

# Learning Styles



## Have you ever heard this from students?



"I had no idea what the professor was talking about. I understood the words, but they didn't mean anything. He kept talking over my head. I kept wanting to ask for an example, but the guy didn't seem to be in touch with reality at all. And the tests were absurd: I have no idea where some of the questions even came from, but definitely not from his lectures!"

"The professor was so petty and small-minded. She was not at all concerned about relating the ideas to other material we had covered. Her tests were ridiculous - so picky and detailed, just requiring us to memorize and regurgitate specific material. There was no chance to be creative, or to show that I've learned the material and understand it."



## Learning Styles



Learning styles are the different ways that people prefer to learn. People differ substantially in the ways they most easily

- perceive information
- organize information
- process information
- and, hence, develop an understanding of the information presented by an instructor



## Mismatch of Learning and Teaching Styles



When an instructor teaches to one learning style, but a student learns according to a different style, a MISMATCH occurs.

- A lot of information may be lost in the process.
- Ineffective instructors often teach only the way they like to learn.

Effective instructors pay attention to differences in learning styles and adjust instructional strategies to accommodate different learning styles in their classrooms.



## Common learning styles



- "Big Picture" vs. "Detail" orientation
- "Active" vs. "Reflective" approach
- "Visual" vs. "Verbal" processing



## Big Picture vs. Detail Orientation



Big-picture people tend to use DEDUCTIVE approaches.

Deductive approach: first get the general concept, then flesh it out with the specific examples.

Example:

- Birds are defined as creatures with feathers.
- Penguins have feathers.
- So a penguin is probably a bird.

## Big Picture vs. Detail Orientation

Detail people tend to use **INDUCTIVE** approaches.  
Inductive approach: first look at the specifics, then use them as a foundation for developing general concepts.

Example:

- Pictured here are a number of birds.
- What do they have in common?

Another example:

- This x-ray shows the following features (a, b, c, etc.)
- What medical disorder is suggested by this combination of radiological features?



## Active vs. Reflective Approach

Active learners most like to **DO** things, sometimes without spending too much time beforehand thinking about the subject at hand.

An active learner will say, "Let me play around with this for a little bit, and then I'll give you my answer/opinion/summary."

→ Like to use and manipulate models and objects.

Reflective learners most enjoy **THINKING**.

Reflective learners need to spend more time contemplating and mulling the information over in their minds before coming up with a response.

→ Like to review their notes over and over again.



## Visual vs. Verbal Processing

Visual learners need to **SEE** something to believe it, to remember it, or even just to get it.

→ Like to use and create pictures, charts, diagrams

Verbal learners relate well to **WORDS**, whether spoken aloud or written.

→ Like to read, discuss with others



## Instructors and learning styles

Instructors tend to teach according to their favorite learning style.

Give everyone a "hook" in to the material by using a variety of methods so as to include both aspects of each of the above dimensions.

- Give the big picture **IN ADDITION TO** specific examples.
- Show **AND** tell.
- Include activities **AS WELL AS** formal presentations in structuring your teaching.

Effective instructors incorporate a wide range of strategies to reach the diversity of students in their classes.



## Lesson Planning

Incorporate as many of these different elements as possible throughout the course:

- Use both inductive and deductive approaches
- Include opportunities for students to engage the classroom information through active and reflective activities
- Grant access to both visual and verbal information.
- Bring the outside world into your classroom by giving readings, activities and written reports as homework, including both academic and applied assignments.
- Include lectures, examples and questioning in class, as well as demonstrations, exercises, videos, and discussions.


There is no one best way; a variety of different ways to structure the course could be very effective.



## Troubleshooting


- If things don't seem to be going well in your class, look for a possible mismatch between teaching activities in class and a student's preferred learning style
- Incorporate or develop learning-style elements that may have been underutilized.
- Explain the same material by approaching it with multiple examples from multiple perspectives.
- Ask what has worked well for a particular student or class in the past and build on that.
- Be ready and willing to try something else.




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## Teaching the same material for different learning styles

Teaching the color wheel





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## Color wheel

**DEDUCTIVE**  
 Start class by telling them that colors can be combined to form new ones. Show them the color wheel.  
 Point out how to determine the result if you combine certain colors. Ask, "If you mix blue and red, what would you get?"  
 Once the theory is clear, give them problems to work on using paint combinations.

**INDUCTIVE**  
 Give everyone a palette of primary colors. Have them mix the colors together two by two and note the results. See if they can develop some rules of color combinations. Have them explain the principles they have discovered to someone else.





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## Color wheel

**VISUAL**  
 The instructor mixes colors in front of the class or shows a video of what happens when different colors combine with very little commentary, requiring students to note their observations in their notes.

**VERBAL**  
 The instructor explains different combinations and results, asking them to remember "red plus yellow makes orange, red plus blue makes purple, and blue plus yellow makes green" without ever showing anything with any color to them at all.





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## Color wheel

**ACTIVE**  
 To maximize active learning the teacher would have the students mix the paints, judge the results, and develop the rules of color combinations from their experiments.

**REFLECTIVE**  
 To maximize reflective learning the teacher would lecture on the process, have the students read an article or handout about mixing colors, and then have students analyze color combinations in famous paintings.




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## Efficiency and learning styles

It would be inefficient in most classes to present the same information via 6 different modes.

What should an instructor do?

- Provide access to the same information presented in class via out-of-class resources: web pages, models, additional reading material, etc.
- Encourage students to participate in study groups
- Give students options in terms of assignments and projects.



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## Conclusions

People have different learning styles.

Many teaching problems reflect a mismatch of learning styles between teachers and their students.

Important dimensions to consider are

- big-picture vs. detail orientation
- active vs. reflective approaches
- visual vs. verbal processing





## Conclusions

Effective instructors plan their courses to accommodate a variety of preferences for taking in and processing information.

The key to successful teaching is to be open-minded and proactive in accommodating different learning styles in the classroom.