

## Analogy — Bridge between Physical and Abstract Reality

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### 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*.

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### 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...

## More... Analogy — Bridge between Physical and Abstract Reality

**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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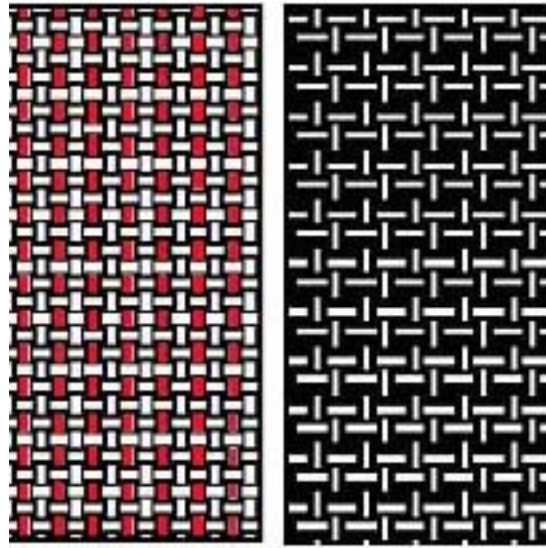
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### Example #2

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?

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*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.

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**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.

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**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

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**Comment**

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

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**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*.”

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**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.

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### 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*.

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