

Literacy and Essential Skills in Industrial Arts

MOSAIC COURSE

**ESSENTIAL
SKILLS**

Student Notes

A project of Literacy Ontario Central South

Canada

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This manual is intended to provide an opportunity for students to learn about the Essential Skills and Mosaics in both a real life situation and an LBS environment. This manual provides basic guidelines for safe practices inside a literacy setting. Do not assume, therefore, that all necessary warnings, precautionary measures, and legal standards are contained in this document and that other or additional measures may not be required.

The opinions and interpretations in this publication are those of the author and do not necessarily reflect those of the Government of Canada.



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ORIENTATION

WELCOME



Document Use

Welcome to introduction to mosaic art.



This course was designed with four primary goals.

1. To help you develop your Essential Skills; skills that will help you in your “work, learning and life”
2. To help you develop technical skills for a hobby as well as for work
3. To help you develop your artistic and creative abilities
4. To give you the opportunity to have fun, meet new people and expand your network of contacts



Call the instructor to let them know if you are unable to attend a class.

COURSE FORMAT



Reading Text, Document Use

In addition to the information in these Student Notes, this course will be presented through a mix of group instruction, demonstration and discussion, followed by independent work.

There will be times when your instructor may ask you to stop what you are working on so that they can provide information to the entire class.



It will be important that you ask other students for help. Helping each other and sharing ideas and opinions is a great way to learn.

Before you are asked to complete any step in this mosaic course, your instructor will provide a demonstration.

Your instructor will demonstrate:

- glass and tile cutting
- placement
- gluing.

The instructor will also demonstrate the safe use of mosaic tools such as:

- cutters
- nippers
- pliers.

You will then have the opportunity to try all of the tools, equipment and techniques while working independently on your project.

The instructor will be available to answer your questions and provide individual support and guidance as you work, so ask them questions anytime.

As you work on your own mosaic project you will find that there are many ways of achieving the same end result. You may find that the step-by-step instructions in your Student Notes are different than the steps your instructor demonstrates in class. You may also find the same techniques are done differently in an online mosaic video you watch. This variety will give you options to try until you find the techniques that work best for you.





STUDENT NOTES



Reading Text

Although this course will focus on oral instruction and hands-on work you will also have information and instructions to read.

In this package you will find all the Student Notes for this course. You will be asked to read a section of the notes during each class or you may read the material at home. You can also read ahead in the notes.

These Student Notes include information that will help you learn more about the topics presented and demonstrated in class. They can also be used as a reference and guide as you work on developing your mosaic skills.

There is a Table of Contents at the front of these Student Notes to help you find the information you need.

At the end of course you can take these notes home with you. They will be helpful as you work on future mosaic projects.

Note: You can record your own notes on the pages of these Student Notes.



In your Student Notes, you will find web links. If a recommended site is no longer available, please inform your instructor.

You will be working at your own pace therefore you may find that you are ahead or behind in the notes. Talk to your instructor if you have any concerns.



ICON LEGEND



Reading Text

Throughout this course you will see icons in the written material. These icons are designed to help you visually identify the content of the section you are reading.

Icons Include:



STUDENT NOTES – At the top of each page of Student Notes you will find this icon on the left side, followed by the name of the section on the top right side. This icon and the section titles will be helpful if you are looking for information listed in the Table of Contents.



ESSENTIAL SKILLS – Under each section heading you will notice this icon, bordered by two lines. The icon will be followed by a list of words. These words represent the Essential Skills you would use if you actually completed the steps outlined in the section. For example, if the text states that you need to “decide on a pattern” you would find Decision Making listed as an Essential Skill. This list will also identify the Essential Skills you are using as you read the information in the section. For example, Reading Text will be listed if you need to read more than two sentences in the section. Document Use will be listed if you need to read a bulleted list or complete a document.



ACTIVITIES – Near the end of your Student Notes you will see pages with this icon in the top left corner identifying it as the activities section of your Student Notes. This section includes step-by-step directions for completing a mosaic project. If you leave the activities section open as you work it can serve as a guide. Alternatively, you can use this section as a reference tool that you can turn to if you get stuck on any part of your project.



TASK – If you see a “T” at the top of a page, you will find step-by-step directions for completing an Essential Skills task. These tasks are designed to help you develop your Essential Skills while at the same time providing information that will help you with your mosaic project. In most cases, the tasks will be handed out during class and you will be given time to complete them before the class ends. Some tasks are designed to be completed independently and others are designed to be done in large and small groups.



When you see this image in a box on the page there will be some additional information to consider.



ESSENTIAL SKILLS



Reading Text

We consider the Essential Skills component of this course to be very important. These skills provide the foundation that makes it possible to learn all other skills. There are nine Essential Skills; Reading Text, Document Use, Numeracy, Writing, Oral Communication, Working with Others, Thinking Skills, Continuous Learning and Computer Use.

Essential Skills are used every day at work, at home and in a mosaic studio. While these skills are important in your personal life they are essential for success at work. Essential Skills will help you find and keep a job and manage change in the workplace.

Essential Skills are transferable. This means that the same skill can be used in different situations. For example, in this mosaic course you will have many opportunities to develop your problem solving skills. You may find that the next time you have a problem at home, at school or at work your problem solving skills will be stronger.



THE NINE ESSENTIAL SKILLS



Document Use

Experts have identified the nine Essential Skills required for success in the Canadian Workforce.

For more information visit:

www.hrsdc.gc.ca/eng/workplaceskills/essential_skills/general/home.shtml

Essential Skills Include:

Reading Text

Reading materials in the form of sentences or paragraphs

Document Use

Tasks that involve a variety of information displays in which words, numbers, symbols and other visual characteristics (e.g. lines, colours or shapes) are given meaning by their spatial arrangements

Numeracy

Using numbers and thinking in quantitative terms to complete tasks

Writing

Writing text and writing in documents, such as filling in forms, and non-paper-based writing such as typing on a computer

Oral Communication

Using speech to give and exchange thoughts and information

Working with Others

Employees working with others to carry out their tasks



Thinking Skills

The process of evaluating ideas or information to reach a rational decision. They include six specific skills:

Problem Solving

Addressing problems that require solutions

Decision Making

Deciding between options

Critical Thinking

Assessing, evaluating ideas or information to reach a rational judgment of value

Job Task Planning and Organizing

Planning and organizing tasks

Significant Use of Memory

Memorization of procedures, codes, numbers, remembering information, learning from an experience

Finding Information

Using text, people, databases or systems to find information

Continuous Learning

Workers participating in an ongoing process of acquiring skills and knowledge

Computer Use

Using different kinds of computer applications and other related technical tools



ESSENTIAL SKILLS CHECKLISTS



Reading Text

As you work on your mosaic project, read your Student Notes and complete the assigned tasks, you will be developing your Essential Skills.

There will be time at the end of each class to talk with the others in your group about the Essential Skills you used in the class.

There will also be time at the end of each class to complete your own individual Essential Skills checklist. As you complete the checklist you will have the chance to identify all of the Essential Skills you used in the class.



After you have read these introductory notes, you will be able to check off Reading Text on your Essential Skills Checklist.



ESSENTIAL SKILLS IN MOSAIC ART



Reading Text, Document Use

Mosaic artists need to draw on their Essential Skills in all nine areas; however mosaic art demands a higher skill level in some areas. For example, mosaic artists need to have strong problem solving skills.

Mosaic artists:

- spot problems and solve them as they work (Thinking Skills, Problem Solving)
- talk with customers and clients (Oral Communication)
- complete precise measurements (Numeracy)
- work independently and/or as a member of a team (Working with Others)
- plan and organize the work involved in completing a project (Job Task Planning and Organizing)

On the other hand, writing is not an Essential Skill that would be critical to the success of a mosaic artist, even though at times they may need to record information, write notes to customers and create promotional material.



TECHNICAL SKILLS



Document Use

In addition to the Essential Skills you will develop in this class, you will also develop technical skills as you work on your mosaic projects.

The technical skills you may develop in this course include:

- using tools such as glass cutters, nippers and running pliers
- working with patterns/templates
- measuring and calculating
- using adhesives and grout

You will also develop:

- form perception
- motor coordination
- manual dexterity
- colour perception



In this mosaic course you will be completing a mix of right brain and left brain activities.

Left Brain: logical - accurate measurements, detail, precision, written instructions.

Right Brain: creative - patterns, colour, images, visual demonstrations.



CAREER EXPLORATION



Reading Text, Document Use, Oral Communication

Although this mosaic course is not designed to prepare you for a specific job, you may discover that you have the skills and interests necessary for a related career. If you enjoy this course, you may want to research careers such as:

- Tiler
- Glazier – home and auto
- Carpet, tile, linoleum, and hardwood floor installers
- Assembler
- Jewelry repair person
- Visual artist
- Painter, decorator, designer
- Mechanic/small engine repair person
- Woodworker/carpenter/cabinet maker
- Hardware and tool salesperson
- Marble cutter - head stones/counter top
- Bricklayer

Although the jobs listed above are not directly related to mosaic art, they require some of the same skills.

There are many other jobs that will require the skills you will be developing throughout this course. If you think of one that is not on this list, share it with the others in the class.



SUMMARY



Reading Text

In addition to developing the skills needed to create a mosaic, you will also develop Essential Skills and technical skills that will help you at work, school and at home.

As mentioned, there are many jobs that require skills similar to the ones you will be developing. As you work through this course, think about your interests, skills and career. At the end of each day, ask yourself, “What skills did I develop that I could add to my résumé?”





STUDIO SAFETY

INTRODUCTION

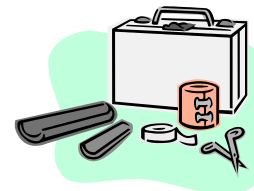


Reading Text

This section of your Student Notes will focus on working safely; this includes your own safety as well as the safety of those around you. There are risks with any hobby, sport or work environment; mosaic art is no exception. The risk is moderate but it is important to be alert, stay organized and practice good housekeeping.

You will be working with glass so you will need to be aware of sharp edges, slivers and shards. You will be using sharp tools, therefore, cuts are possible. You may also be working with chemicals that could cause a moderate risk to you and the environment if they are not handled properly.

The following information will assist you in developing the skills you need to work safely, efficiently and in an environmentally friendly way. If you follow the safety procedures outlined, you will avoid injuries.



You must follow the instructions provided by your instructor, read this section of your Student Notes and apply all of the recommended safety tips whenever you are watching a demonstration or working on your own project.

Note: This section is only an introduction. Your instructor will provide you with a detailed safety lesson before you begin your project.



ACCIDENT REPORTING



Reading Text, Oral Communication

Minor injuries can be treated with items found in a First Aid Kit; however, we ask that you inform your instructor if you have an injury, even if your injury seems like a minor one.

We also ask that you immediately report any spills or damage to tools or equipment in the studio. Your instructor will be able to assist you with clean up and repairs.



SAFETY TIPS



Reading Text, Document Use, Oral Communication

Thinking Skills: Critical Thinking

The safety tips in this section will focus on mosaics, although many of these tips are transferable to other situations. The tips in this section should be applied whether you are working on your project or watching a demonstration



Dress Properly:

- Wear the appropriate clothing and protective gear for the job you are doing
- Wear closed shoes, long pants and a long sleeved shirt
 - This will help you avoid cuts
- Wear leather gloves to protect your hands
- Wear a tight fitting mask
 - The mask will protect you from breathing in dust from the materials you are cutting
 - It will also protect you from free floating silica when you are mixing grout
- Wear safety glasses when you are cutting or nipping materials or removing pieces from your mosaic



Silicosis: a lung disease caused by prolonged inhalation of dust containing silica.

Silica: silicon dioxide is found naturally in quartz, opal, sand, flint, and agate. It's used in the manufacture of glass, abrasives and concrete.



Be Alert:

- Work only when you are well rested
- Do not work with tools or chemicals if you have been drinking alcohol or using drugs
- Focus on the job at hand
- Inspect tools before you begin
- Be aware of the movement of others
- Keep a safe distance between yourself and others when using tools or chemicals
- Know where the fire extinguisher and First Aid Kit are located
- Never smoke or allow anyone else to smoke in your work area



Avoid eating and smoking while you are working with grout or adhesives. If you take a smoke or coffee break, wash your hands first.

Follow the Rules:

- Read manuals and follow all safety procedures
- Listen carefully to your instructor and follow their direction
- Follow all written instructions
- Read and follow the directions on labels and Material Safety Data Sheets (MSDS) for all chemical products

Organize Your Work Area:

- Remove any hazards from your work area before you begin
- Keep all tools and materials out of reach of children and pets
- Design your work area to be safe and efficient



- Ensure there is plenty of ventilation in your work area
- Return everything to its proper place when you are finished

Handle Tools Safely:

- Talk to your instructor before using tools for the first time
- Read manuals and safety guidelines before you start
- Follow all manufacturers' safety guidelines
- Wear all the recommended safety equipment
- Ensure that your work area is tidy before you begin
- Safely store or hang up tools when you are finished
- Use a cutting board
- Protect your work area from glue by using newspaper or plastic
- Check that the tools are ready to use before you begin
 - For example, make sure your cutter has enough oil
 - Are the mosaic nipper wheels tightened?
- Report any tool damage



WORKING WITH CHEMICALS



Reading Text, Document Use

Thinking Skills: Critical Thinking

Although the chemicals you will be using to complete your mosaic project are not dangerous, it is important to develop good safety habits.

For Example:

- Read the Material Safety Data Sheets (MSDS) for any chemicals you use
- Read the labels on any products you use
- Cover all cuts and scratches with a bandage and/or wear gloves to protect your skin
- If you get chemicals on your skin wash your hands well
- Wear a tight fitting mask when you are working with mosaic material
 - Grout dust can harden in your lungs
 - You will be using materials that contain silica which can be dangerous
- Wash your hands regularly, you will be using chemicals that can be absorbed through your skin, eyes and mouth
- Keep your hands away from your face, and try not to rub your eyes or mouth

Material Safety Data Sheets – MSDS are documents written for people who use hazardous materials. They contain information about the physical or chemical hazards associated with using the material. They outline the safe handling, storage and disposal as well as steps for dealing with emergencies, fires, spills and overexposure.

Any material covered by the Workplace Hazardous Materials Information System (WHMIS) must have an MSDS. This means that if you are working with a hazardous substance, you must have access to MSDS in your workplace and you should be trained to work with the material safely.

<http://www.meridianeng.com/msds.html>



CLEAN UP



Reading Text, Document Use

Thinking Skills: Critical Thinking

You will be responsible for cleaning up your work area as you go. You will also be responsible for cleaning your work area at the end of each class.

Cleaning:

- Clean up glass shards with a brush and dustpan or a cloth
 - Never brush them away with your hand
- Keep your work area clean; including your chair or stool
- Wipe up any chemical spills
- Put away chemicals when you are finished
- Put tools away properly when you are finished
- Use the garbage and recycle bins for the appropriate items
- Use a wash basin filled with water to clean up grouting tools and containers and for washing your hands



Note: Never flush grout down the drain; it will harden in the pipes causing a blockage.



THE ENVIRONMENT



Document Use

Some things can't be recycled. For example, stained glass is made with chemicals; therefore pieces that can't be used must go in the garbage.





Respecting the Environment:

- Set aside any leftover glass pieces
 - You can use them in future projects or other people in your class can use them
- Use small pieces of glass and tile that others were not able to use
- Use newspaper or a cloth for clean up rather than paper towel
- Recycle cans and glass bottles



AVOIDING INJURIES - SUMMARY CHART

Document Use

INJURY	CAUSE	AVOIDING
Cuts 	Shards, splinters, broken glass and tile, sharp edges	<ul style="list-style-type: none">• Handle sharp materials with caution• Wear safety glasses to keep glass from your eyes• Wear gloves to keep your hands free of cuts• Keep your work area clean• Clean up with a brush, not with your hands
Absorbing chemicals through skin, eyes, mouth. 	Touching chemicals E.g. You will be using chemicals such as adhesives and grout	<ul style="list-style-type: none">• Wash your hands after contact with any chemicals• Keep your hands away from your face• Do not rub your eyes or mouth• Do not eat or smoke while you are working• Use gloves if you are using chemicals
Muscle Aches	Staying in one position for too long or working in an uncomfortable position	<ul style="list-style-type: none">• Move around and stretch• Pay attention to how you set up your work area. E.g. are you bending over for long periods of time?



INTRODUCTION TO MOSAICS

DEFINITION



Reading Text, Document Use

“Mosaic is the art of creating images with small pieces of colored glass, stone or other material.”





<http://en.wikipedia.org/wiki/Mosaic>

Mosaics are created by arranging and attaching small pieces of material to a surface in a way that they combine to create a larger image or pattern. When you look at a mosaic, you see the larger picture/pattern rather than the small individual pieces.

The word "mosaic" is a Greek word that means: "patient work, worthy of the Muses".

<http://www.mosaic-tile-design.com>. Muses was the goddess who presided over arts and science in Greek mythology.

Mosaic Examples:

<p>Mosaics can be functional; for example a candleholder, mirror or walkway.</p>		<p>Mosaics can be strictly decorative.</p>	
<p>Mosaics can be geometric designs</p>	 <p>Mosaic by Judy Breau</p>	<p>Mosaics can capture an image.</p>	 <p>Mosaic by Judy Breau</p>



Many people say creating a mosaic is like doing a puzzle because it involves fitting pieces together to form a picture. Others say it is more like solving a puzzle, because there is no preset place for the pieces. For example, if two people are asked to create a mosaic using the exact same pieces and the exact same pattern it is possible that they will end up with two entirely different mosaics.

You are encouraged to be creative and use your imagination when creating your mosaic because there is no right or wrong way to arrange the pieces. However, if you want to create a specific effect you will need to use one of the traditional mosaic techniques. (These techniques will be covered in class and later in your Student Notes.)



Tesserae: a name given to a piece used in a mosaic e.g. ceramic, stone and glass.
<http://www.thejoyofshards.co.uk/glossary/ceramic.shtml>

It is from the Latin word for cube and the Greek word for four.
<http://www.mosaic-tile-guide.com/tesserae.html>



HISTORY OF MOSAIC ART



Reading Text, Document Use

Mosaic as an art form has been around for thousands of years, however, it is difficult to pinpoint exactly where and when it began. For example, clay pieces have been found decorating ancient mud walls. As Sonia King states in her book *Mosaic Techniques & Traditions*, “The earliest examples of mosaic art are commonly agreed to be Sumerian. Around 3000 B.C.E. in Mesopotamia.”

The Greeks were well known for their early mosaics. They used coloured pebbles to create patterns on walkways and floors. Most of these early designs were geometric patterns (lines and shapes). As time passed other materials (tesserae) such as glass and marble were used. This allowed artists to be even more creative.

Most agree that it was the Greeks who introduced mosaics to the Romans and the Romans who introduced the technique to people throughout Europe.

Many of these ancient mosaics are still around today because artists used strong and durable materials such as pebbles, marble and glass. Additionally, many of the ancient mosaics were located in churches, which meant that they have been cared for and protected.



Geometric: ancient Greek style noted for its decorative use of simple lines and shapes.

Sumerian: a civilization and a historical region located in Mesopotamia, known as “The Cradle of Civilization”.
(Wikipedia)

Mesopotamia: modern day Iraq, Turkey, Syria, Iran.
(Wikipedia)

BCE: "Before the common era." It means the same as BC, "Before Christ".



MODERN MOSAICS



Reading Text, Document Use

Mosaic art reached its peak in the 15th century AD, but started to decline at that time. It wasn't until the 19th century that mosaics began to make a comeback as an art form. Mosaics also became more affordable in the 19th century when machines were able to mass produce the mosaic pieces.

Today, mosaic artists use many of the same materials and techniques used thousands of years ago. However, new materials, techniques and styles have also been developed. This means that mosaic artists today have more choices than ever before.

Computers and the internet have also changed how mosaic artists work. For example:

- Computer software can be used to design mosaic patterns
- Mosaic materials can be purchased online
- Artists can sell finished pieces through their websites
- Artists can share ideas and new techniques
- Patterns can be found online



AD: “Anno Domini” is Latin for “Year of our Lord” or the year Jesus Christ was born.

CE: “Common Era”, refers to the same time period as AD but is used to avoid the religious reference connected to the term AD.



PATTERNS AND SUBSTRATES

INTRODUCTION



Reading Text

Developing a solid foundation is the first step in learning any new skill. Once you develop the basic skills you can build on them by trying new and different methods. It is similar to building a house. If you don't start by building a solid foundation, the house will be unstable.



Through this course you will develop the basic techniques needed to complete a mosaic project. You will learn how to use a method called the direct method. This method involves using an adhesive (glue) to attach your tesserae (pieces) to the substrate (base). You will then fill in the space between the pieces with grout. This is the best method to use for your first mosaic project.



PATTERN SELECTION



Reading Text, Document Use

Thinking Skills: Critical Thinking, Decision Making

Before you begin your mosaic you will need to select a pattern. When selecting a pattern you will need to make some decisions.

- Will I use an existing pattern or will I design my own?
- Do I want my mosaic to be:
 - free flowing or geometric?
 - an image – e.g. a flower?
- Does the design match my skill level?
- Do I like the image/design I've selected?

Note: We recommend that you start with either a geometric or free flowing design.



Adhesive: glue.

Substrate: the base for your mosaic.

Template: pattern.



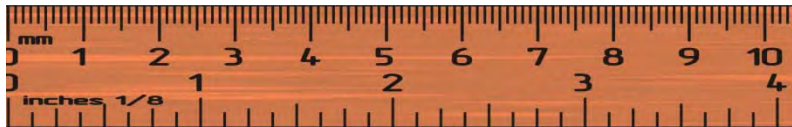
SUBSTRATES



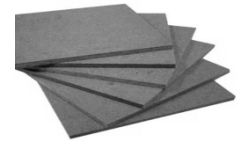
Reading Text, Document Use, Numeracy

Thinking Skills: Decision Making

For this project we recommend using a 1.3 centimeter ($\frac{1}{2}$ inch) thick piece of Medium Density Fiberboard (MDF) with the dimensions 30.5 x 38 centimetres (12 x 15 inches) for your substrate.



MDF panels are produced by combining wood fibers, wax and resin which are then heated and pressed. The result is a board that is dense and heavy and not likely to warp once it's properly sealed. MDF is an ideal choice for mosaics. http://www.woodnshop.com/Hardwood/MEDIUM_DENSITY.htm



Selecting a Substrate – Future Projects

As you develop your skill as a mosaic artist, you will be able to choose from a variety of different substrate options. Before you decide on a substrate you will need to evaluate the project.

- Will it hang on a wall or will it be on the floor or ground?
 - A mosaic designed to be stepped on needs to be smooth and flat
- Will I use the mosaic or will it be strictly decorative?
 - E.g. tabletop, vase or candleholder



- Will it be inside or outside?
 - If your mosaic will be outdoors you will want to use cement, marine grade plywood or glass
 - Whenever possible, bring in your outdoor mosaics for the winter months
- What will work best with the tesserae you want to use?

In a future project you may decide to use glass, cement or pottery as a base. You may also decide to use a wood base such as Medium Density Fiberboard, plywood or a piece of wood furniture.

Note: If you use plywood use a piece that is at least 19 millimetres or ¾ inch thick.

If you are using wood as a base it will need to be sealed. Wood and wood products are porous which means they will absorb moisture and expand and warp. This swelling and twisting will cause the grout to crack and your tesserae to pop off, destroying your mosaic and all of your hard work.

Terra-cotta pottery is also porous. You will need to use diluted (watered-down) polyvinyl acetate (PVA) sealer, both inside and outside the pot, especially if it will be used as a planter.



The Canadian climate is hard on mosaics, even if it has been well protected. If moisture is absorbed it will freeze. When it thaws the grout may crack causing the pieces to fall off.

Tip: We recommend using horizontal surfaces (flat), rather than a vertical surfaces (up and down, like a vase) until you develop your skills. When you work on a vertical surface, tiles can slide out of position before the adhesive cures (dries).



<http://lagniappemosaic.com/PhotoGallery4.htm>



PREPARING YOUR SUBSTRATE



Reading Text, Numeracy

For this project, we recommend creating a mosaic that you will hang on an inside wall; however, you will still need to protect it against moisture absorption. Even though MDF boards don't warp easily, they will eventually absorb water from the air in the summer months. The board can also absorb water from the materials you use to create your mosaic. For example, adhesives and grout both contain moisture.

To seal your substrate use a mixture of PVA adhesive and water (approximately 1 part adhesive to 4 parts water). Paint the sealant on all sides of your substrate with a paint brush and let it dry for at least 30 minutes.

Note: There are 6 sides to seal; the front, back, and the four edges.

Regardless of the substrate you choose, it needs to be clean. This means washing or dusting it before you begin. If you use a surface, such as an old piece of furniture, you will want to remove any oils, waxes (e.g. furniture polish), or flakes of paint by sanding and scraping.

Ideally you will want a surface that is a bit rough, this is called “tooth”. When creating a mosaic, smooth surfaces are harder to work with.



Before using a base for a mosaic, research tips for sealing it properly.

The PVA adhesive you will be using in class is called WeldBond.



PREPARING YOUR PATTERN



Reading Text, Document Use, Numeracy, Oral Communication

Thinking Skills: Decision Making

Once you have selected a pattern and substrate for your project will need to ensure that they are the same size. For example, if your substrate is 30.5 x 38 centimetres (12 x 15 inches) and your pattern is 22.9 x 30.5 centimetres (9 x 12) you will need to enlarge the pattern. There are several methods you can use to change the size of your pattern.

Method One: Photocopy

- You can decide to use a photocopier to increase or decrease the size of your pattern
 - **Note:** Most standard printers use paper that measures 20 x 25 centimetres (8 x 11 inches)



If you are using a pattern, check to make sure that it is copyright free. You can also pay for patterns or ask for permission.

Method Two: Draw Free Hand

- You can decide to draw your pattern onto your substrate free hand

Method Three: Graph Paper

- You can enlarge your template or a portion of your template using graph paper
 - If you would like to use this method, ask your instructor for assistance



TRANSFERRING YOUR PATTERN



Reading Text, Document Use

Once your pattern and substrate are the same size you can transfer the pattern to the substrate using carbon/graphite paper. Carbon/graphite paper is paper that is coated on one side with ink.

Steps for Transferring your Pattern:

- Place the carbon/graphite paper between the template and the substrate, with the ink/graphite side on the substrate
- Attach the carbon/graphite paper and the template to the substrate with tape so they won't move around
- Use a pencil and trace every line on the template
 - The pressure from your pencil will cause the ink to transfer. When you remove the template and carbon/graphite paper your pattern will appear on your substrate



Note: Only use pencil to draw on your substrate. The colour from a marker will eventually bleed into the grout, causing it to stain.

If you decide to create your own pattern rather than using an existing one, you can draw the pattern on a sheet of paper and then transfer it to the substrate using the carbon/graphite paper method. You can also draw your pattern directly onto your substrate in pencil.



MOSAIC TOOLS

INTRODUCTION



Reading Text, Document Use

As mentioned, “tesserae” is the word used to describe mosaic pieces. These are the pieces you use to complete your pattern. They add colour, shape and texture to your mosaic.

Note: In your Student Notes tesserae may also be referred to as pieces or tiles.

In most cases, you won’t want all of your tesserae to look exactly the same. If you use a variety of shapes and sizes in your mosaic it will be unique and more interesting.

That being said, it is unlikely that you will find tesserae that are the exact size and shape you want or need; therefore, you will need to cut and shape the pieces to fit your pattern. To do this you will need to use a variety of tools.

To complete your first mosaic you will only need to use a few basic handheld tools, such as a scorer/cutter, running pliers and nippers.



There are many different makes and models of mosaic tools.

You may find that the same tool is referred to by a variety of different names.



Safety

When you are using mosaic tools you need to follow all the safety procedures outlined in the safety section of your Student Notes. For example:

- Wear safety glasses
- Wear gloves
- Cut on a surface that is easy to clean up
- Use a soft brush to remove tile and glass chips from your workspace
- Never brush off work surfaces with your bare hands
- Watch for sharp tesserae edges





GLASS SCORER/CUTTER



Reading Text, Document Use, Numeracy

Thinking Skills: Critical Thinking

The scorer, also known as a cutter, is a tool designed to cut glass tiles and stained glass in straight lines. It has a wheel that you push along the glass exactly where you want it to break. You can draw the line first, you can score freehand or you can use a ruler to guide the wheel.

When you have finished scoring the glass, you will notice that it will still be in one piece. You will be able to see the score line across the surface of the glass; it will look like a scratch about the size of a hair. The score line breaks the surface tension of the tile, causing it to weaken.

AN EXAMPLE OF A GLASS SCORER/CUTTER:



TIPS FOR SCORING GLASS TILE

Preparation:

- Check the scorer/cutter to make sure the oil reservoir is filled and the head moves freely
 - Scorers often use oil to help the wheel operate smoothly
- Clean away any dirt from the glass surface

Safety:

- Follow all the safety procedures outlined in the safety section of your Student Notes



Scoring:

- Place the wheel on the glass 1.5 millimetres (1/16 inch) in from the edge closest to you
- Start at one edge and travel all the way to another edge
 - Push the wheel away from you when making a score
- Stand while you are cutting
- Never stop once you start your cut
 - Never back up or try to rescore the same line
- Score in straight lines
- Keep an even, steady pressure when making your score lines
 - Think about the pressure coming from your shoulder rather than from your hand
 - Keep your wrist straight and your speed even as you make your cut



RUNNING PLIERS

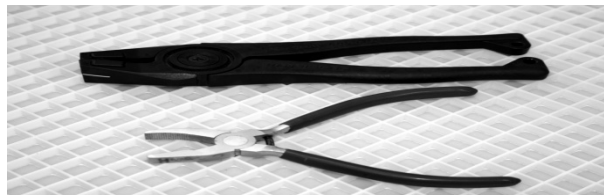


Reading Text, Document Use

Thinking Skills: Critical Thinking

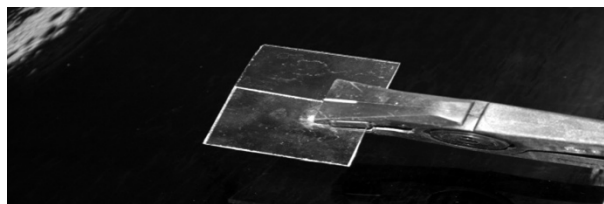
After you have scored the glass, you need to do something that will cause it to break apart. To do this you apply pressure to the score line at the edge of the glass. Running pliers are used for this step. When you pinch the score line, the glass will break apart along the entire length of the line. This happens because the glass has been weakened at the score line.

AN EXAMPLE OF RUNNING PLIERS:



Picture courtesy of Hues in Glass

AN EXAMPLE OF RUNNING PLIERS IN USE:



Picture courtesy of Hues in Glass

TIPS FOR USING RUNNING PLIERS

Safety:

- Follow all the safety procedures outlined in the safety section of your Student Notes



General Tips:

- Hold the glass firmly between your thumb and index finger, away from the score line
- Centre the flat jaw part of the pliers across the score line
 - Your pliers may have a line marked down the centre that you can line up with the score line
- Hold the glass firmly, pinch the handles to apply a quick, even and light pressure with the jaws of the pliers
 - When pressure is applied, the score line will run and the pieces will break apart
- Catch the pieces on a table as they break apart
 - The edges will be sharp so don't try to catch the pieces with your hands



TILE NIPPER



Reading Text, Document Use, Numeracy

You can use a tile nipper to cut and shape ceramic tiles, stone and china; however, they won't work on glass tiles. A tile nipper can be used for straight cuts however they are best for creating angled pieces.

To create an angled piece, use the tile nipper to nip off several small pieces of tile rather than one big piece. Ideally you don't want to nip off any piece larger than 3 millimetres (1/8 of an inch). Continue nipping off pieces until you get the shape you want.

The jaws of tile nippers don't close together tightly. When you squeeze them together you will notice that the top edge hangs over the bottom edge. This means that they are designed to break rather than crush the tile. You can use the centre part of the jaws, or the edge, depending on the type of cut you need to make.

AN EXAMPLE OF A TILE NIPPER:



TIPS FOR USING A TILE NIPPER

Safety:

- Follow all the safety procedures outlined in the safety section of your Student Notes

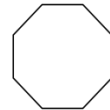


General Tips:

- Sit down to use nippers
- Catch the tile pieces on a table or other surface
 - Don't use your hands to catch pieces
- Keep your arms resting on your leg
 - This keeps the tiles away from your face and keeps your arms from getting too tired
- Hold the handles near the ends
- Hold the piece of tile, but keep your hands away from the jaws of the nipper
- Position the jaws of the nipper 3 millimetres (1/8 inch) of an inch over the edge of the tile
- Nip off small pieces at a time
 - Continue nipping until you have the shape you want

To Create a Circle:

- Nip off all four corner pieces of a square tile. This creates an octagon (8 sides)
- Nip off the sharp corners until you create a circle



To Create a Convex Shape:

- Nip off the corners on one side of a tile
- Nip off the sharp corners until one side of the piece is rounded





To Create a Concave Shape: (more complex):

- Use the back of the nipper to remove a very small piece from the bottom edge of the tile
- Use the front of the nipper to remove a very small piece from the other edge of the tile
- Continue working back and forth until you have the shape you want



To Make Straight Cuts:

- Place the jaws of the nipper on the tile where you want it to break
- Pinch the opposite side of the tile, directly across from the jaws using your thumb and index finger
 - Draw an imaginary line between the jaws and your fingers
- Squeeze the jaws together
 - The tile will break in a straight line between the jaws and your fingers



MOSAIC NIPPER



Reading Text, Document Use

A mosaic nipper, also known as a wheeled mosaic cutter, is similar to a tile nipper but it is used to cut glass. It is not used to cut ceramic or other material. It will cut without causing the glass to crush or splinter. You can use it like a tile nipper to cut shapes and nip off pieces of the glass. You can also use it to cut a piece of glass in half.

There are two variations of mosaic nippers. The wheels on one style are fixed so they don't move. The other style has two wheels that turn and have a slight wiggle. If you are purchasing a mosaic nipper, select the style with fixed wheels.

The wheels are opposite each other and the handles are spring loaded. You use the wheels to apply even pressure to the top and bottom sides of the glass. This causes the glass to break in a straight line, in line with the wheels.

AN EXAMPLE OF A MOSAIC NIPPER:



TIPS FOR USING A MOSAIC NIPPER

Safety:

- Follow all the safety procedures outlined in the safety section of your Student Notes



General Tips:

- Place the glass between the two wheels
- Hold the handle at the ends
- Squeeze the handle together gently
 - The glass will break in line with the nipper
- Nip off pieces of glass using the same techniques you would use if you were creating shapes with a tile nipper



BREAKING TILES



Reading Text

There is another method for creating small, unique and varied tile pieces; you can break them with a hammer. Although this method is not the best choice, many people think of this method first when they think about creating mosaics.

If you use this method, work outside, or in a location that is easy to clean. You will need a hard surface like concrete or a rock. Place the things you want to break in a thick plastic or cloth bag. Use the hammer to hit the bag.

Dump the broken pieces out of the bag onto a clean surface and carefully pick out the pieces you want to keep. Work carefully, the pieces will be sharp. Wrap the small pieces you won't be using in newspaper and place them in the garbage.

Note: You need to do this far away from others. This step requires safety glasses and gloves.



PROBLEM SOLVING CUTS



Reading Text, Document Use

Thinking Skills: Problem Solving

If your tiles are not breaking correctly, you need to consider the possible causes.

It may be that you just need practice. The more cuts you make the better you will get. Your muscles will develop what is called muscle memory. This is the same as “getting the feel” for the amount of pressure you need to apply and the angle you need to hold the various tools.

Common Problems:

- Too much pressure = the tile will shatter
- To little pressure = the tile won't break evenly
- If the break is angled, the cutter may have been held on an angle
- If the tile breaks when you are using a nipper, you may have been trying to nip off too large a piece

Mosaic art is subjective. This means that there is a bit more room for error than in other art forms such as stained glass. Your mosaic can look good even if your cuts don't go exactly as planned.

If you make a cut and find that it is not the exact shape you want, don't throw the piece out, it may still work. It may also work somewhere else in your mosaic or you can offer it to the other people in your class.



Subjective: based on somebody's opinions or feelings rather than on facts or evidence.



TESSERAE SELECTION

INTRODUCTION



Reading Text

The following section will outline some of the things you will want to consider before selecting tesserae for your mosaic.

For example, in this class you will have the opportunity to consider angles, colours, textures and light when you are selecting the tesserae. This means that you will have some decisions to make.

TESSERAE OPTIONS



Reading Text, Document Use

Thinking Skills: Decision Making

Your instructor will provide you with a selection of tesserae that will work well for your first project. However, as you continue working in mosaic art, you will find that the tesserae options are endless.

You can decide to use any combination of traditional pieces such as:



- Stone e.g. marble and slate
- Pebbles and rocks
- Stained glass
- Ceramic/pottery
- Smalti - enameled glass





You may also select modern pieces such as:

- Sea Shells
- Buttons
- China (even the handles of broken cups)
- Cork
- Beads
- Mirrors
- Marbles
- Gems
- Metal



All the pictures on this page are from: <http://www.mosaicworks.com/technical/materials.html>

Note: Later in your Student Notes you will learn where to find inexpensive tesserae options for future projects.



TESSERAE COLOUR



Reading Text, Document Use

Thinking Skills: Decision Making, Critical Thinking

When deciding which tesserae to use you will need to think critically about your colour choices. Some colours look better together than others. Some colours even appear to change when they are placed side-by-side with another colour. If you take time to select colour combinations for your mosaic, you will be happier with your finished piece.

Ask Yourself:

- What colours do I like?
- What colours fit this particular pattern?
 - For example, if your pattern includes a sun you may want to use yellow or orange pieces
- Where am I going to hang my finished piece?
 - You may want to consider colours that will fit well in the room
- How many colours do I want in my mosaic?
 - Too many colours may detract from your overall design by making your mosaic seem cluttered or busy
 - Your choices will also depend on whether you use solid coloured tiles or whether you use multi-coloured or patterned tiles



Note: Use opaque (solid) colour glass so you can't see through to the substrate below. If you do decide to use clear tiles, marbles or glass, you must use clear glue.



VARIETY



Reading Text, Document Use, Oral Communication

Thinking Skills: Decision Making

Earlier in your Student Notes it was recommended that you consider using a variety of tesserae shapes and colours to make your mosaic unique and interesting. You will also want to consider selecting a variety of materials. If you only use glass tiles, your mosaic will look very different than if you use a mix of glass, ceramic and stone.

Tone, texture and thickness of your tesserae will also impact the look of your piece.

Tone: (*how light or dark a colour is*)

- If a dark blue piece is beside a light blue piece, the dark piece will look even darker
- Your eyes will be drawn to lighter colours therefore light colours are best for your central image and dark colours are best for the background

Texture: (*surface*)

- You may decide to use both smooth surfaced and rough surfaced pieces to add variety



Instructors often recommended that people new to mosaic art use stained glass tesserae only.

Ask your instructor what they would recommend for your first project.

Note: Rough or unfinished surfaces such as unglazed pottery, marble or stone are porous and will need special treatment to prepare them for grouting. This step is not covered in this introductory course however you will find information on the internet.



Thickness:

- If you use tesserae that vary in thickness, the surface of your finished mosaic will not be flat This is not ideal if you are creating a mosaic that will be stepped on (e.g. a stepping stone) or used as a tabletop, however, it can make a wall mosaic very interesting
- Stained glass tends to be thinner than other materials
 - It is rare that you will find stained glass over 4 millimetres (1/8 inch) thick

USING LIGHT



Reading Text

Many tesserae such as glass, mirror and polished stone are used because of their ability to reflect light. They all reflect light differently therefore you will want to consider how these surfaces will catch the light before you place them in your mosaic.

While shiny pieces are interesting and can create a sense of movement in your mosaic, they can also be distracting if overused. Additionally, shiny pieces will draw attention to the area so only use them if you want to make an area of your mosaic stand out.



Another option for using light is to change the position or slightly tilt some of the pieces in the mosaic. The angle, as well as the thickness of the pieces will change how the light is reflected.



TIPS FOR SELECTING TESSERAE



Document Use, Numeracy, Oral Communication

Thinking Skills: Decision Making, Critical Thinking

Assess the Tesserae:

- Move the pieces around before you glue them to your substrate
 - If you take the time to put your pieces together in different combinations before you begin gluing, it will be easier to decide which ones work best together
- Step back and look at the pieces; your eyes can help you make your selections
 - Look at your pieces under natural light
 - Assess the tone, texture, thickness, reflection and colour
- Do the colours work together?
- Is there enough variety?



Assess the Shape:

- How much cutting and shaping do you need to do to get the piece to fit the way you want?
- How easy will it be to cut the pieces?
 - If you are unsure, ask your instructor. They will know which materials are easy to work with. They can also tell you if the cut you need to make is possible
- Do you have the skill level to be able to make the cuts you want?



It will be easier to work with pieces that are at least 19 millimetres (3/4 inch) wide.



TESSERAE TECHNIQUES

ANDAMENTO AND OPUS



Reading Text

Thinking Skills: Critical Thinking

As you know, it is the placement of small tesserae that will create the overall look of your final piece. To create movement and flow in your mosaic you can use some standard placement techniques. The terms Andamento and Opus are used to describe these techniques. You will use one technique or the other.

If you are like most people, you won't use the words Andamento and Opus everyday. You don't need to worry about memorizing these words; however, it is important that you know how to use the techniques they describe.

Andamento:

Andamento is an Italian word meaning flow, trend, course or direction. In mosaics it is used to describe how the placement of tesserae in a specific pattern can create movement/flow/rhythm in a mosaic. Movement can also be created by varying the width of the rows and changing the spacing of the tesserae. For example, look at this picture below. Think about how the artist created movement.



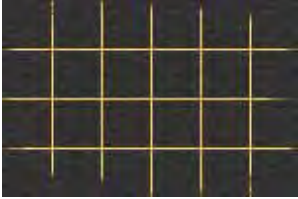
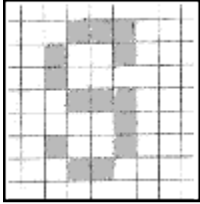


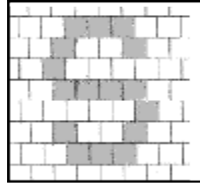
Opus:

Opus is a Latin word for a creative work. In mosaics, opus means the pattern in which the tesserae are arranged.

There are several opus techniques. The six most common are summarized in the chart on the following pages.



OPUS CHART

	<p>OPUS REGULATUM: the tesserae are laid out in a regular grid, both horizontally and vertically. It was a Roman technique and was used to fill in large expanses of background.</p> 
	<p>OPUS SECTILE: one tessera forms a complete shape. For instance, if a fish is made from one piece of glass, it is considered opus sectile.</p>
	<p>OPUS TESSELLATUM: tesserae are applied in straight rows, either horizontally or vertically and stacked on one another, like laying bricks. It is important that none of the tesserae line up across both of the rows.</p> 



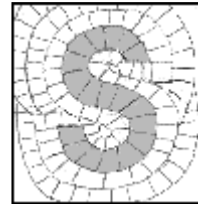
Student Notes – Tesserae Techniques



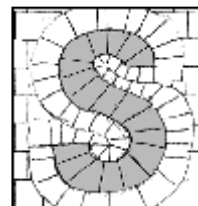
OPUS PALLADIANUM: pieces are placed randomly, this technique is also known as "crazy paving." In this laying of tesserae, it is especially important to keep the interstices (gaps or grout lines) even between the tiles.



OPUS VERMICULATUM: this opus outlines the shape of the mosaic motif or main object to create a halo/aura effect, which highlights the design and gives it a bit more energy. Vermis is the Latin word for worm.



OPUS CLASSICUM: this technique combines opus tessellatum with opus vermiculatum. This technique creates a very strong, sharp and clear image.



The chart is adapted from the website: <http://www.mosaic-tile-art.com/mosaic.html>. The black and white images are from the website: <http://www.drostle.com/mosaicstyle.html>



ADHESIVES

INTRODUCTION



Reading Text, Computer Use

Once your substrate is prepared, your pattern has been transferred and your tesserae selected and cut, it's time to start the fun and creative part of mosaics. At this point you are ready to start attaching the tesserae to the substrate using an adhesive. Adhesive is just another word for glue, something that sticks one thing to another.



Safety

When you are using adhesives remember to work safely; some types can cause skin irritation, others have toxic fumes and some glues are known to be carcinogenic (cancer causing). Read the labels, directions and/or MSDS sheets that come with any products you use. At a minimum, wear gloves when handling non PVA adhesives and work in a well ventilated area.



If you are interested in additional information visit the following sites:

- <http://www.drostle.com/mosaicstyle.html>
- http://www.mosaicartsource.com/mosaicart/mosaic_art_resource/mosaic_glossary.html#o



WELDBOND

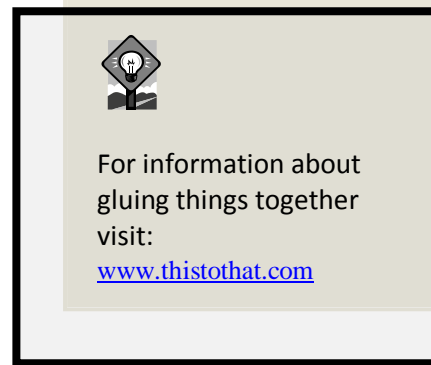


Reading Text, Document Use

The adhesive you will be using for this course is called Weldbond. This is an adhesive that is popular with many mosaic artists and is made right here in Canada.

Weldbond is:

- a polyvinyl acetate (PVA)
- water based
 - This means that it cleans up well with soap and water (from both you hands and your clothes)
- somewhat moisture resistant once it dries and is sealed by grout
 - It is not recommended for use on outdoor projects
- strong and works with many different types of materials
- dries in about 25 hours
 - Drying time will vary depending on the size of the tesserae you are using



The Weldbond website (<http://www.weldbondusa.com>) states the following:

- non-flammable, non-toxic & dries clear
- unmatched as a primer for porous surfaces





- Highly water-resistant & impervious to petroleum, oil, grease, salt, moulds and fungi, alkali's & weak acids
- Withstands all climatic conditions after curing
- Non-staining and will not become brittle with age
- Highly concentrated, can be mixed with water and used as a sealer for many surfaces.
- Tested and approved by CMHC for use in National Housing Act Construction
- Used by Nasa for Escape Suites on space shuttle flights



ADHESIVES - SUMMARY CHART



Reading Text, Document Use

Thinking Skills: Decision Making

You will spend a lot of time creating your mosaic so it's important to use materials that will last. This includes selecting the right adhesive for the project.

As mentioned, for your class project you will be using Weldbond, however if you continue creating mosaics, it is possible that you will eventually need another type of adhesive. The adhesive you choose will depend on the type of materials you're using. It will also depend on where your finished mosaic will be displayed (e.g. inside or outside).

For your future reference, the following chart has been included. It is a summary of the adhesives Sonia King outlines in her book "Mosaic Techniques & Traditions".



Type of Adhesives	Advantages	Uses
PVA e.g. Weldbond	Continues to harden and strengthen. Versatile, non-toxic, clear and it cures quickly	Will hold material such as glass, wood, cement, pottery and metal. Can be used as a sealer when mixed with water
Cement-Based e.g. Thin-set mortar	Flexible, textured, durable and water resistant	Ideal for outdoor projects, or for areas exposed to moisture such as showers
Tile Mastic	Tiles will not slip. Note: Tile mastic is known to become brittle and will eventually break down	Works well on vertical surfaces and indoor projects
Epoxy	Strong, waterproof, permanent, however, it is harder to use than other adhesives. Note: The fumes are toxic so ensure that you have good ventilation	Works well on vertical surfaces and outdoor projects
Silicone	Waterproof, flexible and clear. Note: The fumes are toxic so ensure that you have good ventilation	Works well when attaching glass pieces to a glass surface
School Glue	Water-soluble, therefore, it is easy to remove tiles	Indoor, beginner projects



GLUING TESSERAE



Reading Text, Document Use

Thinking Skills: Problem Solving, Decision Making

There are two techniques you can use to attach tesserae to your substrate.

The first technique is called buttering. It got its name from the way the adhesive is spread on the tesserae; it is like spreading butter on a piece of toast. You butter the back of the piece and then you place the “battered” side down onto the substrate and push it gently into place. This method works well, but it is time consuming because it’s done one piece at a time.



The other method involves spreading some adhesive onto the substrate, covering an area that will fit about four to eight tesserae. You then press each piece down onto the adhesive one at a time. If you use this technique you need to work fairly quickly because the adhesive will start to dry on the substrate. It is recommended that you select the tesserae for the area in advance so they are ready to place.

Regardless of the technique you use, there will be decisions to make and problems to solve. For example, with both methods you will need enough adhesive to hold the tesserae in place, without using so much that you change the height of the piece. Too much adhesive will also cause the pieces to slide out of place.

Additionally, if you use too much adhesive with the butter method it will squirt out from under the tile onto the substrate. If you get glue between the pieces it can cause problems when you try to apply grout. (Grouting is covered later in your Student Notes). If glue does squirt out onto the substrate, clean it off using a small, sharp object such as a toothpick or pin.

With both methods, you need to work carefully so that you don’t get adhesive on the surface of the tesserae. Check your hands for adhesive before you pick up a piece.



TIPS FOR GLUING TESSERAE

Safety:

- Follow all the safety procedures outlined in the safety section of your Student Notes

General Tips:

- Plan ahead
 - Lay out a few tiles before you start to glue
- Remove glue from your grout lines before it dries
- Wipe your hands before you pick up a piece
- Remove any glue from your tesserae
 - Wipe it off carefully before it dries



Note: If the glue dries on your tesserae you can use a razor blade to scrap it off. You want to ensure that you have removed any adhesive from your tesserae before you start to grout.

Note: If you do need to remove a piece, use a small prying tool. Gently pry off the piece carefully so you don't damage any of the surrounding tesserae. Work safely!



PLACING YOUR TESSERAE

PLANNING AHEAD



Reading Text, Document Use

Thinking Skills: Problem Solving, Decision Making, Critical Thinking

The adhesive you will be using to attach the tesserae to your substrate is very strong. It will be difficult to remove a glued piece after it has been placed. Even if you are able to remove the piece, you still need to find a way to remove the adhesive from the substrate. Fixing a problem in mosaic art by reversing your steps is very difficult. It is best to try to avoid this situation by planning ahead.

Mosaic artists will tell you that when they run into problems laying their tesserae, the problem can usually be traced back to the last few pieces they placed. They will also tell you that if you don't catch and fix the problem right away, it will continue to grow bigger with every new piece.

If you place your tesserae randomly, without thinking it through, you may not be happy with the end result. Therefore it is important to take the time to plan ahead 3-4 pieces before you begin to glue them to your substrate.



We don't recommend laying out all of the pieces for your mosaic because the adhesive will affect their position. Work with three or four pieces at a time.



Planning Steps:

- Focus on one area of your mosaic at a time
- Work on pieces that will touch each other in the finished mosaic
- Lay out 3-4 pieces on your substrate
- Move them around
- Assess how they look by asking yourself, are they:
 - the right shape, size and colour?
 - in the right location?
 - the right angle?
 - the right distance from the other pieces?
 - the right fit for the pattern?
- Make adjustments before you start to glue



GROUT LINES



Reading Text, Document Use, Numeracy

Thinking Skills: Decision Making, Critical Thinking

In most cases the tesserae you select will be different shapes and sizes. This means that the pieces will not fit together tightly when placed on your substrate. The resulting spaces between the tesserae are called grout lines. It is this space that will eventually be filled with grout.

As you know the goal in mosaic art is to use small pieces to create a larger image. When you look at a mosaic you shouldn't see the individual pieces. Well placed grout lines will help to tie the individual tesserae together creating this larger overall image.

Grout lines that are not well placed can divide the tesserae making your mosaic look disjointed. Poorly planned grout lines will dominate your mosaic taking attention away from the big picture.

Grout lines will have a major impact on the look of your finished mosaic; therefore it is important that you spend as much time planning grout lines as you do picking out your tesserae.

Planning Grout Lines:

- Think about the location and shape of the grout lines you want
 - The opus you are using and the pattern you are using will be factors in grout line placement
- Stagger your tesserae (unless you are using a traditional grid based opus)
 - Grout lines that run in a continuous line across your mosaic are called grout rivers and will detract from your mosaic



- Decide on grout line size
 - Evenly spaced grout lines will recede into the background of your mosaic allowing your tesserae to take centre stage. This means your main image should be surrounded by evenly spaced grout lines
 - If your pieces are close together your grout lines will be small. If the pieces are far apart, your grout lines will be big. Although this may seem obvious; it's important to keep in mind as you work

TIPS FOR PLACING TESSERAE

Safety:


- Follow all the safety procedures outlined in the safety section of your Student Notes. For example:
 - Read the adhesive label and follow the safety guidelines
 - Protect your work area with newspaper or plastic
 - Wear safety goggles and gloves

General Tips:

- Use one of the adhesive techniques to glue your pieces
 - We recommend the butter method



- Push each piece onto the substrate using gentle but firm pressure
- Leave a gap between each tile so that there is room for the grout
 - You will be using sanded grout, therefore, you want grout lines 3+ millimetres (1/8+ inches) wide (grout will be covered in detail later in your Student Notes)
- Remove any glue the squirts out from under a piece and into the grout line before it has a chance to dry (use a tool such as a toothpick)
- Position your pieces by following your pattern lines
- Position your pieces by following the opus you have selected
- Step back from your work after you glue 3-4 pieces so that you see it from a distance
- Plan your next few pieces



Foreground: the part of a picture or scene that appears nearest the viewer.

Background: the part of a picture or pattern that appears to be in the distance or behind the most important part.

Working on the Foreground:

- Decide what you want to have as your main subject
 - This is the area you want people to see first (the foreground)
- Glue the tesserae for the main subject first
- Place pieces all around the main subject
 - Start just inside the lines of your pattern
 - This will give the main subject shape
- Continue filling in the rest of your main subject



Working on the Background:

- Fill in the background once your main subject is done
 - Work out from the foreground toward the edge of the substrate (the background)
 - Stop when you are close to the edge of your mosaic - about 2.5 centimetres (1 inch)
- Plan ahead so that you leave enough room to place larger pieces at the edges
 - Small edge pieces will draw your eye out to the edge and away from the foreground
 - Small edge pieces will break off easily when bumped



PROBLEM SOLVING PLACEMENT



Reading Text, Document Use

Thinking Skills: Problem Solving, Critical Thinking

As you know, it is important to plan ahead because moving backward in mosaic art is challenging. You must always be thinking about how the piece you are placing will impact the piece you will be placing next. This allows you to anticipate problems and correct them before they happen.

Potential Problems:

- You only have room for small pieces at the edge of your mosaic
- Several similar pieces are placed side-by-side
 - This is a problem unless it is the opus you've chosen
- You have unplanned/unwanted straight grout lines
 - Straight grout lines (grout rivers) will appear out of nowhere, so it is important to stay alert
 - Grout rivers compete for attention and draw your eye away from the tesserae
- The size of your grout lines are inconsistent – some are large and some are small
- You have large grout lines
 - Don't be tempted to fill in these large spaces with small pieces, in most cases it makes it worse
- You have some odd shaped pieces that stand out
 - This is a problem unless it is the opus you've chosen
- You have triangle pieces all pointing in the same direction



To Avoid Problems:

- Work slowly and methodically
- Plan ahead
- Work on the foreground first (your main image)
- Work on one area at a time rather than thinking one tesserae at a time
- Place tesserae side-by-side, rather than working here and there around the substrate
- Keep the overall mosaic in mind – the big picture - as you work

Note: If you need to remove tiles you can pry them off using a prying tool or a hammer and screwdriver. Wear safety goggles and gloves to avoid injury.



GROUT

INTRODUCTION



Reading Text, Document Use

Grout is used to fill the spaces (grout lines) between the tesserae on your substrate. Not every mosaic is grouted; however, it is the most common technique and the one you will use in this course.

There are two types of grout: sanded and unsanded. Most beginners use sanded grout because it is easy to work with. The sand makes the grout stronger and keeps it from shrinking as it dries (or cures).

Sanded grout is a mixture of cement and sand and it is sold in powder form.

When the grout powder is mixed with water it forms a paste. The paste is used to fill the spaces (grout lines) between all the tesserae in your mosaic.



Grout is used to protect the adhesive and the substrate from exposure to moisture. As mentioned earlier, your substrate can warp if it is exposed to moisture including humidity in the air. Grout is used between shower tiles for the same reason.

Grout also covers the sharp edges of your tesserae. This means you don't need to sand the tesserae edges before gluing them to your substrate.

In addition to protecting your mosaic, grout will:

- make the surface smooth
- help keep the tesserae in place
- keep dirt from getting on your substrate
- make your mosaic easier to clean



SELECTING GROUT COLOURS



Reading Text, Document Use

Thinking Skills: Critical Thinking, Decision Making

Grout can enhance the look of a mosaic by tying all the pieces together. The colour of the grout can even enhance the colour of the tesserae in your mosaic.

The grout colour you select will depend on the colours of your tesserae.

Colour Considerations:

- Choose grout that will blend into the background, rather than take centre stage
 - This will allow your tesserae to stand out
 - Select gray or light brown grout if you are unsure
- Select grout that is a different colour than the majority of your pieces
- Use black grout with caution
 - It works with bright, primary colours
 - Black grout can make colours “pop”
- Use white grout with caution
 - It will work if you have black tesserae
 - It will make your tesserae look washed out and fragmented: the tiles will look like they’re floating apart in space rather than being pulled together

Grout colour will have a significant affect on the overall look of a mosaic. If you are not happy with the grout colour, it is difficult to change. Therefore, it is important to take the time to make sure you are making the right choice.



If you are having trouble deciding which grout colour will work best for your mosaic, it is recommended that you do a grout study.

Grout Study:

- Find something small that you can use as a substrate
 - In this example three separate substrates are used
- Select a mix of the tesserae you used in your mosaic
- Glue these pieces to the three substrates, creating a mini version of your mosaic
 - You may want to do more or less than three in your study
- Mix three separate grout colours
- Apply one colour to each mini mosaic
- Wait 24 hours for the grout to dry
- Compare the results
 - When grout dries, its colour generally lightens to look more like it did in powder form
 - Wait until it has dried completely before making your selection

The images below show an example of a grout study. The three squares are created with exactly the same tile combination. It shows how different they look with white, gray and black grout.



Sheila Cunningham <http://www.mosaicworks.com/technical/grout.html>



MIXING GROUT



Reading Text, Document Use, Numeracy

Thinking Skills: Critical Thinking, Decision Making

As mentioned, grout comes in a powder form so you will need to add water.

It is important that you follow the directions on the label. However there are some standard steps outlined below.



Steps for Mixing Grout:

- Find a container and a large spoon/spatula
 - Use an old container and spoon or buy one that will only be used for grout
- Measure one or two cups of grout powder and add it to your container
- Add a small amount of water and stir
- Continue adding small amounts of water until the grout forms a thick paste and looks like cookie dough or thick oatmeal
 - Stirring the grout activates the chemical process required for grout to set up (also known as slaking)
 - Work carefully
 - Stir well so you don't leave any pockets of dry grout hidden on the bottom
- Let the grout stand in the container for 10 minutes
 - This allows the grout to set up
- Re-stir before you apply the grout to your mosaic
 - Stir grout periodically during the grouting process



Note: The mineral content of tap water varies by region. Certain minerals can cause a white residue to form on your grout once it dries. When possible, use distilled water to mix your grout. You can purchase distilled water at most grocery or hardware stores.

TIPS FOR APPLYING GROUT

Safety:

- Follow the safety procedures outlined in the safety section of your Student Notes. For example:
 - Wear gloves and use a mask when mixing grout
 - Follow all of the instructions on the label

Applying Grout:

- Cover your work area with a sheet of plastic or newspaper
- Check grout lines for any adhesive and remove with an Exacto knife if necessary
- Remove any dried adhesive from the surface of your mosaic using a razor blade
- Scoop small amounts of the mixed grout onto your mosaic
 - It is ok to get grout on the tiles
- Spread the grout, using a spatula and/or your gloved hand
- Push the grout into the grout lines so that each line is filled
 - You can use your fingers if you are wearing gloves
 - Go back and forth, carefully pushing grout into the gaps
- Remove the excess grout from your tesserae with your spatula, being careful not to disturb your grout lines
- Wait 20-30 minutes until the grout starts to dry on the surface of the tiles



- Wipe the tesserae with a clean dry cloth being careful not to disturb the grout lines
 - Continue until the surface of the tiles become clear
- Let dry again for at least an hour or until the grout does not pull away from grout lines when wiped
- Wipe the tesserae off with a dry cloth
- When the grout has set, use a damp cloth to clean your mosaic
 - Make sure the cloth is damp, not wet



SEALING GROUT



Reading Text

After your grout has cured for several weeks, you may want to apply a grout sealer if you used a non-sanded grout. This will protect your grout from being damaged by stains or mildew growth. Sealers can be purchased at most hardware stores.

CLEAN UP



Document Use

Clean Up:

- Scrape any remaining grout into a piece of newspaper and fold the sides up around the grout
- Rinse out your grout bowl, tools and rags in a bucket of cold water and dispose of this water outside, away from drain pipes
 - In small amounts, grout is not damaging to the environment and will biodegrade
- Place the newspaper and paper towel in a bag and then place it all in the garbage



Note: Never rinse grout down the drain - it will harden and eventually block the drain



PROBLEM SOLVING GROUT



Document Use

Thinking Skills: Problem Solving, Decision Making

Potential Problems:

- You have air bubbles or cracks in your grout
 - You added too much water to the grout
- Your pieces moved out of position
 - Your grout was too dry and sticky
- Your grout dominates your mosaic
 - Your grout lines are too wide or uneven
 - You have selected the wrong colour grout
- There are sharp tesserae edges not covered by grout
 - Your pieces needed sanding – at this point you can use a handheld grinding stone to smooth the sharp edges

Fixing Grout Colour:

- Scrape it out and start over
 - This is very difficult to do and can damage your tesserae
- Or
- Apply a diluted, water based paint wash to your mosaic
 - It will look better in the short term, but the colour may fade

Note: You may not be able to fix some problems.



MOSAICS AT HOME

INTRODUCTION



Reading Text, Document Use

Thinking Skills: Decision Making

After you have completed this course you will have the skills and experience necessary to create a second mosaic. If you enjoyed working on your mosaic in this class, you may consider setting up your own work area at home. It can be fun creating mosaics for yourself and others.

Mosaic art is a fairly inexpensive hobby. To start, you only need a few tools such as a glass scorer/cutter, running pliers and tile nipper, safety goggles and gloves.

You will need to buy adhesive and grout, however, these products are fairly inexpensive and a little goes a long way.

Rather than buying tesserae you may want to consider using household items such as broken dishes, glass scraps and old jewellery.

If you decide to work on mosaics at home there are a few things to consider.



Note: You will be working with sharp objects and tools so it is important to keep children and pets away from your work area.

Reminder: Never put grout down a drain. You can find information about safe clean up in your Student Notes.



At Home:

- Work in an area without carpeting
 - It is hard to see small, sharp objects that land on carpet
- Work in an area other than your kitchen
 - You don't want to work with grout and adhesives near food
- Find a table and chair to use in your work area
- Use a room that has a window for natural light
- Ensure that you have good ventilation (an open window)
- Select a place where you will have easy access to water
- Gather a collection of tesserae before you start your project. This means having a storage area for the pieces you collect
 - Sandwich and freezer bags or plastic containers can be used to keep your tesserae organized



FOUND ITEMS

E Reading Text

As mentioned, creating a mosaic does not need to be expensive. You can have amazing results with low cost or found items. Found items are things you find for free such as shells or stones. They can also be everyday things you no longer need such as a broken mug, cup or glass, an old watch, old toys, buttons, corks, old cutlery, beads, even bottle caps. In addition to saving you money, this method can turn mosaic art into a treasure hunt.

You can also buy low cost items for your mosaics. For example, a tea cup at a second hand store, marbles or glass beads at a dollar store or nuts and bolts purchased at a hardware store. Yard sales are also excellent places to find low cost items that can be used in mosaics.

You may find that people are willing to give you things they no longer need. For example, a stained glass store will often have small pieces of glass they can't use. Rather than throwing the glass in the garbage they may be willing to pass it on to you. Hardware stores or flooring stores may also have old tiles or sample boards they would be willing to give you free of charge.

Food can become tesserae, as long as it does not contain moisture. If you visit a bulk food store you can buy small quantities of dried goods such as beans, seeds and pasta.

The mosaic below was made with candy wrappers.



Note: In addition to saving money and creating one-of-a-kind mosaics, using found items can also reduce waste. You can help the environment by keeping these items from becoming landfill.

<http://www.jasonmecier.com/gallery.html>

Although using found items can save you money they can also create unique challenges.



PROBLEM SOLVING FOUND ITEMS



Reading Text

Thinking Skills: Problem Solving, Critical Thinking

It is difficult to apply grout if your tesserae are different thicknesses. For example, you may want to use a watch face (which is flat) beside a marble (which is round). One way to address this is by creating larger grout lines.

You may find an item perfect for your mosaic, only to discover that it's too heavy. Your adhesive may not be strong enough to hold it in place. It may also be difficult to find a hook strong enough to hang your finished mosaic. If you are determined to use the piece, you will need to consider solutions to these problems first.



Some items may not have a flat surface to hold the adhesive. This makes it difficult to attach the piece to the substrate. For example, if you are using the concave part of a sea shell, you may need to fill it with something to give it strength and create enough surface area for the adhesive.

You may also find something you want to use in your mosaic, only to discover that it is too difficult to cut or shape. You may need to find a way to cut or break it safely or you can use the whole piece, as the artist did with the watch and coins in the mosaic below.



http://www.riversonfineart.com/mosaic_breastplate.htm

Finally, if you want to use something that has been broken, such as a broken bottle or tea cup, you will need to sand any edges that stick out above the grout.



PURCHASING SUBSTRATES



Reading Text, Numeracy

Thinking Skills: Decision Making

As you know, Medium Density Fiberboard is the substrate used for this class project. When purchasing MDF for substrates, you can reduce your cost by buying it in 1.8 x 2.4 meter (6 x 8 foot) sheets. Although prices will vary, these sheets usually cost between \$25.00 and \$30.00. You can have these sheets cut to size at the store or in a woodworking shop that has access to a circular saw.



As mentioned earlier, you are not limited to buying MDF boards. You can use other things as your substrate. For example, as you gain skill in mosaic art you can use new or used windows, mirrors and picture frames, gift boxes, vases, glass jars, candleholders, plates, wooden trays, tabletops and wood or cork coasters. Some of these items will be more challenging to use so consider your skills before picking a base.

PURCHASING TESSERAE



Reading Text, Document Use, Numeracy, Oral Communication, Computer Use

Thinking Skills: Finding Information

If you want to purchase more traditional tesserae such as stained glass, ceramic tiles or stone, you can search your local area for stores and suppliers. The yellow pages are a good place to start.

If you have access to the internet you can also search for products online. There are many reputable online suppliers, however, “Buyer Beware”, not all suppliers are created equal.



Buying Online:

- Compare apples to apples when comparing product descriptions and costs
 - Ensure the quality and quantity, size and weight are the same
- Ask about:
 - Hidden costs (e.g. brokerage fees)
 - Cost of shipping (especially if you are ordering outside Canada)
 - Prices – (are they in Canadian or US dollars?)
- Search the reputation of the supplier through online reviews
 - Ask your instructor for recommended sites

Tile Calculators

Some sites offer tile calculators to help you determine how much you will need to order to complete a project. The more mosaics you do, the better you will get at estimating the amount you will need.

Note: If you are placing an order online for a specific project, you will want to order enough tesserae so that you don't run short mid way through the project. It is better to have tesserae left over than not run out.



If a web address ends in .ca it is usually a Canadian site. If the address ends in .com (commerce) it means it could be either a Canadian or US company. So check before you buy.



ACTIVITIES

INTRODUCTION



Reading Text

The following section will provide you with step-by-step guidelines for creating a mosaic. You may want to keep these notes open as you work so that you can quickly check your progress and identify your next steps.

As you work on your mosaic you will be developing your technical skills. You will also continue to develop your Essential Skills. For example, the combination of the steps in each of these projects is a good example of the Essential Skill called Job Task Planning and Organizing.

If you have any questions, refer back in your Student Notes to find the answers or ask your instructor. Use the Table of Contents in your Student Notes to help you find information.

If you have questions as you work, refer back to your Student Notes to find the answers.

Use the Table of Contents to help you find information in your Student Notes.



Follow all safety procedures when completing the steps in this section.



STEP ONE - SELECT A PATTERN/TEMPLATE



Document Use, Computer Use, Numeracy

Thinking Skills: Decision Making

YOU WILL NEED:

- ✓ a selection of pattern options from your instructor

- Review the patterns (templates) provided by your instructor

- Think about where you would like to hang your finished mosaic
 - This mosaic will be designed to hang indoors

- Decide on the pattern you want to use for this project



To find patterns for future projects:

- Search copyright free mosaic patterns on the internet
- Look at colouring books or copyright free pattern books for ideas
- Create your own design



STEP TWO - PREPARE YOUR BASE



Document Use, Numeracy

Thinking Skills: Decision Making

YOU WILL NEED:

- ✓ one piece of Medium Density Fiberboard 30.5 x 38 centimetres (12 x 15 inches)
- ✓ water
- ✓ a clock/timer
- ✓ WeldBond adhesive
- ✓ mixing container
- ✓ paint brush
- ✓ tape measure

- Select a substrate
- Measure your substrate using a tape measure
- Read the label for the WeldBond adhesive
- Mix 1 part WeldBond with 4 parts water to make a sealer for your substrate
- Paint this mixture onto your substrate using a paint brush
 - Cover all 6 surface areas of the substrate (back, front, and four edges)
- Set the timer for 30 minutes
 - The substrate should dry to the touch before moving on to the next step



STEP THREE – TRANSFER YOUR PATTERN



Document Use, Computer Use, Numeracy, Oral Communication

YOU WILL NEED:

- ✓ your chosen template
- ✓ your prepared substrate
- ✓ a pencil
- ✓ carbon/graphite paper
- ✓ tape

- Check that your pattern is the same size as your substrate
 - You may need to reduce or enlarge the pattern
 - Ask your instructor for assistance or refer to your Student Notes for more information to help you with this step
- Place the carbon/graphite paper between the substrate and your template
- Tape the template and carbon/graphite paper to the substrate
- Trace around the pattern with a pencil
 - Check that all the lines of your pattern have been transferred to the substrate before removing the pattern and carbon/graphite paper



STEP FOUR – PRACTICE USING TOOLS



Document Use

Thinking Skills: Critical Thinking

YOU WILL NEED:

- ✓ tesserae pieces
- ✓ mosaic nipper
- ✓ running pliers
- ✓ a table and a chair or stool
- ✓ scorer/cutter
- ✓ tile nipper
- ✓ a clean cutting surface

Practice scoring glass

Practice using the running pliers

Practice using a tile nipper

Practice using a mosaic nipper

Assess your cut tiles

- Are there things you need to change?
- Do you need to practice further before you start working on your mosaic?

Note: The order you do these steps will depend on the availability of the tools. As you work through these steps, try different cuts, angles and techniques.



STEP FIVE - SELECT YOUR TESSERAE



Document Use, Numeracy, Oral Communication

Thinking Skills: Decision Making, Critical Thinking

YOU WILL NEED:

- ✓ a selection of tesserae
- ✓ a ruler

- Review the tesserae provided by your instructor

- Assess the colours and make your selections
 - Think about your pattern
 - Combine tesserae and identify the pieces that work well together
 - Look at the tesserae in natural light (a window)
 - Select a main colour(s) and background colour(s)

- Consider the texture

- Consider the tone and shine

- Use a ruler to measure the thickness of the tiles you have selected
 - Are they all the same thickness?
 - If not, ask your instructor for tips on making adjustments



STEP SIX - PLACE YOUR TESSERAE



Document Use, Numeracy

Thinking Skills: Decision Making, Critical Thinking

YOU WILL NEED:

- ✓ the tesserae you have selected
- ✓ adhesive
- ✓ all safety equipment
- ✓ your prepared substrate with the pattern
- ✓ cutting tools

Preparation:

- Protect the area you will be working on with newspaper or plastic
- Gather together the tesserae you want to use
- Gather together the cutting tool(s) you will need to begin

Foreground:

- Select the area of your mosaic you want as your main image (foreground)
- Cut the pieces to the shape and size you want, working safely
- Place your tesserae just inside the lines you have drawn for your main image
 - Plan your first 3-4 pieces
 - Place them on the substrate and move them around until you are happy with their positions
- Apply adhesive to your pieces one at a time using the butter method
- Push your pieces onto the substrate



Placing your Tesserae Continued:

- Remove any glue that squeezes out onto the grout lines
- Wipe off any glue you get on your fingers or your tesserae
- Continue gluing your pieces until your main image/foreground is finished

Background:

- Cut the pieces to the shape and size you want, working safely
- Fill in the background
 - Continue planning 3-4 pieces ahead as you place your tesserae
- Work out from the main image (foreground), towards the edges of the substrate
- Plan ahead as you near the edge of your substrate
 - Leave room for larger edge pieces

Ongoing:

- Step back to look at your mosaic after you glue 3 or 4 pieces
- Check to see if anything needs changing before the glue dries
- Ask yourself:
 - Are there any grout rivers forming?
 - Are the grout lines even?
 - Are the grout lines the size I want?
 - Am I getting the look I want?
 - Do I need to make any adjustments?



Note:

- As you work, plan ahead 3-4 pieces
- If the glue dries on the tesserae, use a razor blade to scrap it off



STEP SEVEN - CREATE YOUR MOSAIC



Reading Text, Document Use, Numeracy, Oral Communication

Thinking Skills: Critical Thinking

YOU WILL NEED:

- | | |
|-----------------------------|------------------|
| ✓ your mosaic (in progress) | ✓ tesserae |
| ✓ adhesive | ✓ cutting tools |
| ✓ all safety equipment | ✓ clock/calendar |

During Each Class:

- Lean your mosaic against a wall or table before you start
- Step back and look at your mosaic from a distance
 - Think about how it looks
 - Think about what you would like to accomplish today
- Locate and select the tools you need to begin
- Continue working on your mosaic (gluing tesserae)
- Ask your instructor and other students for feedback throughout the day
- Ask questions as they arise
- Provide feedback and offer to help others, as needed

Note: Consider the time remaining in the course. You need to finish placing and gluing your tesserae at least 15 hours before the last class. Check the date and the clock and determine the final day you will be able to glue.



STEP EIGHT - APPLY GROUT



Document Use, Numeracy, Oral Communication

Thinking Skills: Critical Thinking, Decision Making

YOU WILL NEED:

- | | |
|--|------------------------------|
| ✓ your finished mosaic | ✓ mixing container |
| ✓ grout powder | ✓ plastic sheet or newspaper |
| ✓ distilled water | ✓ spatula/spoon |
| ✓ razor blade/Exacto knife | ✓ a clock/timer |
| ✓ all safety equipment (gloves and a mask) | ✓ cloth |

Grout Colour Selection:

- Lean your finished mosaic against a wall or table
- Step back and look at it from a distance
 - Think about grout colours
 - What grout colour will look the best?
- Discuss your options with your instructor and the others in your class
- Select a grout colour

Preparing:

- Locate and select the tools and safety equipment you will need to begin
- Read the label on the grout package
- Cover your work area with a plastic sheet or newspaper



Applying Grout Continued:

- Assess your mosaic
- Remove adhesive from the grout lines and from the surface of your tesserae
 - Use a razor blade/Exacto knife safely

Mixing Grout:

- Add one or two cups of grout powder into your mixing container
- Add a small amount of distilled water
- Stir well with a spoon or spatula
- Continue adding water and mixing until it forms a thick paste
 - Your instructor will help you gauge the thickness of the paste
- Check the clock or set the timer for 10 minutes
 - Let the grout stand for 10 minutes
- Stir it again

Applying Grout:

- Scoop a small amount of grout onto your mosaic
- Spread the grout around, using a spatula and/or your gloved hand
- Push the grout into the grout lines so that each line is filled
- Remove the excess gout from your tesserae using your spatula
 - Work carefully so you don't disturb the grout lines



Applying Grout Continued:

- Check the clock or set the timer for 20-30 minutes and let your mosaic stand
- Wipe the tesserae with a clean dry cloth
 - Work carefully so you don't disturb the grout lines
 - Continue until the surface of the tiles are clear
- Check the clock or set the timer for one hour to let the grout dry
 - Check that the grout does not pull away from the tesserae when wiped
- Wipe the tesserae off with a dry cloth
- When grout is dry use a damp cloth to clean up your mosaic



STEP NINE – SEAL THE GROUT



Reading Text, Document Use, Numeracy

Thinking Skills: Decision Making

YOU WILL NEED:

- ✓ your finished mosaic
- ✓ grout sealer

- Wait several weeks, until your grout is dry
- Decide whether you want to apply a grout sealer
- Seal your mosaic following the instructions on the sealer
- Purchase hanging hardware (hooks) and attach them to the back of your mosaic
 - Be sure to use hardware that is appropriate for the weight of the mosaic

Note: You will need to complete this step on your own after the course has finished. You may decide that you don't need to complete the step at all.



Congratulations

You have successfully completed your first mosaic!

Mosaic Tile Resources Used Throughout Students Notes

www.hrsdc.gc.ca/eng/workplaceskills/essential_skills/general/home.shtml

<http://www.meridianeng.com/msds.html>

<http://en.wikipedia.org/wiki/Mosaic>

<http://www.mosaic-tile-design.com>

<http://www.thejoyofshards.co.uk/glossary/ceramic.shtml>

<http://www.mosaic-tile-guide.com/tesserae.html>

http://www.woodnshop.com/Hardwood/MEDIUM_DENSITY.htm

<http://lagniappemosaic.com/PhotoGallery4.htm>

<http://www.mosaicworks.com/technical/materials.html>

<http://www.mosaic-tile-art.com/mosaic.html>

<http://www.drostle.com/mosaicstyle.html>

http://www.mosaicartsource.com/mosaicart/mosaic_art_resource/mosaic_glossary.html#o

www.thistothat.com

<http://www.weldbondusa.com>

<http://www.mosaicworks.com/technical/grout.html>

<http://www.jasonmecier.com/gallery.html>

http://www.riversonfineart.com/mosaic_breastplate.htm



We hope you have enjoyed this mosaic course.

On behalf of Literacy Ontario Central South, Literacy and Essential Skills in Industrial Arts (L.E.S.I.A.) project, we would like to thank you for your participation.

Best of luck with your future endeavours.