

Analogy — Bridge between Physical and Abstract Reality

Introduction

What value does an analogy have for you as an instructor?

Let's look at two examples of analogies, then answer that question with a list of the benefits we identify. We will derive our own definition of *analogy*.

Example #1

Picture yourself riding a bicycle. Focus on what the front wheel does. Contrast what the front wheel does with what the back wheel does.



How might we use this contrast between a bicycle's front and back wheels to understand organizational relationships within your agency or company?

A well-designed bicycle

- steers the rider to a destination with its front wheel, *and*
- drives the rider forward with its back wheel.

In an analogous manner, a well-designed education and training curriculum

- steers your agency/company to its goal with *effective people skills*, *and*
 - drives organizational productivity forward *with efficient technical skills*.
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More...

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Parts & functions of analogy #1 This matrix shows the “bridge” between physical and abstract reality. It displays the —

- parts of an analogy, based on a bicycle’s parts, functions, and results.
- analogous relationship to the parts, functions, and results of a company.

| Example | Physical Reality | | | Abstract Reality | | |
|----------|---|---|---|---|------------------------------|---|
| | Bicycle | | | Company | | |
| Analogy | Just as A... | relates to... | B..., | so also C... | relates to... | D. |
| Part | Front wheel | Bike frame | Back wheel | People skills | Company structure | Technical skills |
| Function | Steers bike to destination | Moves in various directions | Drives bike forward | Guides company to its goal | Moves in various directions | Propels company’s productivity |
| Result | Effective application of rider’s energy | Low cost movement of one or two persons | Efficient application of rider’s energy | Effective application of company’s energy | Low cost movement of company | Efficient application of company’s energy |

Four potential analogies

You can develop at least these four different analogies from this table:

1. *Part A* is to *whole bicycle* as *Part C* is to *whole company*.
2. *Part A* is to *Part B* as *Part C* is to *Part D*.
3. *Function A* is to *bicycle* as *Function C* is to the *company*.
4. *Function A* is to *Function B* as *Function C* is to *Function D*.

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Guided practice #1

Develop four different analogies from the table of bicycle parts and functions. Work with a partner, and write your answers in the space provided. Ask your facilitator for help, if you have a problem.

1. *Part A* is to *whole bicycle* as *part C* is to the *whole company*.
 2. *Part A* is to *Part B* as *Part C* is to *Part D*.
 3. *Function A* is to *bicycle* as *Function C* is to the *whole company*.
 4. *Function A* is to *Function B* as *Function C* is to *Function D*.
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Exploratory activity

Write a definition of *analogy*.

Base it on what you have observed while doing the first guided practice.

Use the recommended pattern.

Definition An *analogy* is a (member of a larger known group) which has (this list of critical attributes):

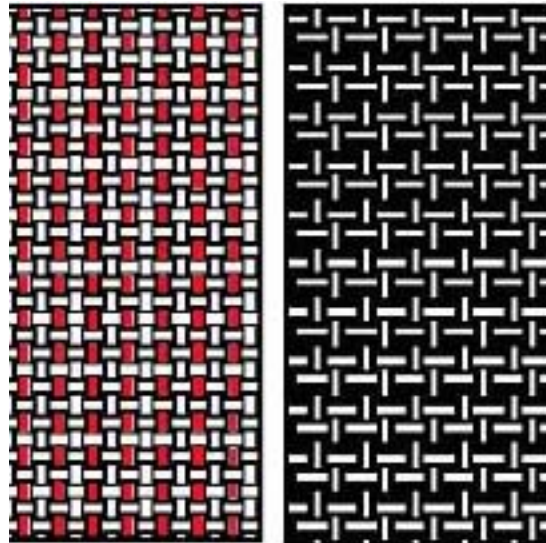
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Example #2

Picture a bolt of cloth or examine the structure of a piece of fabric. Focus on the way the weaver arranged the threads in the fabric. Contrast the way the vertical red threads are woven with the way the horizontal black threads are woven.



How might we use this contrast between the vertical and horizontal threads of a piece of fabric to understand organizational relationships at a given company?

Consider these facts:

- Both the vertical and horizontal threads must be equally strong to ensure overall strength of the fabric.
- Strong organizational structures have strong vertical power lines as well as strong horizontal power lines.
- Management By Objectives (MBO) has been used to provide strong *vertical* allocation of resources within some strong companies and federal agencies.
- Quality Function Deployment (QFD) has been used to provide strong *horizontal* communication among diverse functional departments within some strong companies and federal agencies.

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Parts & functions of analogy #2

This table shows the “bridge” between physical and abstract reality. It displays the

- parts of an analogy, based on a piece of fabric’s parts, functions, and results
- analogous relationship to the parts, functions, and results of a company.

| Example | Physical | | | Abstract | | |
|----------|--------------------------------|-----------------|----------------------------------|--|-----------------|--|
| | Piece of fabric | | | Company | | |
| Analogy | Just as A... | relates to... | B..., | so also C... | relates to... | D. |
| Part | warp: vertical thread | weave of fabric | woof: horizontal thread | Management By Objectives | company mission | Quality Function Deployment |
| Function | makes fabric strong vertically | ? | makes fabric strong horizontally | aligns use of company resources with mission | ? | guides concurrent planning by stakeholders |
| Result | warp strength | ? | woof strength | cost-benefit congruence | ? | prevention of losses |

Guided practice #2

What information is missing from the four cells of this table for the *fabric* analogy?

-
-
-
-

Hint: Compare this table with the table for *bicycle* analogy. Ask your facilitator for help, if you have a problem.

Suggestion: Discuss with a colleague the meaning of *warp* and *woof* as used in the weaving industry.

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Importance of demo Developing an analogy together is more effective learning than viewing someone else's completed analogy. The facilitator will demonstrate how to develop an analogy, with the class's help.

Purpose Your class's purpose is to develop an analogy for a lesson in a train-the-trainer course, based on your familiarity with the functions \ and processes of air travel.

Demo: developing an analogy Assist the instructor to complete the missing information in each column below.

| How is ... | like a ... ? |
|---------------------------|--|
| instruction process | air transportation process? map of travel territory |
| motivation to learn | travel objective |
| subject matter expert | airline |
| a learner | passenger/customer |
| an instructor | flight attendant plane |
| a registrar | mechanic |
| an instructional designer | plane designer plane builder |

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List of ideas

Here is a list of potential events to develop into analogies, arranged alphabetically in two columns.

| | |
|-------------------------|----------------------------|
| Adopting a baby | Making peace with an enemy |
| Arranging flowers | Managing a project |
| Building a house | Performing a magic trick |
| Colonizing a territory | Planning a vacation |
| Competing in track | Planting a garden |
| Conducting an orchestra | Promoting a product |
| Cooking a meal | Prospecting for gold |
| Driving a car | Pruning a tree |
| Fighting a fire | Raising a child |
| Following a religion | Reading a novel |
| Giving a speech | Solving a problem |
| Going fishing | Spreading propaganda |
| Looking at the stars | Starting a revolution |
| Making a sales call | Writing a story |

Comment

Some of the easiest analogies to develop are those that relate something to a familiar event.

Guideline

Use events which are familiar to your intended learners, but not so rich in context that learners become distracted from your lesson.

Note: Pioneer educator Madeline Hunter would say,
“Don’t import an elephant to teach the concept of *gray*.”

**Review:
key points**

The course facilitator will ask random learners these four questions:

1. What is the tag for one thing you have learned today?
 2. How do you define or describe it, using your own words?
 3. How will you use what you have learned when you return to your job?
 4. What will happen when you begin to apply what you have learned?
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Importance

Now you need to work as an individual to demonstrate that you can develop analogies for your own instructional activities. The next activity requires you to work independently. Show your results to your course instructor.

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Independent practice

Follow these steps to develop your own effective analogies.

1. Choose an event that is familiar to your intended learners, but not so rich in context that it may distract them.
2. Compare a relationship between two elements of the event to a relationship between two elements of your lesson.

Note: Some possible relationships are:

- part to part,
 - part to whole,
 - function to function, *and*
 - function to whole.
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Guideline

Guide your development of an analogy by filling in the symbols of this formula: **A:B::C:D**.

Comment: The meaning of the formula is this:

A relates to B in the same way as C relates to D.

Examples

Examples of *function:whole::function:whole* analogies are

- (A) Buying a plane ticket relates to (B) traveling by air as (C) paying course tuition relates to (D) learning.
 - (A) Planning a flight relates to (B) traveling by air as (C) planning a lesson relates to (D) learning.
 - (A) Piloting a jet plane relates to (B) traveling by air as (C) instructing a course relates to (D) learning.
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Variations

Further variations of these analogies are

- whole:whole::function:function

Learning relates to traveling by air as instructing a course relates to piloting a jet plane.

- whole:function::whole::function

Learning relates to instructing a course as traveling by air relates to piloting a jet plane.
