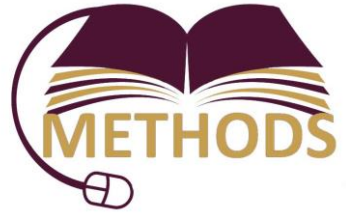




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# MODERNIZATION OF TEACHING METHODOLOGIES IN HIGHER EDUCATION: EU EXPERIENCE FOR JORDAN AND PALESTINE (METHODS)

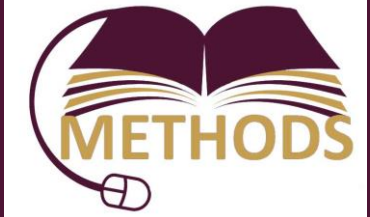
Wednesday, July 18, UoJ -Jordan

DR. WASEL GHANEM, BIRZEIT UNIVERSITY

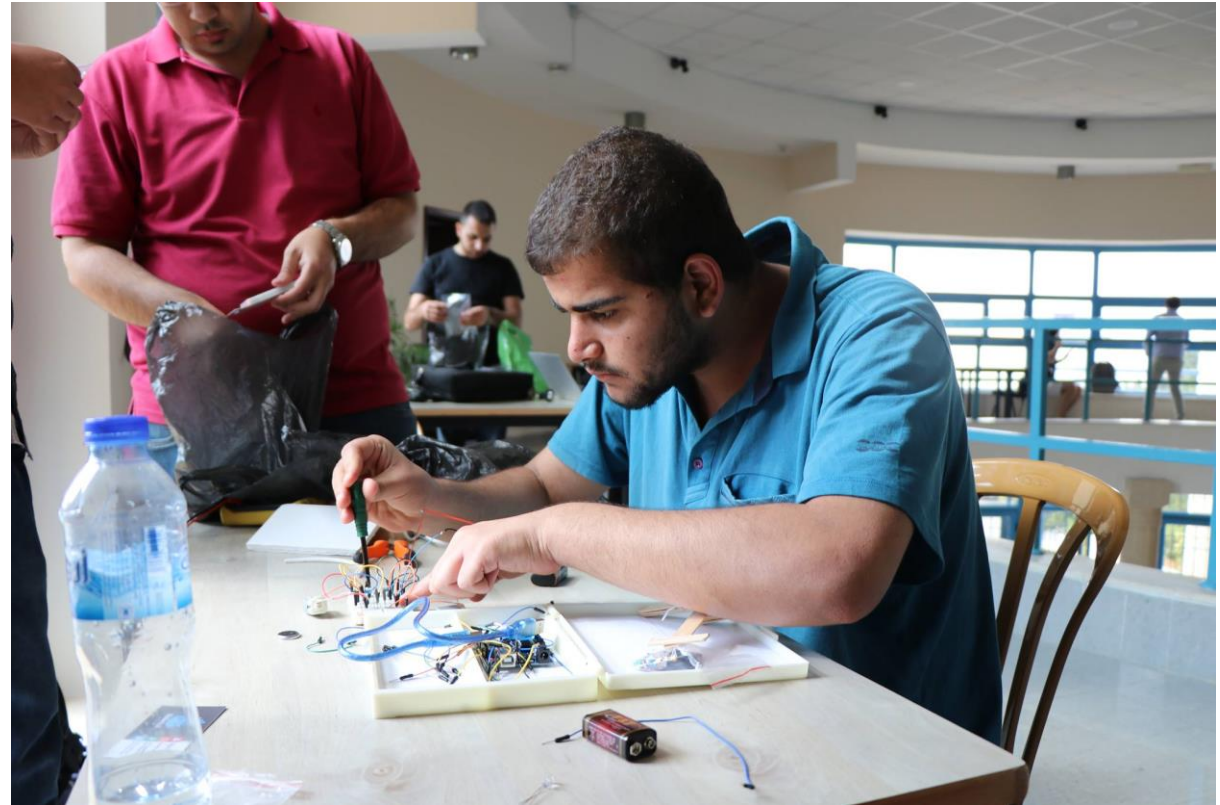
Local Coordinator



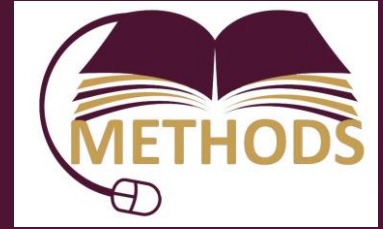
# AGENDA



- ❑ Methods main Objective
- ❑ Methods models in course development:
  - Competence Based Teaching (CBT)
  - Problem Based Learning (PBL)
  - Flipped Classroom
  - Moocs
- ❑ Methods Portal
- ❑ Methods Teaching and Learning Labs  
in BZU and UoJ



# MAIN OBJECTIVE:

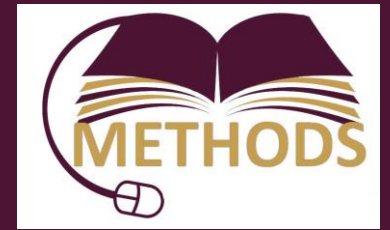


- To raise the competencies of individual **learners** to become active members of the **knowledge society** by enhancing the **learning process** of students acquiring **21st Century competencies** to become **autonomous\*** and **active learners\*\***

\*\*students engage with the material, participate in the class, and collaborate with each other. Don't expect your students simply to listen and memorize; instead, have them help demonstrate a process, analyze an argument, or apply a concept to a real-world situation.

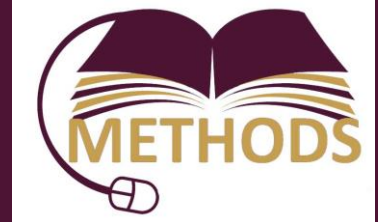
- **How indicators will be measured**
- (30) staff member are trained on best practices of utilizing ICT in education
- (30) courses are uploaded on the portal developed in best practices of utilizing ICT in education.
- Capacity of the universities to evaluate e-curricula is developed
- Autonomous **well-equipped Labs/Units** in both Palestine (BZU) and Jordan (UoJ) are established in the first 24 month of the project

# COMPETENCE BASED TEACHING –CBT-



- Customized Girona University Model

## Why CBT?



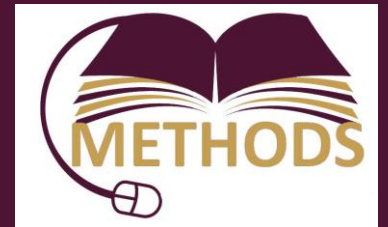
The main goal of CBT is to offer an efficient way to plan, teach and evaluate by competences, useful for educators from different educational levels and context.

CBT can be used individually for a course or subject, or collectively for a whole program.

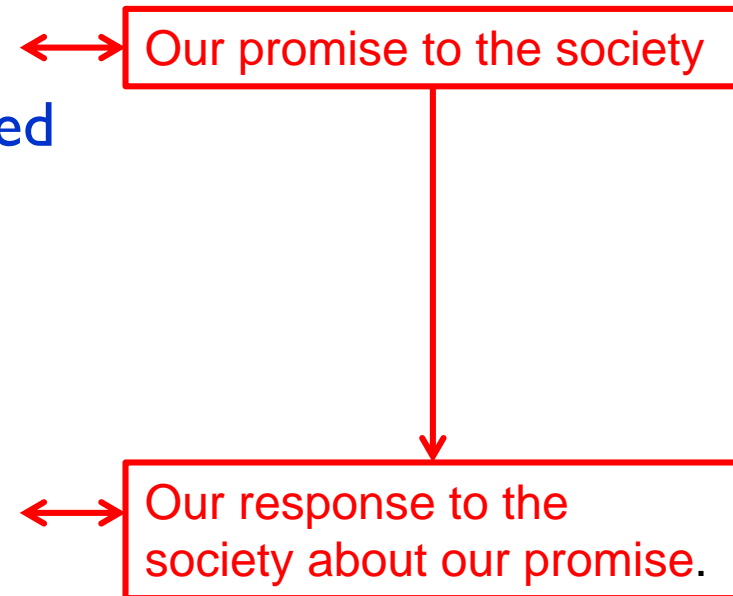
### Methods Objective

To raise the competencies of individual **learners** to become active members of the **knowledge society** by enhancing the **learning process** of students acquiring **21st Century competencies** to become **autonomous** and **active learners**

# THE COMPLETE SEQUENCE OF THE TEACHING PROCESS



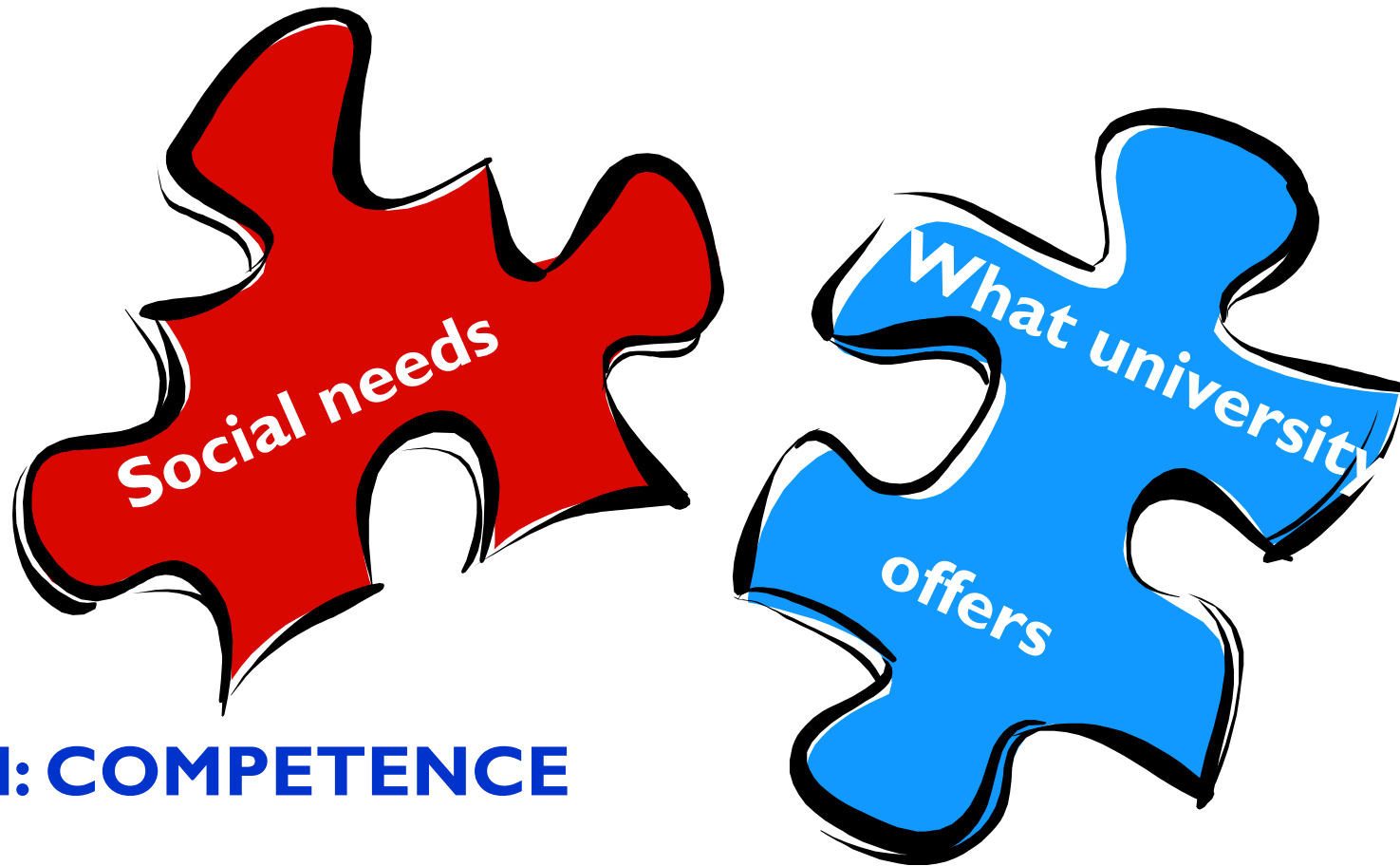
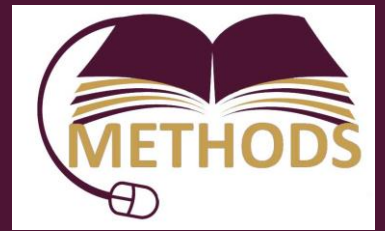
- 1.-To define our desired competences \*
- 2.-To design learning activities actually orientated to the required competences.
- 3.-To design evaluation activities able to reflect the level of competences acquisition (learning outcomes).
- 4.-The certification of the acquisition of the competences.



*\*You, as an educator, can adapt the formula of the programmed competences, if it is necessary for better understanding and management (see next slides)*

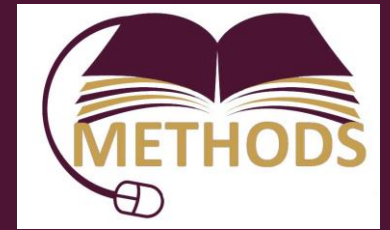


## COMPETENCE: THE CONCEPT



**Keyword: COMPETENCE**

# How to formulate competences (learning horizon).



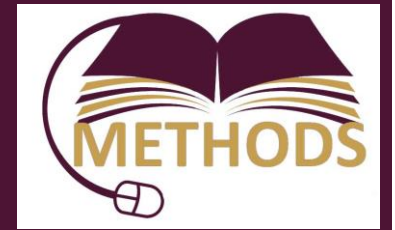
-Using verbs of **intentioned actions**.



-Easily and directly **evaluable**.



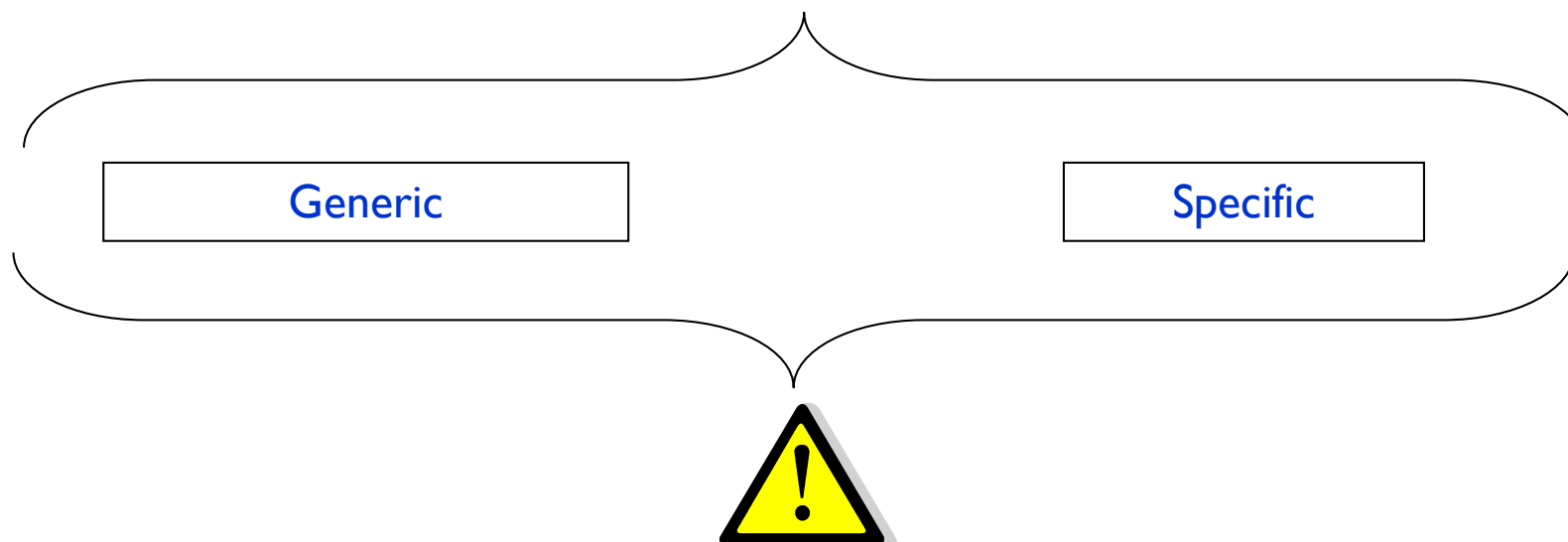
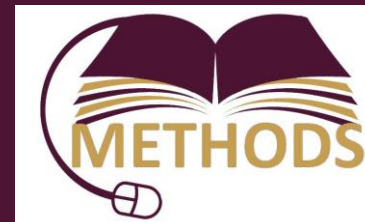
## How to formulate competences (learning horizon)



Verbs meaning intentioned and observable actions like *to apply, to assess, to develop, to identify, to plan, to use, to design, to compare,...* are the classical good verbs to formulate competences.

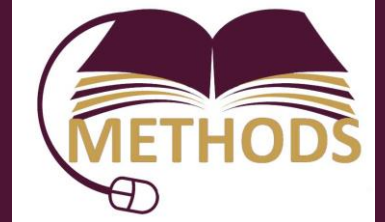
Verbs like *to know* are the classical bad tools to formulate competences.

## Types of competences



Each course or subject can include several generic and specific competences at different level of complexity that have to be defined.

# Competences, aims, learning outcomes



C O M P E T E N C E

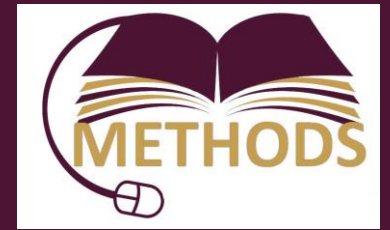
In relation to the  
teaching-learning  
process

Before  
teaching it is  
the **objective**

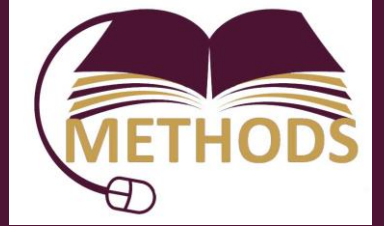
During teaching it is  
the **learning activity**  
reference

After teaching it is the  
**learning outcome**

# METHODS SPECIFIC COMPETENCES

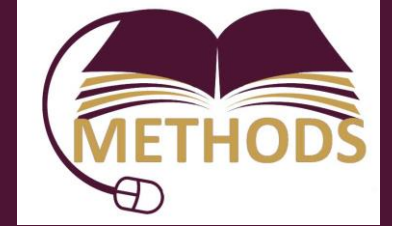


Instructors in charge to develop each Methods pilot course should formulate the specific competences for his/her own course, following the indications of CBT (with a feasible and realistic point of view)



Once the competences we want to develop in our course/subject/program are defined, the second big step: **landing in the curriculum** (learning activities)

## Teaching Management Tools. –TMT-



-Software to manage CBT

-To ensure the connection between competences, activities and learning outcomes.

Although TMT is not free, it may be usable free for research purposes

TMT allows us to link competences and activities thereby ensuring all the activities are orientated towards developing one or more competence

Educational planning | Activities summary | Evaluation | Day to day

Competences

Activities

Competences	Description	Ev.	Total
<input type="checkbox"/> 12.1. DEPENDABILITY and RELIABILITY: Does not attend to personal business while on the job	<input type="checkbox"/> Student self-evaluation (Initial)		0
<input type="checkbox"/> 12.2. DEPENDABILITY and RELIABILITY: Fulfils obligations of the job	<input type="checkbox"/> Function of water treatment.		0
<input type="checkbox"/> 13.1. WORKING INDEPENDENTLY: Is able to make decisions in own area of responsibility, without relying on a supervisor, but understands the point at which it is necessary to contact a supervisor	<input type="checkbox"/> Collecting water samples		0
	<input type="checkbox"/> Performing emergency operating procedures		40
	<input type="checkbox"/> Obtaining and interpreting information		20
<input type="checkbox"/> 13.2. WORKING INDEPENDENTLY: Takes initiative in identifying and completing necessary tasks	<input type="checkbox"/> Monitoring visit	20%	8
<input type="checkbox"/> 2.1. CONSCIENTIOUSNESS: Completes required documentation of work activities, observations and test results in an accurate and timely way	<input type="checkbox"/> Performing safety requirements and procedures		0
	<input type="checkbox"/> Regulations affecting water treatment and distribution		0
<input type="checkbox"/> 2.2. CONSCIENTIOUSNESS: Demonstrates honesty and integrity in all aspects of work	<input type="checkbox"/> Regulations relevant to the operation and performance of the water treatment process.		0
	<input type="checkbox"/> Understanding and/or performing basic maintenance procedures.		0
Total hours with teacher: 78,00			
Total hours without teacher: 0,00			
<b>Total hours</b>			<b>78,00</b>



## Weight of each competence in the evaluation

### Activity data

Title:

Description:

General data **Connected competences** Connected contents Attachments

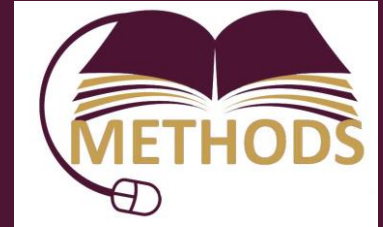
Competence	Weight (%)
<input type="checkbox"/> 2. To use information technology and communication in clinical, therapeutic, and preventive research.	<input type="text" value="20"/>
<input type="checkbox"/> 3. Recognizing the basis of normal human behavior and its disorders.	<input type="text" value="80"/>

The next link contents two video showing the use of TMT (named [Degree design](#) and [Course design](#)).

<http://dset.solutions/index.php/ca/videos-tmt>

<http://tmttools.dset-solutions.com/en/>

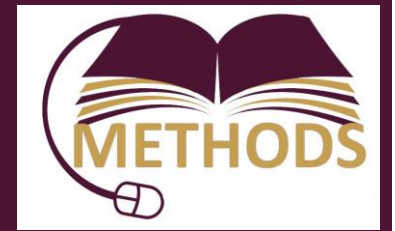
# PROBLEM BASED LEARNING MODEL IN METHODS



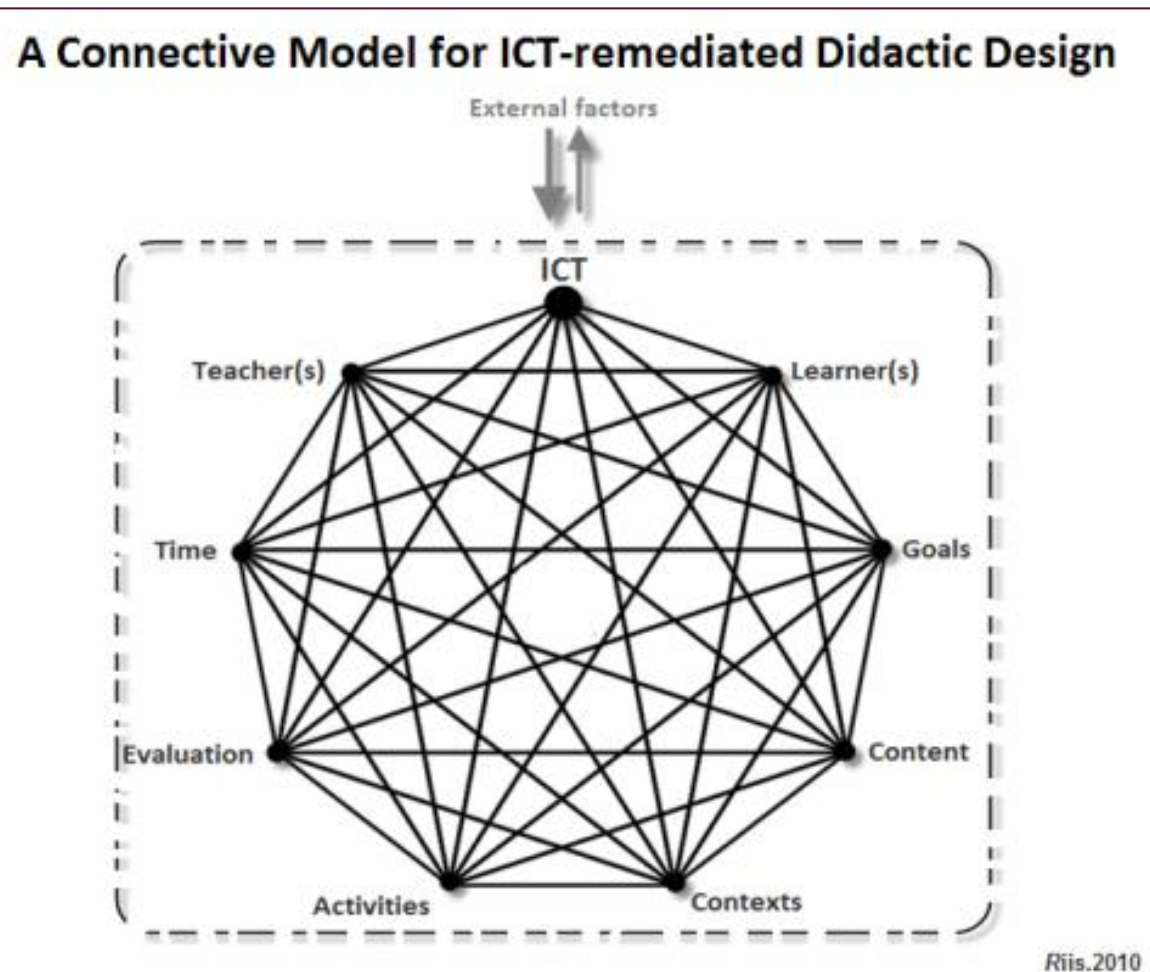
- Customized Aalborg Model



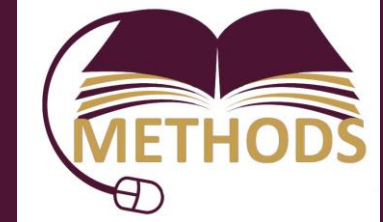
# METHODS GOAL: 21ST CENTURY LEARNING SKILLS



- **Learning and innovation skills:** critical thinking and problem solving, communications and collaboration, creativity and innovation
- **Digital literacy skills:** information literacy, media literacy, Information and communication technologies (ICT) literacy
- **Career and life skills:** flexibility and adaptability, initiative and self-direction, social and cross-cultural interaction, productivity and accountability



# BACKGROUND: FOCUS GROUP INTERVIEWS AND WORKSHOPS IN JORDAN AND PALESTINE

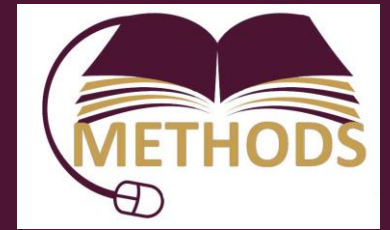


- **Focus group interviews:** Potentials and challenges for ICT in education and PBL learning at partner universities, Students and Faculty Members from all partner universities
- **Co-design workshops:** focus on understanding faculty members and students visions for ICT PBL centre facilities and training
- **Methods:** Un-structured qualitative interviews, video observations, brain storms, rapid prototypes.





# DATA AND RESULTS: THEMES



## 1. Access & Places

1. Hardware, internet, physical access to university
2. Lack of physical space – possibilities for virtual space

## 2. Roles in student and teacher use of ICT - responsibilities

1. Pen & paper vs laptop: The serious student use Pen and paper
2. blackboard vs ICT teaching tools PP: traditional/effective teaching, “Students as listeners”
3. ICT freedom fighters

## 3. Group – Project work

1. Trust, dependency, responsibility, gender and culture

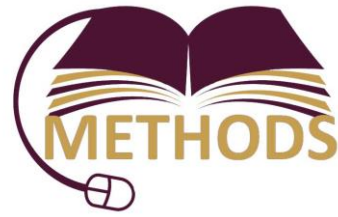
## 4. Collaboration (lack of)

1. Lack of collaboration between students and companies/
2. Getting the right skills/collaborating with companies





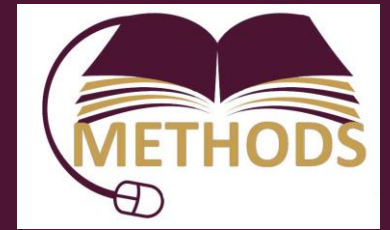
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# PBL: THEORY AND EXAMPLES



# PROBLEM BASED LEARNING



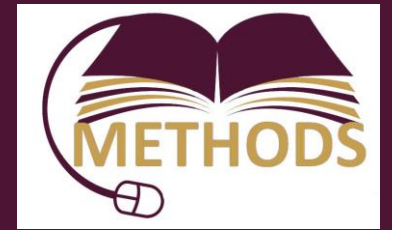
“*Problem Based Learning* is a teaching method in which students gain knowledge and skills by working for an extended period of time to investigate and respond to an **authentic\*\***, **engaging and complex question, problem, or challenge.**”

- Group work
- open-ended problems
- Project reports
- Courses support project work
- Students are responsible for their own learning achievements

**authentic learning** is an instructional approach that allows students to explore, discuss, and meaningfully construct concepts and relationships in contexts that involve real-world problems and projects that are relevant to the learner.

# LEARNING PRINCIPLES – THE PROBLEM

(GRAFF & KOLMOS, 2003, CHARACTERISTIC OF PBL )

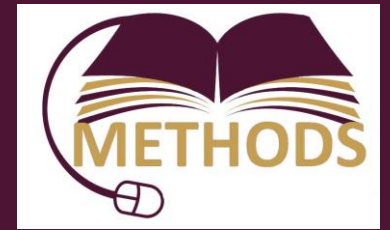


The **PROBLEM** is the starting-point in the learning process

- The starting point for learning should be a problem, a query, or a puzzle that the learner wishes to solve.
- Complex problems that does not have a single correct answer - often (based on) real-life problems
- Learners should build on their own experiences and learn through active engagement with cases or real-world problems.
- A problem can be theoretical, practical, social, technical, or scientific and grows out of students' wondering within different disciplines and professional environments.

# TEACHER- & STUDENTS CENTRED

(HMELO-SILVER & BARROWS, 2006)



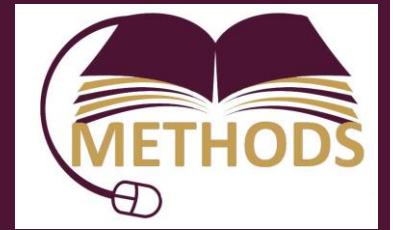
## ■ **Teacher-centred approach:**

- Focus on teaching and delivering the right knowledge
- The teacher ask most of the questions
- Ask known-answer questions and evaluate answers
- + broad subject knowledge

## ■ **Student-centred approach**

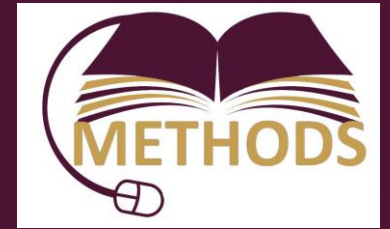
- Focus on student engagement
- Teacher focus on understanding the meaning of students' ideas rather than just correcting them
- Student responses are used to focus and develop discussions – responsibility for elaboration
- The teacher becomes the facilitator of the learning process rather than providing information
- Co-construction of agenda and knowledge between teacher and students
  - E.g. students might disagree with our view on an appropriate process

# TEACHER AND STUDENT RESPONSIBILITIES IN PBL



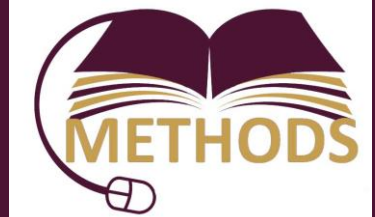
- Students:
  - Responsible for their own learning,
  - Part of ICT and learning – e.g. students responsible for what they use the laptop for in class
  
- Teachers:
  - Responsible for facilitating and guiding the students learning process
  - The facilitator guides students in the learning process, and models the kinds of questions that students need to be asking themselves, thus forming a cognitive apprenticeship
  
- Equality in expertise:
  - **Students** experts in their case – rapidly build knowledge due to research
  - **Teachers** experts in processes, methods, theory and domain knowledge

# STUDENT RESPONSIBILITY FOR OWN LEARNING?



- **Traditional approach:** teaching begins with the delivery of information which the teacher believes that the student needs to know.
- **Problem-based learning** begins with a problem which the students must research to acquire the information that the students themselves believe they need to solve it.
- The teacher is there to guide the research in response to the students' research.

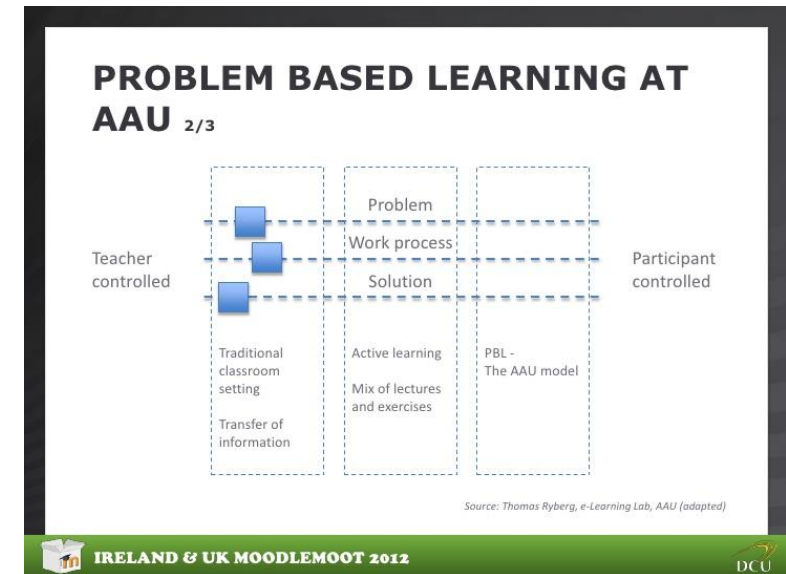
# DISTRUBUTION OF TEACHER AND STUDENT CONTROL



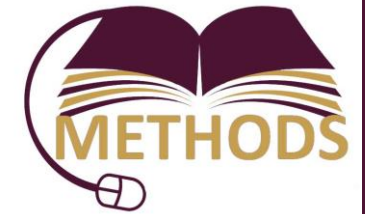
- Distribution of control between students and teachers

Can variate between educations, disciplines, institutes, universities

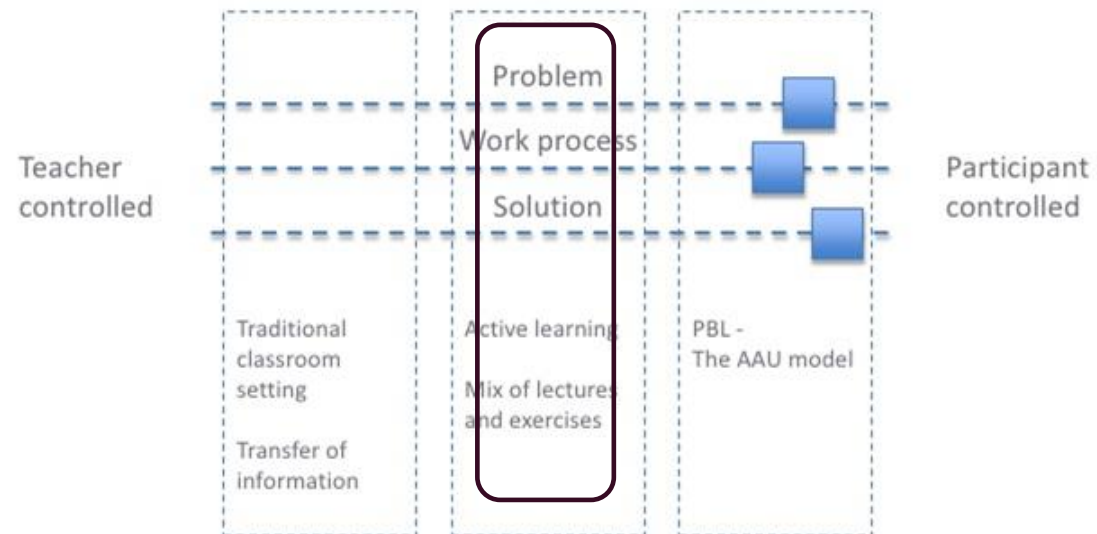
- **Problems:** Are learners given a particular problem to solve or do they define the problem themselves?
- **Work process:** Who manages the work process? Who decides what theories and methods to choose?
- **Solution:** To what degree is the solution open-ended or fixed? Are students to come up with a pre-defined solution or are they developing new knowledge and insights?



# DISTRUBUTION OF TEACHER AND STUDENT CONTROL



## PROBLEM BASED LEARNING AT AAU <sup>3/3</sup>

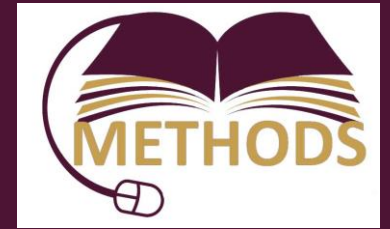


Source: Thomas Ryberg, e-Learning Lab, AAU (adapted)



# EDUCATIONAL MODELS

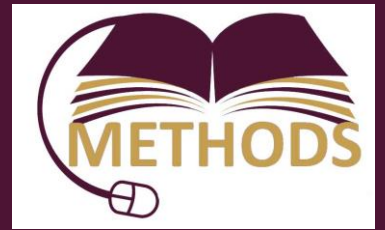
(GRAFF & KOLMOS, 2003, CHARACTERISTIC OF PBL )



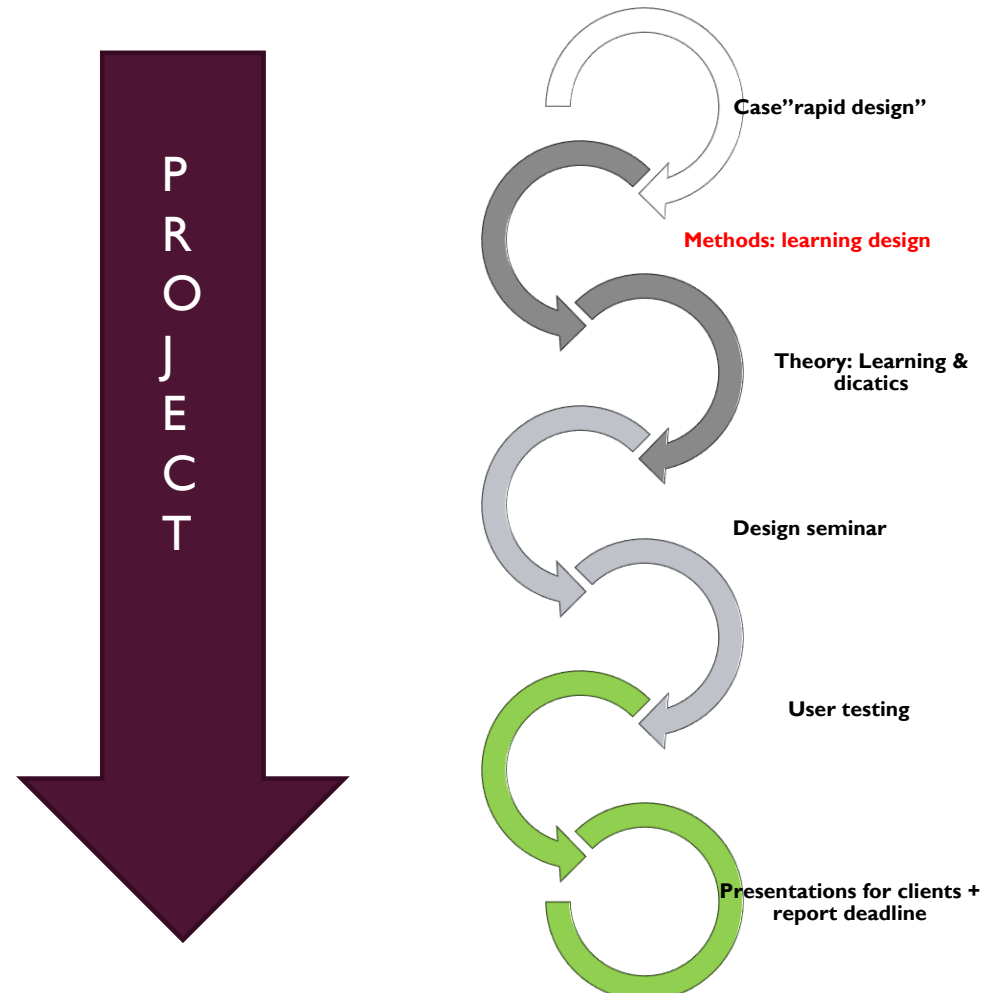
## Problem-based learning as a model (course work)

- Curriculum structure
  - Blocks of themes that reflects the students needs in the problem solving process
  - 1. clarify the concepts; 2. define the problem; 3. analyse the problem; 4. find the explanation; 5. formulate the learning objective; 6. search for further information; 7. report and test new information.
- Learning process
  - Self-directed study groups, Teacher facilitates the learning process
- Assessment
  - Test competences and not factual knowledge, e.g. ability to manage projects with research and real world problem solving

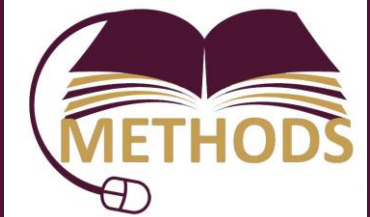
# MODEL:TEACHING SUPPORTING PROJECT



- Supervision
- Group work
- Data collection
- Writing of report



# STUDENT WORK WITH PROBLEM DEFINITIONS



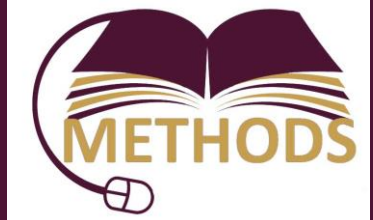
- Broad problem area – specific wishes for learning designs
- Students: What is really the clients problem?

**Examples:**

**Warehouse Management in NBC**



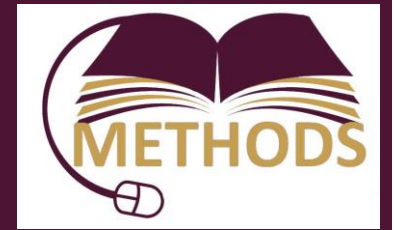
# GROUP WORK



- Students work in groups as part of the course work
- Groups are formed based on interests in cases
- Group spaces where students can work at all times, change the space with prototypes etc.
- Groups are supervised weekly with the case.
- Supervision is primarily to support and guide knowledge and learning processes, choice of methods/theory, take part in discussing and analysing cases
- Social issues – students are not responsible for free riders – teachers responsibility to act on



# RESPONSIBILITIES



## Students:

- Analysing problem
- Arranging meetings and interviews with external partner
- Collecting and analysing data - interviews, surveys, observations
- Writing report and producing presentation for clients

## My role:

- Presenting relevant theories and methods for students to apply in project work
- Facilitating learning process: Guiding students on relevant processes, methods and theories
- Solving bigger social problems in groups





<b>ENC5436</b>
Participants
Badges
Competencies
Grades
General
20 September - 26 September
27 September - 3 October
4 October - 10 October
11 October - 17 October
18 October - 24 October

### Chatting Room

In this room different stuff related to the course and projects should be discussed.

### Forum

## 20 September - 26 September

Module 0 - Assignment

Module 0

Light Emitting Diode

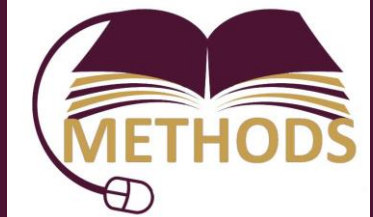
Switch

Arduino

Electronic color code

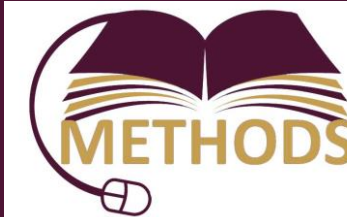
## 27 September - 3 October

# FLIPPED CLASSROOM MODEL





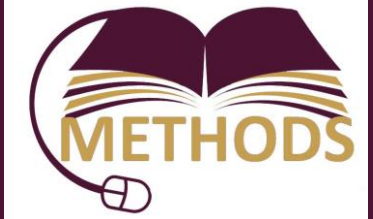
# WHAT IS FLIPPING?



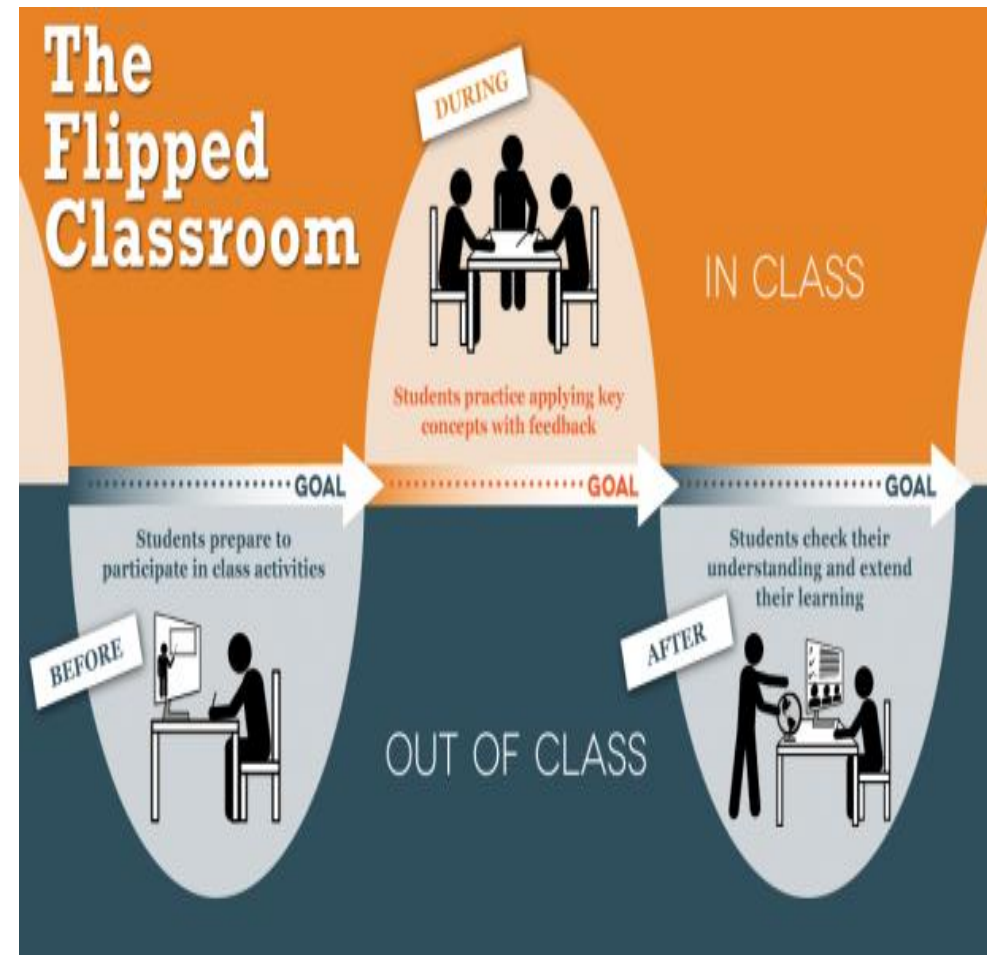
In a flipped classroom, the typical **lecture** and **homework** elements of a course **are reversed**. Readings and lectures are pre-done by students at home, while classroom sessions are devoted to exercises, projects, or discussions.



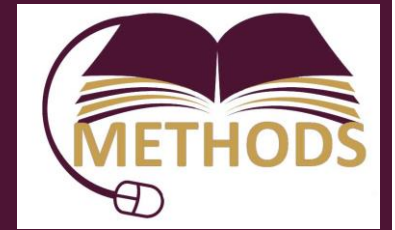
# OTHER DEFINITIONS FOR FLIPPED CLASSROOMS



- Moving from an instructor-centered learning environment to **a student-centered learning** environment.
- Shifting from individual to **collaborative** tactics
- Focus on the student
- May or may not include technology



# KEY ELEMENTS OF A FLIPPED CLASSROOM



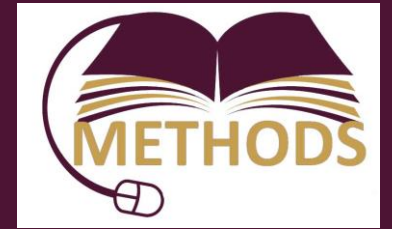
- Provide an opportunity for students to gain first exposure prior to class.

can vary, from simple textbook readings to lecture videos can be created by the instructor or found online from YouTube, the Khan Academy, MIT's OpenCourseWare, Coursera, or other similar sources

- Provide an incentive for students to prepare for class.

the task provided an incentive for students to come to class prepared by speaking the common language of undergraduates: points

# KEY ELEMENTS OF A FLIPPED CLASSROOM



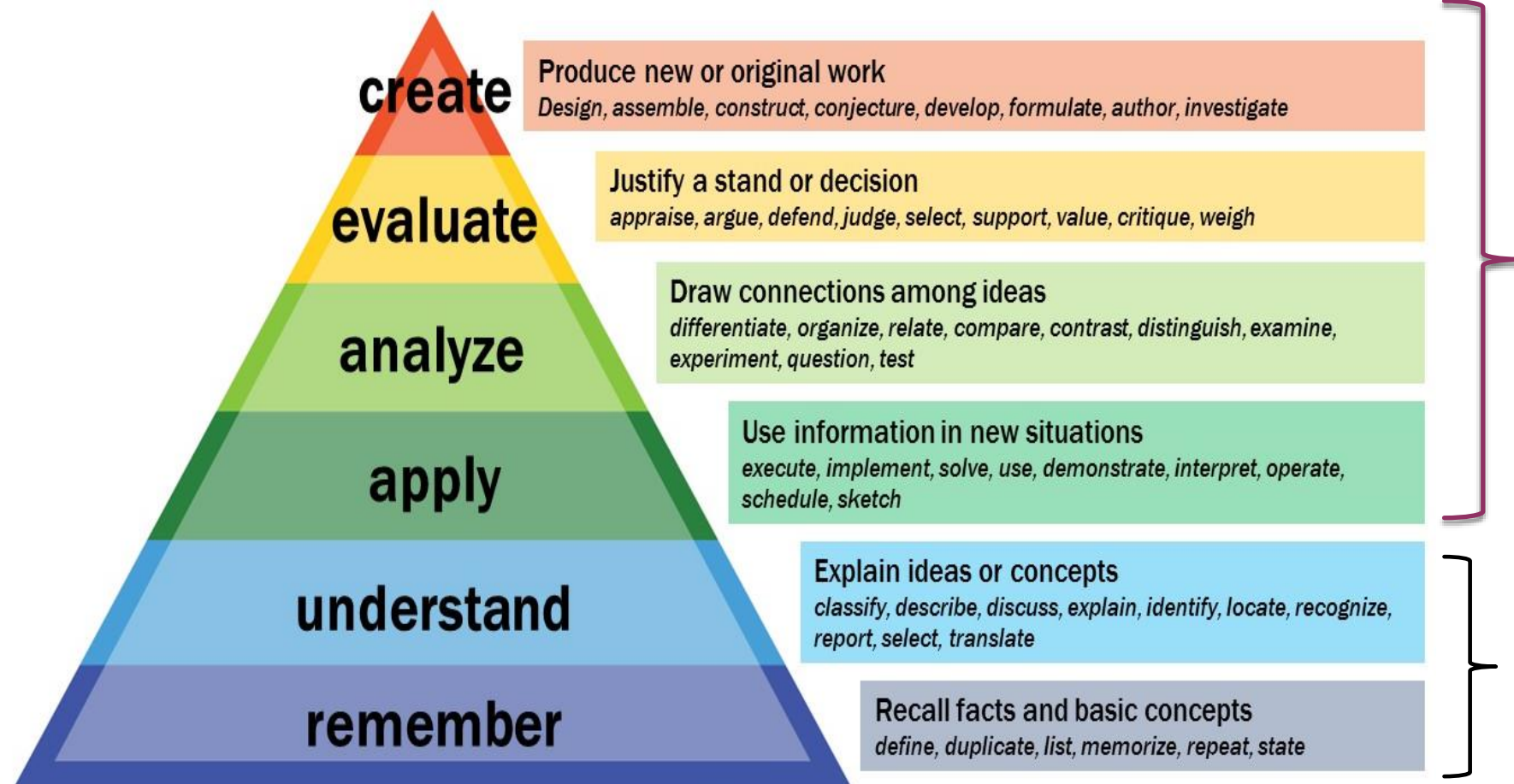
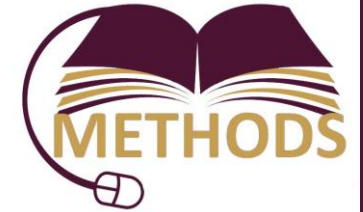
- Provide a mechanism to assess student understanding.

the instructor tailors class activities to focus on the elements with which students are struggling

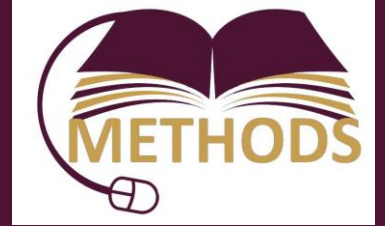
- Provide in-class activities that focus on higher level cognitive activities

The key is that students are using class time to deepen their understanding and increase their skills at using their new knowledge

# FLIPPING FOR BLOOM'S TAXONOMY

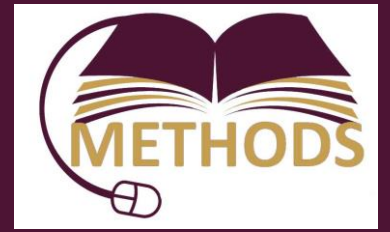


# FLIPPED APPROACH



The flipped classroom approach is not about watching videos. It's about students being actively involved in their own learning and creating content in the structure that is most meaningful for them.





# WHAT TYPE OF PRE-WORK WAS PERFORMED?

Before class

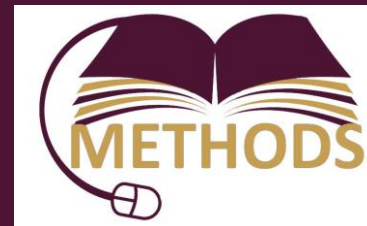
- Watch a video lesson (Mooc)
- Answer short quizzes

Ensure Pre-work by:

- Submit results to me



# JUST-IN-TIME TEACHING

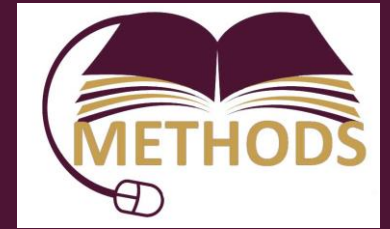


Pedagogical strategy that uses feedback between classroom activities and work that students do at home, in preparation for the classroom meeting.



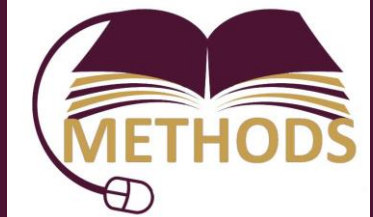


## EXAMPLE 1: INQUIRY/PROBLEM-BASED LEARNING LESSON: DIGITAL DESIGN COURSE



- (1) Students must watch Mooc and answer questions and solve problems related to :
  - Two Level Design
  - Binary Multiplier
- . (2) Summarize on possible scenarios to design any function;
- Sample problems/inquiries:
  - What are the different designs to implement any function just using NAND gates?
  - How can you design binary multiplier?

# TIME TO PRESENT YOUR FLIPPED CLASSROOM!



## Advantages of Flipping

Promotes peer interaction and collaboration skills

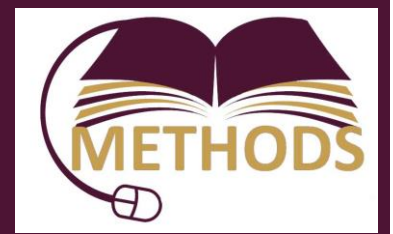
Makes *learning* central, rather than *teaching*

Fosters independent learning

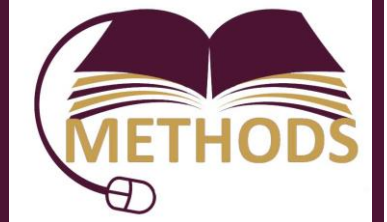
Encourages higher student engagement

Provides increased individualized attention

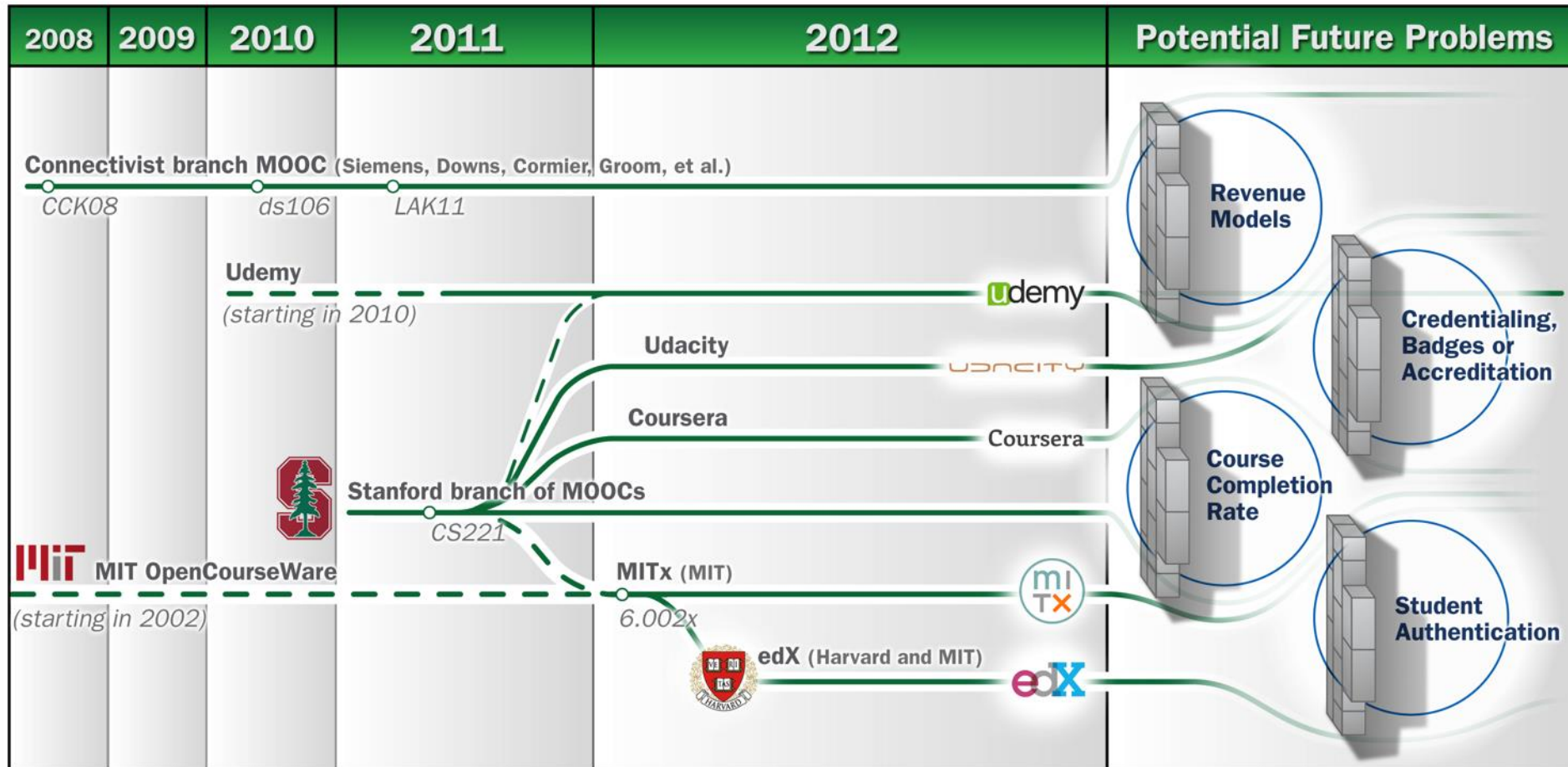
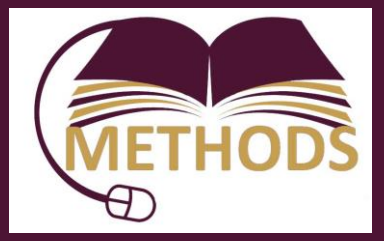
MOOC



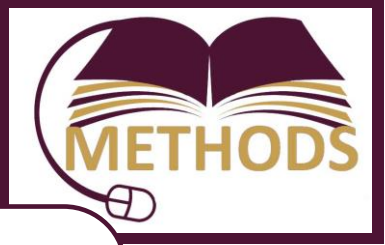
# MOOC



- A MOOC is an online open course that provides a platform for students who want to take a course with no limits to attendance.
- The acronym MOOC stands for Massive Online Open Courses.



Phil Hill, 2012



# WHY OFFER A MOOC?

MOOCs can profile an institution as a leading 21<sup>st</sup> Century educational institution.

**MOOC**

An institution can make knowledge more accessible to the general public through offering a range of MOOCs.

MOOCs may well be a “game changer” with respect to how education is delivered and consumed and institutions need to be in the MOOC space to experience delivering education in this way and to remain current with educational practices.

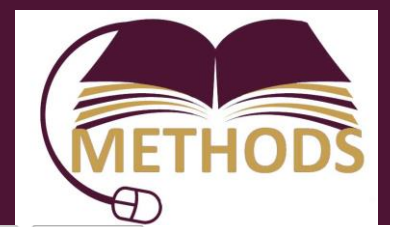
MOOCs provide an opportunity for an institution to experiment with teaching practices and to engage with new pedagogical approaches.

Institutions have a range of subject areas that are specific to their region e.g. HK SAR / China context and HKU can showcase these subjects through offering MOOC courses.





# EXAMPLE: GETTING STARTED WITH MOODLE



A screenshot of a web browser displaying a Moodle course page. The browser's address bar shows the URL "https://moodle.methodsx.org/course/view.php?id=24". The page has a dark header with the "MethodsX" logo and a user profile for "Wasel Ghanem". A left-hand sidebar contains a menu with items like "GSM", "Participants", "Badges", "Competencies", "Grades", and several folders including "General", "Login the Course", "Enroll of Students", "Divide Students into Groups", "Add Files to Students", and "Add Assignment to Students". The main content area lists several course management options: "Announcements", "Login the Course", "Login to the course and manage it", "Enroll of Students", "Enroll students in the course", "Divide Students into Groups", "Divide of Students into Groups", and "Add Files to Students". The Windows taskbar at the bottom shows the time as 6:40 AM on 11/13/2017.

- Login to the Course and Manage it
- Enroll of Students
- Divide Students into Groups
- Add files to Students
- ...



