

What Are Inductive and Deductive Teaching?

Inductive teaching (also called discovery teaching or inquiry teaching) is based on the claim that knowledge is built primarily from a learner's experiences and interactions with phenomena. An instructor using an inductive approach begins by exposing students to a concrete instance, or instances, of a concept. Then learners are encouraged to observe patterns, raise questions, or make generalizations from their observations. The teacher's role is to create the opportunities and the context in which students can successfully make the appropriate generalizations, and to guide students as necessary.

Inductive teaching has close ties with the instructional method called the "learning cycle" where phenomena are explored before concepts are named. Inquiry-based teaching, in which students are asked to continually develop and test hypotheses in order to generalize a principle, is another member of the inductive "family".

Deductive teaching (also called direct instruction) is much less "constructivist" and is based on the idea that a highly structured presentation of content creates optimal learning for students. The instructor using a deductive approach typically presents a general concept by first defining it and then providing examples or illustrations that demonstrate the idea. Examples that do not fit the idea are helpful in confirming the idea. Students are given opportunities to practice, with instructor guidance and feedback, applying and finding examples of the concept at hand, until they achieve concept mastery.

Most "demonstration" or "cookbook" labs are deductive in nature. Students have already been introduced to the idea in their text or in lecture, and the lab serves to show them directly and concretely something that they already know or have been taught conceptually. They know the outcome of the procedure

before it is completed. The three osmosis labs starting present a deductive version (demonstration), a transitional deductive/inductive version (structured inquiry), and an inductive version (guided inquiry), all based on the same materials.