

Introduction

Designing a Course and Constructing a Syllabus Best Practices of Teaching and Learning

Welcome to this session on designing a course and constructing a syllabus. In this session, we'll first have an introduction to the session, then discuss the components of the syllabus, Backward Course Design, course content prioritization, and learning objectives.

Traditional course design starts with a list of topics that the instructor would like to teach without a framework to tie the topics together. This leads to rote memorization of course material without truly understanding it. As a result, in traditional courses students acquire knowledge without a framework to tie material together, making it difficult for students to deeply understand the material. In addition, learning is not very rewarding, and it is hard to generalize and apply knowledge to new situations. By structuring your course to focus on big ideas and helping students to construct mental frameworks, we can increase student retention and improve our students' ability to transfer knowledge.

Knowledge is not equal to understanding. If knowledge is facts, then understanding refers to the meaning of those facts, the insights into the essential material to be able to transfer knowledge. This quote signifies the difference between knowledge and understanding.

"What differentiates revolutionary thinkers from non-revolutionary ones is almost never a greater knowledge of the facts. Darwin knew far less about the various species he collected on the Beagle voyage than did experts back in England who classified these organisms for him. Yet expert after expert missed the revolutionary significance of what Darwin collected, who knew less, but somehow understood more."

Charles Darwin was able to transfer his knowledge of individual species to understand the importance of his discoveries. His findings helped him formulate the theory of Evolution.

Let's go through an example. Here we have a math question from a standardized test for high school students in the United States. This question demonstrates a situation in which we can help students learn material more effectively. The question is, what is the distance between the points 2, 10 and minus 4, 2 on the XY plane? A, 6. B, 8. C, 10. D, 14. Or E, 18. Pause the video here to answer the question.

In this problem, students are asked to apply their knowledge of the Pythagorean theorem to this situation, where they're asked to measure the distance between two points which make up the hypotenuse of a right triangle. In this case, the length of one side of the triangle is 6 and the other side is 8. Let's plug the numbers into the equation to solve for the length of the hypotenuse, c .

The Pythagorean theorem can be expressed as $a^2 + b^2 = c^2$. In this situation, once we plug in the numbers, we get $6^2 + 8^2 = c^2$. Evaluating the expression means that c equals 10, which corresponds to answer choice C.

Only 33% of students were able to solve this problem correctly. This was the hardest problem on the standardized math test, because students couldn't apply their knowledge of the Pythagorean theorem to a new situation. The goal of this session is to illustrate how Backward Course Design can lead to a more effective course that aids in understanding and transfer.

The learning objectives are that by the end of this session, you will have considered ways to-- 1, state the components of the syllabus; 2, identify the components of Backward Course Design; 3, evaluate content for a

course you would like to teach based on content priorities; and 4, define and develop learning objectives for a course you would like to teach.