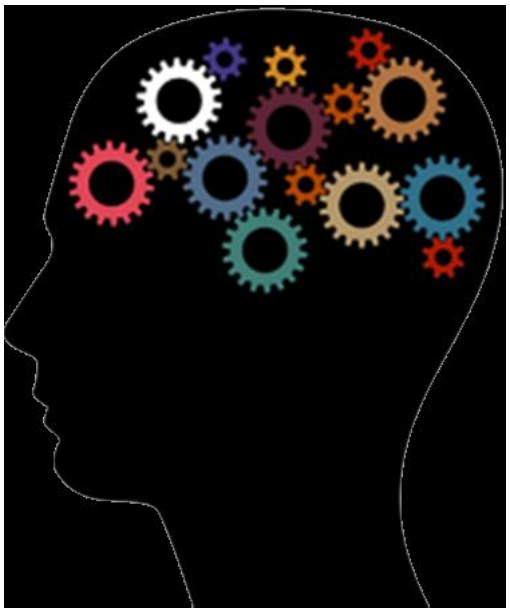
Course Design

Faleh Sawair BDS, FDS RCS (England), PhD
Director/Accreditation and Quality Assurance Center
Professor of Oral Pathology
The University of Jordan

مركز الاعتماد
وضمان الجودة



DESIGNING COURSES THAT PROMOTE SIGNIFICANT LEARNING

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Teaching is a complex human action

- Knowledge of the subject matter.
- Design the course
- Interactions with students (through lectures, discussions, office visits, etc.).
- Management of entire instructional event.

Course Design

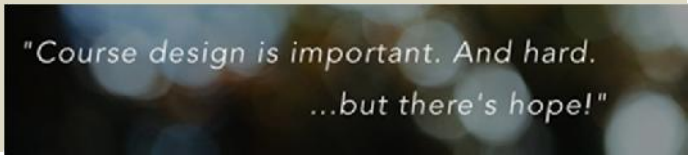
- The process of conceptualizing, organizing, and arranging the elements of curriculum into a coherent pattern (Print, 1993).

عملية تحديد المفاهيم وتنظيم وترتيب عناصر المنهاج الدراسي في نمط متماسك.

Course design

Refers to processes that includes the following:

- Diagnosis of needs;
- Formulation of intended outcomes;
- Selection of content;
- Organization of content;
- Organization of learning experiences; and
- Determination of what to evaluate, and means to evaluate.



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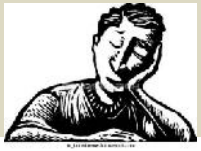
2 approaches to create a course

- **A content-centered approach:**

  "List of topics approach", most common, textbook, time for each topic, and how many tests.

Easy and simple.

No attention to what students might learn beyond content, easily forgotten.



2 approaches to create a course

- **A Learning-centered approach:**

  Decide first what students can and should learn in relation to this subject and then figure out how such learning can be facilitated.

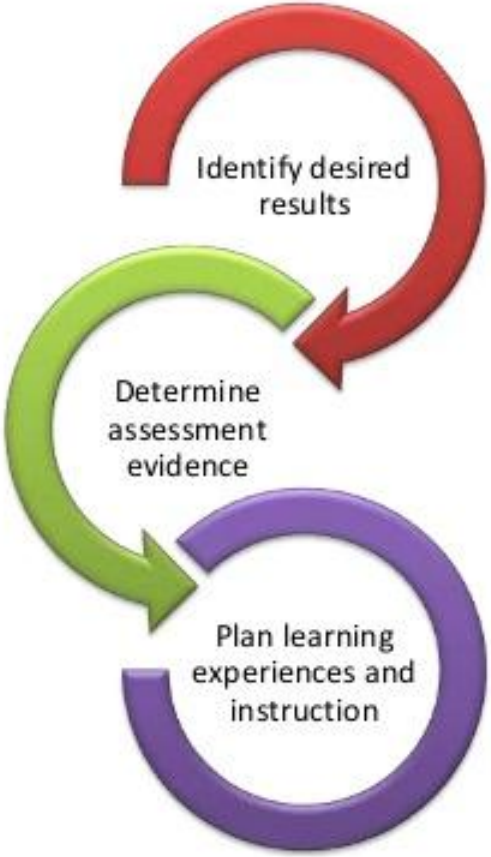
The best chance of ensuring that students have a significant learning experience.

Requires more time and effort.

Learning-centered approach

- Backward Design
- Integrated Course Design

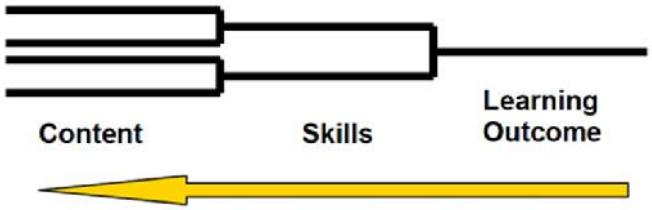
The Backward Design Process



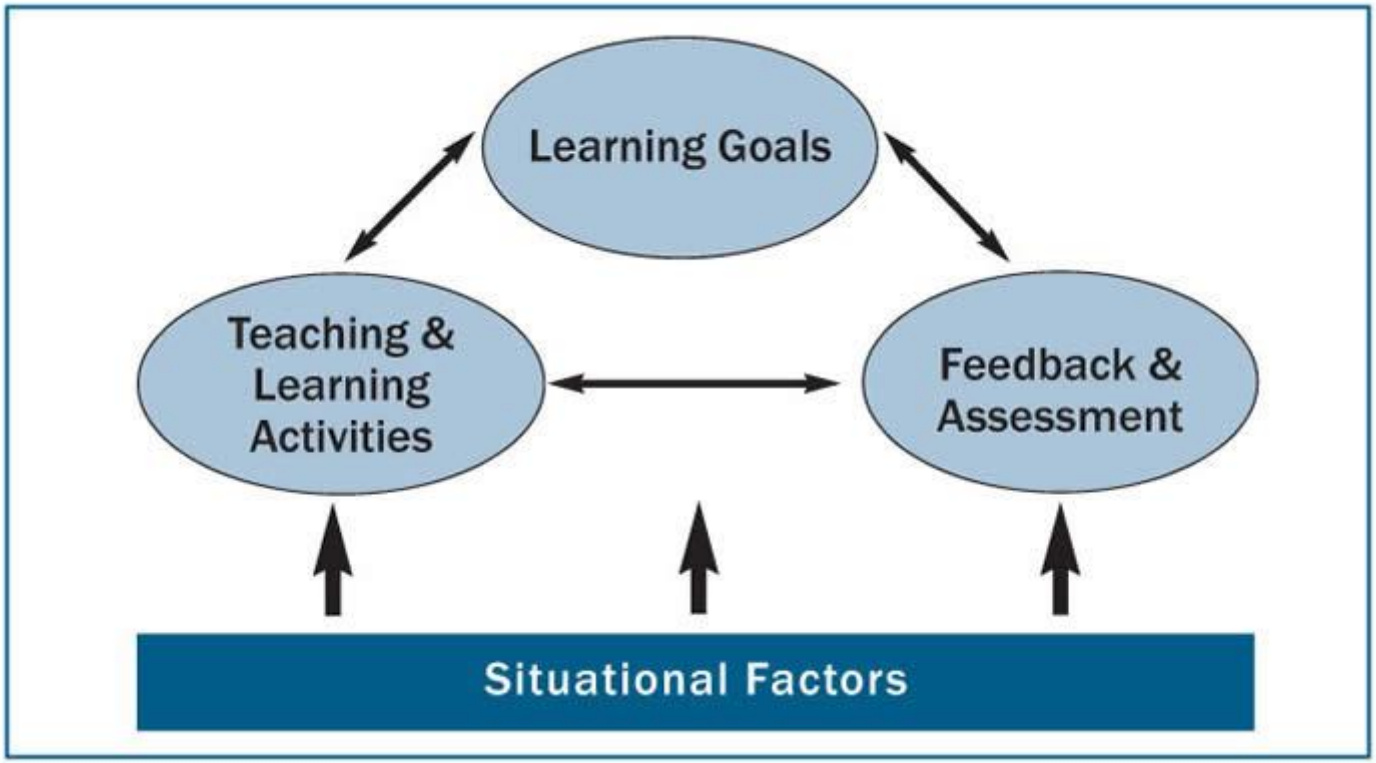
What I want the students to Understand and know and be able to do?

How do I check they have learned?

Which learning activities will lead students to the desired results?

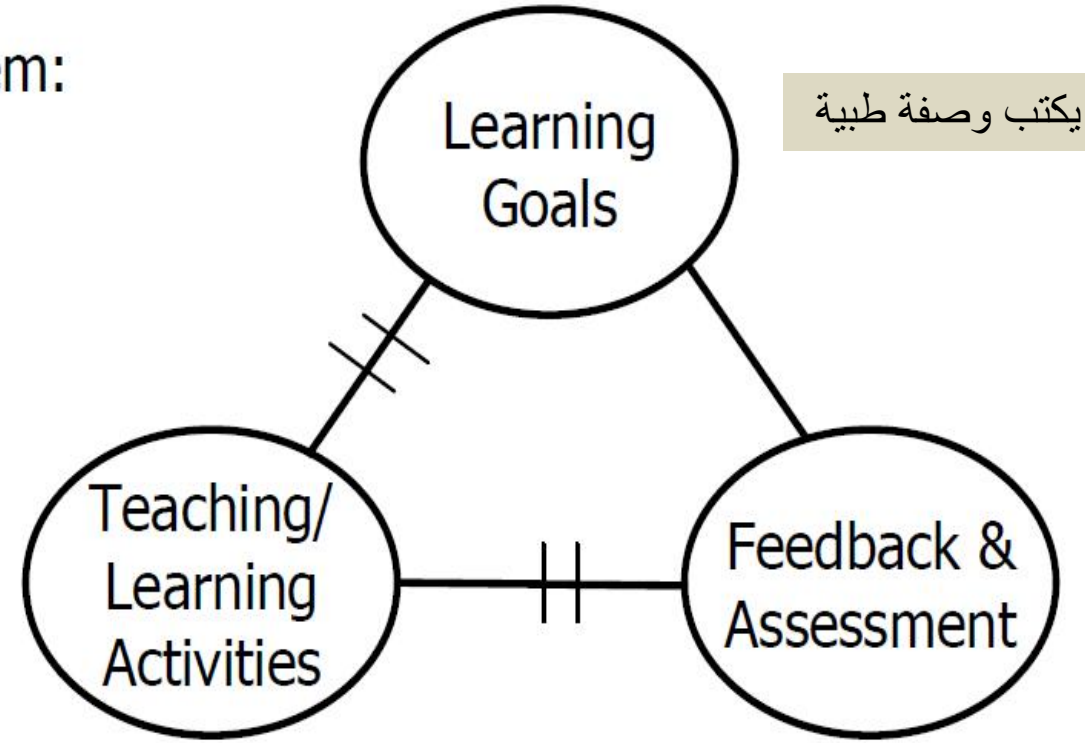


Integrated Course Design:



Un-integrated/dis-connected course

Integration Problem:
Example 1



يكتب وصفة طبية

لا يوجد تدريب عملي لكتابة الوصفة

اكتب وصفة لمعالجة مرض ....

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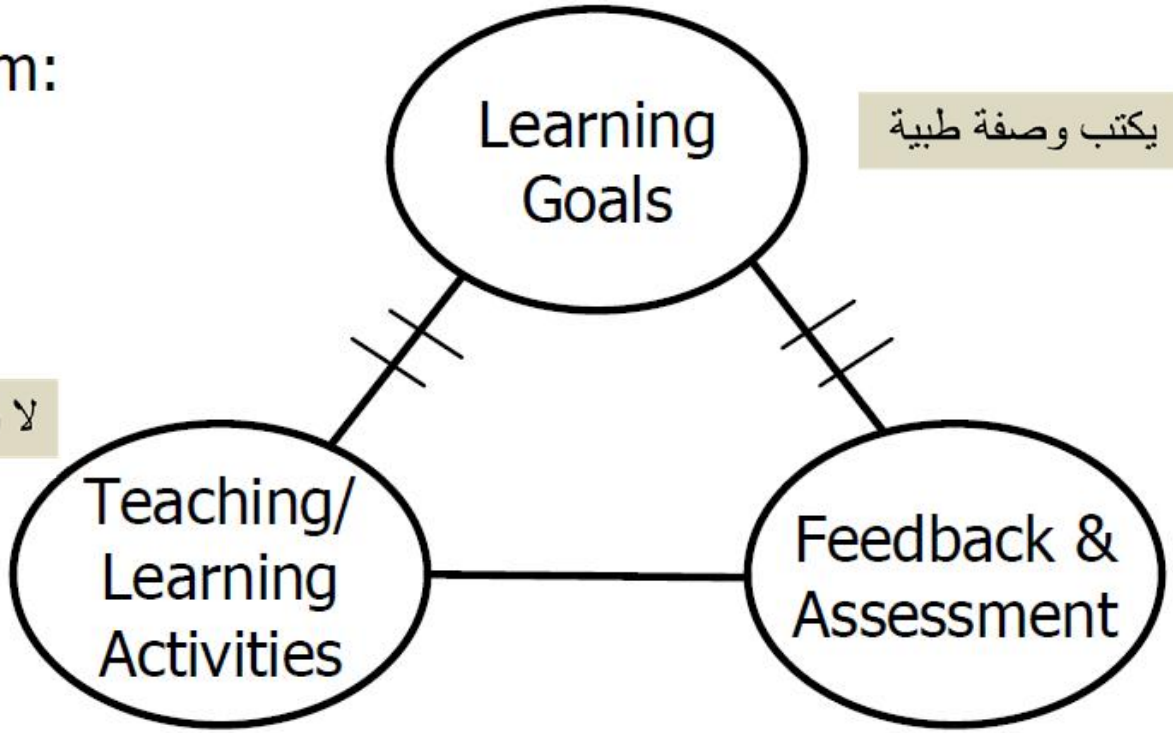
Un-integrated/dis-connected course

Integration Problem:
Example 2



يكتب وصفة طبية

لا يوجد تدريب عملي لكتابة الوصفة

لا يوجد سؤال لقياس قدرة الطالب على كتابة وصفة

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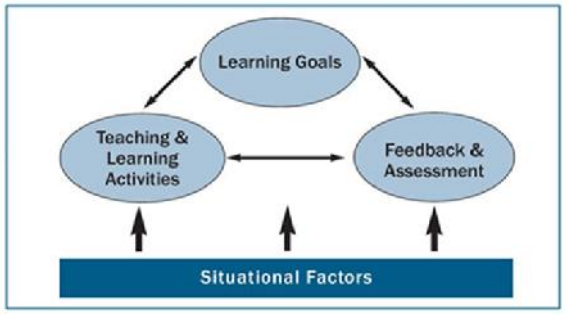
Integrated Course Design:



- **INITIAL DESIGN PHASE:**

  Build Strong Primary Components

  Step 1. Identify important **situational factors**

  Step 2. Identify important **learning outcomes**

  Step 3. Formulate appropriate **feedback & assessment procedures**

  Step 4. Select effective **teaching/learning activities**

  Step 5. Make sure primary components are **integrated**

Integrated Course Design:

- **INTERMEDIATE DESIGN PHASE:**

  Assemble the Components into a Coherent Whole

  Step 6. Create a thematic **structure for the course**

  Step 7. Select or create an **instructional strategy**

  Step 8. **Integrate** course structure & instructional strategy

Integrated Course Design:

- **FINAL DESIGN PHASE:**

  Finish Important Remaining Tasks

  Step 9. Develop the **grading system**

  Step 10. Write the course **syllabus**

  Step 11. Plan an **evaluation** of course and of your teaching

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1- Identifying the Situational Factors:

WHERE ARE YOU?

1. Specific Context of the Teaching/Learning Situation
2. General Context of the Learning Situation
3. Nature of the Subject
4. Characteristics of the Learners
5. Characteristics of the Teacher

Step 1 Worksheet

2- Establishing Learning Outcomes

WHERE DO YOU WANT TO GO?

Traditionally, a content centered approach is taken: “I want students to learn about topics X, Y, and Z.” Although such an approach is easy and natural, it generally results in an over-emphasis on “understanding and remembering”

2- Establishing Learning Outcomes

WHERE DO YOU WANT TO GO?

- **Learning-centered approach**

  - What do you want students to get out of the course.
  - What is important for them to learn and retain, 2-3 years after the course is over?
  - What kind of thinking or application abilities do you want them to develop?
  - How do you want them to keep on learning after the course is over?

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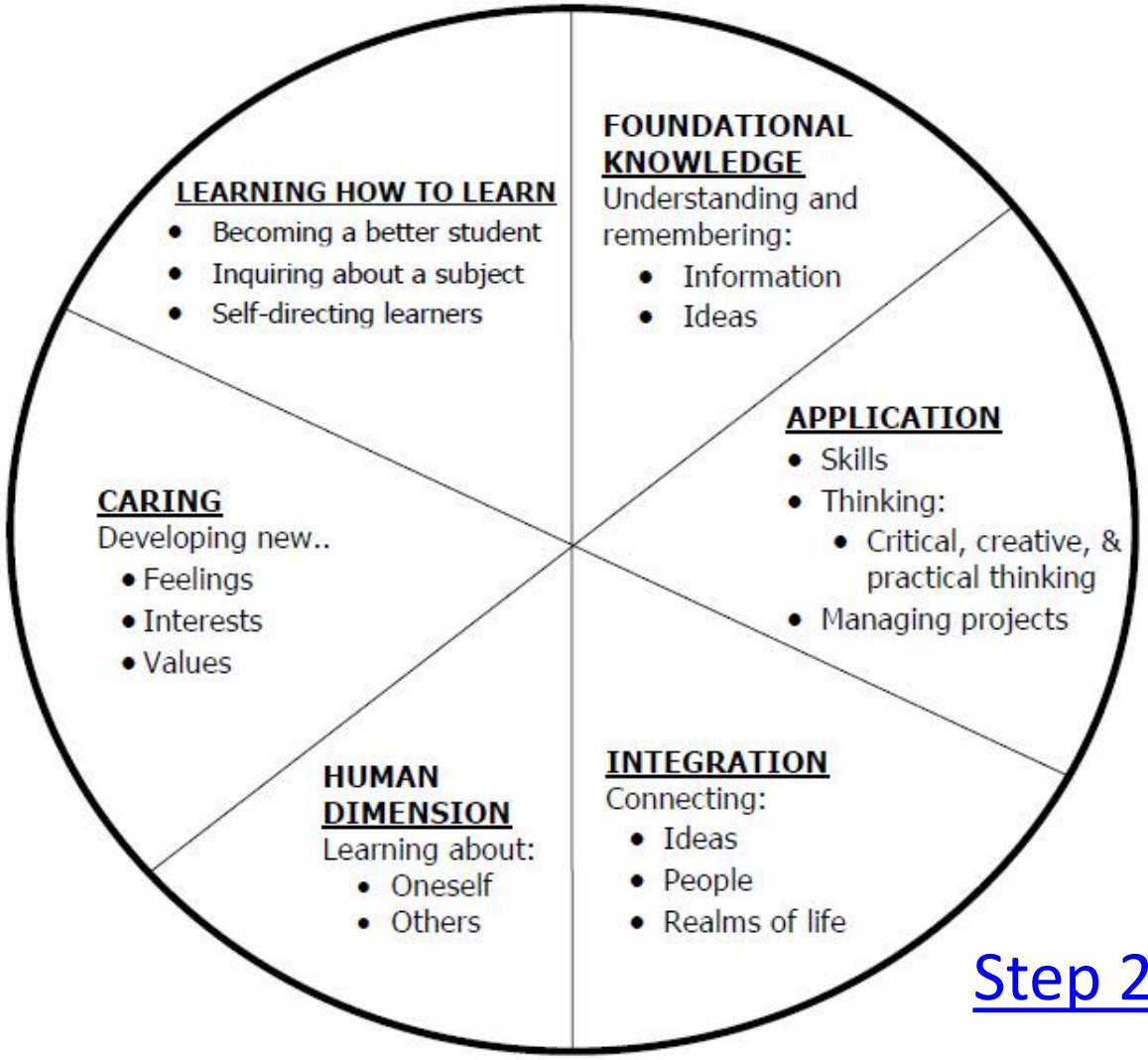
2- Establishing Learning Outcomes

WHERE DO YOU WANT TO GO?

- Think expansively, beyond "understand and remember" kinds of learning.
- What students can learn that is truly significant
  - Emphasize such things as critical thinking, learning how to creatively use knowledge from the course, learning to solve real-world problems, changing the way students think about themselves and others, realizing the importance of life-long learning

- What questions would students be able to answer, or what skills, abilities, or qualities would they develop throughout the course.



[Step 2. Worksheet]

Bloom's Taxonomy of Educational Objectives

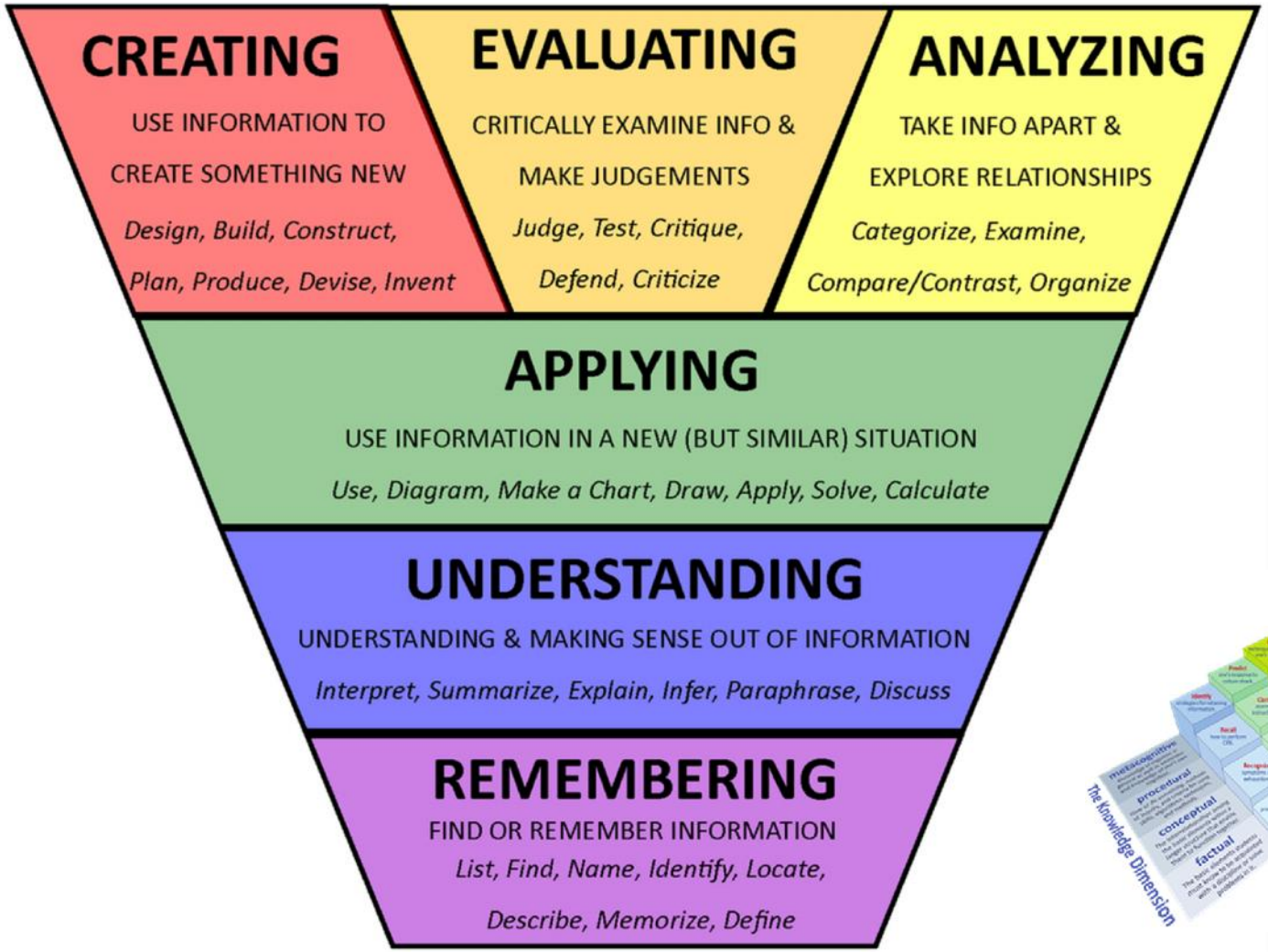


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Table 2: Bloom's Taxonomy of Educational Objectives for Skill-Based Goals

Level of Expertise	Description of Level	Example of Measurable Student Outcome
Perception	Uses sensory cues to guide actions	Some of the colored samples you see will need dilution before you take their spectra. Using only observation, how will you decide which solutions might need to be diluted?
Set	Demonstrates a readiness to take action to perform the task or objective	Describe how you would go about taking the absorbance spectra of a sample of pigments?
Guided Response	Knows steps required to complete the task or objective	Determine the density of a group of sample metals with regular and irregular shapes.
Mechanism	Performs task or objective in a somewhat confident, proficient, and habitual manner	Using the procedure described below, determine the quantity of copper in your unknown ore. Report its mean value and standard deviation.
Complex Overt Response	Performs task or objective in a confident, proficient, and habitual manner	Use titration to determine the K_a for an unknown weak acid.
Adaptation	Performs task or objective as above, but can also modify actions to account for new or problematic situations	You are performing titrations on a series of unknown acids and find a variety of problems with the resulting curves, e.g., only 3.0 ml of base is required for one acid while 75.0 ml is required in another. What can you do to get valid data for all the unknown acids?
Organization	Creates new tasks or objectives incorporating learned ones	Recall your plating and etching experiences with an aluminum substrate. Choose a different metal substrate and design a process to plate, mask, and etch so that a pattern of 4 different metals is created.

Table 3: Bloom's Taxonomy of Educational Objectives for Affective Goals

Level of Expertise	Description of Level	Example of Measurable Student Outcome
Receiving	Demonstrates a willingness to participate in the activity	When I'm in class I am attentive to the instructor, take notes, etc. I do not read the newspaper instead.
Responding	Shows interest in the objects, phenomena, or activity by seeking it out or pursuing it for pleasure	I complete my homework and participate in class discussions.
Valuing	Internalizes an appreciation for (values) the objectives, phenomena, or activity	I seek out information in popular media related to my class.
Organization	Begins to compare different values, and resolves conflicts between them to form an internally consistent system of values	Some of the ideas I've learned in my class differ from my previous beliefs. How do I resolve this?
Characterization by a Value or Value Complex	Adopts a long-term value system that is "pervasive, consistent, and predictable"	I've decided to take my family on a vacation to visit some of the places I learned about in my class.

3- Feedback and Assessment Procedures

HOW WILL THE STUDENTS AND YOU KNOW IF THEY GET THERE?

- What will students do to demonstrate they have achieved the Learning outcomes we set for the course? Are they getting it?
- For which outcomes are paper-and-pencil evaluations sufficient? Which need reflective writing? Performance assessment?

In a content-centered course, a mid-term and a final exam are usually considered sufficient feedback and assessment for determining if the student "got it" or not.

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Feedback and Assessment Procedures

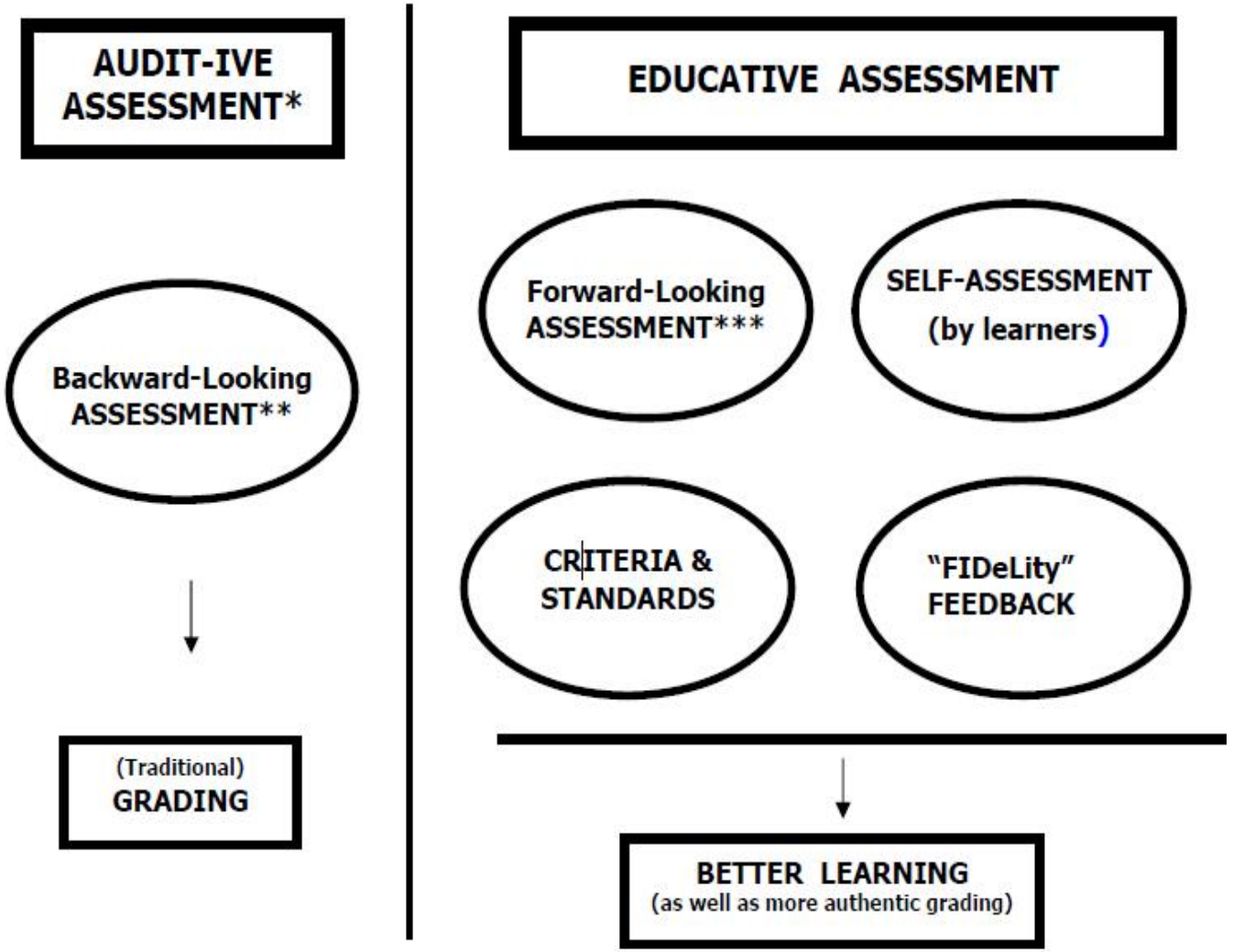
A learning-centered course

- Think about what you can do that will help students learn, as well as give you a basis for issuing a course grade.
- A set of feedback and assessment procedures collectively known as "**educative assessment**" is needed.
  - Forward-Looking Assessment
  - Self-assessment

“FIDeLity” Feedback:

- **Frequent**: Give feedback daily, weekly, or as frequently as possible.
- **Immediate**: Get the feedback to students as soon as possible.
- **Discriminating**: Make clear what the difference is between poor, acceptable, and exceptional work.
- **Loving**: Be empathetic in the way you deliver your feedback.

AUDIT-IVE AND EDUCATIVE ASSESSMENT



Step 3: Worksheet

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4. Teaching/learning activities

HOW ARE YOU GOING TO GET THERE?

- What would have to happen during the course for students to do well on the Feedback & Assessment activities?
- **Active Learning.** students learn more and retain their learning longer if they acquire it in an active rather than a passive manner.

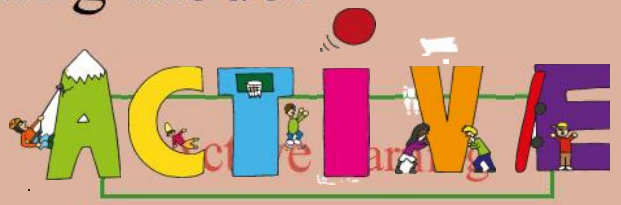
The Cone of Learning

4. Teaching/learning activities

- Think creatively for ways of involving students: in doing things and thinking about the things they are doing.
- "Doing" refers to activities such as debates, simulations, guided design, group problem solving, and case studies. Thinking refers to reflections about the meaning of what students learn or about the learning process itself.

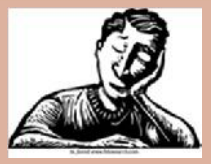
4. Teaching/learning activities

Active learning model



Passive Learning

Receiving information and ideas.



Experience

Doing

Observing

Reflective dialogue with:

Self

Others

Active Learning

A HOLISTIC VIEW OF ACTIVE LEARNING

Experience
- Doing, Observing
- Actual, Simulated
- "Rich Learning Experiences"

Information & Ideas
- Primary & Secondary Sources
- Accessing them in class, out of class, online

Reflective Dialogue
- Minute Papers, Learning Portfolios, Journaling
- About the Subject and/or Learning Process

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In-Depth Reflective Dialogue

Students address a different set of questions, such as:

- What am I learning?
- What is the value of what I am learning?
- How am I learning?
- What else do I need to learn?

Information and Ideas

In order to free up some class time for the experiential and reflective activities identified above, you will probably need to explore alternative ways of introducing students to the key information and ideas of the course, i.e., the **content**.

Information and Ideas

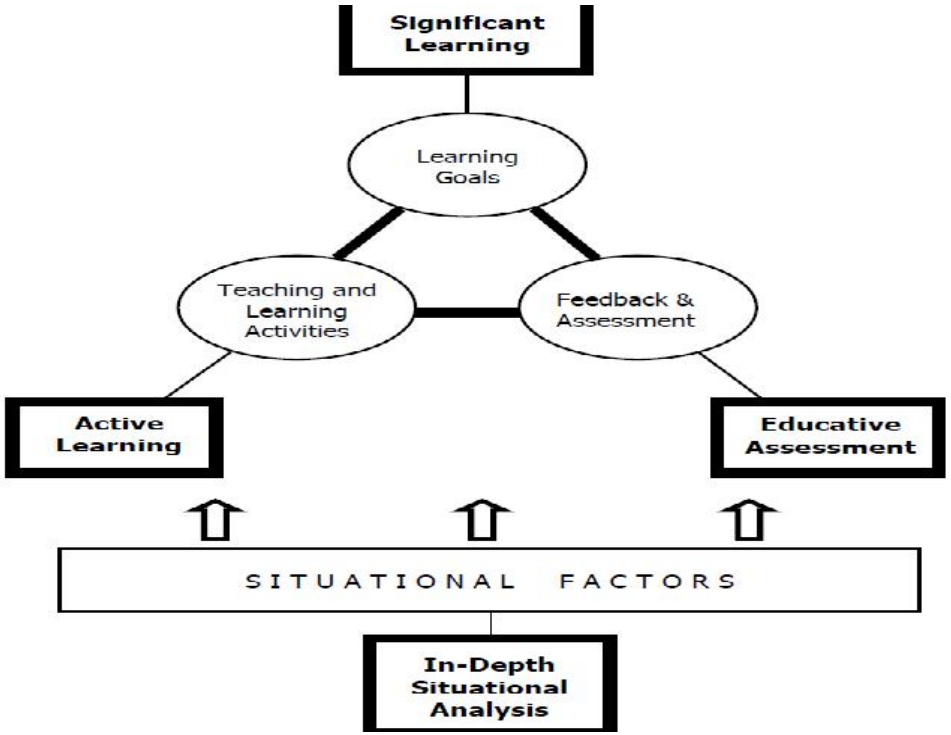
1. having them do more reading before they come to class.
2. Or it may mean creating a course-specific website where you put content-related material.
3. Or you can direct students to go to selected websites that have good content related to the course.

Active Learning

	GETTING INFORMATION & IDEAS	EXPERIENCE		REFLECTIVE DIALOGUE, with:	
		"Doing"	"Observing"	Self	Others
DIRECT	• Primary data • Primary sources	• "Real Doing," in authentic settings	• Direct observation of phenomena	• Reflective thinking • Journaling	• Dialogue (in or out of class)
INDIRECT, VICARIOUS	• Secondary data and sources • Lectures, textbooks	• Case Studies • Gaming, Simulations • Role Play	• Stories (can be accessed *via:* film, oral history, literature)		
ONLINE	• Course website • Internet	• Teacher can assign students to "directly experience _____." • Students can engage in "indirect" kinds of experience online.		• Students can reflect and then engage in various kinds of dialogue online.	

Step 4 worksheet

Step 5: Integrating Steps 1-4



Step 5 Worksheet A
Step 5 Worksheet B

Step 6. Course Structure

WHAT ARE THE MAJOR TOPICS IN THIS COURSE?

"What content topics could I use to achieve the outcomes of my course?"

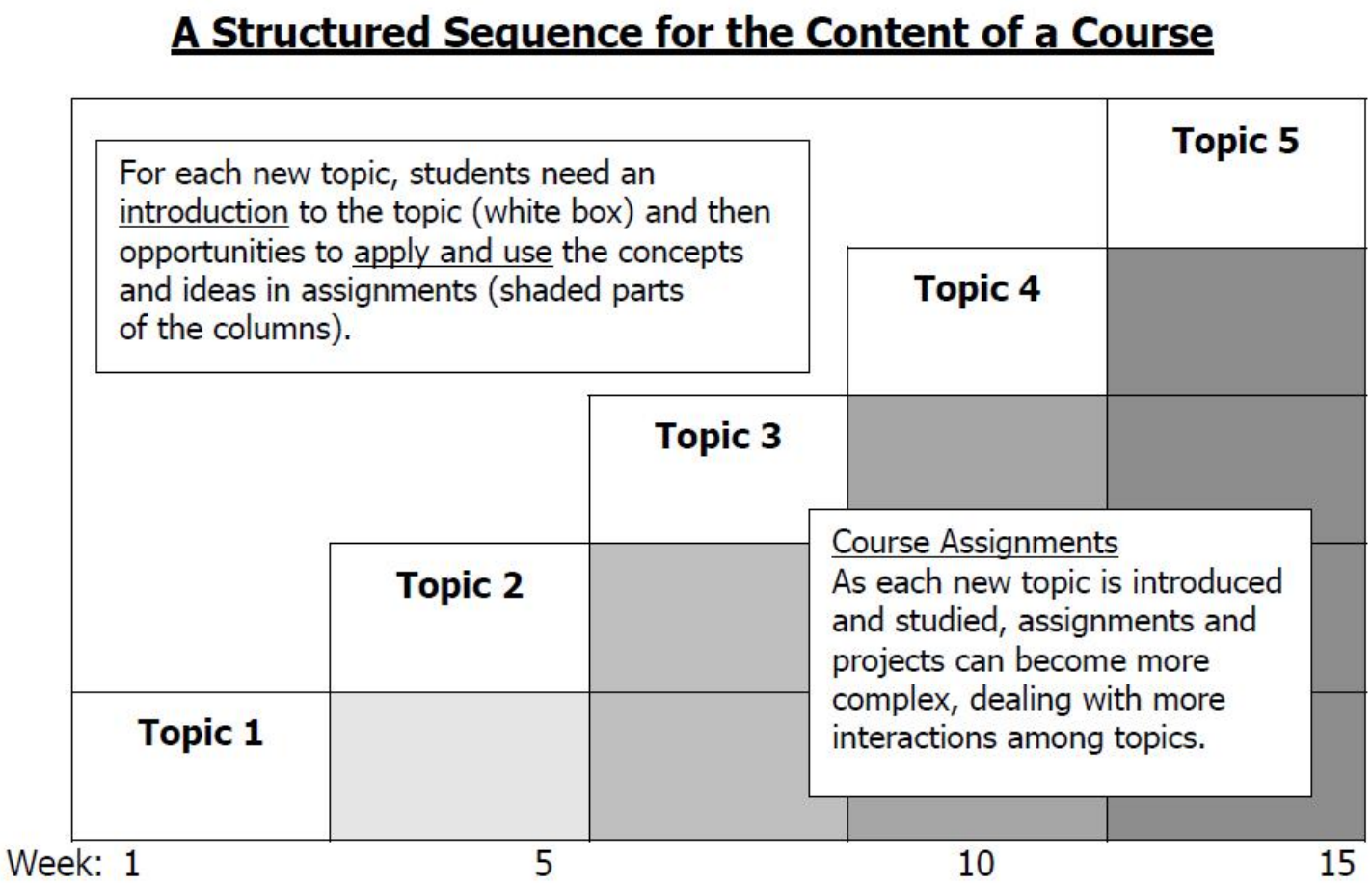
- Identify the four to seven major ideas, topics, or themes in the course.
- Then place them in an appropriate sequence.
- Decide how many weeks or class sessions to allocate to each one.

Tips

- Courses with depth rather than breadth are a viable alternative in course design.
- Topic coverage in a course does not have to be linear or follow the table of contents of a textbook.

  Non-linearity is OK, and, in fact, may be desirable. Revisiting a topic in different contexts and depth improves learning and provides an opportunity to build the complexity of ideas and applications over time.

Step 6. Course Structure



Step 7. Instructional Strategy

WHAT WILL THE STUDENTS NEED TO DO?

Examples of instructional strategies:

- **Continuous series of lectures and reading assignments, interrupted once or twice by a midterm exam.**

  Sequence of student activities: hear- read-test.

- **Series of reading, reflective writing, and whole-class discussion assignments (sequence repeated for each topic).**

  Sequence of student activities: read-write-talk.

  (A variation of this would be read-talk-write.)

Step 7. Instructional Strategy

- **Start with some field or lab work observations, followed by readings and whole-class discussions.**

  Sequence of student activities: do (or 1ook)-read-talk.

  (Write-ups of lab/field work are sometimes included.)

- **Lectures followed by field work or lab observations.**

  Sequence of student activities: hear-see or do

Step 7. Instructional Strategy

- Have students do **assigned readings followed by mini-tests done individually and in small groups, then move on to group-based application projects.**

  Sequence of *student activities*:

  read-----individual & group tests---practice "doing" with feedback.

- Work through a series of developmental stages lasting four to *six* weeks apiece: **build some knowledge and skills, work on small application projects, and then work on larger, more complex projects.**

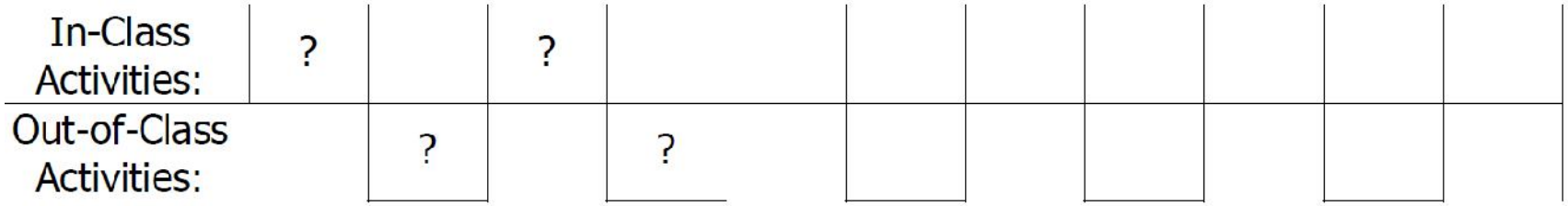
  Sequence of *student activities*:

  know----build know how to do-----DO.

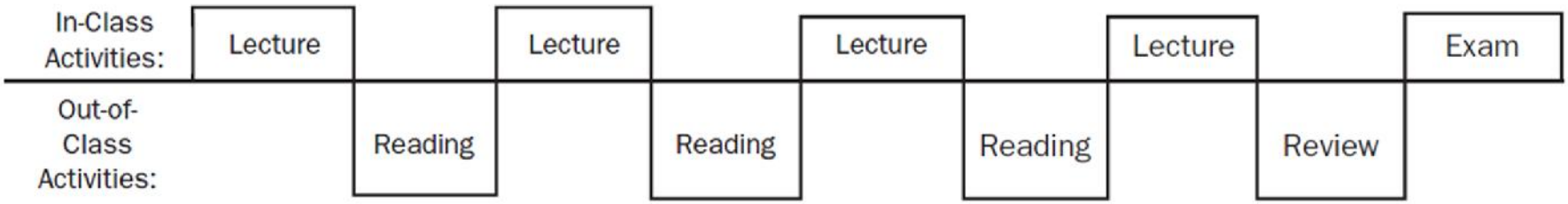
- **Contract for a grade-that is, set up an agreement along the lines of "read text and pass exams" to get a C, add a research paper to get a B, do extended project as well as a research paper to get an A.**

Step 7. Instructional Strategy

- Laying out the combination of in-class and out-of-class activities in a "**castle-top**" diagram allows the teacher to sense how dynamic the teaching strategy is.



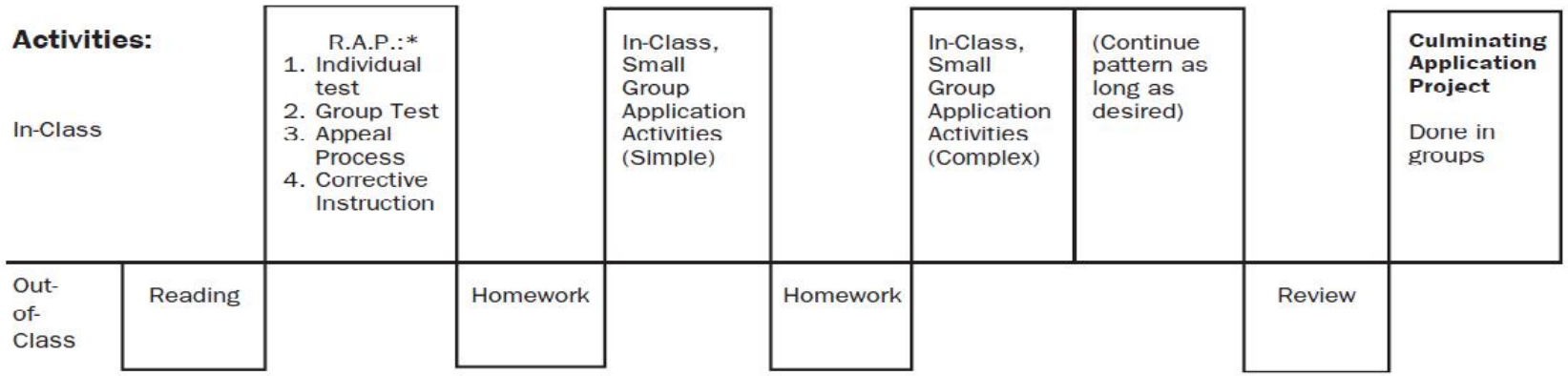
Step 7. Instructional Strategy



- This example is not very dynamic both because it is repetitive and because the individual activities do not engage students in active learning, typically, until the night before the exam.

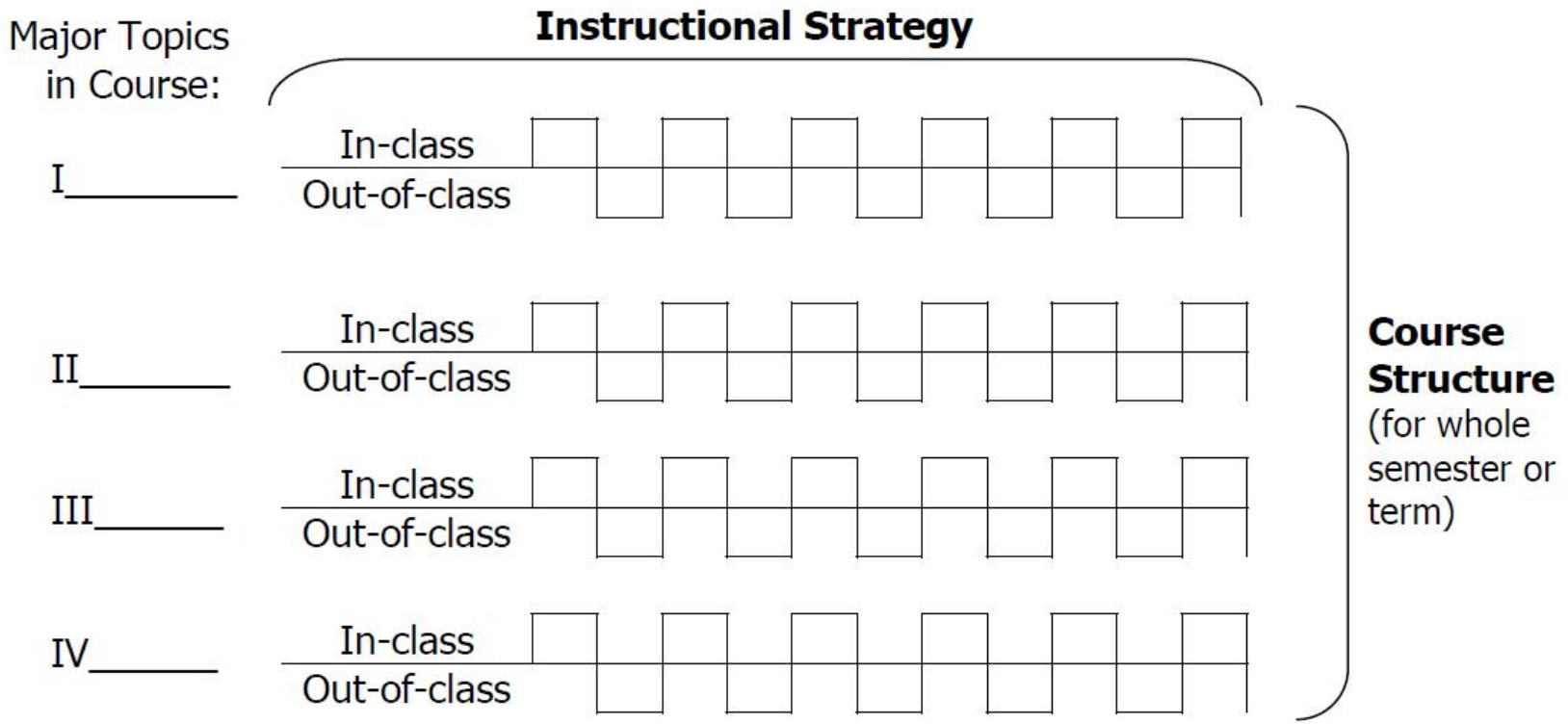
Step 7. Instructional Strategy

In-class activities	Lecture		Test on readings		In-class problem solving		Exam	
Out-of-class activities		Reading homework		Problem-solving homework		Review		



Step 8. Integrate course structure & instructional strategy

WHAT IS THE OVERALL SCHEME OF LEARNING ACTIVITIES?



At this time you need to dynamically integrate the course structure and the instructional strategy for the whole course.

Step 8. Integrate course structure & instructional strategy

- Lay out a week-by-week schedule of activities for the whole semester

Step 8 Worksheet

Step 9. How Are You Going To Grade?

Develop your grading system. Tips

- Should reflect the full range of learning outcomes and activities.
- You do NOT have to grade everything.
- But make sure you do grade some instances of every kind of learning you want students to retain.
- Relative weight of each item as it affects the course grade should reflect the relative importance of that activity.

Step 10. Syllabus
Let Students Know What You Are Planning

- Syllabus
- How do you want to communicate the syllabus to students — on paper, online?

In general, the syllabus serves a variety of functions, not the least of which is that it acts as a **"contract"** between the instructor and the student (Slattery and Carlson, 2005).

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Step 11. Evaluation:

How Will You Know How The Course Is Going? How It Went?

- Plan an evaluation of the course itself and of your own teaching.
- To make the course better and to improve your own teaching over time.
- You can collect feedback throughout the semester as well as at the end.

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Step 11. Evaluation

What specific questions do you have about

- The degree to which your goals for the course were achieved?
- The effectiveness of particular learning activities?
- Your ability to interact effectively with students?

Step 11. Evaluation

You can use a variety of information sources:

- Video/audio tape of the class sessions
- Student ratings of instruction
- Student interviews and/or questionnaires
- Outside observers (e.g., colleagues, instructional consultant)
- Test results

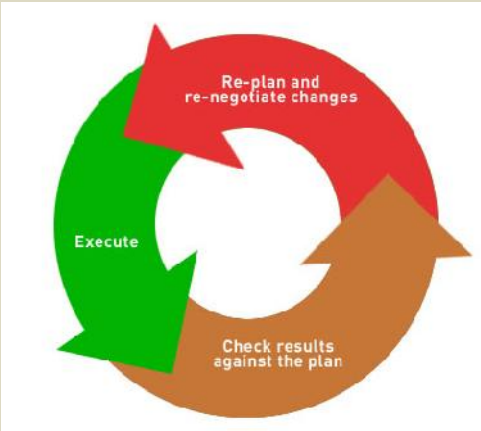
Course Report

Conclusions

- Stay Flexible

  It is only a plan

- Each time you teach, make an assessment of how well the design worked; then next time, make another, more ambitious set of changes.



Conclusions

An integrated course design requires a significant investment in time, energy, and thought. But has great potential for exerting a potent effect on student acquisition of "**significant" learning**.

"Most of us end up with no more than five or six people who remember us. Teachers have thousands of people who remember them for the rest of their lives."