ZALE CORPORATION BUYERS' COURSE
on
JEWELRY MANUFACTURING

INSTRUCTOR'S GUIDE

(Excerpts)

Raw Materials: The Structure of Metal

SAY: Let's say you're looking at two almost-identical solitaire rings. Both have a shank and a basket, and both are made of the same 18K gold alloy. But one of the settings is a much more durable and secure choice for a wedding ring. Is it:

(1) the ring that has been cast as a continuous piece of metal, or
(2) the ring that has been assembled from a cast shank and a die-struck basket?

To answer this question intelligently, you need to know a few basics about metallurgy.

ACTIVITY: "Metallurgy Basics" Essay

PURPOSE: Familiarize the students with terms such as *work hardening* and *annealing* so students will more deeply understand the processes and quality issues discussed in the rest of the course.

MATERIALS NEEDED: Participant's Guide

SAY: Let's start our discussion of metallurgy by taking about ten minutes to read the essay in your participant's guide, "Metallurgy Basics."

ACTION: Allow students to read for 10-15 minutes.

SAY: Does anyone have any questions about metallurgy basics?

ACTION: Field questions that may have arisen from the reading.

First Processes

TRANSITION: We've been talking how metals and alloys affect quality and cost. Now let's talk about the *processes* metals go through, which also affect quality and cost.

SAY: One process is *casting*, which you are familiar with, and which we will discuss later in more detail. But let me begin this section by asking *you* a question.

ACTIVITY: Probing Question

PURPOSE: Get students thinking about first fabrication processes, and help them see the relevance of these processes to their own buying experiences.

MATERIALS NEEDED: Flip chart, markers

ASK: What are some items you buy that are not cast?

ACTION: Write down about ten of the participant's answers on a flip chart.

SAY: Some of the items you name could be either cast or fabricated. For instance, some ring shanks are cast, and others are made by bending thick wire.

SAY: If the jewelry piece or component wasn't made by casting, it went through one of the following processes we are about to investigate. In other words, all of these items (gesture to the list) may have started out as a wire, sheet, or piece of tubing.

SAY: How these processes are carried out influences the quality, color, the ways the product can be used, and more.

TRANSITION: Earlier you became familiar with the metallurgy basics like work hardening and annealing. As a matter of fact, almost all of these first procedures are forms of work hardening.

ACTIVITY: **Lecture/Discussion of First Processes, Hands-On Assessment, and Slide Show**

PURPOSE: Introduce students to the processes that the metal ingots must undergo before they can be manufactured further into jewelry.

MATERIALS NEEDED: Examples of many of the following items: metal sheets, wire, tubing, extruded tubing, gallery wire, ingots, and dies. Also needed are examples of a few items made from sheets and wire, such as a wire-made earring post.

SAY: Follow along in your Participant's Guide and take notes if you like. There are a few "notes" already filled in for you there.

LECTURE INSTRUCTIONS: As you lecture about processes, pass around examples of tubes, wires, and sheets. Also pass around items made from these products.

Discussion Topics:
Drawing Wire
Drawing Tubing
Rolling Ingots into Sheet Metal
Stamping Sheets
Rolling Wire/Gallery Wire
Extruded Tubing (a casting process)
Die Forming (creating dies for die-striking)

TRANSITION: Some jewelry manufacturers like to carry out these processes themselves, so as to control the quality. But many jewelry manufacturers don't do these first procedures: they buy the wire, tubing, and sheets from someone else. Their first steps in jewelry manufacture are the processes we are about to discuss.

Secondary Processes: Hammering

SAY: So, we've got our wire, tubing, and sheets. Now it's time for the secondary processes. These can be grouped into three main categories: hammering, cutting, and forming.

SAY: We'll start with hammering. PAGE – has some hammering words defined for your convenience. You can look at those at your leisure. Just know that they are there.

SAY: Imagine a jeweler has the sheet of gold in front of him, and he wants to make an earring like this one.

ACTION: Hold up a piece of jewelry that has been die-struck.

CONTINUE/SAY: This was made, in part, by the hammering method of die-striking.

ACTIVITY: Lecture/Discussion, Hands-On Assessment

PURPOSE: Introduce students to the processes that fall under the "hammering" or "made with the help of a hammer" category.

MATERIALS NEEDED: Hammering tools such a stamps, dies, chasing tools, hammers, and so on; examples of jewelry components that have been though a hammering process, such as a die-struck item, a stamped item, and a piece that has had metal chased (over stones, perhaps).

SAY: There is a place for you to take notes on this section, on PAGE--. There are a few "notes" already there, to keep your hands from cramping.

LECTURE INSTRUCTIONS: As you begin your lecture, pass around the tools and jewelry components.

Discussion Topics:
Die Striking
Striking
Punching
Chasing
    Chasing Tools and Punches
Stamping

ACTIVITY: Guess the Hammering Style

PURPOSE: Allow students to analyze jewelry and thereby put their new knowledge to use immediately. This activity is part of the **larger goal**, which is for students to be able to assess a finished piece of jewelry as they negotiate price with a vendor.

MATERIALS NEEDED: Trays of items that have been through a hammering process. Examples may include findings made by stamping, and a ring that has had metal chased around its stones.

SEATING ARRANGEMENT: Seat students in groups of four around small tables.

ACTION: Pass around items that have gone through the hammering processes.

SAY: Here are some items that have been hammered in one way or another. Confer with the other participants around your table, and see if you can agree on which of the items has been die struck, stamped, chased, and so on. I will walk around and answer questions while you do this activity. You can take notes in your participant's guide.

ACTION: Students complete the hands-on exercise.

SAY: What are your assessments?

ACTION: Discuss participants' answers.

Settings

ACTIVITY: Probing Questions

PURPOSE: Engage students by bringing their attention to why they, as buyers, might be interested in learning more about stone setting. Guide them to find the personal, professional relevance of the upcoming information.

MATERIALS NEEDED: Flip chart, markers

ASK: In your experience, what kinds of jewelry set with stones have high returns to stores?

ASK: What were the problems with those pieces? (Example: Stones popping out)

ASK: What sorts of quality/workmanship issues do you take into account when you are choosing jewelry for the stores?

ACTION: Write students' answers on the flip chart.

ACTIVITY: Lecture and Slide Show about Stone Setting

PURPOSE: Familiarize students with the processes, tools, risks, and skills involved in stone setting.

MATERIALS NEEDED: To supplement parts of the lecture, include slides that show how stones are set into baskets, how beveled settings are burnished, how metal is chased around stones, how setting burs make holes for stones, how channel and bead setting is done (close up photos or illustrations), how beading tools round the chased metal, and so on. Also good would be a photo that shows how a diamond is notched for an invisible set. Close-ups of pave and cluster-prong settings would be of particular interest to the buyers. Finally, include slides that show broken gems damaged by setting processes.

Discussion Topics:

Kinds of Settings
- Bezel Setting
- Pave
- Micro Pave
- Flush Setting
- Bead Setting
- Invisible Setting
- Channel Setting
- Prong Setting
- Nick Set

Illusion Setting (Miracle Set)

ACTIVITY: Probing Questions

PURPOSE: Engage students by generating discussion.

ASK: What can crack a diamond?

(Students will probably give answers that come directly from the preceding lecture, such as “a prong set on top of an inclusion can cause the diamond to crack.” However, pursue more answers. For instance, fluctuations in temperature will crack a diamond. Also diamonds can crush each other during the wax-set process if they’re too close together.)

SAY: Right. There are many different ways the setting process can hurt even the hardest of stones, the diamond. You can just imagine the damage that emeralds, rubies, and opals incur as well.

SAY: So, it’s important to know about settings, especially stone-in-place casting, which Zale Corporation buys often.

Issues of Assembly

SAY: Be aware that a finished product may not be assembled in one location. For instance, a brooch may be poured in Italy, and its micro pave set in India. Let's discuss what are called "Country of Origin" issues.

ACTIVITY: Lecture/Discussion on Country of Origin

PURPOSE: Deepen students' knowledge of Country of Origin issues such as duty, labor, and technology.

MATERIALS NEEDED: Participant's Guide

SAY: Please follow along with me by using PAGE --- to take notes on this discussion.

LECTURE INSTRUCTIONS: Explain the assembly supply-chain, and what different places have to offer the manufacturer (cost savings, quality of craftsmanship, etc.).

Discussion Topics:

Duty (GSP)
Currency fluctuation
Where the technology is.
Where the skilled labor is.
The advantages and disadvantages of each country.
Costs associated with those countries.

ACTIVITY: Pricing Exercise -- Italy, India, and the United States

PURPOSE: To help students practice thinking about the country-of-origin price components of the jewelry they buy.

MATERIALS NEEDED: Flip chart, markers

SAY: Let's say you have three identical bracelets from three manufacturers, each in a different country. Each manufacturer is asking the same price for the bracelet. What are the pricing issues you would have to take into consideration when choosing among the manufacturers?

ACTION: Gather a list from the students, and write it on a flip chart. Items may include the following: tax, duty, shipping, lag time, and currency fluctuation.

Possible Flip-Chart Table Configuration:

	Italy	India	U.S.
Tax: Duty: Shipping: Lag time: Currency flux: Labor cost:			

Product and PIW Assessment

ACTIVITY: The "Break It Down" Game/Quiz

PURPOSE: Allow students to analyze finished pieces of jewelry, and identify components and processes. This activity directly reflects the course's overall goal, which is for students to be able to assess a finished piece of jewelry as they negotiate price with a vendor.

MATERIALS NEEDED: Finished jewelry pieces to be assessed by students.

SAY: I'm going to give you finished pieces of jewelry to analyze.

SAY: In your Participant's Guide, you can sketch and then map, or simply list the components/findings of each piece.

SAY: Also identify possible plating, using only the marks and information the piece itself provides.

SAY: Finally, see if you can tell what manufacturing processes were used in the making of each piece.

ACTION: Discuss students' answers. Provide correct answers.

Some answers will be clearly right or wrong, such as " this earring has a kidney loop and a gem basket." Other answers will be "fun." For instance, students can find out if they guessed correctly (by weight, usually) whether a piece is rhodium-plated white-gold, or simply platinum.