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Assessment of Learning Outcomes & the Concept of Value Added Score

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Workshop Overview

- I. Why Outcomes Assessment?
- II. The Case for and Against
- III. Process and Literature
- IV. Practical Examples
- V. Case Study Presented by Reuben Topchyan
- VI. Role of Quality Assurance (accreditation)
- VII. Value Added Score

Outcomes-Based Assessment – Why?

- A commitment to being learner centered
- Visible in teaching and learning
- Concerns that the traditional paradigm of large lecture formats sprinkled with an occasional question and answer session is no longer effective

The Case for Outcomes Assessment



The initiate-respond-evaluate cycle:

*I'll ask the question,
a few of you will answer
for the entire class,
and we'll all pretend
this is the same thing as learning.*

Fisher and Frey, 2007



The Case for Outcomes Assessment

The more you teach without finding out who understands the concepts and who doesn't, the greater the likelihood that only already-proficient students will succeed.

Grant Wiggins, 2006



The Case for Outcomes Assessment

The worst scenario is one in which some pupils who get low marks this time also got low marks last time and come to expect to get low marks next time.

This cycle of repeated failure becomes part of a shared belief between such students and their teacher.

Black and Wiliam, 1998

Concerns and Objections

“It’s inflexible, mechanic, and reductionist.”

“It privileges lower-order measurable knowledge and skills.”

“Its unresponsive to multiple intelligences and diverse learning styles.”

“It has a tendency to be highly prescriptive for both learners and educators, inhibiting creativity and flexibility.”

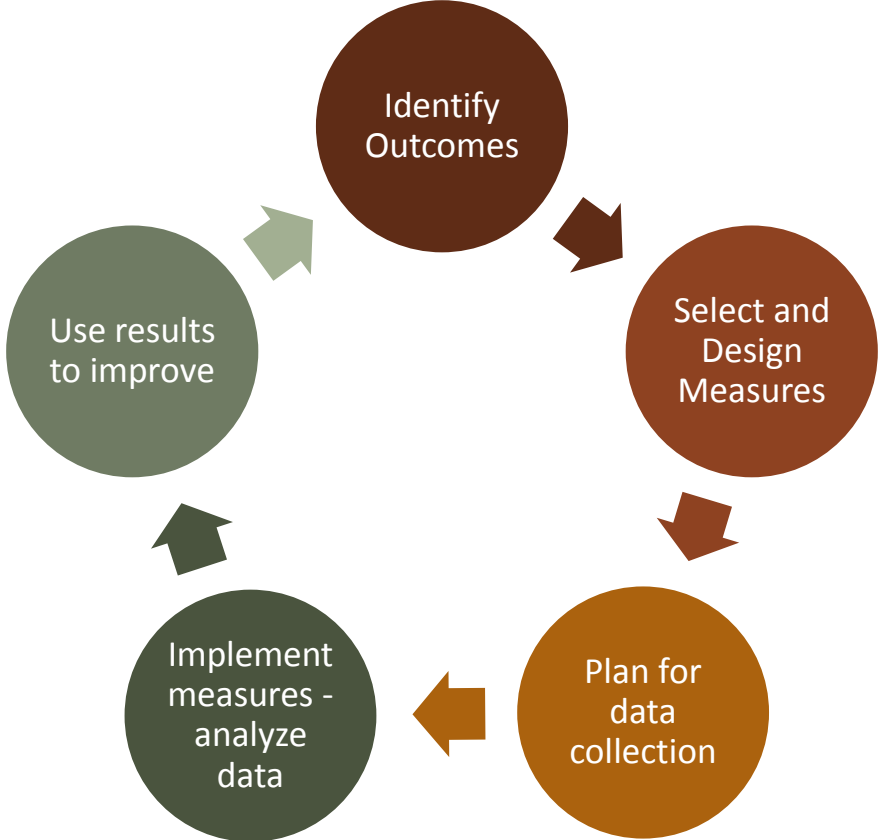
“True education cannot be measured.”

A Culture of Inquiry – the Big Questions

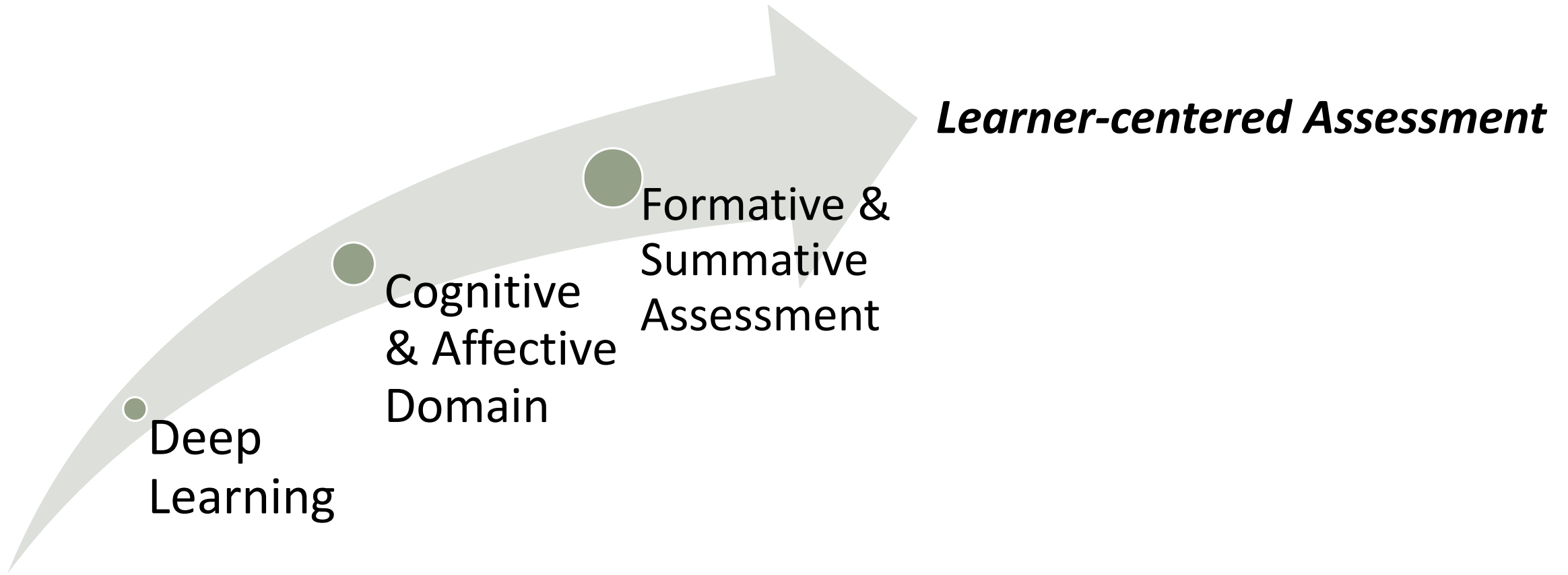
What do we want our university graduates to be able to do and be?

What do we expect our students who major in _____ to be able to do and be?

Outcomes Assessment Learning Community



The Building Blocks



Comparison of Surface Learning and Deep Learning

SURFACE LEARNING	DEEP LEARNING
Unrelated bits of knowledge	Relationships
Memorization, following directions	Patterns, principles, integration
Difficulty with “making sense”	Logic, evidence, conclusions
Study without strategy or reflection	Understanding, metacognition
External motivation	Internal motivation
Little meaning, tasks	Active interest, engagement

Source: Adapted from *Achieving Deep Learning* by N.J. Entwistle (2000) , Chicago, IL

Levels of the Cognitive Domain

LEVELS	LEARNER OUTCOMES
Knowledge	defines, repeats, lists, names, observes, memorizes, recites, listens, selects, draws, fills in, records, asks
Comprehension	restates, describes, explains, tells, identifies, discusses, reports, estimates, paraphrases, documents, defends, generalizes
Application	Changes, computes, demonstrates, shows, operates, uses, solves, sequences, tests, classifies, translates, employs, constructs, interprets, writes
Analysis	Dissects, distinguishes, differentiates, calculates, texts, contrasts, debates, solves, experiments, relates, maps, categorizes, subdivides
Evaluation	Compares, concludes, contracts, criticizes, justifies, supports, states, appraises, discriminates, summarizes, recommends, decides, selects
Synthesis	Creates, composes, proposes, formulates, sets up, assembles, constructs, manages, invents, produces, hypothesizes, plans, designs, creates, organizes

Levels of the Affective Domain

From the simple to the complex:

Receiving requires learners to attend – to listen, notice, observe

Responding asks learners to discuss, argue, agree/disagree in response to what is heard or observed

Valuing requires learners to consider what was received, to use it to make decisions about its importance, to regard it as priority and place a value on it

Organizing requires learners to place values in relationship to other values, to organize judgements and choices, and to be influenced by the value

Characterizing, the highest level, requires learners to organize their values to the point that they are internalized or become part of the learners' lives

Levels of the Psychomotor Domain

-----Increasing Complexity----->				
Imitation	Manipulation	Precision	Articulation	Naturalization
Observing and copying another's action/skill	Reproducing action/skill through instruction	Accurately executing action/skill on own	Integrating multiple actions/skills and performing consistently	Naturally and automatically performing actions/skills at high level
Adhere Copy Follow Repeat Replicate	Build Execute Implement Perform Recreate	Calibrate Complete Control Demonstrate Perfect Show	Adapt Combine Construct Coordinate Develop Formulate Integrate Master	Design Invent Manage Project Specify

Formative and Summative Assessment

Formative – ongoing assessment that provides information about progress, misunderstanding, need for clarification

Summative – a final process that follows the sequence of teaching and learning, providing students with an opportunity to summarize what they have learned and integrate it with new ideas or experiences.

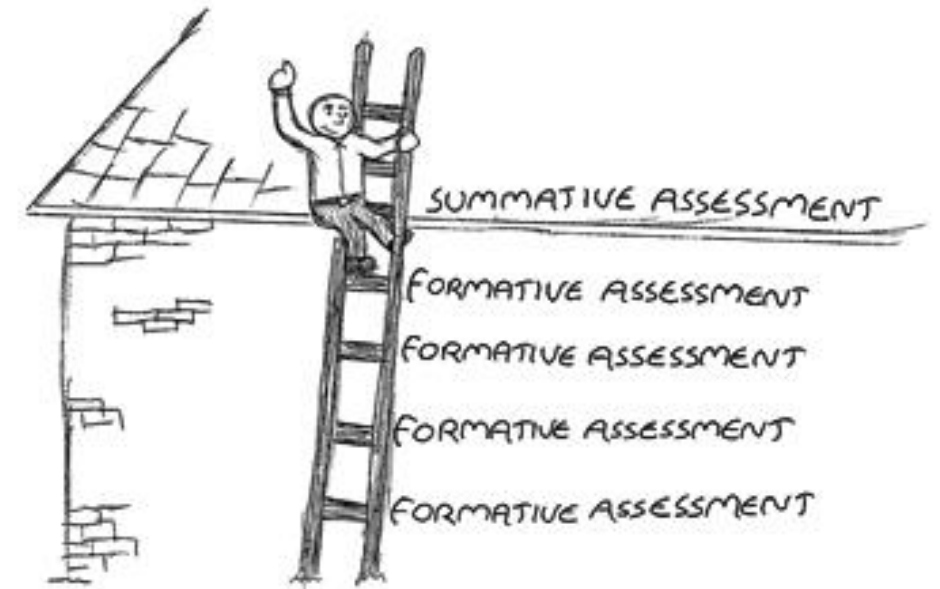


Image credit: <http://katienovakudl.com/formative-vs-summative-assessments/>

Using Learning Outcomes as a Centerpiece

Learning outcomes are the centerpiece at all levels – the course, the program, the degree

But, they do not stand alone

Evidence, criteria and standards together with outcomes build the curriculum.

Outcomes, Evidence, Criteria, Standards

OUTCOME:	Students articulate an individual code of ethics and apply it to personal decisions of integrity.
EVIDENCE:	<ul style="list-style-type: none">•Written personal code with discussion of two different decisions of integrity•Multimedia presentation on personal code•Letter of application for employment responding to questions of ethics
CRITERIA:	Reflection – Multiple Perspectives – In-depth analysis
STANDARDS:	FOR <i>Reflection</i> <i><u>Excellent</u> – the student consistently raises questions, analyses assumptions, connects with previous experiences, elaborates on implications for future actions</i> <i><u>Satisfactory</u> – the student raises questions, begins to connect with previous experiences and occasionally assess decisions, identifies assumptions</i> <i><u>Unsatisfactory</u> – the student moves through the decision-making process with few questions and unaware of the influence of assumptions</i>

What are your evidence, criteria and standards?

Overarching question for students taking a general education course on Museum Studies:

How do museums give voice to underrepresented populations and perspectives and facilitate the transformation of social structures to create a more inclusive, interactive discussion of history, society and culture?

Develop evidence, criteria, and standards for these student learning outcomes:

- 1. Identify and analyze how museums serve and reflect multiple communities in terms of representation and relevance.**
- 2. Analyze and articulate the internal and external economic and social pressures that influence the choices made by museum personnel, boards and volunteers with regard to the development of collections and exhibits.**

Assessment of Learning Outcomes in Practice

Region A Community College – Discipline Assessment Cycle

The Discipline Assessment Cycle (DAC) pulls together information at the course- and program-level, together with data regarding general education, departmental snapshots, and relevant skills. The framework of the DAC is designed to promote meaningful assessment, while simultaneously providing a source of assessment information from across the institution. The data gathered is then forwarded to other processes and bodies within the college where such information is needed, such as Master Planning, Budget Development, and committees and councils, such as the Academic and Campus Affairs Council. It also serves to provide documentation to outside accrediting bodies.

Discipline = areas of study (e.g., psychology, information technology, accounting)

The Assessment Cycle

- identifying Program-Level Student Learning Outcomes, General Education Competencies, and Course-Level Student Learning Outcomes;
- measuring these outcomes;
- analyzing the results of the measures;
- creating an action plan for improvement;
- implementing this action plan; and
- “closing the loop” by assessing and evaluating the results of the action plan.

Program Level Student Learning Outcome

Definition:

A Program-Level Student Learning Outcome (PSLO):

- is a statement defining the knowledge or skills that students are expected to possess upon the successful completion of an award;
- must be measurable and meaningful so data can be gathered on the extent to which a student has achieved the PSLOs;
- reflects the culmination of what students learn across the degree's required courses, rather than what students learn in one specific course; and
- is introduced in one course and further reinforced and developed in later courses.

Award: AAS and Certificate in Child Development

Program-Level Student Learning Outcomes

Required Courses

Upon completion of the AAS in Child Development students will be able to:

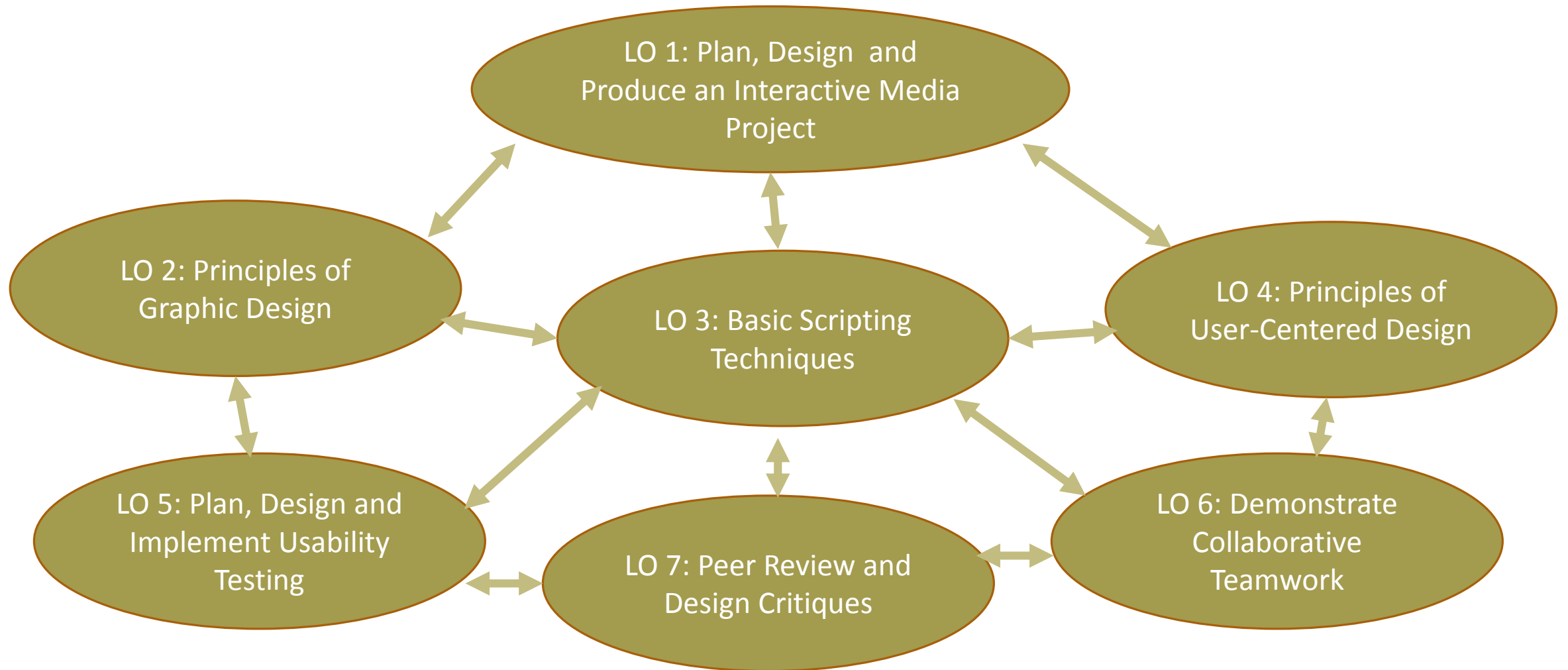
	CDEC 1303	CDEC 1311	CDEC 1392	CDEC 1413	CDEC 1419
1. use developmental knowledge to create healthy, respectful, supportive, and challenging learning environments;		X		X	X
1. observe, document, and assess to support young children and their families;		X	X		X
1. build family and community relationships;	X		X	X	
1. design, implement, and evaluate meaningful, challenging curriculum to promote positive outcomes; and			X	X	X
1. discuss and uphold ethical standards and other professional guidelines.	X	X	X	X	X

Program Level SLO to be Assessed:	Upon completion of the AAS or Certificate in Child Development, students will be able to observe, document, and assess to support young children and their families.
Please describe the assessment method including how it will be scored.	Students are assigned to complete a child study that includes a child assessment based on observations. As part of the child assessment, students will develop curriculum tailored to the child's developmental needs. Upon completion of the child study, the students present their findings to the class simulating a parent conference
Who will be responsible for collecting the data?	All faculty (fulltime and adjunct) will use a rubric to determine students' achievement levels.
When will the data be collected?	All faculty members teaching CDEC 1392. End of Fall 2011 semester.
In which course(s) will the data be collected?	In CDEC 1392.
What is the individual student level of achievement you hope to reach?	Students will meet or exceed expectations in all categories on the rubric.
What is the program target level of achievement you hope to reach?	80% of students will meet or exceed expectations as outlined on rubric.
How will departmental faculty be engaged in analyzing this data?	Faculty members record the rubric outcomes on a summative form and send the completed forms to the Department's Data Coordinator. The Department Data Coordinator averages the scores and compares them to the target level of achievement.
Who will be coordinating the assessment project?	The Department Data Coordinator

Award (Programs): AAS and Certificate in Child Development	
Program-Level Student Learning Outcome Assessed: Upon completion of the AAS or Certificate in Child Development, students will be able to observe, document, and assess to support young children and their families.	
How was the action strategy implemented?	Faculty met and discussed the previous semester's assessment and disappointing results. The decision was made to add an additional child observation exercise in each of the two prerequisite courses. Those courses' curricula were altered accordingly.
Please describe any changes in student success that have emerged since the action strategy was implemented.	When CDEC 1392 was assessed this following year, the results indicated a significant improvement of student achievement of the PSLO. 48 students completed the child assessment. Of these 48 students: <ul style="list-style-type: none"> ▪ 22 (46%) exceeded expectations ▪ 15 (31%) met expectations ▪ 8 (17%) approached expectations ▪ 3 (6%) were below expectations
What conclusions did the faculty reach based on their discussion of the implementation and progress on the action strategy?	The action strategy was successful
Will the action strategy be revised? If so, please describe how.	No

General Education Competencies	Core Curriculum Courses					
Upon completion of the general education component of an associate's degree, students will demonstrate competence in:	PHYS 1401	PHYS 1402	PHYS 1405	PHYS 1407	PHYS 2425	PHYS 2426
1. Analyzing and critiquing competing perspectives in a democratic society. (Civic Awareness)						
1. Gathering, analyzing, synthesizing, evaluating and applying information. (Critical Thinking)	X	X	X	X	X	X
1. Comparing, contrasting, and interpreting differences and commonalities among peoples, ideas, aesthetic traditions, and cultural practices. (Cultural Awareness)						
1. Identifying and applying ethical principles and practices. (Ethical Reasoning)						
1. Interacting collaboratively to achieve common goals. (Interpersonal Skills)	X	X	X	X		
1. Demonstrating effective learning, creative thinking, and personal responsibility. (Life/Personal Skills)						
1. Applying mathematical, logical and scientific principles and methods. (Quantitative and Empirical Reasoning)	X	X	X	X	X	X
1. Using appropriate technology to retrieve, manage, analyze, and present information. (Technology Skills)	X	X	X	X	X	
1. Communicating effectively, adapting to purpose, structure, audience, and medium. (Written, Oral and Visual Communication)						

Webbing Learning Outcomes for Connectedness



Rethinking “employer – academy” conversation

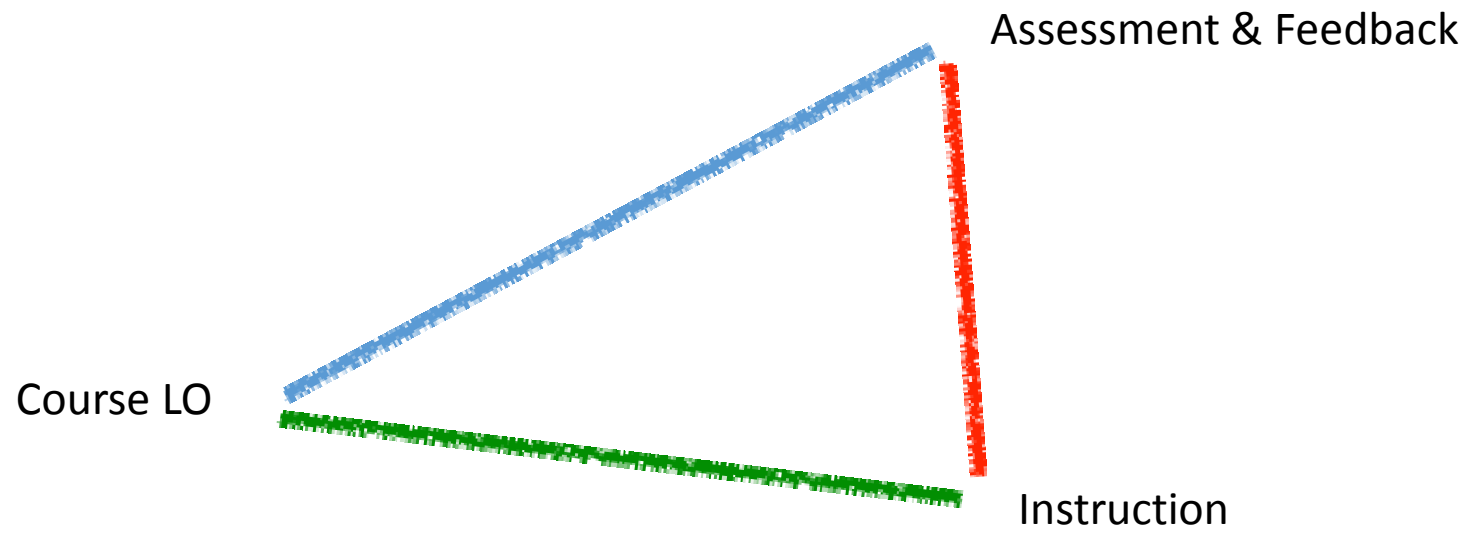
3D geometry of alignment

Triangulation

Dr. Ruben Topchyan, ANQA, Armenia



Alignment channels - 2D



Alignment channels - 3D

Program LO

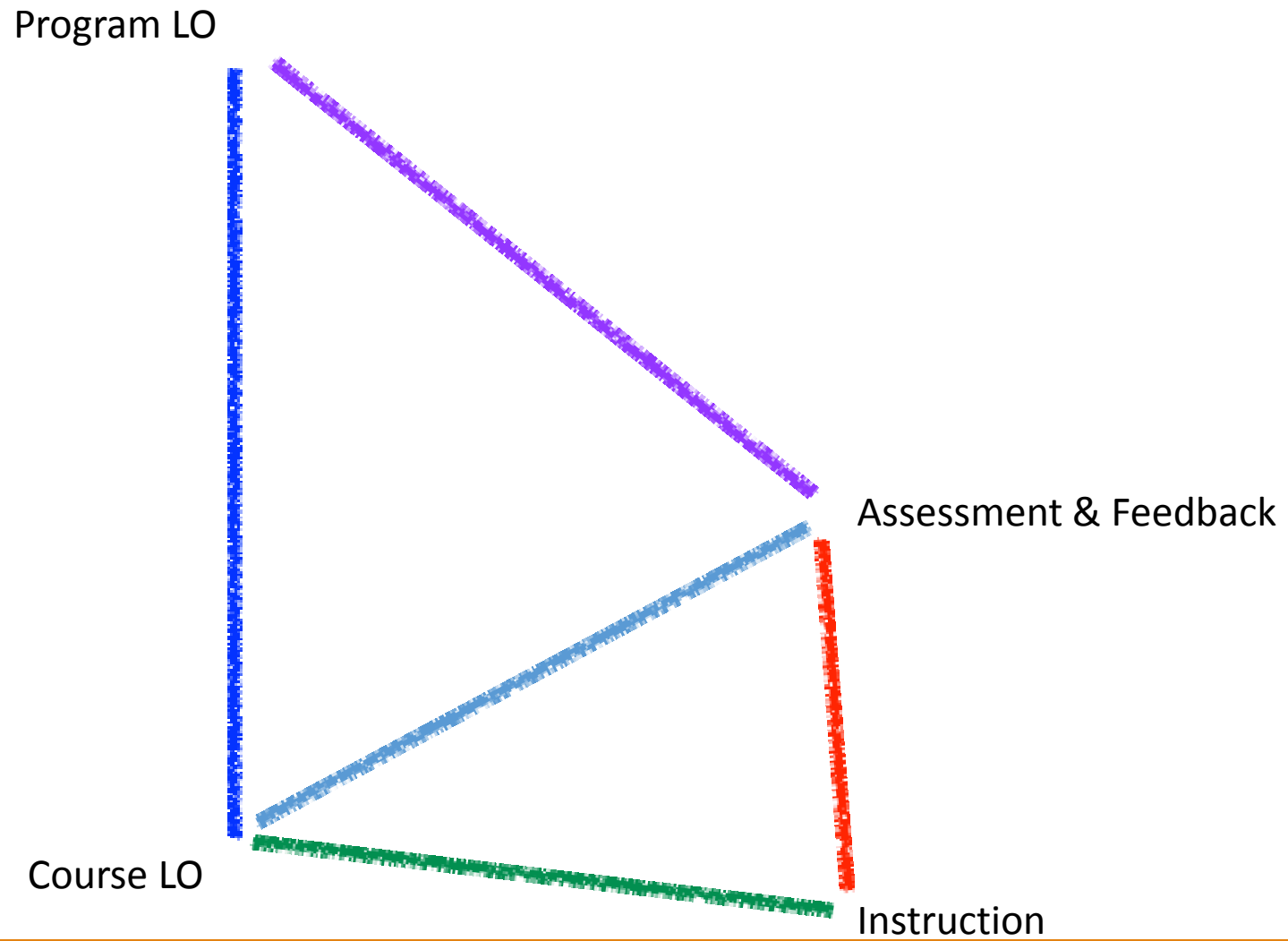
Course LO

Assessment & Feedback

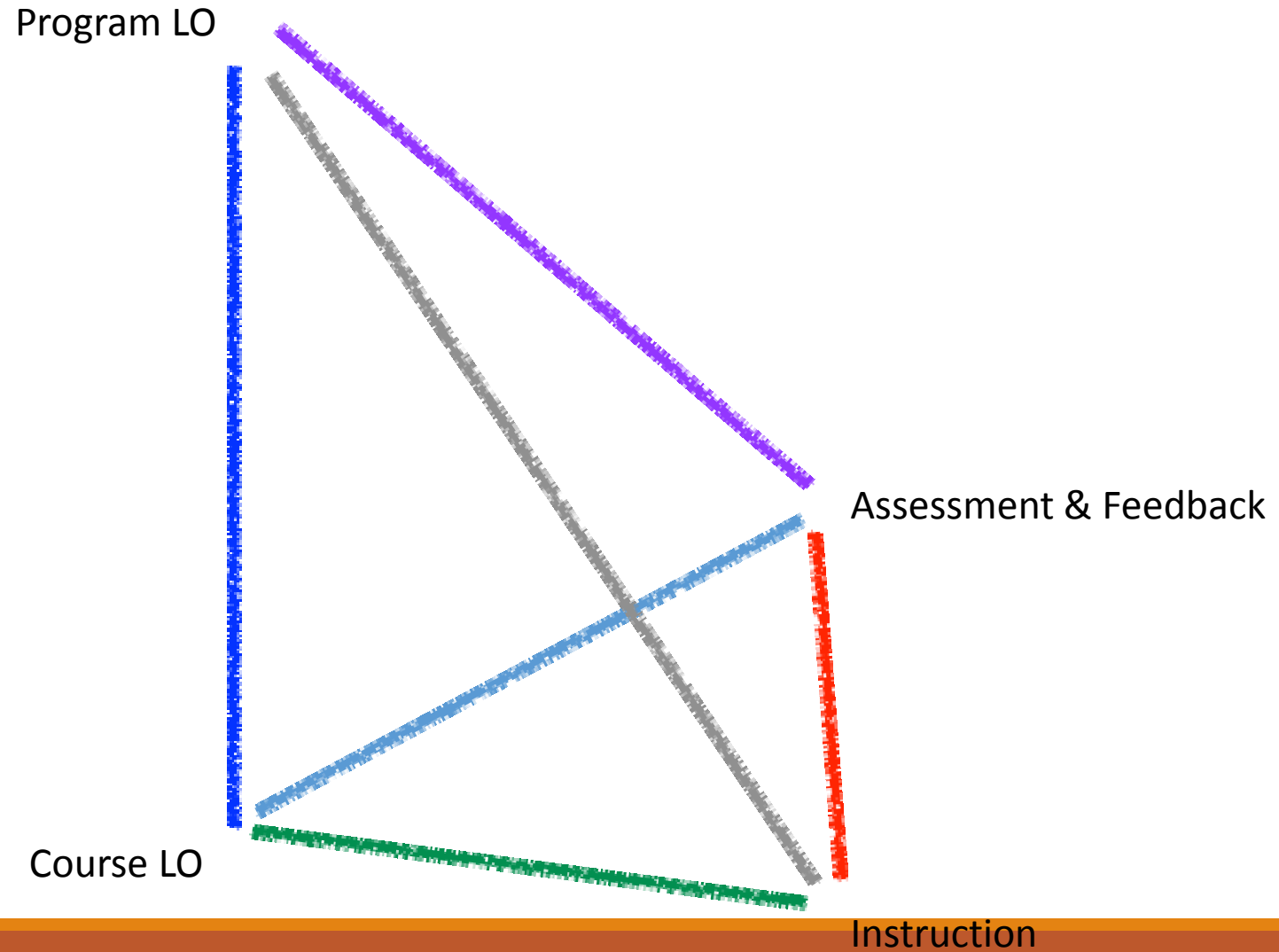
Instruction



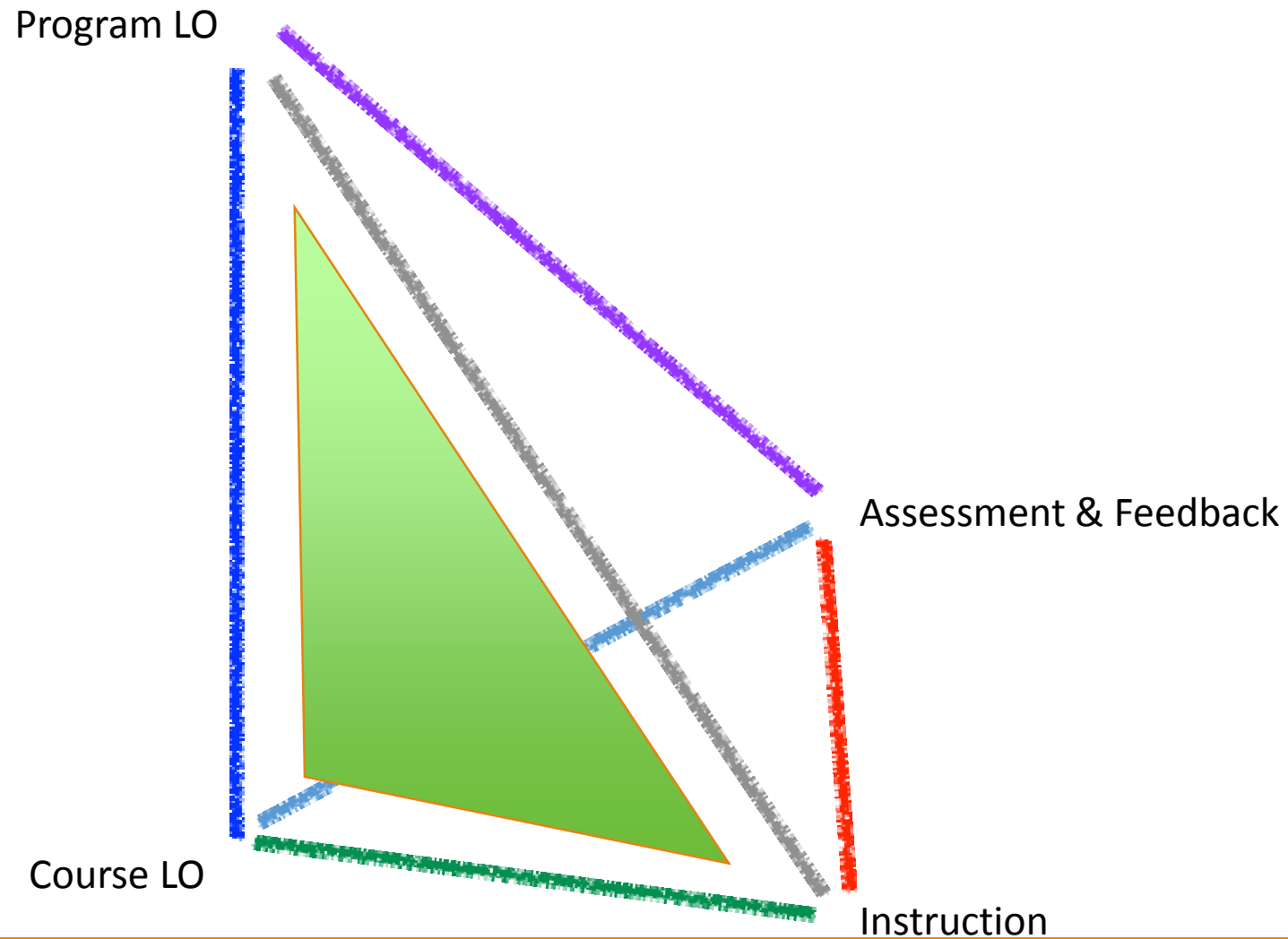
Alignment channels - 3D



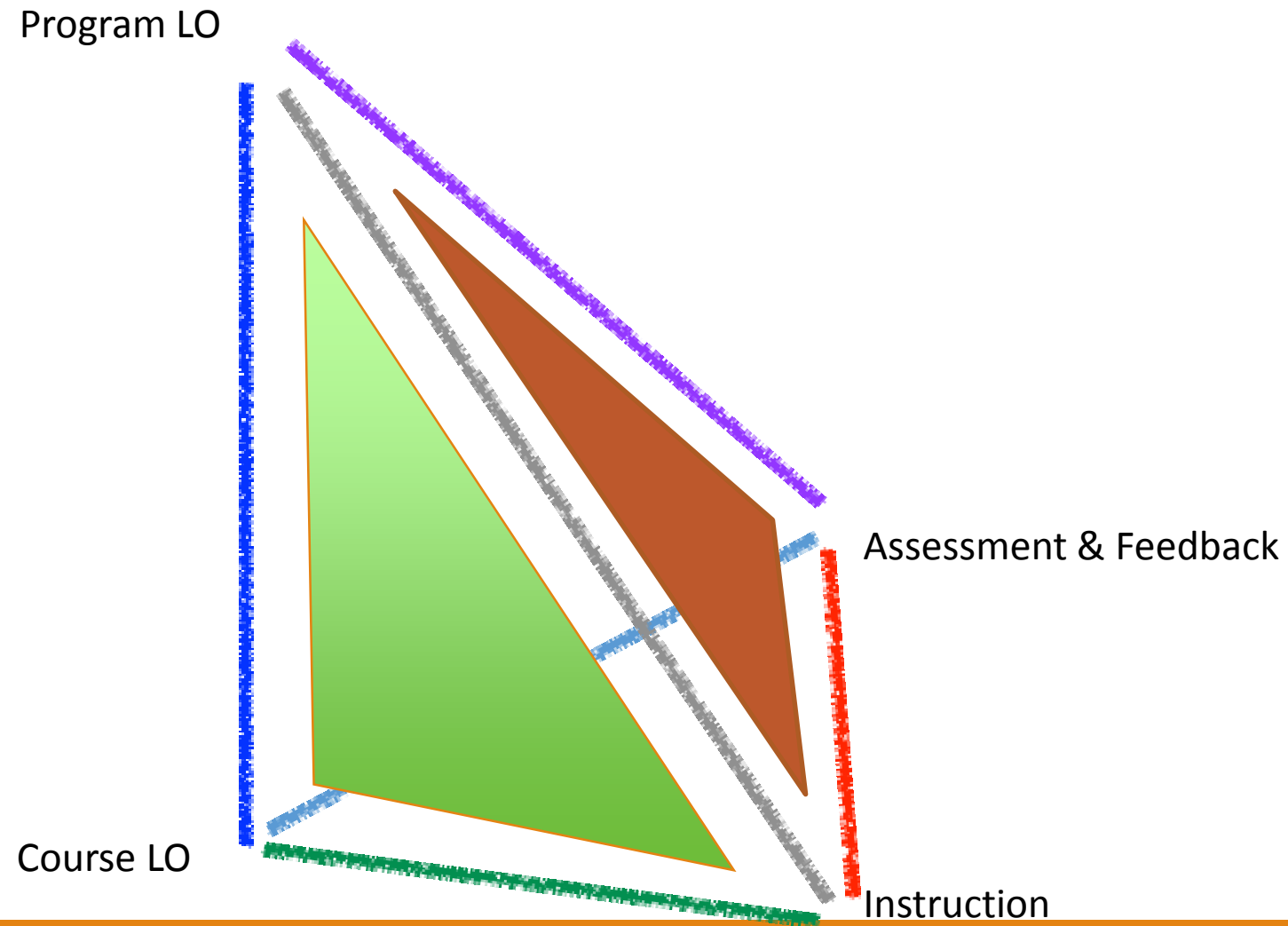
Alignment channels - 3D



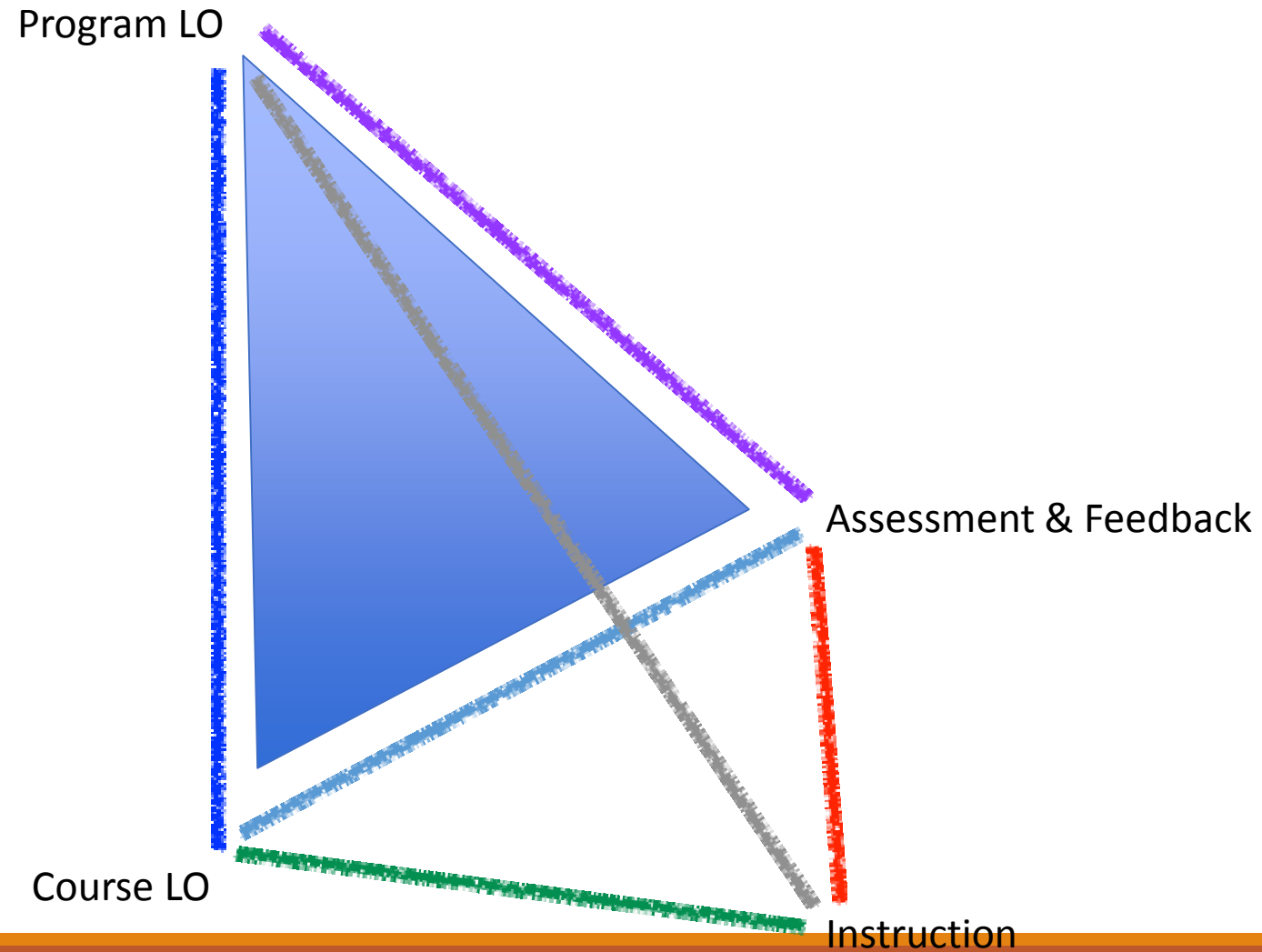
Alignment channels - 3D - triangulation



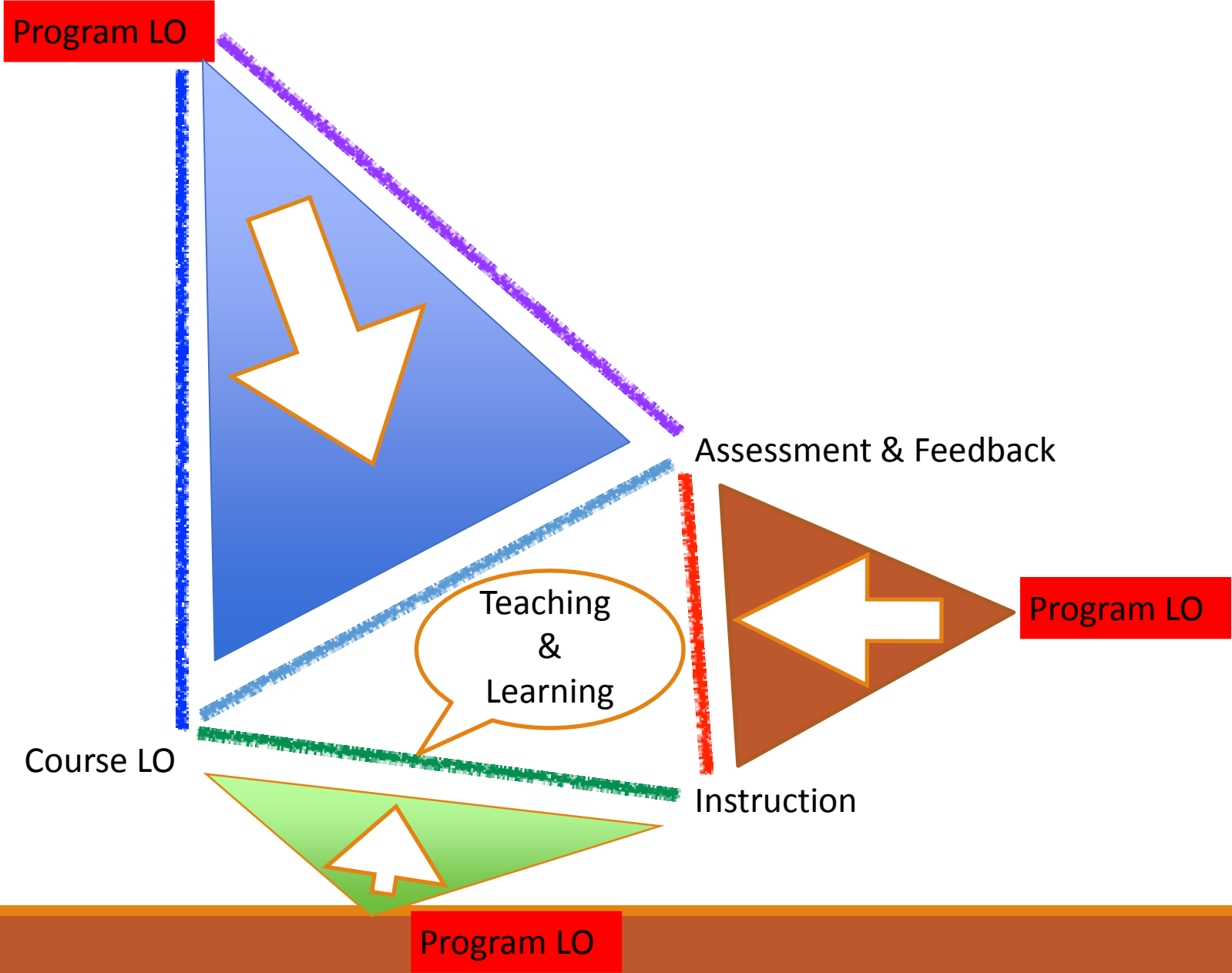
Alignment channels - 3D - triangulation



Alignment channels - 3D - triangulation

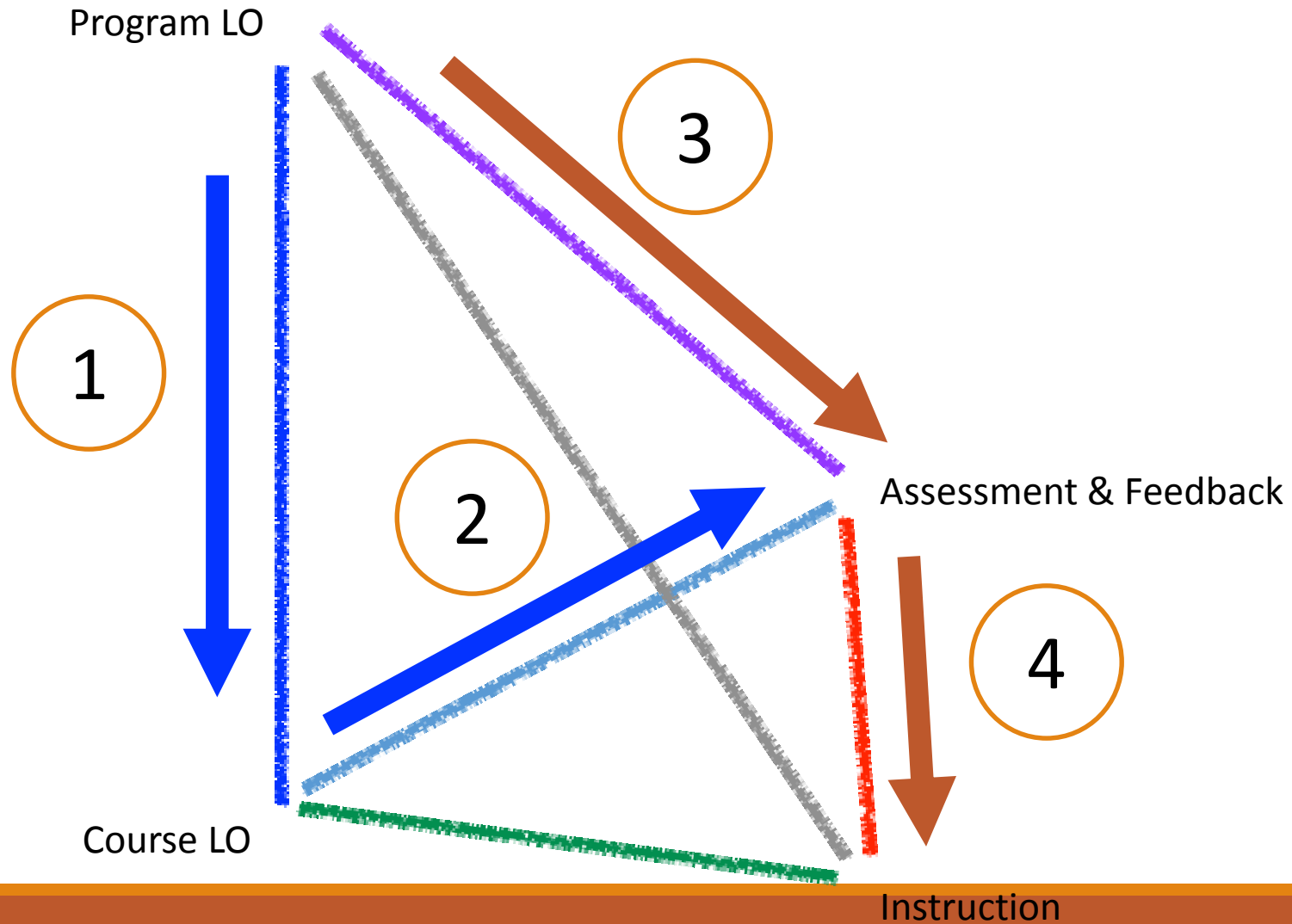


Alignment channels - 3D - Inheritance



Alignment channels - 3D inheritance & completeness

Employer context



What we observe is eternal tandem: employers – students - HEI

Couldn't you
come up with
useable skills?
So sad, total
losers!

EMPLOYERS



STUDENTS

?

ACADEMY

How employers are engaged in academic program development?

1. General feedback on curricula
2. Opinion on formulation of pLO
3. Opinion on formulation of cLO

The result is always insufficient and fragmented.

Lack of practical skills among students 🤖

No common language

There is divergence between concepts used by both sides

ACADEMY

Learning outcomes

Knowledge

Skills

Competences

EMPLOYER

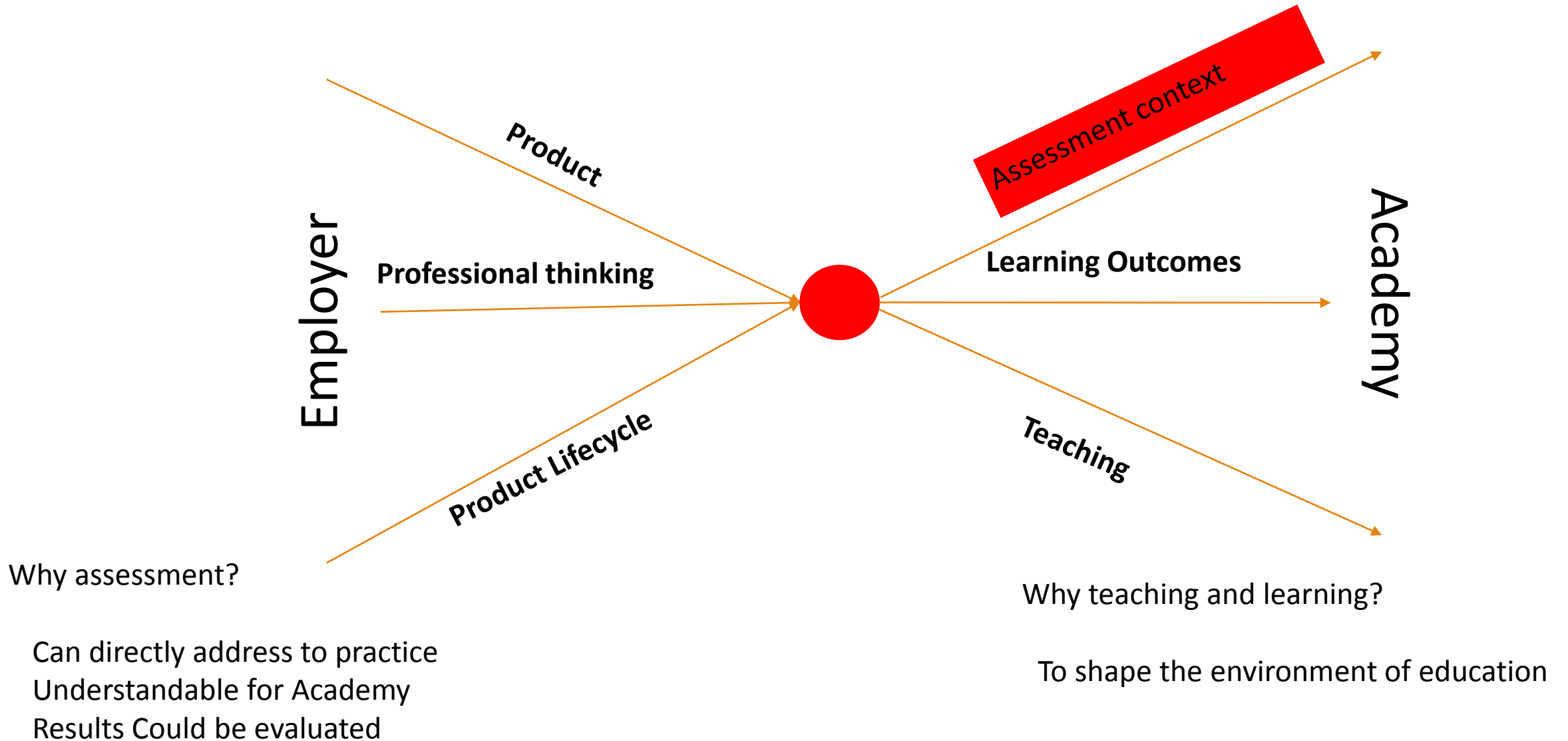
Product

Product lifecycle

Professional thinking

As a result, employers' context is not always transferred to academy

How to transfer employers context to academy?



Piloting the framework

1. Sample

a) Key IT employers including umbrella organization

2. Focus groups were held both with

a) High level management (CEO)

b) Middle level management (CTO)

c) Staff (3 years experience and freshman)

3. Companies has been differed in terms of size and profile in IT

4. Main points of discussions

a) Products and requirements

b) Professional thinking Skills (skills for decision and thinking) and competencies

c) Life cycle organization competencies for product development

Finding of graduates weaknesses

Products

- Open source software adaptation
- Online Personalization of purchase

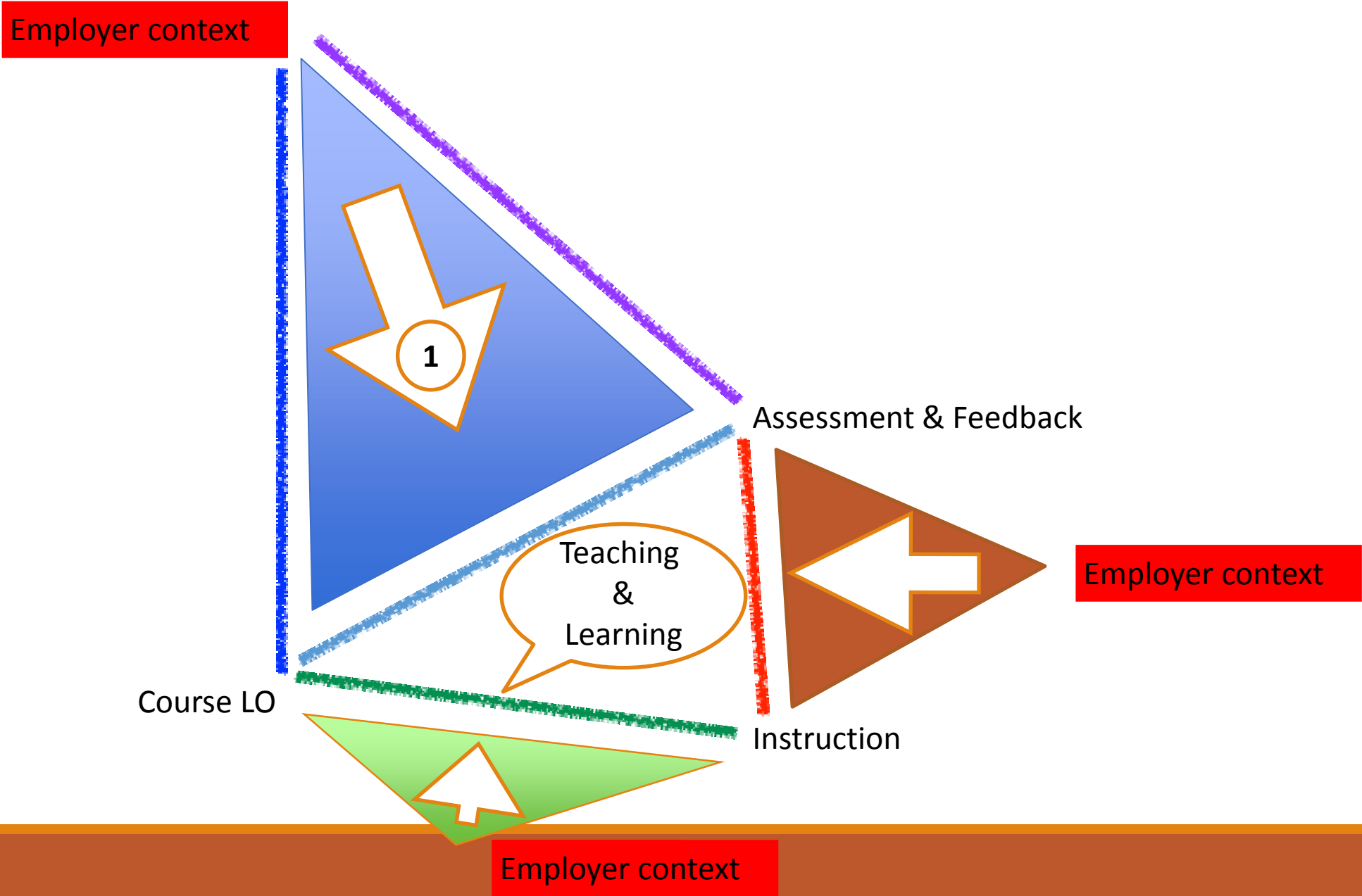
Computer thinking

- Algorithmic thinking
- Complexity of algorithms
- Data structure selection and development

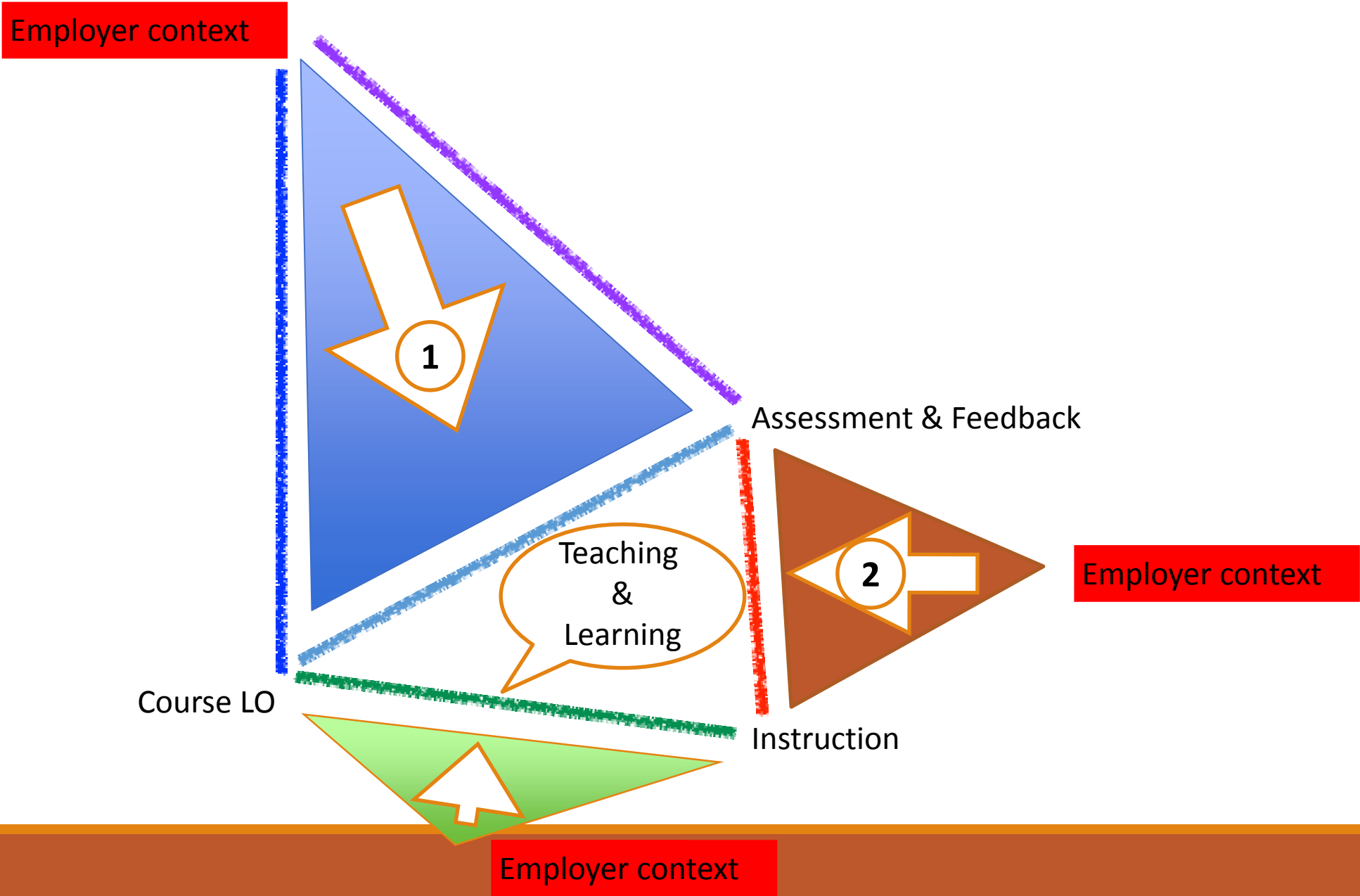
Product Life Cycle

- Looking for appropriate Open Source
- Localization of adapting modules change
- Interface and body development
- Isolated testing
- Testing after the embedding

Alignment channels - 3D model



Alignment channels - 3D model



Alignment plan

<ul style="list-style-type: none">• Assessment	<ul style="list-style-type: none">• Employer context	<ul style="list-style-type: none">• Course LO
<ul style="list-style-type: none">• Module testing skills training & assessment	<ul style="list-style-type: none">• Open source software module	<ul style="list-style-type: none">• Sorting algorithms
<ul style="list-style-type: none">• Assessment	<ul style="list-style-type: none">• Employer context	<ul style="list-style-type: none">• Instruction
<ul style="list-style-type: none">• Testing skills training/assessment	<ul style="list-style-type: none">• Open source software module	<ul style="list-style-type: none">• Modular design principles
<ul style="list-style-type: none">• Instruction	<ul style="list-style-type: none">• Employer context	<ul style="list-style-type: none">• Course LO
<ul style="list-style-type: none">• Testing skills training/assessment	<ul style="list-style-type: none">• Open source software module	<ul style="list-style-type: none">• Top down software projecting/development

Completeness of QA communication

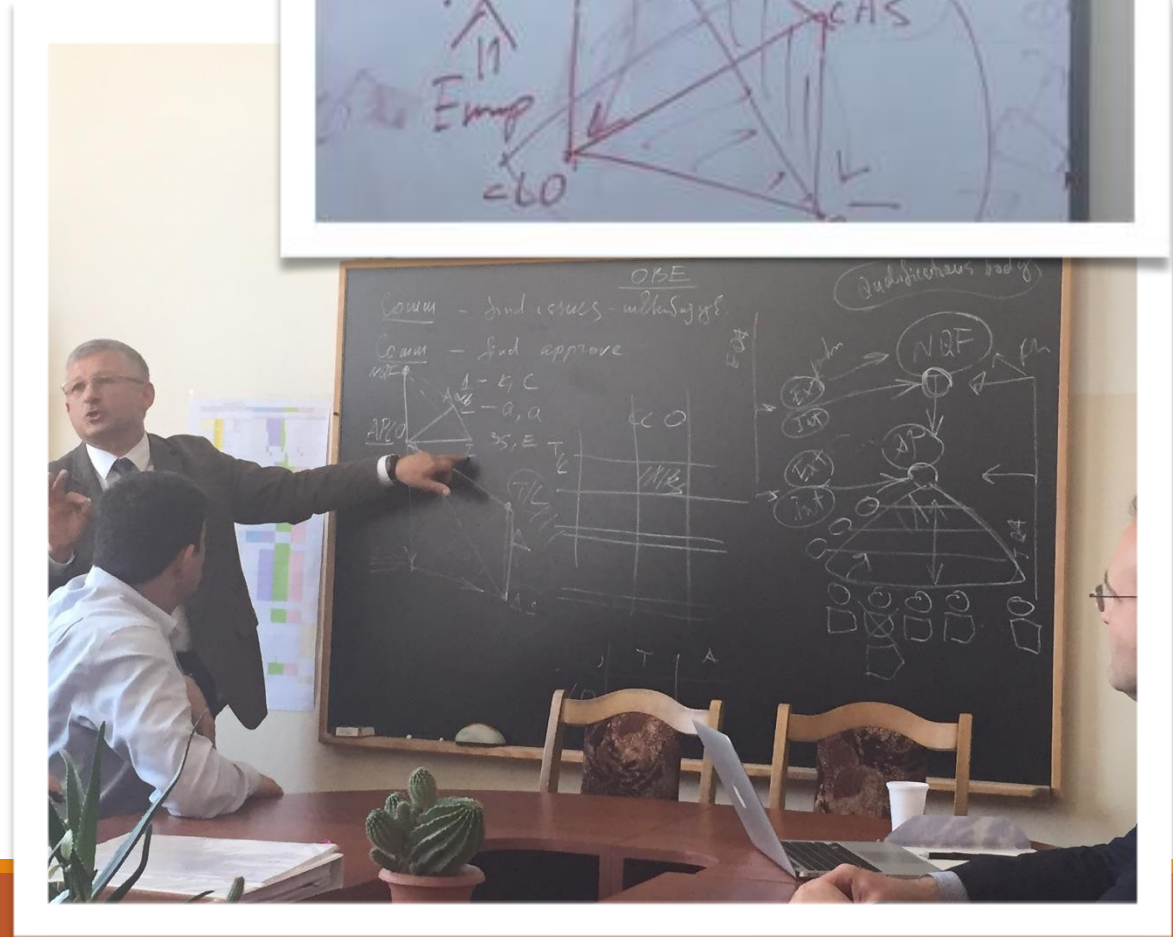
What is the goal of **this/specific assessment task**

- Employer requested context of competency
- What was requested by course LO (which one)
- What was taught theoretically for that



Trainings and practice of use

- TEMPUS ALIGN project
 - University of Art
 - Medical university
 - Linguistic university
 - Guideline for Alignment
 - Trainings of teaching staff
 - Self Evaluation of 6 programs using tools of alignment
 - Review done by EU and local experts
- Trainings for chairs of departments
 - Police academy
 - Military institution
 - University of theater and kino
 - Medical university



Thank you!

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Key Questions for Quality Assurance

- Are the outcomes, evidence, criteria and standards clearly disclosed to students?
- Are the outcomes evidence, criteria and standards clear and well understood by faculty?
- Does the academic advising system consistently establish a path for students to achieve the learning outcomes?
- Are resource materials and study guides appropriate to the outcomes, evidence, criteria and standards?
- Is there a tracking system to keep a record of students' achievement of the outcomes?

Key Areas for Quality Assurance

- ✓ Evidence of Student Learning
- ✓ Common Understanding of Outcomes, Criteria and Standards Across the Institution
- ✓ Connecting Teaching and Assessment Activities to the Learning Outcomes
- ✓ Making it Inquiry Based
- ✓ Engaging Faculty and Drawing on Faculty Experience

Institutions should be able to...

Show how they assess student learning at course, program and institutional levels

- 1) Examine learning culture
- 2) Design assessment, articulate goals, develop clear outcomes, evidence, criteria and standards
- 3) Make outcomes, evidence, criteria and standards visible (syllabi, website, literature)
- 4) Collect evidence of student achievement
- 5) Review and analyze evidence
- 6) Revise outcomes and criteria, improve pedagogy and curriculum

Role of Accreditation/Quality Assurance

Whether governmental or non-governmental, there are six key aspects to consider:

- 1) Student learning outcomes
- 2) Evidence of student learning
- 3) At what level should evidence of student learning be sought?
- 4) To what extent should student learning outcomes be specified by the accreditor?
- 5) What models are available to accreditors in determining an approach?
- 6) What issues should be anticipated?

Value Added Score

“Student achievement, which is inextricably connected to institutional success must be measured by institutions on a ‘value-added’ basis that takes into account students’ academic baseline when assessing their results. This information should be made available to students, and reported publicly in aggregate form to provide consumers and policy makers an accessible, understandable way to measure effectiveness of different colleges and universities.”

- Quote from “A Test of Leadership,” the 2006 Report of the Spellings Commission on
Higher Education

Value Added Score

Multidimensional features of higher education

No single measure

Limitations of data

Value Added Score

Data, sample and variable construction

Individual level data

Earnings records

