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Bologna Process for Curriculum Development: Course Descriptors and Learning Outcomes

Ana Kuveždić Divjak
Faculty of Geodesy, University of Zagreb, Croatia

smart WB Workshop I 9.5.2023.

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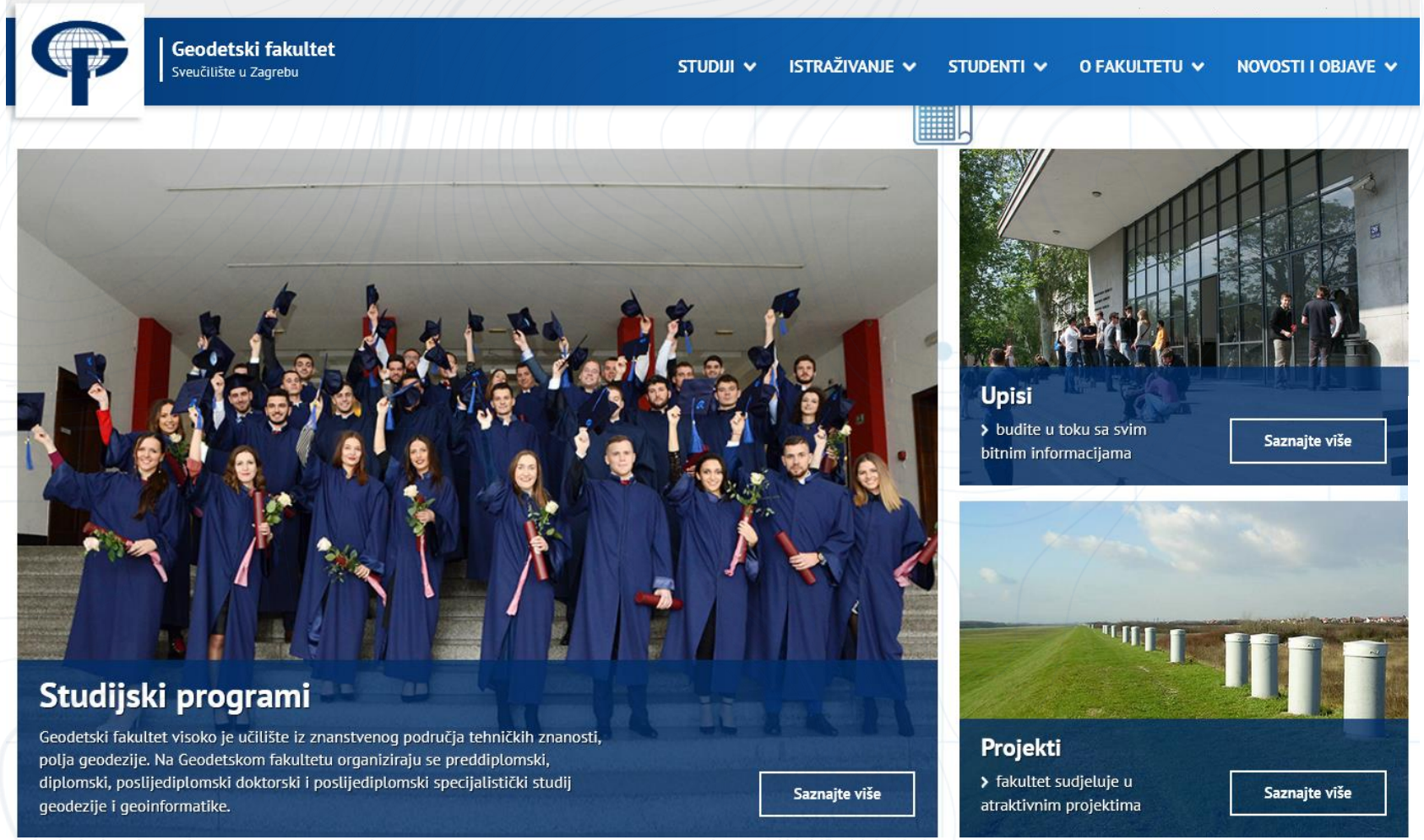

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Assist. Prof. Ana Kuveždić Divjak

Faculty of Geodesy, University of Zagreb

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λ = 15°57'49,9''
H = 116 m

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Bologna Process and European Higher Education Area

Intergovernmental higher education reform process that includes 49 European countries and a number of European organisations.

Bologna Process Main Purpose:

- to enhance the quality and recognition of European higher education systems
- to improve the conditions for exchange and collaboration within Europe, as well as internationally

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Bologna Process and European Higher Education Area

Intergovernmental higher education reform process that includes 49 European countries and a number of European organisations.

Bologna Process Goals:

- three-cycle degree structure (bachelor, master's, doctorate)
- shared instruments, such as the European Credits Transfer and Accumulation System (ECTS) and the Standards and Guidelines for Quality Assurance in the European Higher Education Area (ESG)

Bologna Process and European Higher Education Area

Intergovernmental higher education reform process that includes 49 European countries and a number of European organisations.

- new topics addressed, such as fundamental values and learning and teaching; as well as its longstanding commitments, which require continued attention

Bologna Process and European Higher Education Area

Learning outcomes: why we need a common language between the worlds of work and education?

"Learning outcomes" is used to state what a learner should know, be able to do and understand at the end of a learning process or sequence.

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Bologna Process and European Higher Education Area

Learning outcomes: why we need a common language between the worlds of work and education?

"Learning outcomes" is used to state what a learner should know, be able to do and understand at the end of a learning process or sequence.

curriculum and course development | non-formal and informal learning | qualification frameworks | professional standards

Broad range of areas in which Learning Outcomes are used.

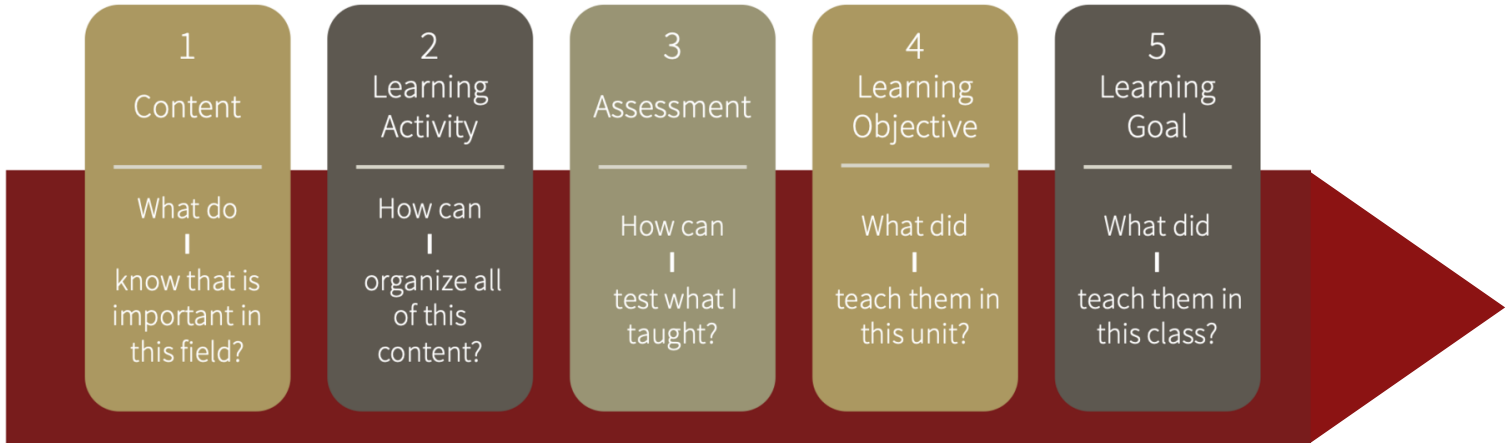
- increasing transparency and accountability within higher education and towards stakeholders, including students and professional sectors

Bologna Process and European Higher Education Area

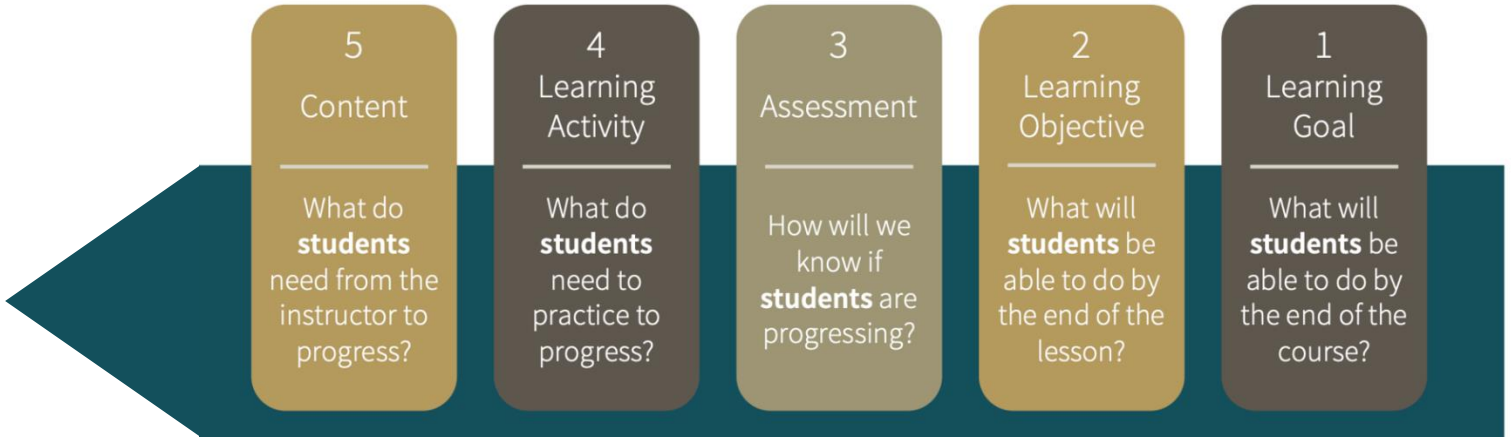
Learning outcomes: why we need a common language between the worlds of work and education?

European universities have been increasingly implementing learning outomes -> widely considered as a common basis for developing education provision across the European Higher Education Area

- associated with ***student-centred learning*** – another long-term goal of the Bologna Process



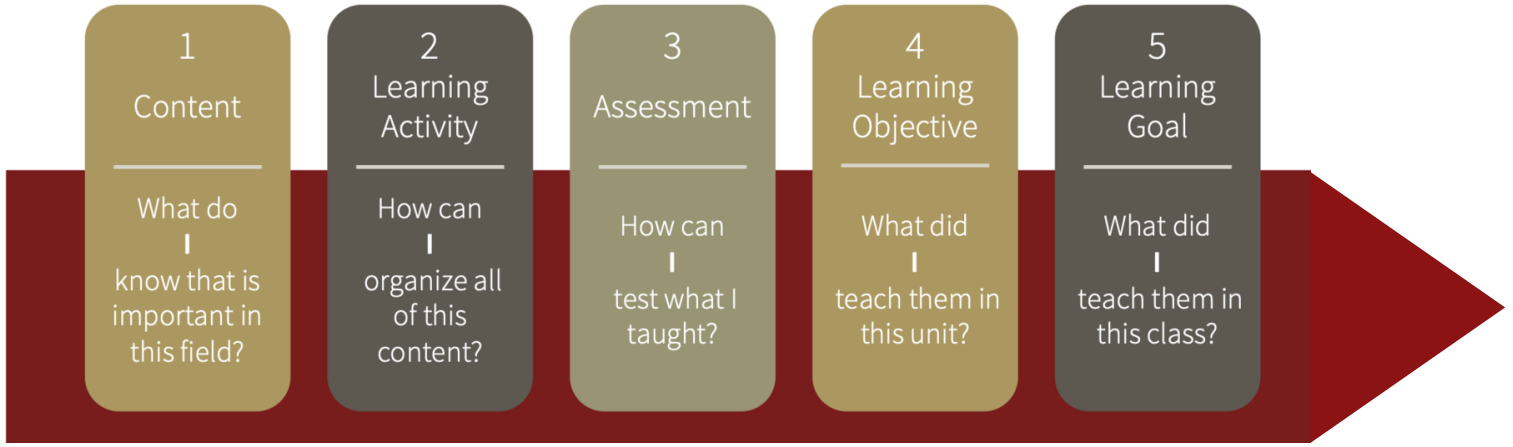
Teacher-centered course design



Student-centered course design

Bologna Process

An outcome-based approach is one of the **long-term goals of the Bologna Process**.



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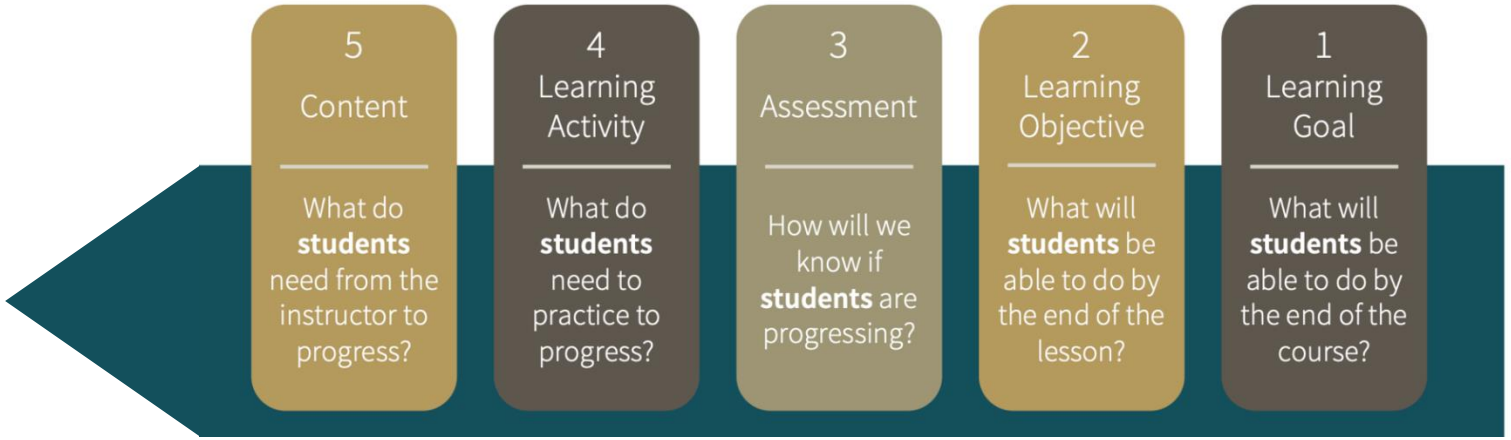


Student-centered course design

Bologna Process

Student-centred learning is one of the **long-term goals of the Bologna Process**.

What are Learning Outcomes?

Learning outcomes are statements of what a learner is expected to know, understand and/or be able to demonstrate after completion of a process of learning.

The process of learning could be, for example, a lecture, a module or an entire programme.

Learning outcomes and constructive alignment

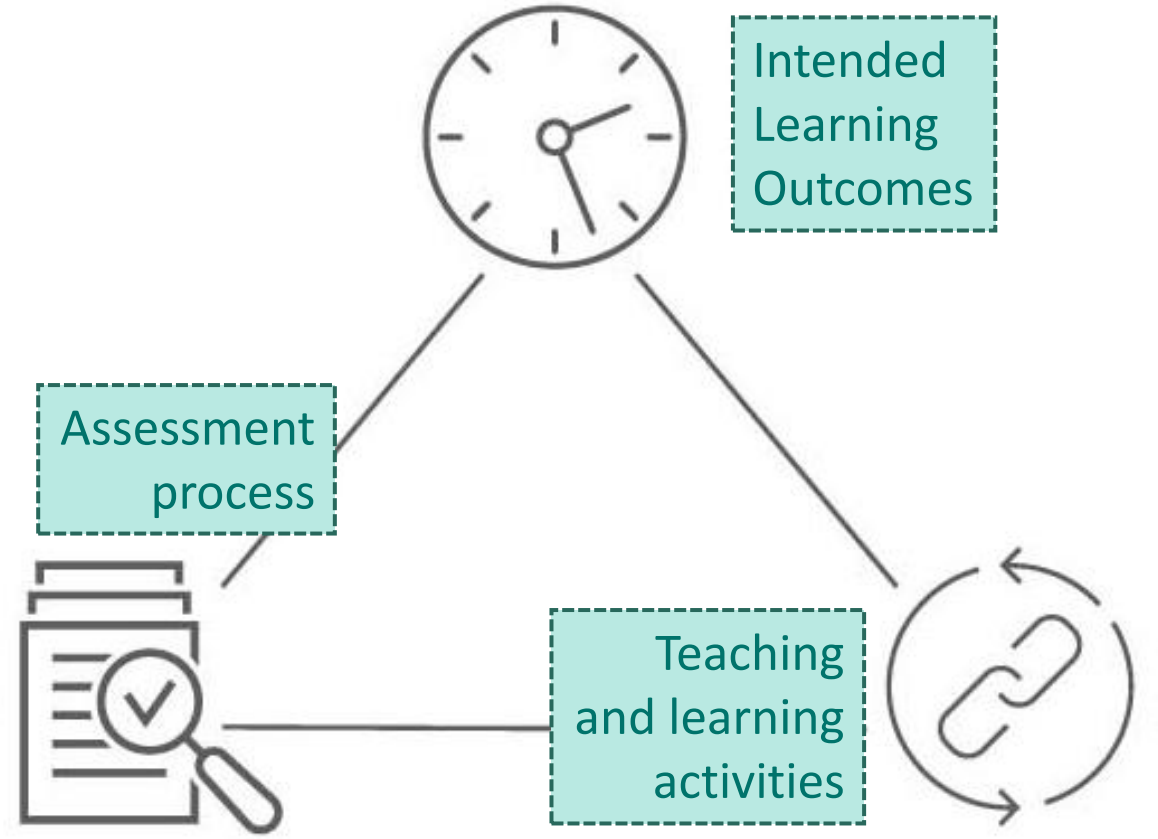
The beauty of starting from the end?

Intended Learning Outcomes may be the teacher's guide in the design of teaching and learning activities and in the choice of assessment strategies that will allow him to observe whether or not the Intended Learning Outcomes have been achieved.

Learning outcomes and constructive alignment

CONSTRUCTIVE ALIGNMENT - J.B. BIGGS

3 steps for designing effective teaching



Learning outcomes and constructive alignment

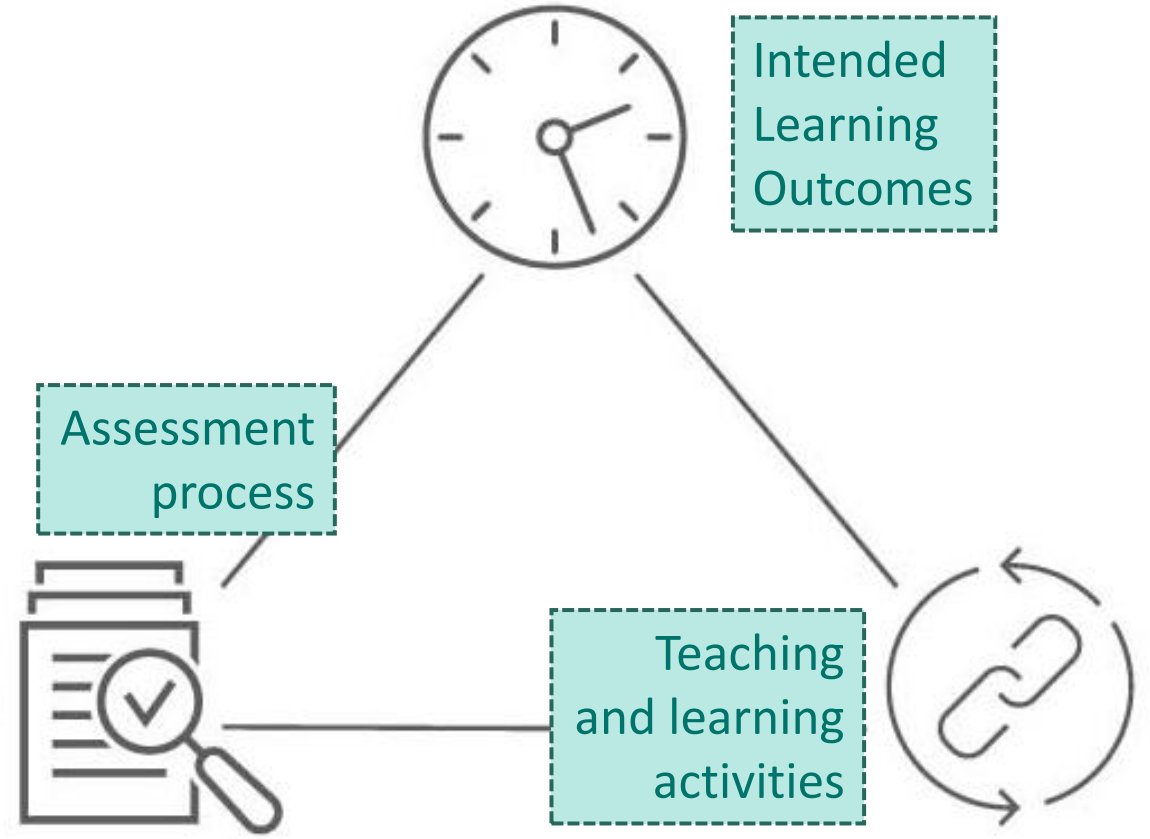
CONSTRUCTIVE ALIGNMENT - J.B. BIGGS

3 steps for designing effective teaching

(1) formulation of the Intended Learning Outcomes

(2) designing an Assessment Strategy that allows you to effectively assess the Intended Learning Outcomes

(3) designing teaching and learning activities that lead your students to achieve the Intended Learning Outcomes and deal successfully with the planned assessment activities



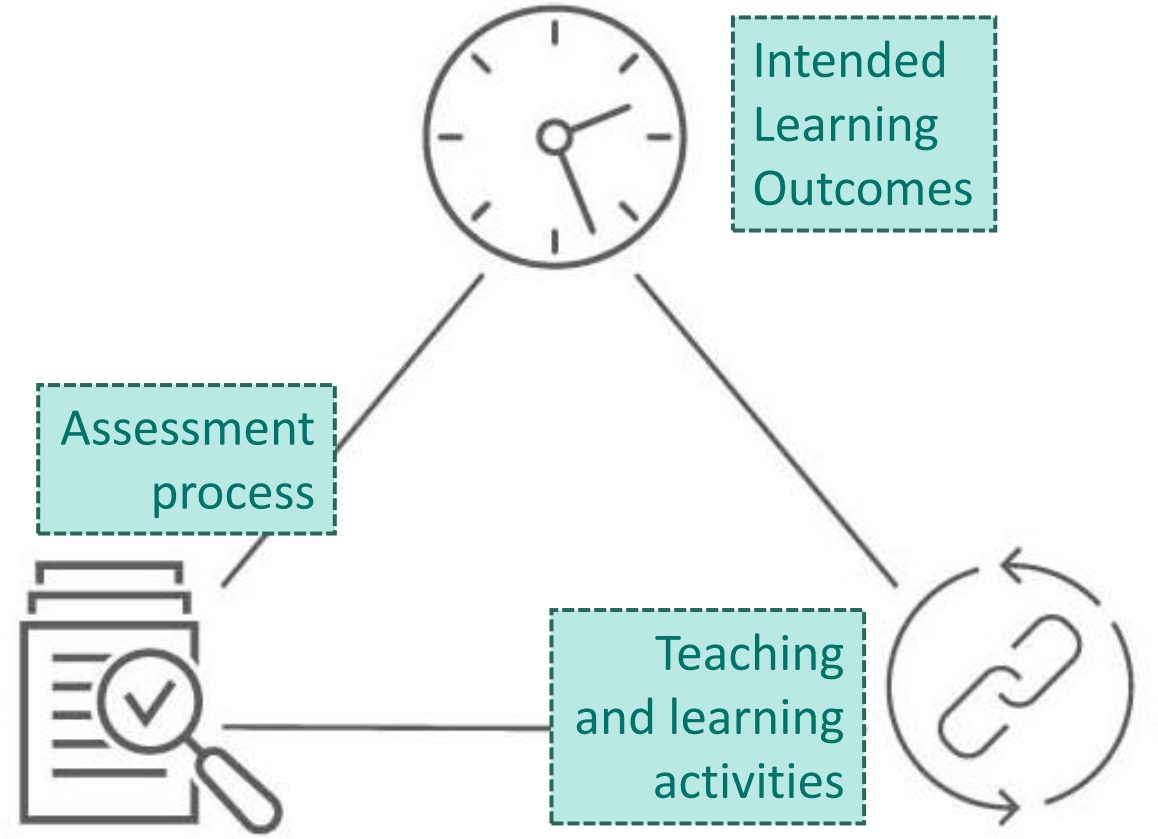
Learning outcomes and constructive alignment

CONSTRUCTIVE ALIGNMENT - J.B. BIGGS

3 steps for designing effective teaching

(1) formulation of the Intended Learning Outcomes

> first and crucial step for a good teaching experience design



How can one formulate well learning outcomes?

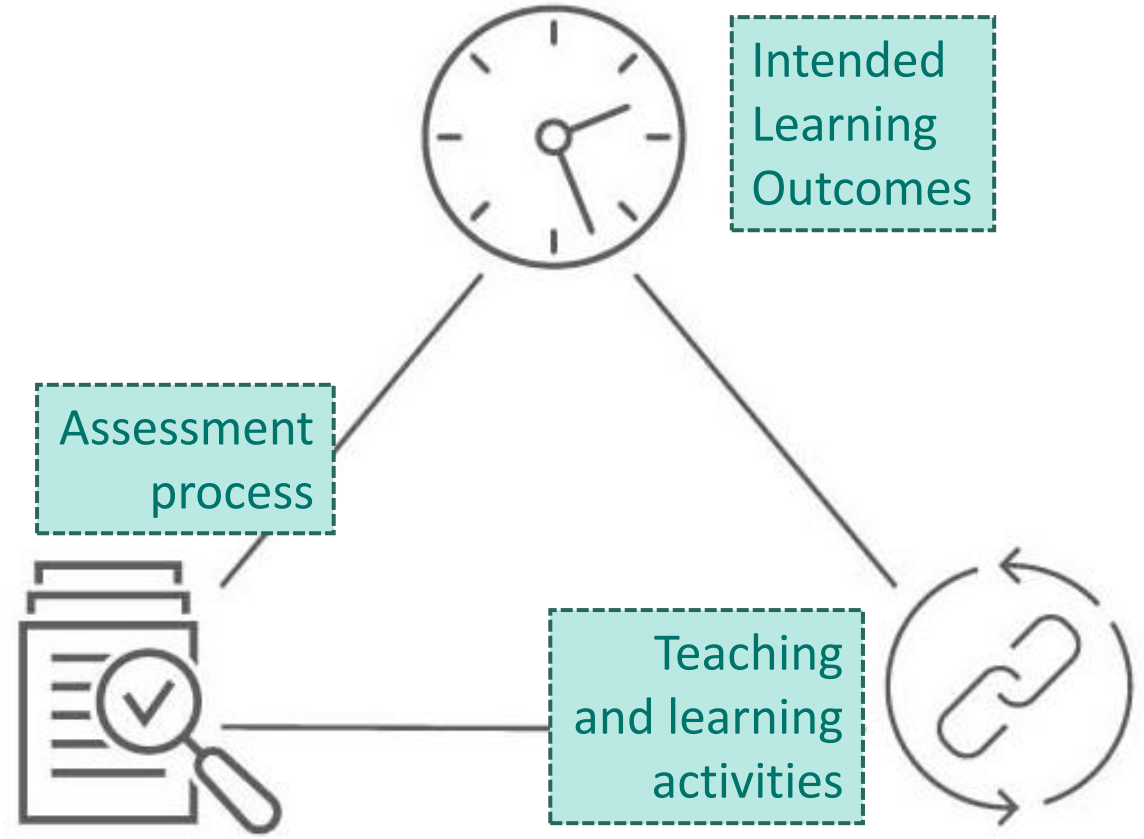
Performance > Observable

The student will know the basis of Spatial Data Infrastructure. 

The student will be able to present, using the correct disciplinary language, the definitions and the components of Spatial Data Infrastructure.

Learning outcomes and constructive alignment

The student will know… ✗



How can one write learning outcomes?

The student will be able
to recognize,
starting from the analysis of the real world industry case scenarios,
theoretical and practical concepts of Spatial Data Infrastructures
with specific emphasize on policy, financial, stakeholders and standards related issues.

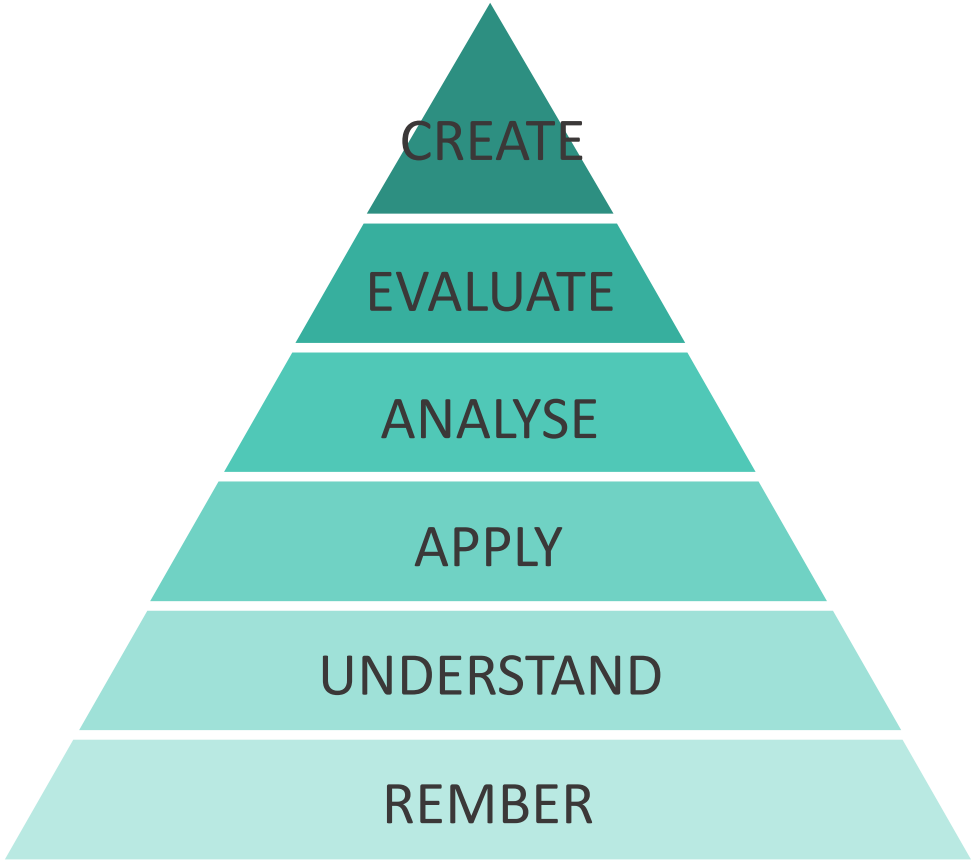
How can one write learning outcomes?

The student will be able PERFORMANCE
to recognize, VERB-ACTION
starting from the analysis of the real world industry case scenarios, CONTEXT OF THE PERFORMANCE
theoretical and practical concepts of Spatial Data Infrastructures CONTENT
with specific emphasize on policy, financial, stakeholders and standards related issues. FILED OF APPLICATION

Dublin Desciptors

- KNOWLEDGE AND UNDERSTANDING
- APPLYING KNOWLEDGE AND UNDERSTANDING
- MAKING JUDGEMENTS
- COMMUNICATION SKILLS
- LEARNING SKILLS

Bloom's Taxonomy



Dublin Desciptors

KNOWLEDGE AND UNDERSTANDING

APPLYING KNOWLEDGE AND UNDERSTANDING

MAKING JUDGEMENTS

COMMUNICATION SKILLS

LEARNING SKILLS

Aim to facilitate the definition of the Intended Learning Outcomes at the end of a course so as to make them more conforming with other similar courses within the **European educational system**

Dublin Desciptors

KNOWLEDGE AND UNDERSTANDING

APPLYING KNOWLEDGE AND UNDERSTANDING

MAKING JUDGEMENTS

COMMUNICATION SKILLS

LEARNING SKILLS

Explain which KNOWLEDGE our programs aim at.

Aim to facilitate the definition of the Intended Learning Outcomes at the end of a course so as to make them more conforming with other similar courses within the **European educational system**

Dublin Desciptors

KNOWLEDGE AND UNDERSTANDING

APPLYING KNOWLEDGE AND UNDERSTANDING

MAKING JUDGEMENTS

COMMUNICATION SKILLS

LEARNING SKILLS

Ensure that our students will be able to APPLY the acquired knowledge.

Aim to facilitate the definition of the Intended Learning Outcomes at the end of a course so as to make them more conforming with other similar courses within the **European educational system**

Dublin Desciptors

KNOWLEDGE AND UNDERSTANDING

APPLYING KNOWLEDGE AND UNDERSTANDING

MAKING JUDGEMENTS

COMMUNICATION SKILLS

LEARNING SKILLS

To EVALUATE and compare different contexts and apply to these contexts the knowledge they have already acquired.

Aim to facilitate the definition of the Intended Learning Outcomes at the end of a course so as to make them more conforming with other similar courses within the **European educational system**

Dublin Desciptors

KNOWLEDGE AND UNDERSTANDING

APPLYING KNOWLEDGE AND UNDERSTANDING

MAKING JUDGEMENTS

COMMUNICATION SKILLS

LEARNING SKILLS

Acquisition of communication skills that allow to COMMUNICATE what the student learned before.

Aim to facilitate the definition of the Intended Learning Outcomes at the end of a course so as to make them more conforming with other similar courses within the **European educational system**

Dublin Desciptors

KNOWLEDGE AND UNDERSTANDING

APPLYING KNOWLEDGE AND UNDERSTANDING

MAKING JUDGEMENTS

COMMUNICATION SKILLS

LEARNING SKILLS

Students will develop abilities in terms of autonomous learning.

Aim to facilitate the definition of the Intended Learning Outcomes at the end of a course so as to make them more conforming with other similar courses within the **European educational system**

Dublin Desciptors

KNOWLEDGE AND UNDERSTANDING

APPLYING KNOWLEDGE AND UNDERSTANDING

MAKING JUDGEMENTS

COMMUNICATION SKILLS

LEARNING SKILLS

System of descriptors
of the Intended Learning Outcomes:
KNOWING, APPLYING, EVALUATING, COMMUNICATING, LEARNING TO LEARN.

Dublin desciptors are not exhaustive model of different types of knowledge.

Dublin Desciptors

The students will be able to correctly present in written form the basic concepts of Spatial Data Infrastructures using the disciplinary language and the international notational system.

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Dublin desciptors are not exhaustive model of different types of knowledge.

Dublin Desciptors

Cycle	Knowledge and understanding:
1 (Bachelor)	[Is] supported by advanced text books [with] some aspects informed by knowledge at the forefront of their field of study ..
2 (Master)	provides a basis or opportunity for originality in developing or applying ideas often in a research* context ..
3 (Doctorate)	[includes] a systematic understanding of their field of study and mastery of the methods of research* associated with that field..

	Applying knowledge and understanding:
1 (Bachelor)	[through] devising and sustaining arguments
2 (Master)	[through] problem solving abilities [applied] in new or unfamiliar environments within broader (or multidisciplinary) contexts ..
3 (Doctorate)	[is demonstrated by the] ability to conceive, design, implement and adapt a substantial process of research* with scholarly integrity .. [is in the context of] a contribution that extends the frontier of knowledge by developing a substantial body of work some of which merits national or international refereed publication ..

Differentiating between three-cycle degree structure (bachelor, master's, doctorate) of the Bologna process.

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Dublin Desciptors

	Making judgements:
1 (Bachelor)	[involves] gathering and interpreting relevant data ..
2 (Master)	[demonstrates] the ability to integrate knowledge and handle complexity, and formulate judgements with incomplete data ..
3 (Doctorate)	[requires being] capable of critical analysis, evaluation and synthesis of new and complex ideas..

	Communication
1 (Bachelor)	[of] information, ideas, problems and solutions ..
2 (Master)	[of] their conclusions and the underpinning knowledge and rationale (restricted scope) to specialist and non-specialist audiences (monologue) ..
3 (Doctorate)	with their peers, the larger scholarly community and with society in general (dialogue) about their areas of expertise (broad scope)..

	Learning skills ..
1 (Bachelor)	have developed those skills needed to study further with a high level of autonomy ..
2 (Master)	study in a manner that may be largely self-directed or autonomous..
3 (Doctorate)	expected to be able to promote, within academic and professional contexts, technological, social or cultural advancement ..

Differentiating between three-cycle degree structure (bachelor, master's, doctorate) of the Bologna process.

Dublin Desciptors

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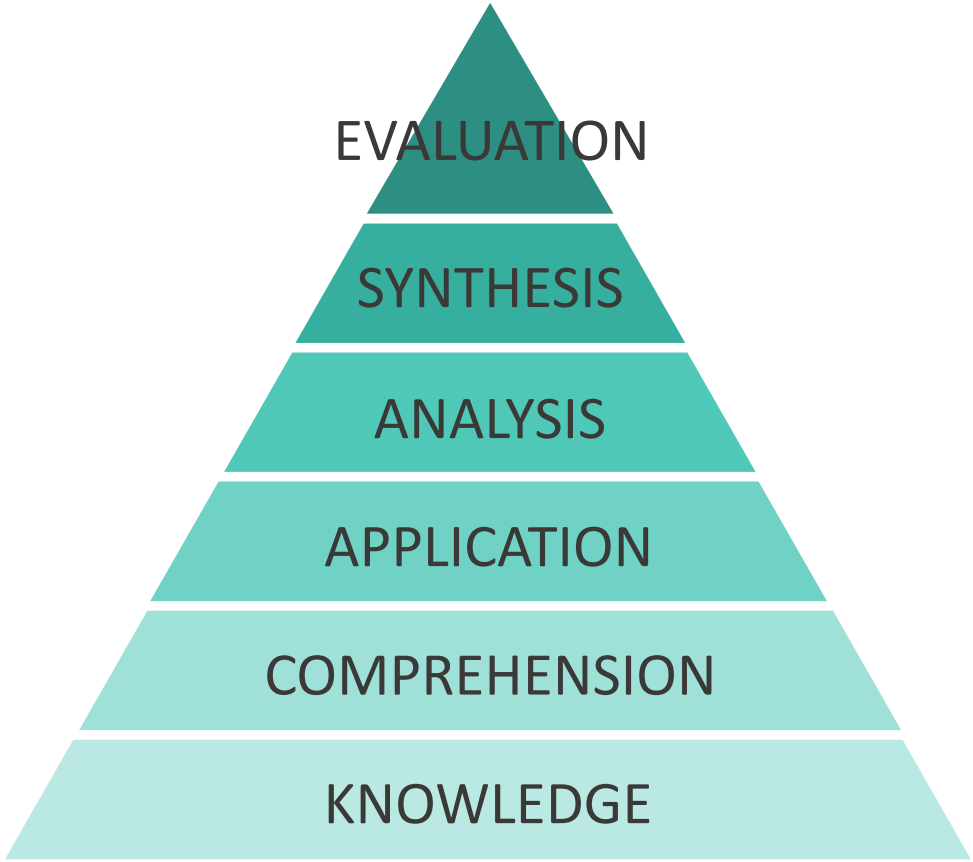
Dublin Descriptors
assist us to write Learning Outcomes >>

Bloom's Taxonomy

Cognitive

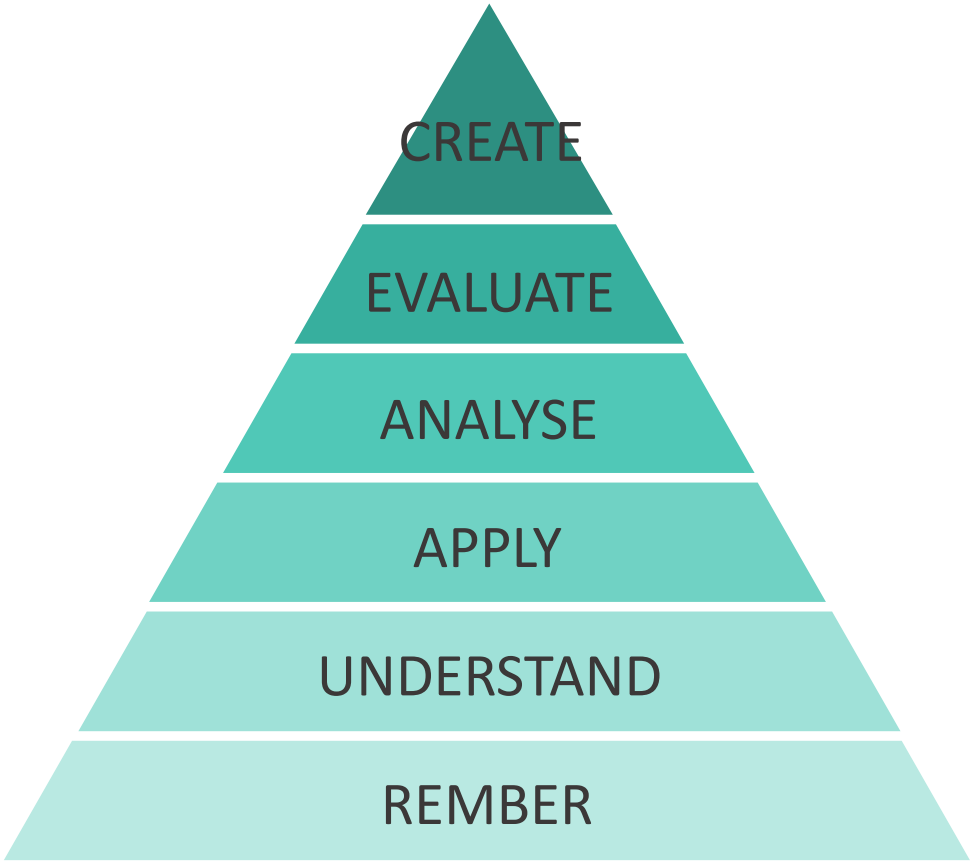
Affective

Psychomotor



Original version

Bloom's Taxonomy



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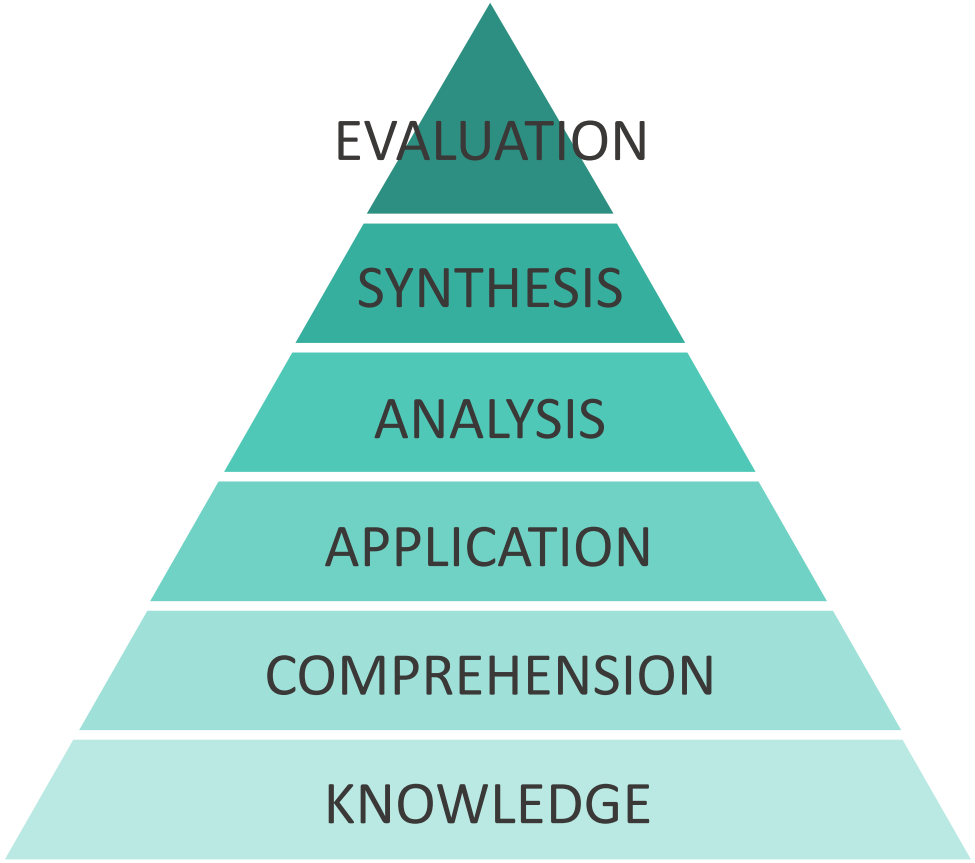

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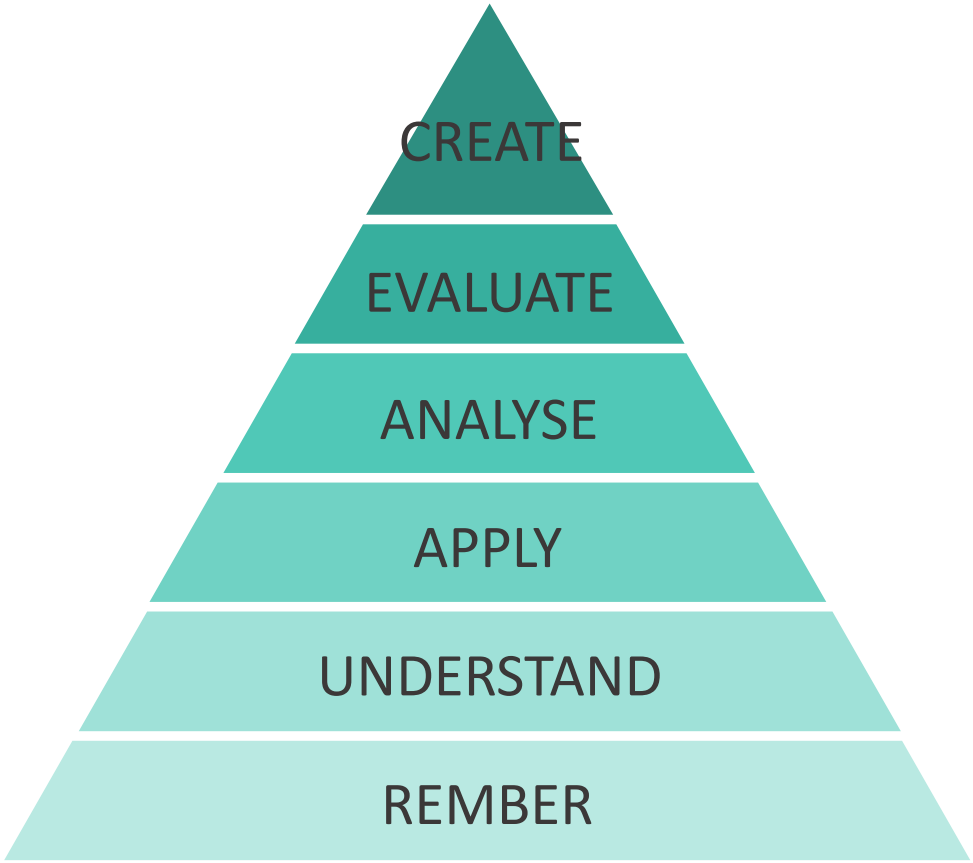
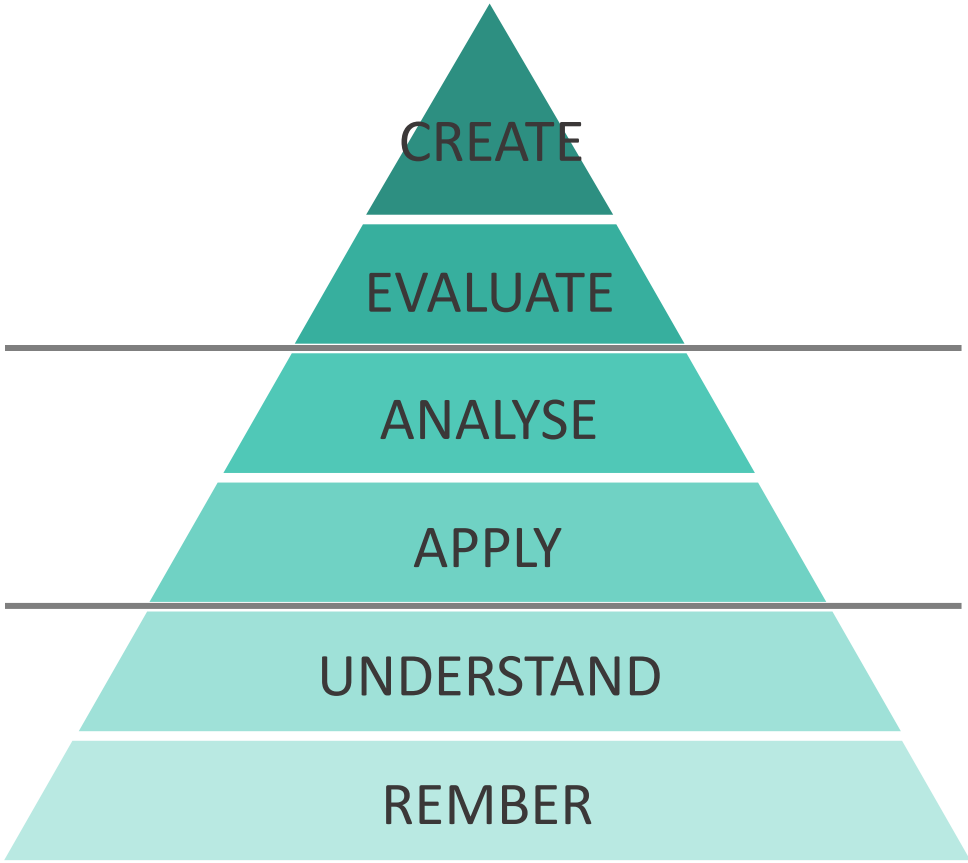


This taxonomy is used to classify educational goals, learning outcomes and standards, and provides a framework suitable to structure learning and teaching in a more transparent and efficient manner.

Bloom's Taxonomy



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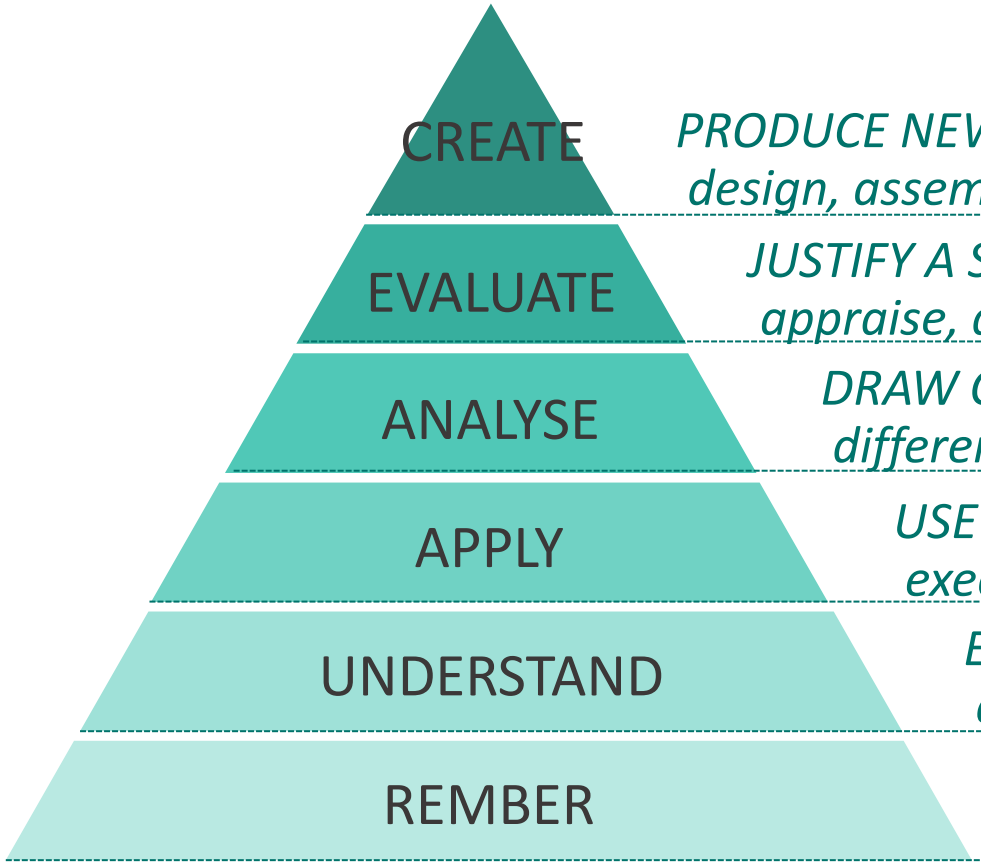


PRODUCE NEW OR ORIGINAL WORK
design, assemble, construct, develop, formulate, author, investigate

JUSTIFY A STAND OR A DECISION
appraise, argue, defend, judge, select, support, value, critique, weight

DRAW CONNECTIONS AMONG IDEAS
differentiate, organize, relate, compare, contrast, distinguish, examine

USE INFORMATION IN NEW SITUATIONS
execute, implement, solve, use, demonstrate, interpret, sketch

EXPLAIN IDEAS OR CONCEPTS
classify, describe, discuss, explain, identify, recognize, select

RECALL FACTS AND BASIC CONCEPTS
define, duplicate, list, memorise, repeat, state

Bloom's Taxonomy

	REMEMBER	UNDERSTAND	APPLY	ANALYZE	EVALUATE	CREATE
Factual						
Conceptual						
Procedural						
Megacognitive						

Bloom's table

Bloom's Taxonomy and Learning Outcomes

On completion of the course, the student will be able to:

- ✓ Describe the core SDI principles
- ✓ Identify the necessary components required to support the development of SDIs, including technical and institutional arrangements and the basis of effective and efficient design
- ✓ Describe a range of technologies and technological concepts applicable for developing and maintaining SDIs
- ✓ Compare the range of approaches to SDI development in both developed and developing countries
- ✓ Model, design and critique SDI initiatives and spatial enablement platforms

Bloom's Taxonomy and Learning Outcomes

	REMEMBER	UNDERSTAND	APPLY	ANALYZE	EVALUATE	CREATE
Factual						
Conceptual		×				
Procedural						
Megacognitive						

The student will be able to describe the core SDI principles.

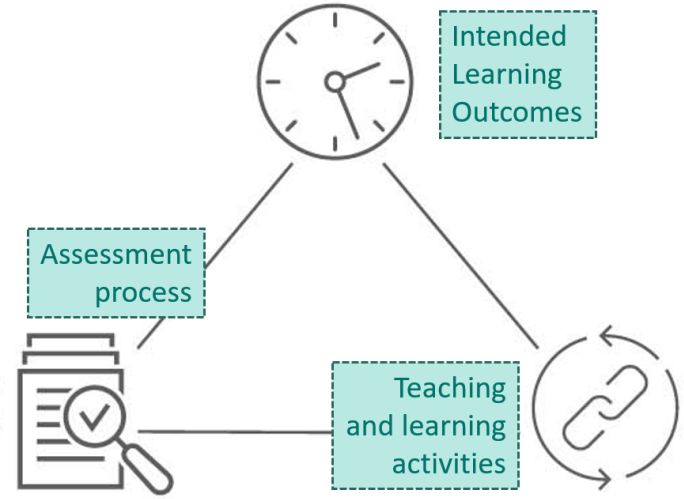
Bloom's Taxonomy and Learning Outcomes

	REMEMBER	UNDERSTAND	APPLY	ANALYZE	EVALUATE	CREATE
Factual						
Conceptual		X X	X X	X		
Procedural				X		X
Megacognitive						

Course descriptors

What other information, apart from the Learning outcomes is needed to describe a course?

Course descriptors



Aim: A sentence stating the teaching intention

Content: A list of topics covered in the course.

Learning Outcomes: On successful completion of this course, students will be able to:

[List of learning outcomes].

Assessment: Details of total mark for course and details of the breakdown of this total mark, e.g. written paper, continuous assessment, project, etc.

Course descriptors

Credit Weighting: Number of ECTS credits

Teaching Period(s): Term 1, Term 2 or both

No. of Students: Maximum number of students allowed to take the course

Pre-requisite(s): Course(s) that should already have been passed by student

Co-requisite(s): Another course that the student must take with this one

Teaching Methods: Details of number of lectures, tutorials, etc.

Course Co-ordinator: Name of person in charge of course

Lecturer(s): Name(s) of person(s) teaching the course

Course descriptors

Compulsory Elements: Any part of assessment that MUST be passed in order to pass the course, e.g. professional practice component.

Penalties (for late submission of Course/Project Work etc.): Details of marks deducted for late submission.

Pass Standard and any Special Requirements for Passing Course: The minimum mark that must be obtained in order to pass the module.

End of Year Written Examination Profile: Number and duration of examination papers.

Requirements for Supplemental Examination: Number and duration and date of repeat examination for those who fail the course.

Course descriptors

Play an important role in all programmes in academic institutions.

- minimise the overlaps and gaps between different courses within a programme in an academic institution
- cross crediting of courses between different institutions or different programmes within the same institution

Learning outcomes are a key component of course descriptors.

Course descriptors

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- minimise the overlaps and gaps between different courses within a programme in an academic institution
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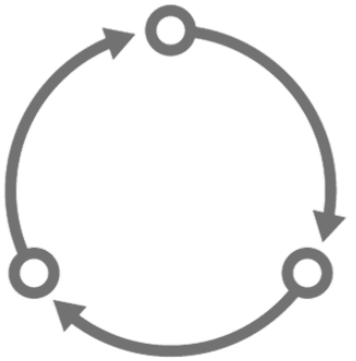

Conclusion > Course design

Learning outcomes can:

- Help to ensure consistency of delivery across modules and programmes
- Aid curriculum design by clarifying areas of overlap between modules and programmes
- Help course designers to determine precisely the key purposes of a course and to see how components of the syllabus fit and how learning progression is incorporated
- Highlight the relationship among teaching, learning, and assessment and help improve course design and the student experience

Conclusion > Quality assurance

Learning outcomes provide:

- Increase transparency and the comparability of standards between and within qualifications
- Possess greater credibility and utility than traditional qualifications
- Play a key role by acting as points of reference for establishing and assessing standards.

Conclusion > Students

Learning outcomes provide:

- Comprehensive sets of statements of exactly what the students will be able to achieve after successful study
- Clear information to help students with their choice of module and programme, which can lead to more effective learning
- Clear information to employers and higher education institutions on the achievements and characteristics associated with particular qualifications.

Conclusion > Mobility

Learning outcomes:

- Contribute to the mobility of students by facilitating the recognition of their qualifications
- Improve the transparency of qualifications
- Simplify credit transfer
- Provide a common format that helps promote lifelong learning and that can assist in creating multiple routes through and between different educational systems.

Thank you for your attention!