

The Cardiothoracic Surgeon as an Educator

Ara A. Vaporciyan
Department of Thoracic
and Cardiovascular Surgery

THE UNIVERSITY OF TEXAS
MD ANDERSON
CANCER CENTER



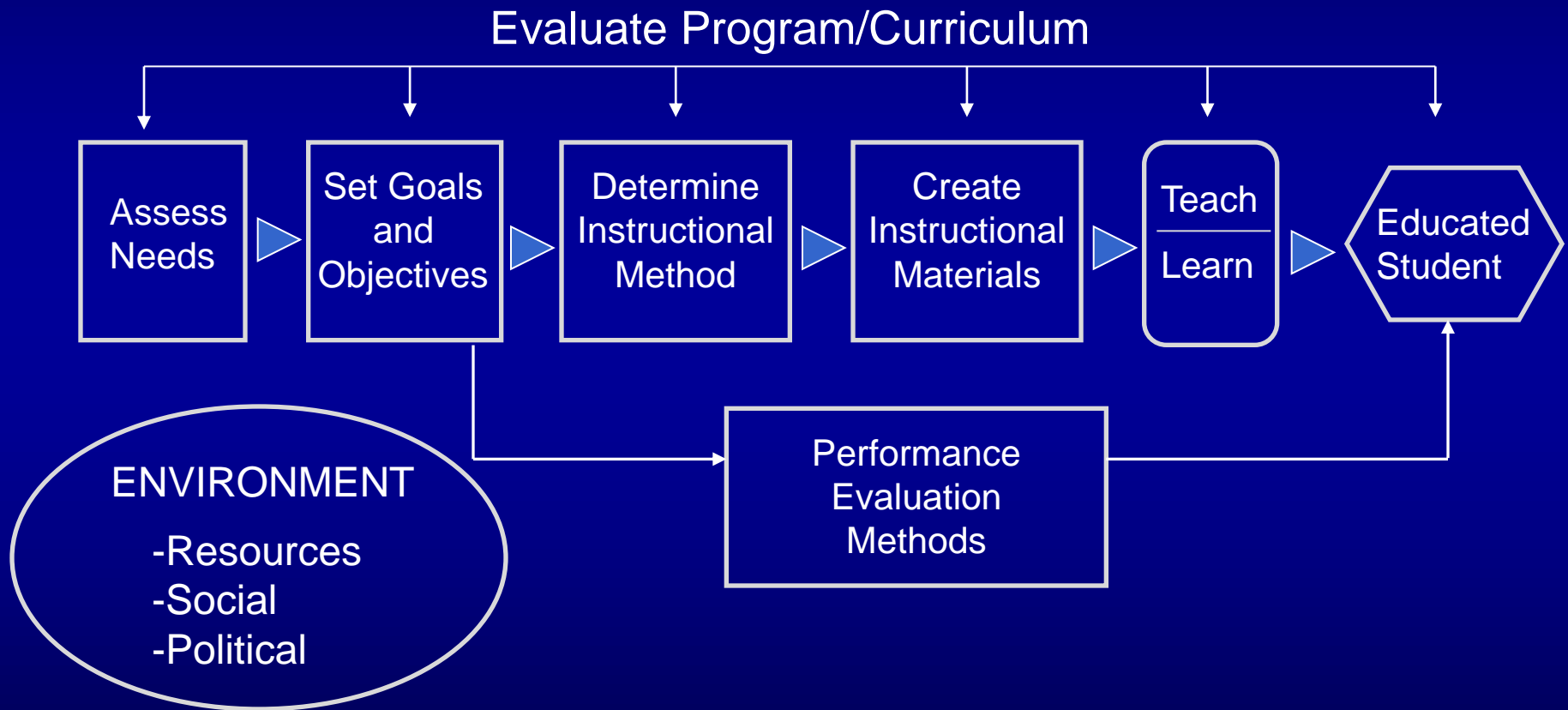
DEPARTMENT of THORACIC &
CARDIOVASCULAR SURGERY

An Academic Cardiothoracic Surgical Educator?

Agenda

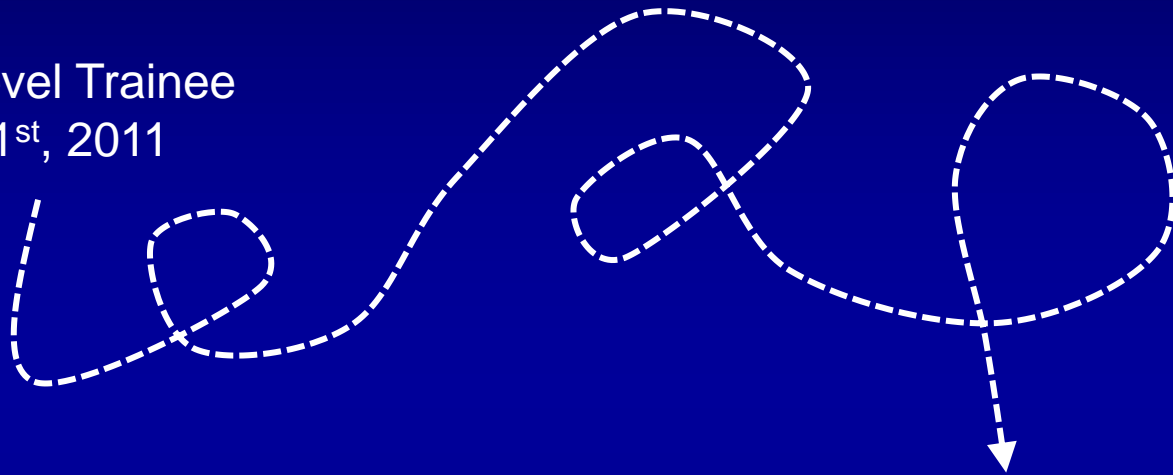
- Basic outline of an educational program
 - What we are doing
 - What is the impact of an I-6
- Efforts to improve our skills as educators
 - Educate the Educators
 - Future directions

Educational Curriculum



Why do we need it?

Entry Level Trainee
July 1st, 2011



A curriculum...

defines the problem,

what the solution will resemble,

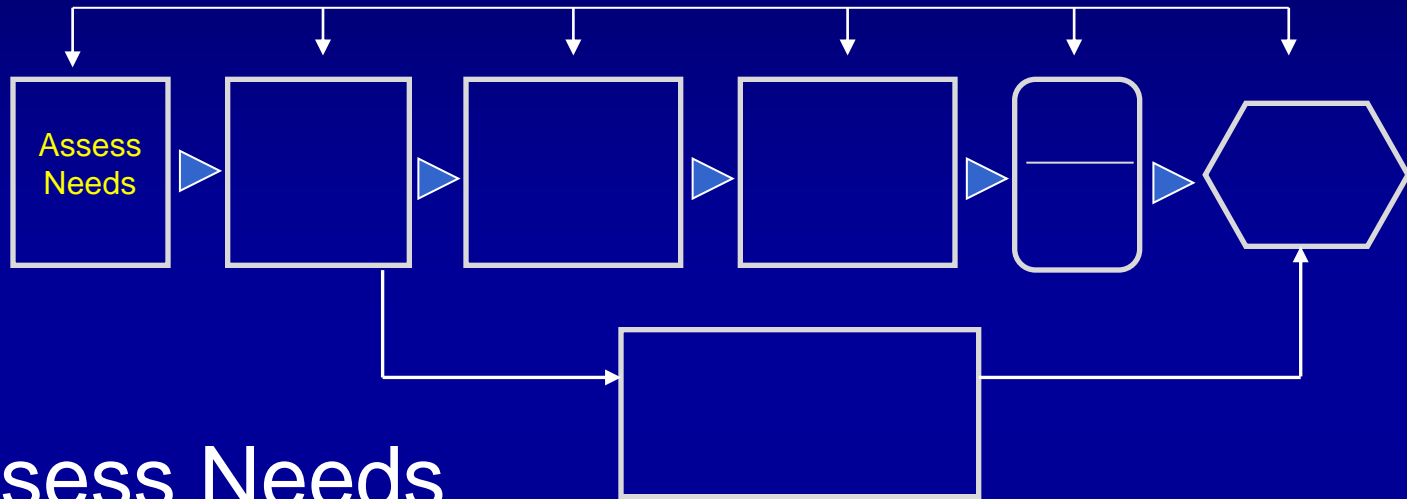
how we will make the trip,

what we will use along the way,

and how we will ensure we have arrived

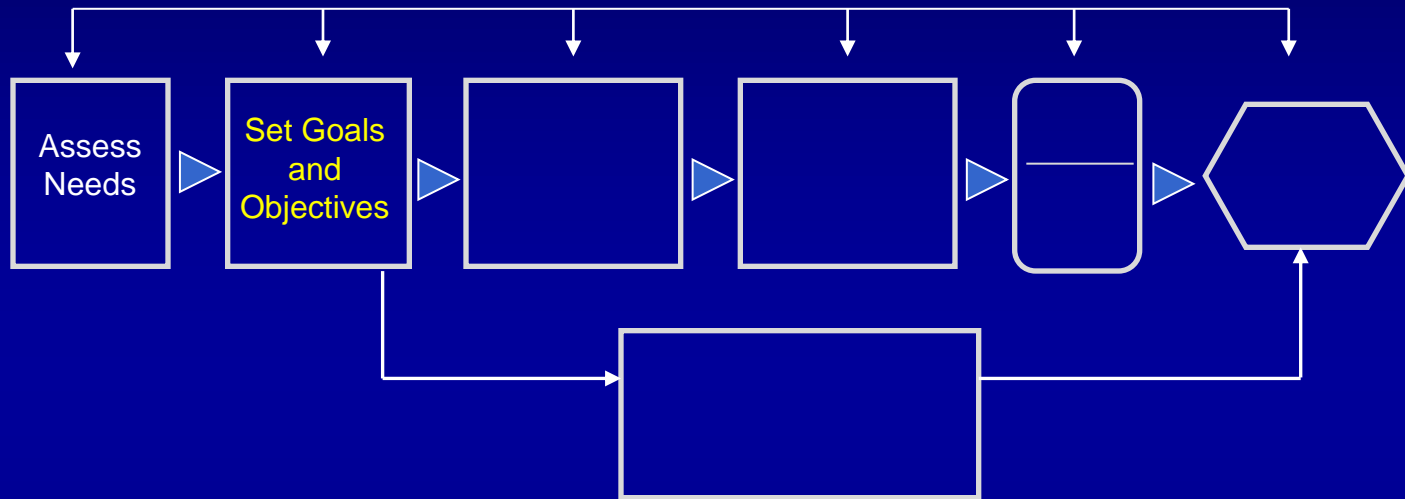
Graduating Cardiothoracic Surgeon
June 30st, 20??

What are the components?



- **Assess Needs**
 - General needs
 - What does the idealized final product look like?
 - Targeted needs
 - What do the trainees already possess?

What are the components?



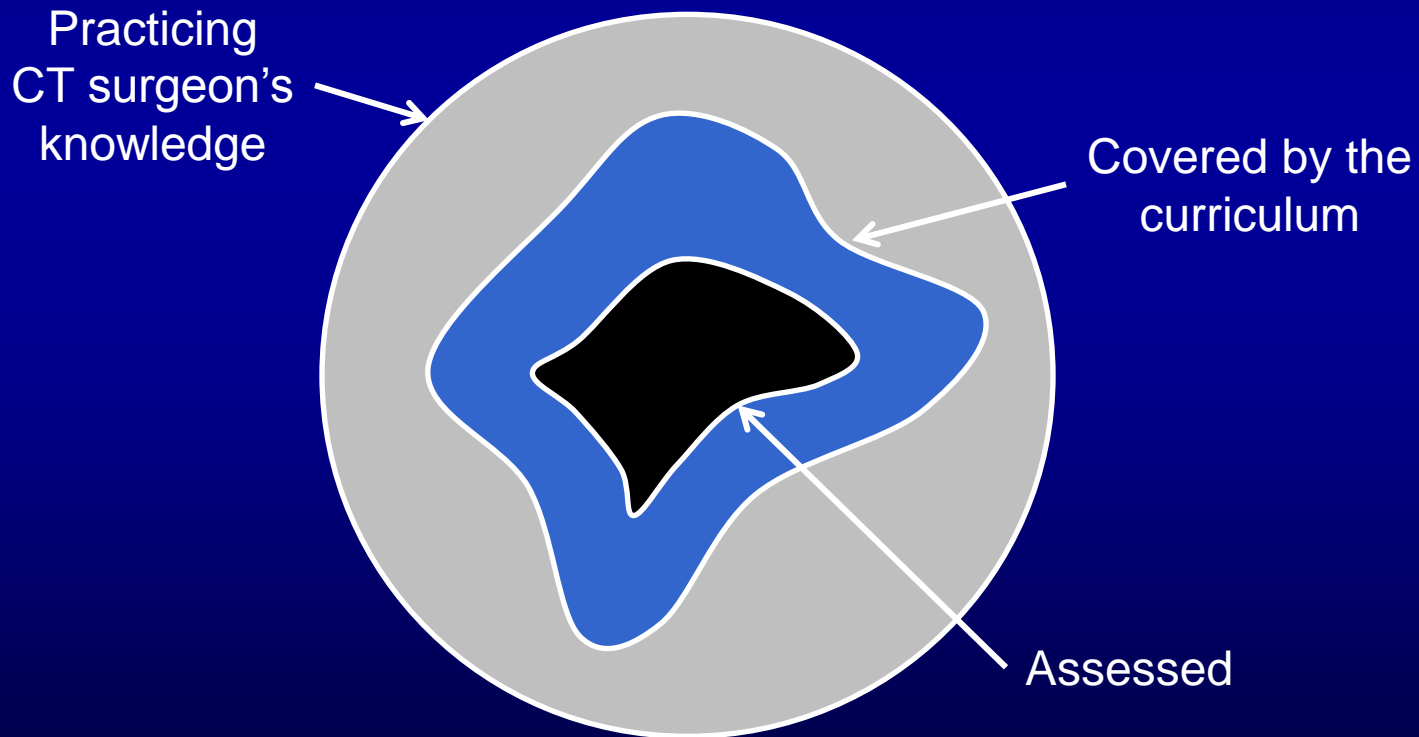
- **Set Goals and Objectives**

General needs – Targeted Needs = Goals and Objectives

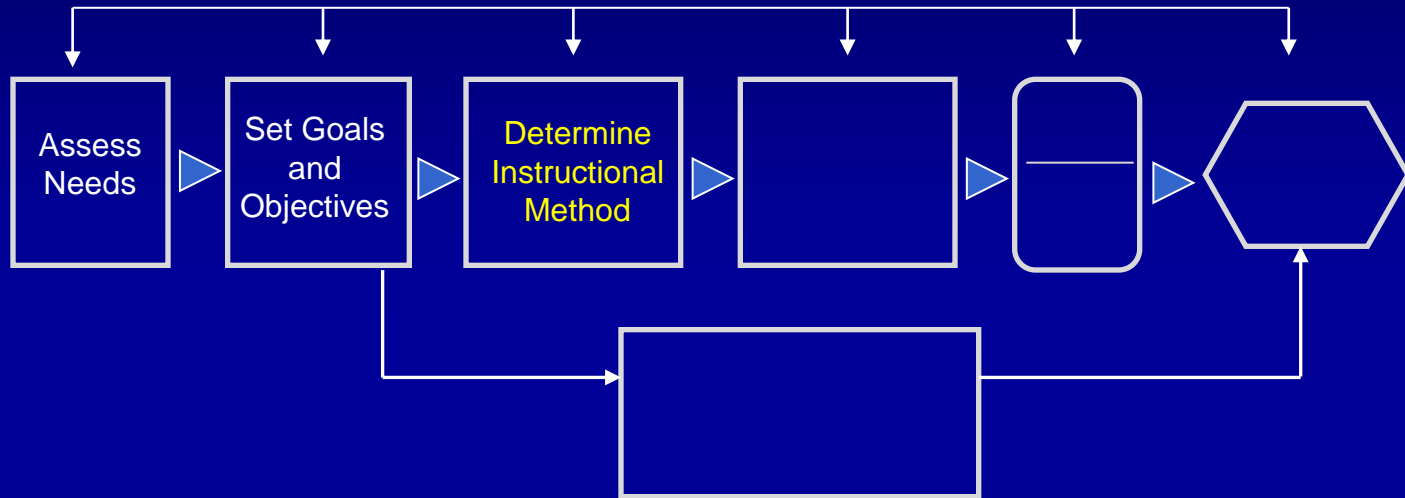
- Template exists for standard 2 and 3 year programs
- Wide variability for I-6 programs

Set Goals and Objectives

- You cannot teach everything...
- You can assess even less...

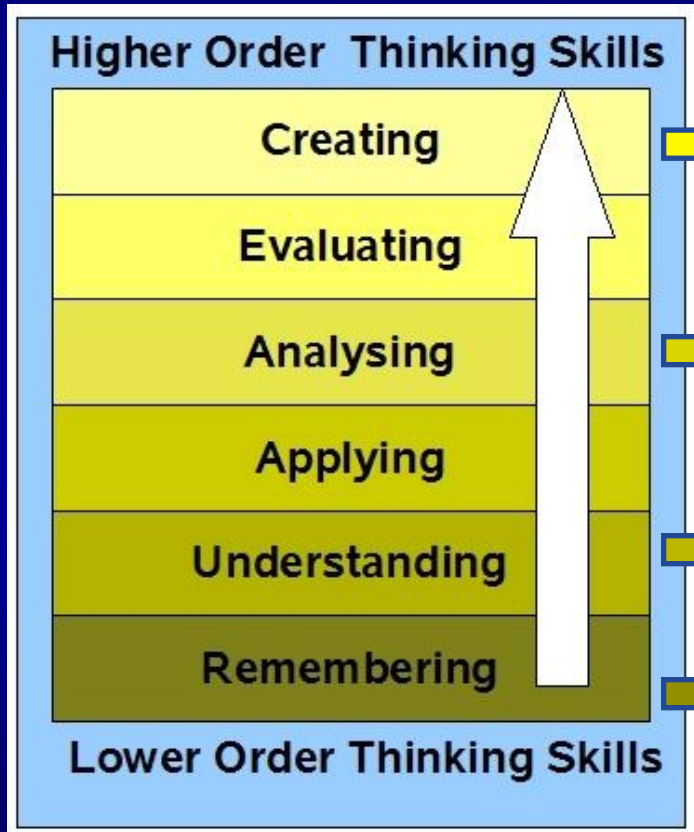


What are the components?



- Determine Instructional Methods
 - All objectives are not the same
 - All learners are not the same

Variation Among Objectives



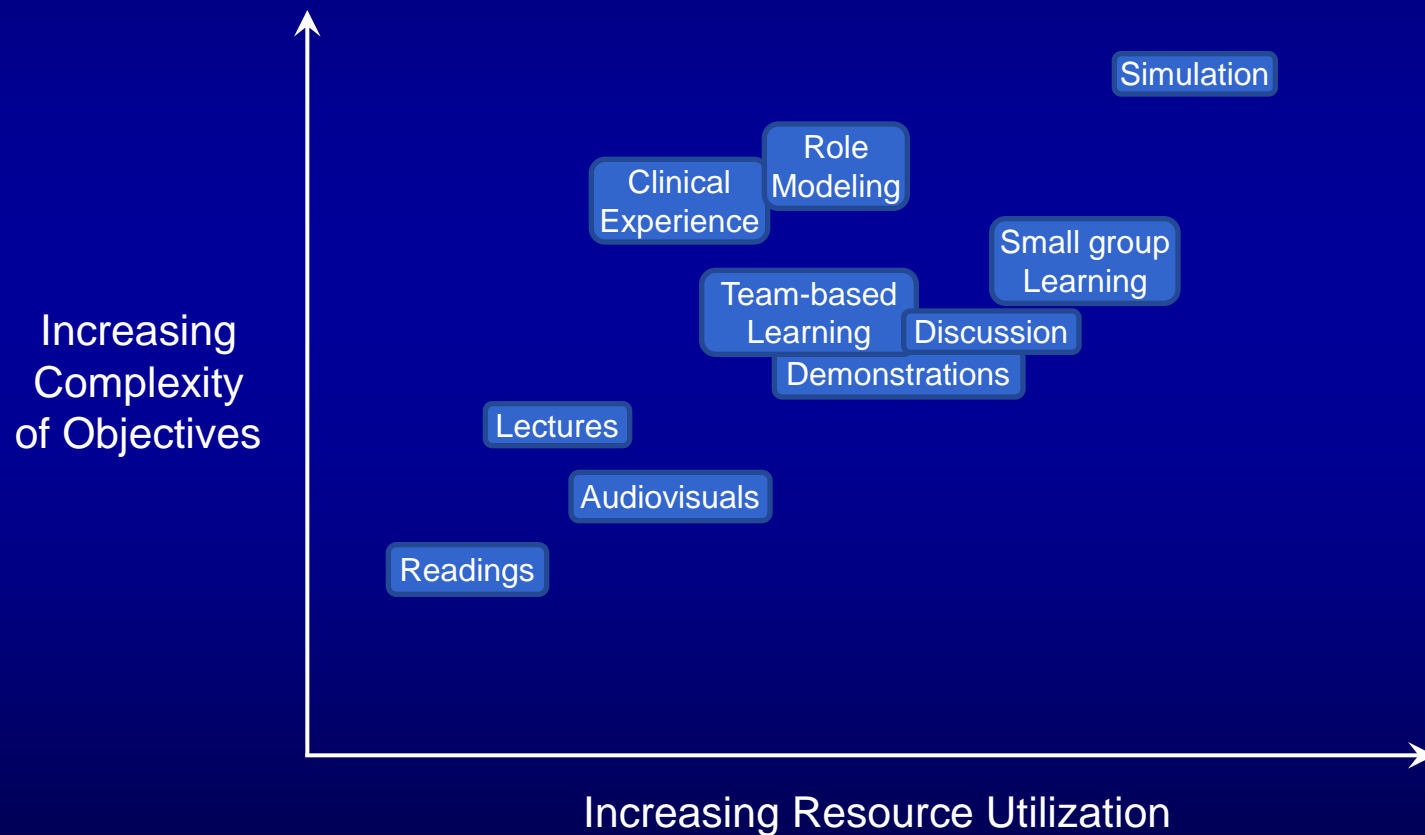
Given a patient with the common signs and symptoms of coronary artery disease the trainee will design an evaluation and treatment plan

Given an image from a cardiac cath, the trainee will be able to differentiate normal, non critical, and critical stenosis

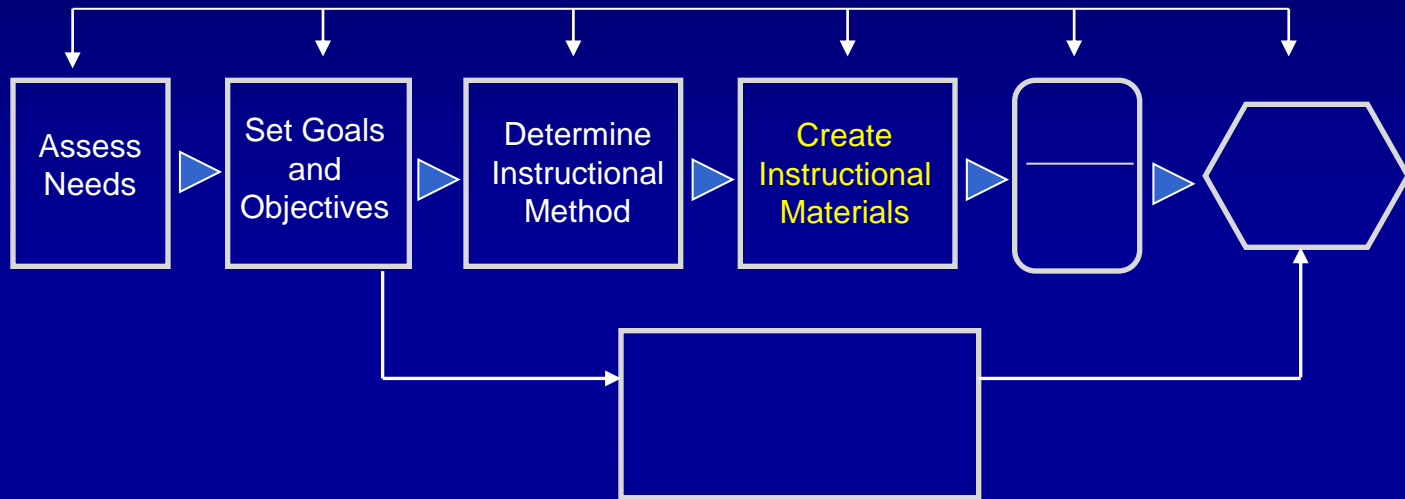
Summarize the common findings associated with coronary artery disease seen on angiography

Given a view from a cardiac cath, the trainee will be able to identify the specific coronary vessel being imaged

Instructional Methods



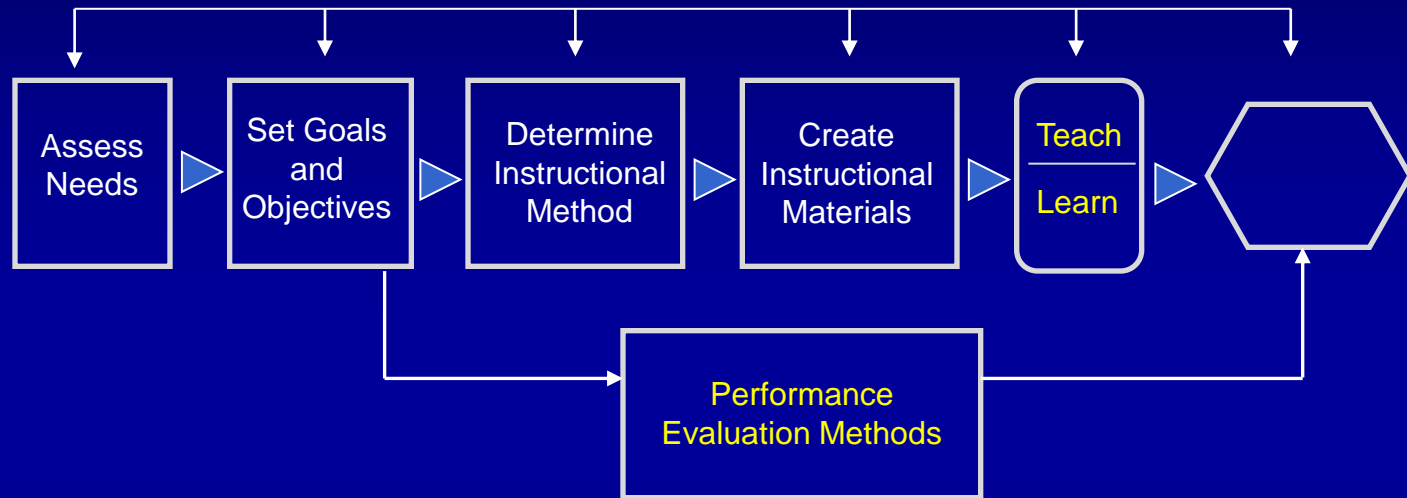
What are the components?



- **Create Instructional Material**

- Large volumes of content are already available
- Avoid “curriculumegally”

What are the components?

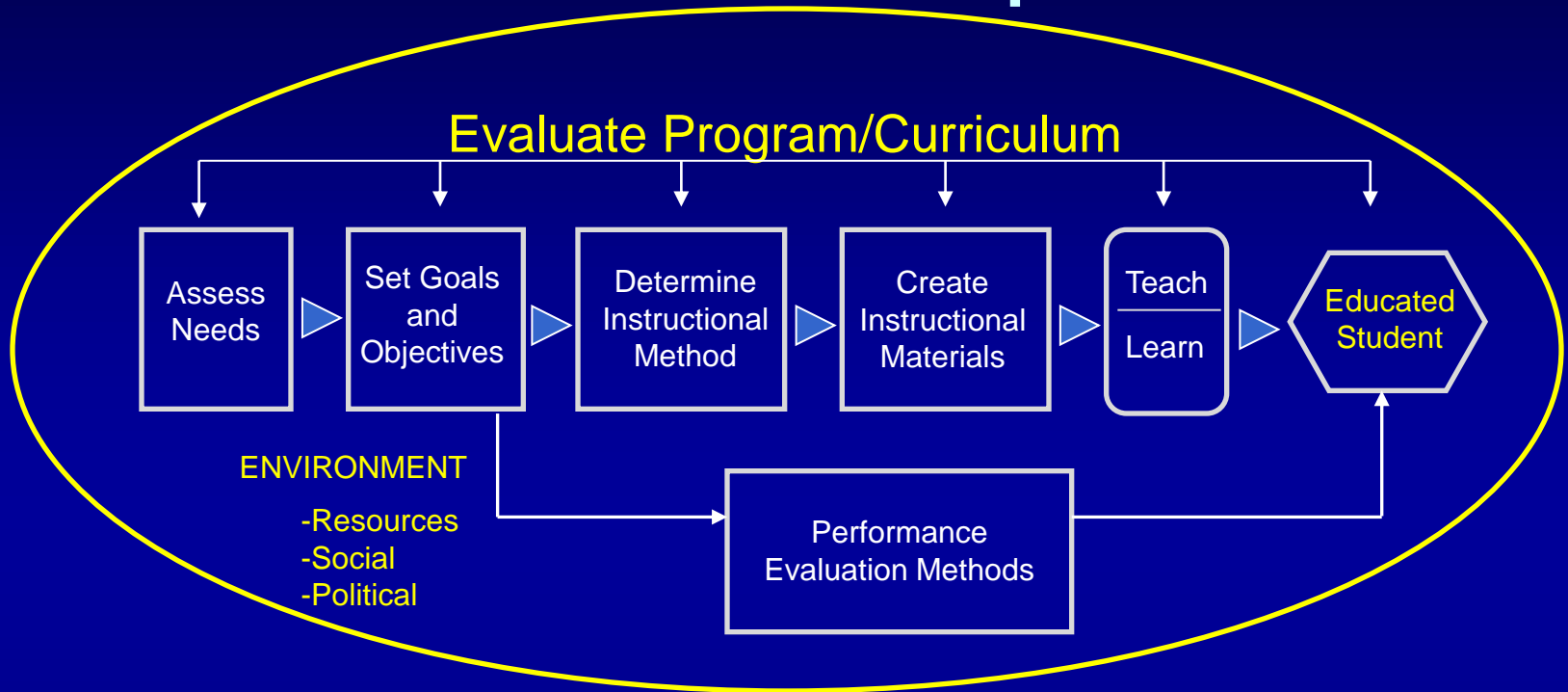


- **Assessment**

- Direct observation, evaluation forms
 - Not very reliable or valid but can provide formative feedback
- In-training exam, ABTS certification
 - Reliable but questionable validity and mostly summative

} Very little is competency based

What are the Components?



- Implementation and Programmatic Evaluation
 - Implementation is program dependent
 - Evaluation is not based on achieving objectives

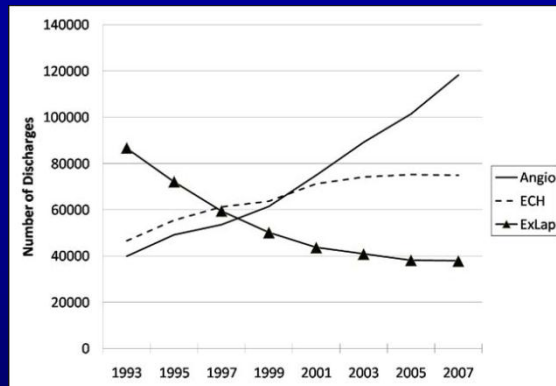
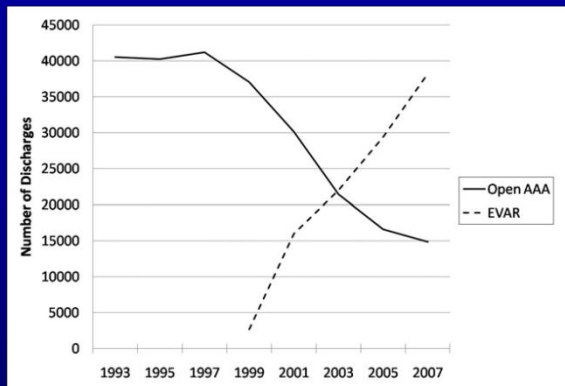
Conventional 2 or 3 Year versus Integrated 6 Year

- Why did conventional 2 or 3 year programs work?
 - Necessary basic skills obtained in general surgery
 - High volume open surgery
 - Exposure to CT surgery common
 - Limited number of objectives in early CT surgery
 - CT surgical practices were clinically heavy
 - Clinical experience
 - Role modeling

Easy to implement

Conventional 2 or 3 Year versus Integrated 6 Year

- Why move to an Integrated 6 year program?
 - The product of GS training has changed
 - Major shift in their curriculum
 - Major shift in the applicant pool



The changing face of the general surgeon: national and local trends in resident operative experience.
Eckert M et al. Am J of Surg. 2010

The basic skill set we rely on has changed!

Conventional 2 or 3 Year versus Integrated 6 Year

- Why move to an Integrated 6 year program?
 - The product of GS training has changed
 - Variety of operations have increased
 - ABTS case requirements remain vague
 - Still no requirement to deal with complications of surgery

The final product we are now required to produce is
much more complex!

Conventional 2 or 3 Year versus Integrated 6 Year

- Why move to an Integrated 6 year program?
 - The product of GS training has changed
 - Variety of operations have increased
 - Available clinical material has decreased

Conventional 2 or 3 Year versus Integrated 6 Year

- Why move to an Integrated 6 year program?
 - The product of GS training has changed
 - Variety of operations have increased
 - Available clinical material has decreased
- What new problems will an Integrated 6 year program introduce?
 - A totally new curriculum will need to be developed!
 - We need educators who understand curriculum construction

Improving CT Surgical Educators

- JCTSE
 - Create an “Army of Educators”
 - Principles of adult education
 - Curriculum design
 - Selection of instructional methods
 - Assessment tool development
 - Program evaluation

Improving CT Surgical Educators

- JCTSE
 - Create an “Army of Educators”
 - Future Directions
 - Explore and disseminate new instructional methods
 - Develop standards for competency

Educate the Educator

- Replicates the ACS Surgeons as Educators course
- 2.5 day course concurrent with the TSDA Boot Camp
- Instructors
 - 3 Thoracic Surgeons
 - 3 PhD educators
- Topics addressed

How People Learn

Curriculum design

Formative feedback

Teaching in the OR

Skills acquisition teaching

Multi-media lecture design

Education as a career path

Deb DaRosa

Ara Vaporciyan

Ara Vaporciyan and Maura Sullivan

Steven Yang and Ed Verrier

Maura Sullivan

Steven Yang

Ara Vaporciyan and Steven Yang

Educate the Educator

- Attendees
 - 40 faculty
 - 40 institutions with ACGME approved programs
 - Majority were young (70% <5 years in practice)
- Impact
 - Highly rated by all attendees
 - Majority (>80%) agreed they would pay to attend such a course
 - Leadership agreed to repeat the course in 2011.

Educate the Educator

- Additional spin-off efforts
 - Quarterly webinar on education
 - Maintain open communication
 - Address local concerns/problems in real-time
 - Mini-EtE at the AATS meeting
 - Expand attendance to programs without existing training programs
 - Educational Club
 - Present educational projects and allow informal discussion and collaboration
 - Development of an Academy of Educators
 - Increase promotional value of educational effort

Improving CT Surgical Educators

- JCTSE
 - Create an “Army of Educators”
 - Future Directions
 - Explore and disseminate new instructional methods
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Future Directions

- Instructional design improvements
 - Simulation
 - Procedural
 - Decision making
 - Error management
 - Team training



Future Directions

- Instructional design improvements
 - Simulation
 - E-Learning
 - Organize content
 - Online education
 - Collaboration
 - Experiential learning
 - Feedback



Future Directions

- Instructional design improvements
 - Simulation
 - E-Learning
- Assessment
 - Simulation
 - Formative feedback
 - Summative feedback
 - requires high reliability and strong validity data

ORIGINAL ARTICLE

ACTA RADIOLOGICA

The Use of Virtual Reality for Training in Carotid Artery Stenting:
A Construct Validation Study

M. BERRY, R. REZNICK, T. LYSTIG & L. LÖNN

Department of Radiology, Sahlgrenska University Hospital, Sahlgrenska Academy at Göteborg University, Göteborg, Sweden; Department of Endovascular Surgery, Faculty of Health Sciences, University of Copenhagen, Copenhagen, Denmark; Department of Surgery, University of Toronto, Toronto, Canada AstraZeneca AB, Mölndal, Sweden

Future Directions

- Instructional design improvements
 - Simulation
 - E-Learning
- Assessment
 - Simulation
 - E-learning
 - Online assessment
 - Quizzes, collaborative assignments, virtual patients...



Summary

- Reinvention of our educational system requires...
 - Development of a new restructured curriculum
 - A critical mass of educators who understand the steps involved
 - Exploration of new tools to instruct and assess