of the water or remove a lot. If the casting is too dry it's likely to crack in the kiln firing. If it's too wet it will shrink more.
- Practice to find the balance where the amount of water left is just enough.

Tamp or soak
The powder must be fully wetted to avoid dry patches. You can just pour water over the powder and wait for it to soak down or you can pour some in and tamp to soak into the powder.
- Practice different ways to tamp the wet mix or vibrate it to remove excess water.

Fire now or later
You can place the frozen castings into the kiln as soon as you remove them from the mold or you can leave them for a few minutes before loading into the kiln.
- Experiment with both ways to learn how if affects results.

Powder only or frit
You can use only powder or you can mix in small amounts of fine frit
- If you want to include frit you should experiment with how much is safe to use.

Plastic molds or rubber
You can make your castings in plastic molds or rubber. Plastics molds are much less expensive and for shapes that have no undercuts work fine. Rubber molds will reproduce more detail in the casting and can be used for shapes that have some small amount of undercut.
- Experiment with molds made from different materials.
- Experiment with making your own molds.

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Loading Molds

How much glass is needed to fill a mold is always a concern. Have you practiced the different ways to measure how much is needed?

Weight

Do the math and calculate the weight of how much glass is needed to fill that space. Weigh out that much glass and put it in the mold.

- Practice how to make that calculation.

Volume

Calculate the volume of the glass needed to fill the volume of the space.

- Practice ways to calculate the volume of glass.

Visual

Many artisans prefer to fill a mold by what looks like the right amount. Their best guesstimate. A rough guideline is to assume when you fill a mold with scraps of glass the glass will melt down to about half the height it started as.

- Practice guessing how much glass is needed to fill the mold when using different size pieces of glass.

Allowance

There are some projects like drip filling molds for lost wax castings where not all the glass will go into the mold. Extra is needed to provide the weight needed to encourage the glass to fully fill the mold.

- Practice calculating how much extra to allow?

Bubbles

An effective way to ensure you have no bubbles in a casting is to stack the glass vertically in the mold so any air between the pieces of glass is squeezed up and out as the glass melts down.

- Practice different ways to fill molds to minimize bubbles.

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Teaching

The need to practice applies to teaching as much as to anything else. Teaching is a completely separate skill. Because you can do something well does not mean you can teach it well.

Safety

- Have you considered all the safety concerns?
- Is your first aid kit adequate?

Class Preparation

- What could you do to be better prepared for contingencies?
- Have you made a list of likely to be asked questions and prepared good answers?
- Do you have a comprehensive list of tools and supplies needed?

Organization

- What could you do to make your classes run more smoothly?

Class Control

- Do you have a timetable plan?
- Could it be more efficient?

Problem Students

- Have you considered all the possibilities and have a plan in place to deal with them?
- Have you decided how to balance firm with fair?

Demonstrations

- Have you practiced your demonstrations to make them clear and easy for your students to understand?
- Do you have alternatives to use if needed?

Samples

- Do you have good samples to show your students?
- Could they be better?
- Are they enough?

Explanations

- Are the explanations you use clear and concise?
- Have you reviewed your comments to remove all unnecessary jargon?

Technology

- Do you experiment with using technology line the internet and videos to teach more efficiently?

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Writing

Writing is an acquired skill. Because you are skilled at doing something does not mean you are skilled at teaching it. Like all skills, how well you write can be improved with practice. Just as becoming a good artist takes practice and being a good teacher takes practice, so does being a good writer take practice. Talent will help you become a good writer but practice can make anyone a good writer.

To write well requires understanding the key factors that make good writing and using that understanding to constant practice being a better writer.

Preparation

- **Materials collection.** Practice how to find new sources for material.
- **Notes.** Practice efficient note taking. Have you considered using your phone to record voice messages to yourself?
- **Library.** Work constantly at keeping your library of material organized and updated.

Planning

Few things have greater effect on the end results of writing than how it was planned.

- **Deleting.** You often want to include everything but that is never possible unless you're writing a massive manuscript. When you clean out your closet it's hard deciding what to throw out. Same applies when writing something. When you scan through all your material you must make hard choices what to keep and what to save. Just like sorting out your closet, the strength to toss out things you really don't need comes only with practice. Practice sorting your material to use only what is needed.
- **Addition.** The mirror of the importance of deleting is adding. What is missing that should be included?
- **Size.** Often there is a size limit. How skilled are you at condensing materials when needed? This also comes with practice. When you read what you wrote practice ways to say the same thing with less words.
- **Audience.** Identify your audience and practice using a writing style directed at that audience. You might need to learn how to use different writing styles for different audiences. Practice writing tutorials for grade school children – then practice writing the same tutorial for skilled artisans. Practice becoming a multi-level writer.

Importance of Practice

Organization

Organization is everything. Writing is the same as teaching. The more you plan and the better organized you are, the better it will be.

- **Orderly.** Have you organized your writing in the most logical order? Have you practiced presenting it in a different order? How many different options are there?
- **Details.** Have you explained each step and detail? Is something missing? Should something be deleted?
- **Assumptions.** Have you made assumptions that may not be valid? That relates to the audience you're writing for and how much detail you think is needed for your audience.

Polish

Editing to polish something you wrote is like cold working glass art and is equally important in creating a quality product. As part of your polish and edit do you check for consistency?

- **Present tense.** Describe doing it now.
- **Action words.** Describing doing it rather than thinking about doing it.
- **Logical order.** Write instructions in the order they will most logically be done.
- **Careful word choice.** Choose your words carefully. Write for the expected age and skill level of your audience. Unless it's essential, avoid using any trade jargon.
- **Positive actions**. You say "do this" rather than "this is how it is done"
- **Write in second person.** Say, "You do this".
- **Include alternatives.** Suggest different ways you might get the same results.
- **Graphics.** Use photos and graphics to help explain what you're saying.

Rest & revisit

When you're done writing something don't assume it's finished. Leave it for a day or so to rest. Revisit it later for the final edit. You'll be surprised what changes you think are needed and what should be added.

Call a friend

Get help to proofread. It's too easy to miss mistakes no matter how many times you reread the work. Fresh eyes are more likely to catch mistakes. Do NOT trust spellcheck. It will correct spelling mistakes but not the use of a wrong word. Also be careful using programs like Grammarly. Many writers us a relaxed informal writing style much like how we talk to each other. Editing programs will switch to more formalized structure.