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The Shortest Distance Between Two Points

Mechanical Drafter
Technical and Professional Communications 12

Lesson Idea by: Ron McMullen, Rutland Secondary School, Central Okanagan School District

Application

A mechanical drafter is the person who turns an idea for an object into a reality. A drafter does this by drawing the object. Once an object is drawn, it can be constructed.

"A drafter is the intermediary between someone who has an idea and the physical reality," says Bill West, who heads up the drafting department at Vancouver Community College. "Any object began life as an idea, then a drawing. Drafting is the profession or skill that turns an idea into a physical reality."

It's not an easy skill to learn. "What makes it a difficult skill to learn is that we're representing three-dimensional objects in a two-dimensional medium," explains West.

Virtually everything a drafter does is associated with communication in some way. The majority of communication takes place graphically instead of verbally. "The fax has largely replaced the phone, because the drafter finds it easier to draw a picture than to write a message or to talk," says West. "Talking a picture over the phone is rather difficult."

The communication doesn't stop there. Mechanical drafters often attach written documents to their drawings. These documents help explain their work to non-drafters who cannot "read" the drawings.

In any workplace, the guiding principles for any written communications are clarity and accuracy. Errors in context or style can lead to faulty interpretations or outright mistakes, with dire consequences for the individuals or businesses involved. Thus, it is important that the communications be effective and produce the desired results.

Practice

You're a mechanical drafter, and you've been given an assignment to revise and edit a piece of technical writing. See the document labeled "Practice File" below.

As you review the file, check for spelling and punctuation errors, mistakes in grammar, and the logical presentation of information.

Develop an editing legend. Define your proofreading marks to clarify why you made these revisions.

Now, practice your revision skills:

1. Develop a revised set of instructions for the drafting communique.
2. Pass a copy of the revised document to each student. In small groups, or as individuals, review the document. Try to follow the instructions in the communique.
3. Display the results. As a class, discuss whether the message in the document was successfully completed. Also discuss what you thought was successful and what was ineffective.

Principles

It is important to understand the concepts required in revising a document. Learn more about revising, proofreading and editing by referring to your classroom texts.

From the initial conceptual development to the final production of the writing project, the writer or writing team engages several stages that should enhance the quality of the final product. As a class, discuss the important elements of revision. Here are some concepts you may consider:

1. Develop a framework of writing strategies
2. Explain the factors required when analysing the document
3. Determine appropriate strategies for revision
4. Decide what to look for when revising
5. Review the factors contained in the collaborative writing process
6. Analyze the elements contained in a writer's checklist

Learn

As a class, review the Practice document. Discuss both the editing changes you made and the reasons you made them. Was it to correct an error of spelling or punctuation? Was it for readability?

Compare the various editing legends and discuss editing terms. Find some other samples of legends and exercises in your texts and discuss them.

As a class, brainstorm various types of communications that instruct the reader how to complete a task, assemble an item, or achieve a goal. (For example, the instructions packed with furniture that needs to be assembled at home, or instructions for installing a new software application.)

As a class, pick one of the ideas. Then, develop a set of instructions together.

Now, on your own or in pairs, pick an idea. Write your own instructions. When you are finished, swap your work with your partner or another student. Using your editing skills, edit the writing. Then review the changes with your partner.

Yes, you can do it

Now that you know more about the importance of writing clear instructions, you'll be writing a memorandum based on one of the two following scenarios. Your teacher should provide you with some guidelines on writing memos.

Scenario 1

Nancy Meiners is a mechanical drafter designer. She was drawn to the career early on in her life. "As a young woman, I worked in my father's cabinet shop. I enjoyed creating things, tinkering and taking things apart. Most of all, I loved problem solving," she says.

Meiners has operated her own home-based business doing drafting, and also worked as a drafter for other companies. During her career, she has encountered some unusual requests. She tells this story:

"It was a strange situation. Normally we have to wear comfortable clothes like jeans and runners. If we are working with machinery, we have to be able to crawl around. But this one company told us that we would have to wear dress clothes!"

This caused some problems for the drafters. "Because we normally work in jeans, none of us had nice clothes. My colleagues came to work in some strange outfits. One guy had on these huge bell bottoms -- who knows how old they were!"

Unfortunately, the bell bottoms weren't only a fashion disaster. They also held some dire consequences for Meiners. The bell bottoms worn by her co-worker got caught in some sheet metal. "My foot was crushed and I was out for six weeks. I'm OK now -- the only real consequence was barometric. I can tell when it's going to rain."

Write a memo from Nancy Meiners to her co-workers in order to prevent any further problems that may result from inappropriate dress on the job. Factors that may be considered might include insurance costs and the potential loss of the contract. Ensure that your memo doesn't lay blame or come across as dictatorial.

Scenario 2

Not many people will look back on their careers and remember their most satisfying experience as the hours they spent in jail. "I know it sounds weird, but it was great," says Rob Crane, a mechanical designer and drafter. "The company I was working for had a contract to design and install an automatic door system at a jail. It was the first really big project I worked on."

For this project, Crane had to draw on all his previous experience. "I had a pretty varied background in different industries up to that point, including construction and renovation. It all came together on that job," he says. Even with all that knowledge under his belt, creating the door was no small task.

"I'd designed a lot of automatic doors up to that point, mostly in shopping centers. But this was a real challenge. The jail itself was fairly old. Hardly anything was automated. We really were starting from scratch, designing and building the doors and a computer-controlled system where none existed before."

In this situation, mistakes weren't an option. "It was critical that I understood exactly what was required and that there were no misunderstandings. That's the same in any job. But in this case, there wasn't a lot of room for mistakes," Crane says. "When a door fails at a shopping mall, it's not a big deal. You just prop it open until it can be fixed. Obviously, that wasn't an option here. So there were a lot of face-to-face meetings and checking and re-checking of drawings. I really learned a lot about communicating in a clear and concise way."

Write a memo from Rob Crane to his co-workers regarding the safety factors to be considered while at the jail. Ensure that your memo is sensitive regarding the security concerns about the inmates.

Have every student display the memo they've written. Discuss their format, content, and the degree of successful change that may be anticipated from their creation.

Curriculum Organizer(s):
Revise and edit communications; following verbal directions of written communiques for specific situations and contexts.

Curriculum Sub-organizer(s):
Writing, Listening

Prerequisites:
None

Resources:
Texts on technical and workplace writing. If possible, use of a computer lab for word processing would be useful.

Practice File

(Edit this file.)

Sketching

Proper sketching is very important to the communication process. Multiple sloppy sketch marks is not proper sketching in this sense. Proper sketching is ledgible freehand drawing with crisp dark linework.

Guidelines for primary geometry follows:

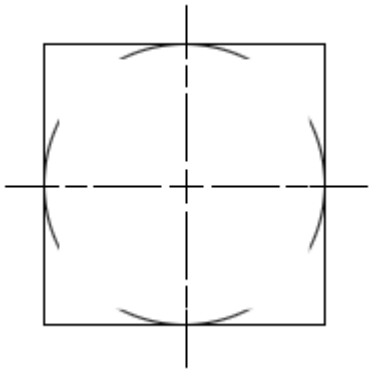
Sketching Straight Lines

Determine your start and end points. Begin your stroke, but be sure to eye the end point. Start with a very faint construction line, then go over it when you are satisfied with the direction and smoothness of it Keep in mind proper linetypes.

Sketching Circles

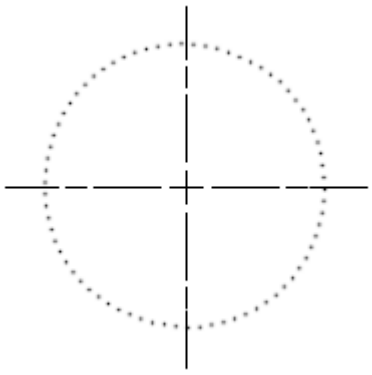
1. Trammul Method

Mark off the radius of the circle on a piece of paper old one end of the paper radius at the center of the circle mark off the other end of the radius several times at different intervals and sketch the circle through these marks.



2.Enclosing Square method

Lightly sketch a square that will enclose the circle (i.e. a square with sides equal to the diameter of the circle) Draw the centerlines through the midpoints of the sides of the square. Then draw the circle making sure that it is tangunt to the square where thecenterlines intersect.

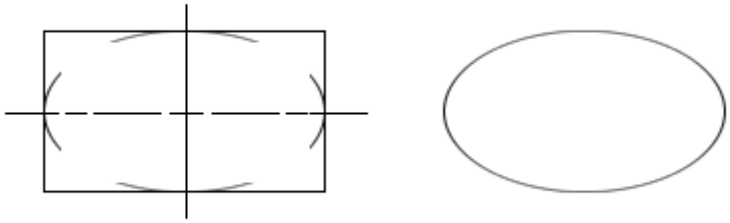


Sketching Ellipses

Ellipsis can be sketched using a method similar to the Enclosing Square Method described above for sketching circles. Another method of sketching ellipses is to make several LIGHT elliptical strokes where the ellipse is desired, erase any stray strokes, draw darkly over the desired strokes, and clean up the rest

3. Semi-mechanical Method

Hold two pencils together such that one pencil acts as the needle-point leg of a compass. Place this pencil point at the center of the circle. Place the other pencilpoint at the radius of the circle. The paper can then be rotated about the center point, and the other pencil will describe the circle.



Solution to Practice

(Editing changes have been indicated with an *.)

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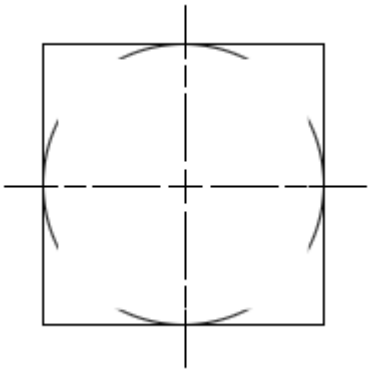

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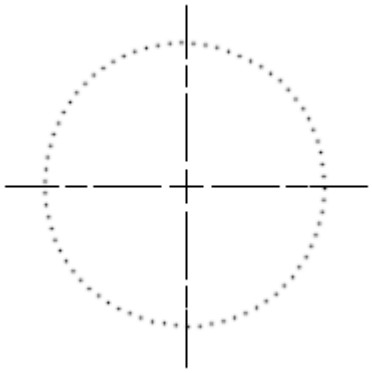

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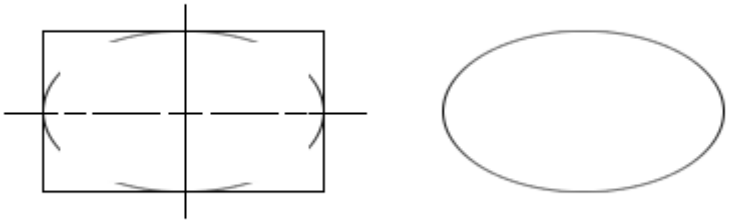

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