Outcomes-oriented Choice of Methods

Barbara Breen-Wenninger and Barbara Louis

May 2020

Overview

1. Teaching/learning methods

Teaching/learning methods are the **means** by which you support your students in **achieving the intended student learning outcomes (ILOs)** and the respective knowledge and competencies. When you have to choose from the wide range of possible methods in your course planning, *Constructive Alignment* helps, as the appropriate teaching/learning methods enable students to learn and practise what they should know and be able to do according to the ILOs. For assessment, this means that the best instruments reveal the students' approximation to the ILOs as directly as possible.

Tip: The more **sophisticated** the ILOs (i.e. the higher up in the taxonomy), the more important it is to use **different methods.**[1] For example: If students are expected to learn how to operate an electron microscope correctly, listening to a lecture and reading a textbook chapter will not suffice. Students must also have the opportunity for practical application.

In addition to ILOs, various other factors influence the choice of teaching/learning methods: the course **content**, the **type of course** and the general set-up (continuous or non-continuous assessment, number of participants)[2], **student group characteristics** including familiarity with the course topic (e.g. phase of study program), as well as available **resources** (e.g. room, time frame, digital elements, tutorial support).

2. Courses with Non-continuous Assessment

Courses with non-continuous assessment are usually lectures ("Vorlesung"). This format is particularly suitable for ILOs that involve the **acquisition of knowledge**. Traditionally, lectures are characterized by a **lower degree of interaction and student activity** and therefore include mainly **presentations** and other teacher-centred **teaching/learning methods** (e.g. lecture, demonstration).[3] The teacher structures the content and guides teaching/learning processes by presenting, explaining, and demonstrating. Lectures are ideally supported with visual aids such as presentation slides (see also: video on design tips, especially from minute 7:30 (https://infopool.univie.ac.at/videos/ballstaedt/#c393141); in German).

However, it is also possible to employ **teaching/learning activities** in lectures that complement the presentation (see video Vorlesungsrhetorik (https://infopool.univie.ac.at/videos/vorlesungsrhetorik/); in German). These include **motivating strategies** at the beginning of class (e.g. brainstorming), or activating and structuring students' previous knowledge, thus integrating new content into their existing range of experience, e.g. through advance organisers, concept mapping, mind mapping and the like. Student Response Systems are suitable for **engaging** students during lectures or for quick knowledge checks. At the University of Vienna we use Arsnova (https://arsnova.univie.ac.at/).

In the last few years, the traditional lecture has undergone substantial modification, with the development of variants that encourage active student participation (for more information, see: Flipped Classroom (https://infopool.univie.ac.at/en/home-page/teaching-advising/flipped-classroom/)). Ultimately, the aim is to support continuous student learning throughout the semester by using preparatory materials, intermediate tests, and interactive elements during class sessions.

3. Courses with Continuous Assessment

Courses with continuous assessment appear in the curriculum as proseminars, seminars, exercises ("Übung"), laboratory courses, etc. and feature a **higher degree of interaction and student activity** than lectures. In addition to the acquisition of knowledge, intended student learning outcomes here aim at students **developing more complex competencies** for which student-centred teaching/learning methods are suitable, as they offer **opportunities to acquire and practise** the desired competencies.

Aligning your teaching with ILOs includes choosing the teaching/learning methods and activities that best support students in developing competencies. **Some** of these **teaching/learning activities can also serve for assessment** and thus have a dual function in the overall teaching/learning concept.

4. Guide to Outcomes-oriented Selection of Teaching/Learning Methods

The following table shows examples of which common teaching/learning methods that are suitable for which intended student learning outcomes. The table is not complete of course, and should only serve as a general guideline, from which deviations are certainly possible. How suitable methods are for ILOs also depends on these methods' detailed design and implementation (e.g. a traditional lecture is primarily suitable for knowledge acquisition, though interactive design may also enable higher-level outcomes).

Table 1:[4]

ILO / Method	Knowing	Understanding	Applying	Analysing	Synthesising	Evaluating
(Interactive) Lecture	☑	☑	☒	☒	☒	☒
Written assignments	☒	☑	☑	☑	☑	☑
Lab experiment	☒	☑	☑	☒	☒	☒
Peer feedback	☒	☑	☒	☑	☒	☑
Problem-based learning	☒	☒	☑	☑	☑	☑

In this final section, you will find an overview of some teaching/learning activities for achieving the six cognitive levels according to Bloom with separate descriptions of teacher and student activities.[5] It should serve as a further illustration of the previous points, but we also hope that it will be useful as a guide for your own detailed course planning.

Knowing

Actions of teachers

Organize content in meaningful blocks; highlight key ideas, show patterns and connections between ideas or concepts, use visual aids.

Actions of students

Practise retrieving, listing, and reformulating information; practise expressing definitions and central concepts in their own words.

Understanding

Actions of teachers

Explain new material and outline it in simplified form; explain using specific examples and cases.

Actions of students

Summarise, explain and describe content; illustrate what they have learned, explain details and transfer content across contexts.

Applying

Actions of teachers

Give different examples of a phenomenon; provide necessary information for application and explain the context; describe the necessary steps of a particular application; use appropriate questions to guide students in the right direction.

Actions of students

Formulate own examples of a phenomenon; apply concepts to concrete problems; select suitable problem-solving strategies; solve problems; calculate parameters; design scenarios; transfer solutions to other examples.

Analysing

Actions of teachers

Highlight central and explain less important elements of content; point out connections between concepts; explain different thinking strategies; show how to recognise errors and fallacies in thinking; explain and demonstrate how they proceed in their own professional work; encourage students to reflect on and evaluate their own thinking.

Actions of students

Explain different thinking strategies; practise applying different thinking strategies by means of practical examples; compare and categorise phenomena; classify contents; practice recognising errors of thought as well as fallacies.

Synthesising

Actions of teachers

Explain processes and methods of scientific work; illustrate examples for developing research questions and hypotheses; interpret research results; show examples of creative problem-solving; ask questions to which there are several good answers; encourage students to think for themselves and to adopt original approaches.

Actions of students

Solve problems that require new, creative approaches; create a research design; write a paper on a course topic; process data to solve challenging questions; re-conceptualize problems to open up perspectives for further possible solutions.

Evaluating

Actions of teachers

Create situations that challenge established opinions, attitudes and beliefs; explain how evidence, logic, rigorous argumentation and evaluation criteria can be recognised and developed; use examples to explain which factors might influence alternative approaches and interpretations.

Actions of students

Assess information, results, and interpretations; identify factors that influence approaches and interpretations; identify errors and contradictions in an example; review a scientific study or a written paper and justify their assessment; evaluate alternative approaches or interpretations to a problem and argue their criteria.

References

[1] Nilson, Linda B. *Teaching at Its Best: A Research-Based Resource for College Instructors*, 4th edition San Francisco: Jossey-Bass, 2016, 130.

[2] For the definitions of courses with continuous assessment and courses with non-continuous assessment, please see the *Teaching Manual*, University of Vienna, 2019, chapter 6.1.1 (p. 32-33) and 6.2. (p. 39ff). https://intra.univie.ac.at/fileadmin/download/Teaching_Manual.pdf [last accessed on 04.09.2020]

[3] Einsiedler, Wolfgang. *Lehrmethoden. Probleme und Erkenntnisse der Lehrmethodenforschung*. München: Urban & Schwarzenberg, 1981.

[4] See for example Nilson. *Teaching at Its Best*, 134 [1].

[5] See Nilson. Teaching at Its Best, 135-139 [1].

Recommended citation

Breen-Wenninger, Barbara/Louis, Barbara: *Outcomes-oriented Choice of Methods.* Infopool *better teaching.* Center for Teaching and Learning, University of Vienna, May 2020. [https://infopool.univie.ac.at/en/home-page/teaching-advising/outcomes-oriented-choice-of-methods/

Contact

T (Telephone): +43-1-4277-120 60
infopool@univie.ac.at