The Field Guide Approach to Teaching Argument Analysis

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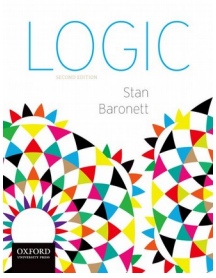
Benjamin C. Jantzen
bjantzen@vt.edu
www.phil.vt.edu/jantzen/jantzen.html
www.ratiocination.org

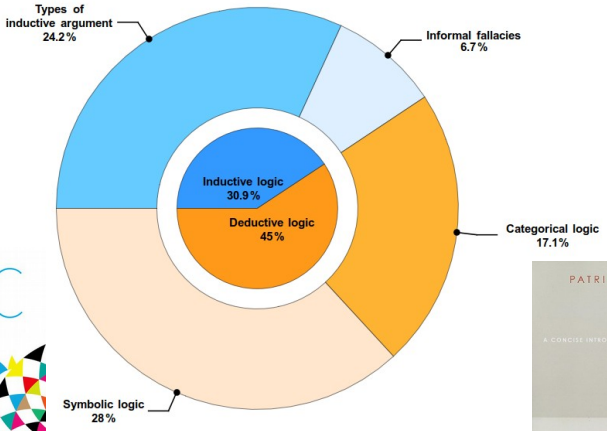
objective:

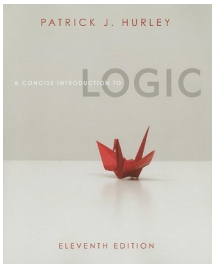
Help students become competent consumers of the full range of arguments found across the disciplines.

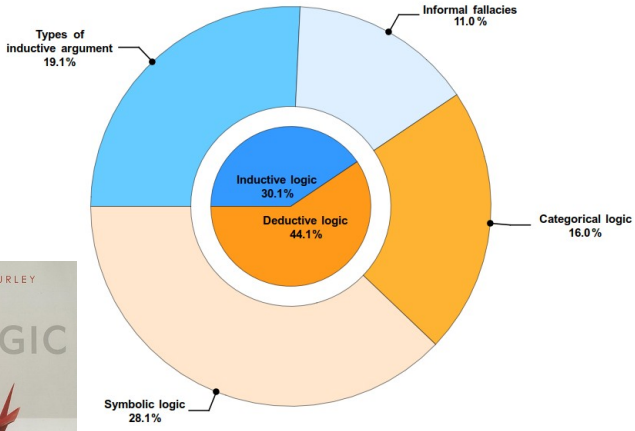
the standard content:

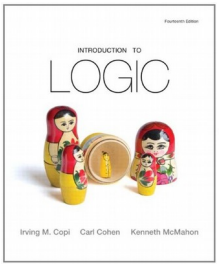
What's in our “introduction to logic” or “critical thinking” textbooks?

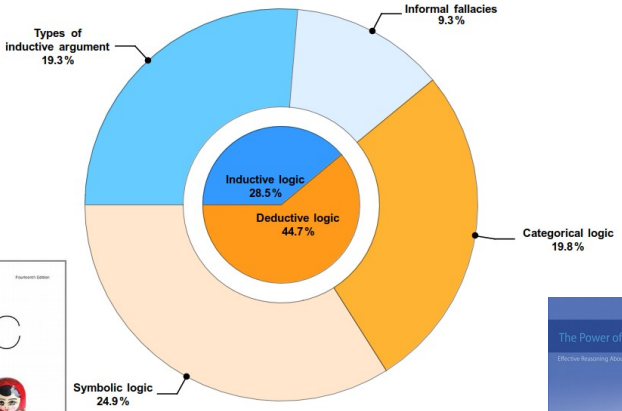


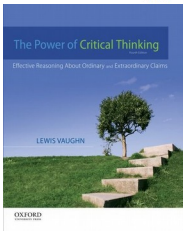


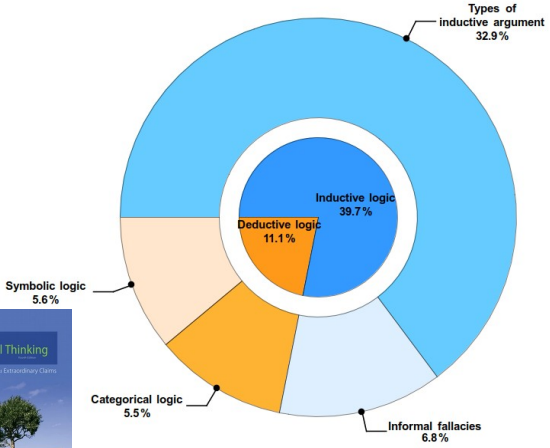


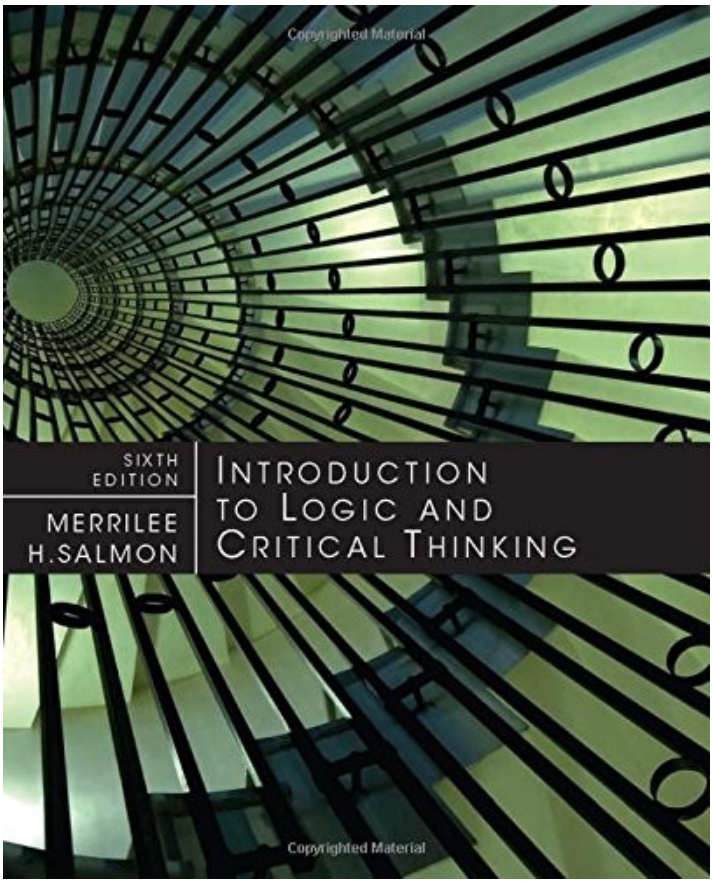












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typical activities:

What are we asking students to do in order to learn the skills of argument identification and evaluation?

"Criticize the following arguments in light of the material presented in this section..."
----Hurley

"Each of the following passages contains a fallacy of relevance. Determine the fallacy that best fits each case..."
---Baronett

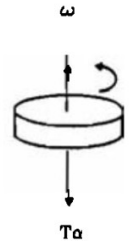
"Identify the moral arguments in each passage..."
---Baronett

"Identify the fallacies of presumption, ambiguity, and grammatical analogy committed by the following arguments..."
---Hurley

Diagrams Depicted from Problems Categorized by Novices within the Same Groups

Novices' Explanations for Their Similarity Groupings

Problem 10 (11)

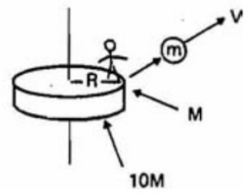


Novice 2: "*Angular* velocity, *momentum*, circular things"

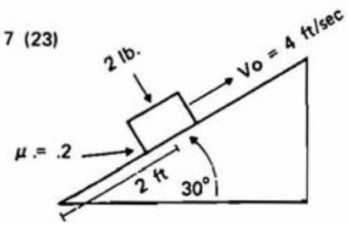
Novice 3: "*Rotational* kinematics, *angular* speeds, *angular* velocities"

Novice 6: "Problems that have something *rotating; angular* speed"

Problem 11 (39)



Problem 7 (23)



Novice 1: "These deal with blocks on an *incline plane*"

Novice 5: "*Inclined plane* problems, coefficient of *friction*"

Novice 6: "Blocks on *inclined planes* with angles"

Problem 7 (35)

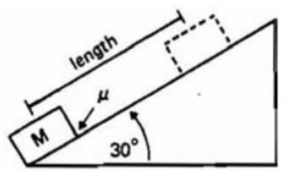
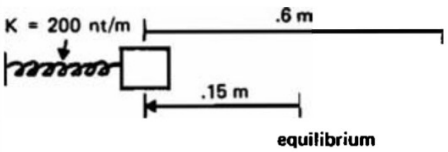


Figure 1. Diagrams depicted from two pairs of problems categorized by novices as similar and samples of three novices' explanations for their similarity are provided. Problem numbers given represent chapter, followed by problem number from Halliday and Resnick (1974).

Diagrams Depicted from Problems Catergorized by Experts within the Same Groups

Experts' Explanations for Their Similarity Groupings

Problem 6 (21)

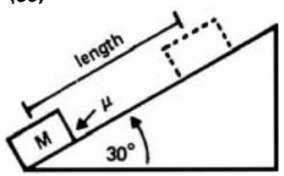


Expert 2: "*Conservation of Energy*"

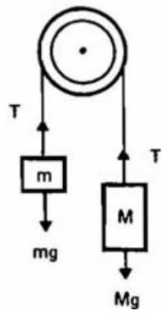
Expert 3: "*Work-Energy Theorem*. They are all straight-forward problems."

Expert 4: "These can be done from energy considerations. Either you should know the *Principle of Conservation of Energy*, or work is lost somewhere."

Problem 7 (35)



Problem 5 (39)



Expert 2: "These can be solved by *Newton's Second Law*"

Expert 3: "F = ma; *Newton's Second Law*"

Expert 4: "Largely use F = ma; *Newton's Second Law*"

Problem 12 (23)

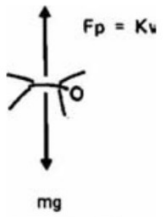
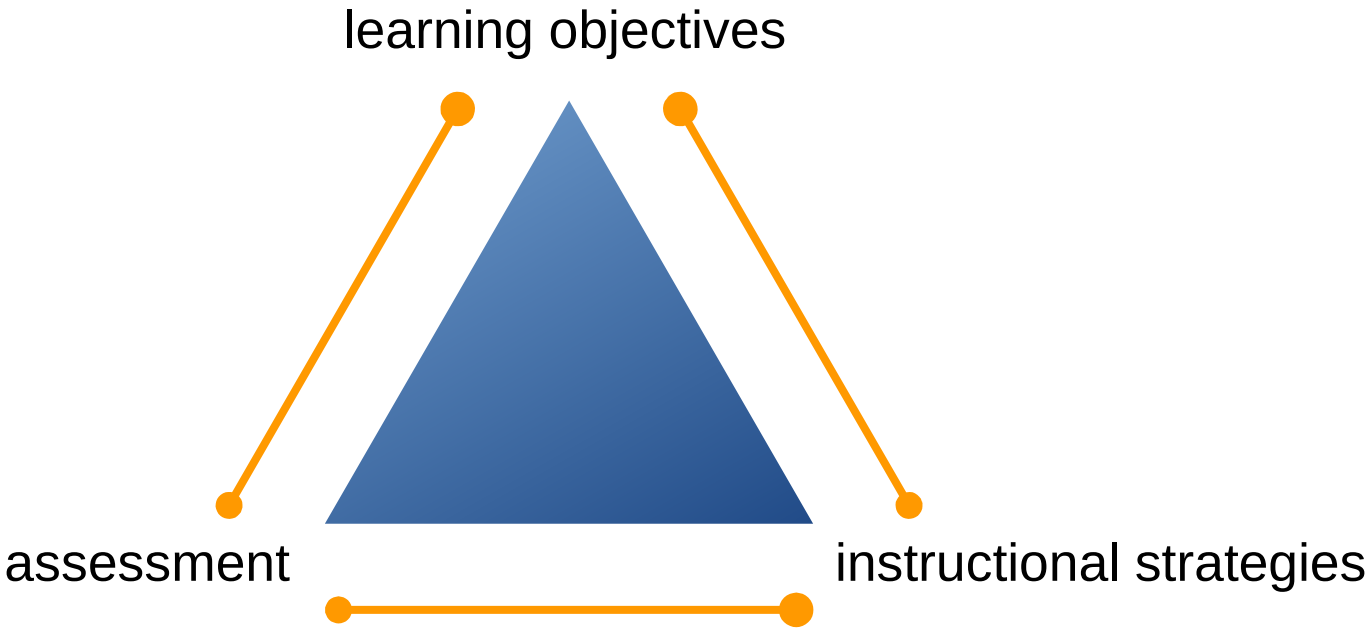


Figure 2. Diagrams depicted from pairs of problems categorized by experts as similar and samples of three experts' explanations for their similarity are provided. Problem numbers given represent chapter, followed by problem number from Halliday and Resnick (1974).

classify problems based on appropriate tools for solution

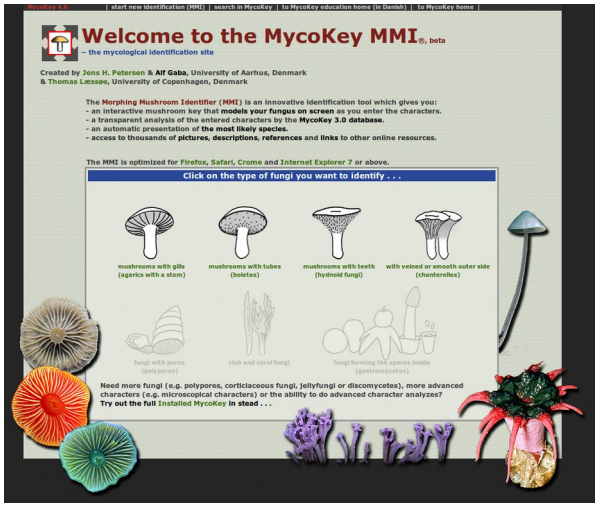


make the *entire* classification process explicit

the field guide approach:

a new way to model the expert process

http://www.arborday.org/trees/whattree/index.cfm



http://www.mycokey.com/newMycoKeySite/MycoKeyIdentQuick.html

Photo from
http://wildflowers.perverdonk.com/trees_and_shrubs/Sassafras/20090618112951%20Sassafras%20%28Sassafras%20albidum%29%20tree%20-%20Pontiac%20Lake%20RA,%20Oakland%20Co.JPG

Does the tree have leaves that are flat and thin and generally shed annually?
CLUE: *These trees are called BROADLEAF, (a tree with leaves that are flat, thin and generally shed annually) most are DECIDUOUS (shedding all leaves annually) and bear a variety of fruit and flowers.*

Yes

Are the leaves SIMPLE (one BLADE attached to a stalk or PETIOLE)?

Yes

Are the SIMPLE leaves OPPOSITE (2 or 3 leaves that are directly across from each other on the same twig?

Yes

- OR -

Are the SIMPLE leaves ALTERNATE (2 or 3 leaves that are staggered, not OPPOSITE each other on the twig)?

Yes

Are the leaves fan-shaped, the veins fanning out from the leaf base, with1 or 2 notches forming LOBES along the MARGIN (the edge of a leaf), and most attached to short, spur-like branches?

Yes

- OR -

Are the leaves not fan-shaped?

Yes

Are the leaves entire, mitten-shaped, or 3-LOBED all on the same small tree or shrub?

Yes

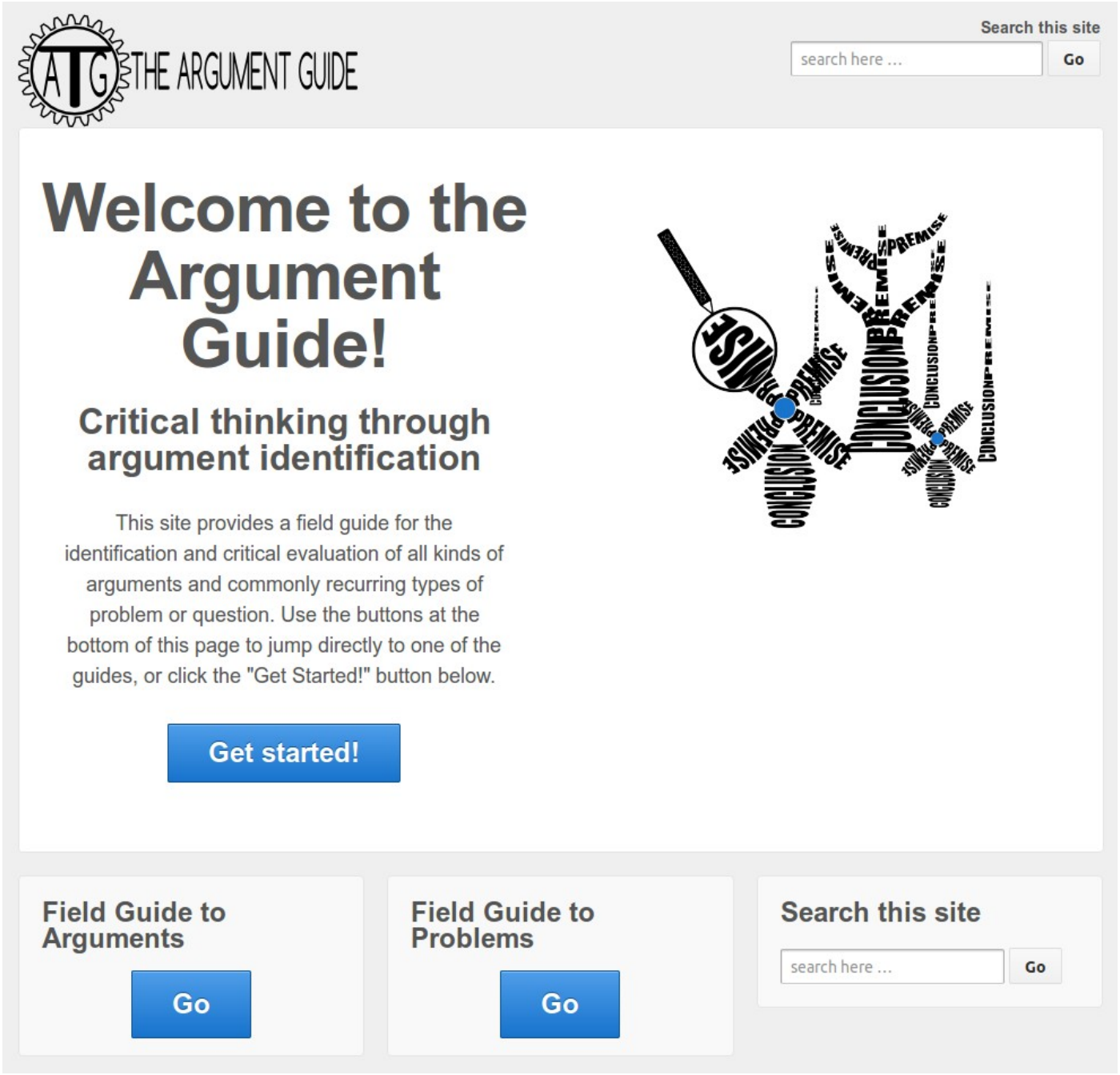
The Tree is a

Sassafras

SASSAFRAS ALBIDUM

Field guides and argument analysis

a keyed guide makes explicit which features of an argument experts use to classify



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