TeComp
Strengthening Teaching Competences
in Higher Education
in Natural and Mathematical Sciences
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Using blended learning to bridge the gap between on-line and on-campus courses

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Strengthening Teaching Competences in HE

What we want to change or to improve?

Strengthening Teaching Competences in HE

Our goals are:

- to increase students' active participation in classes,
- to additionally motivate students to learn,
- to enable students to learn autonomously,
- to impact students to take responsibility for their own work and progress,
- ...

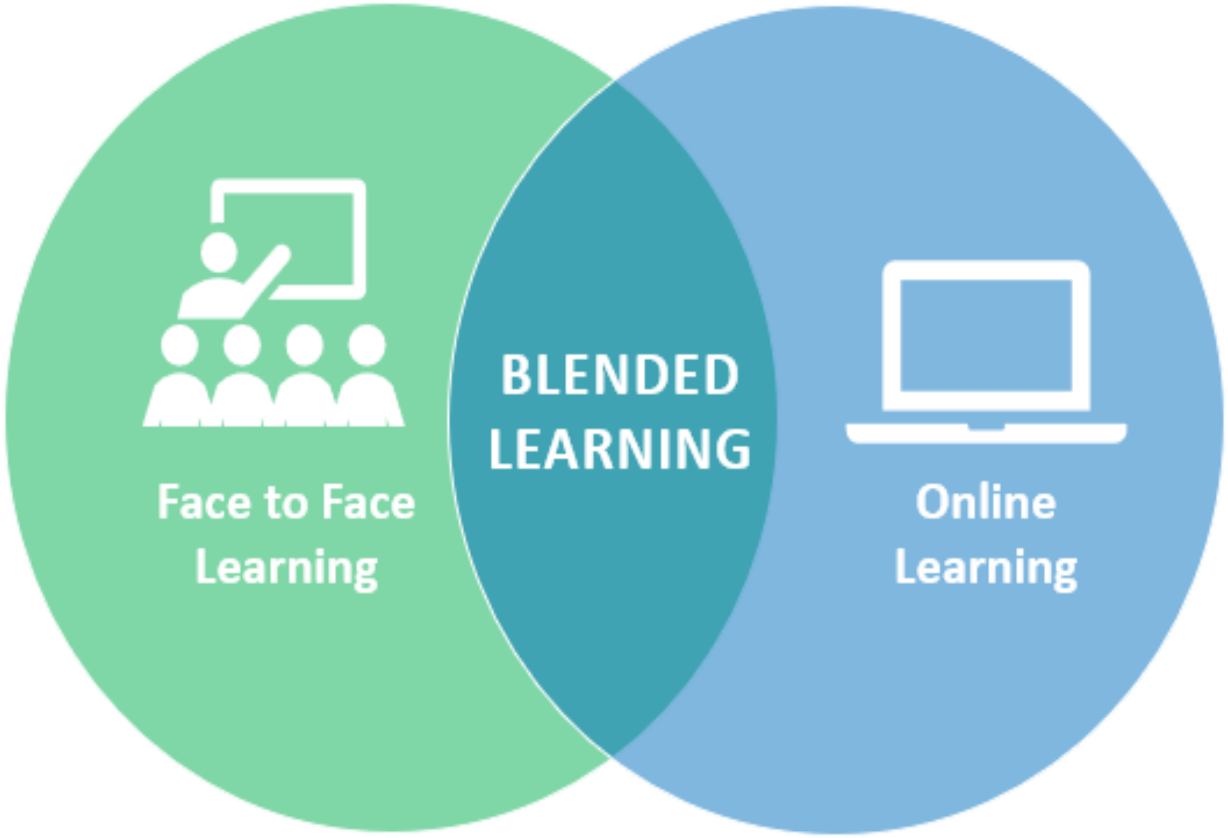
Strengthening Teaching Competences in HE

Starting point - overview of current situation

- expirience with face-to-face teaching,
- more and more available sophisticated ICT,
- aditionally COVID pandemic – distance (online) teaching as an emergency, not as a choice,
- ...

Strengthening Teaching Competences in HE

Blended model
of teaching and learning
as solution for some of
the observed problems



Blended Learning

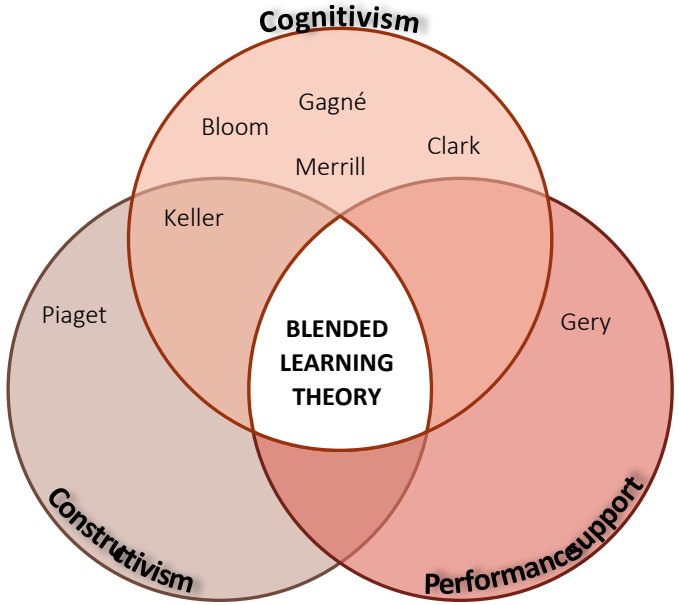
- The genealogy of *blended learning* can be found in the distance learning through correspondence courses. The objective of **overcoming the spatial distance** still remains one of the major motives for the use of blended learning.

- An additional incentive for the development of such a type of teaching happened at the end of the previous century, when the availability of personal computers and the emergence of the Internet and social networks made the development of new teaching models and learning at the various educational levels possible. The new technology had the potential not only to cross the space, but also **to cross the time** (by recording) and **to individualize learning** (students have the control to choose their path through the curriculum and to choose their learning pace).

Blended Learning

Most broadly understood, and probably the most profound and useful interpretation of the ***blended learning*** is the one where it needs to include a combination of various teaching theories in educational practice in a way that most adequately suits the given situation.

Learning theories are not like a religion, one does not exclude the other, and the aim is to have a proper theory for a proper situation. The choice in a specific situation depends on the characteristics of the students, educational field and concrete teaching content, as well as the nature of the knowledge and skills which the students need to acquire and the context in which these are meant to be applied.



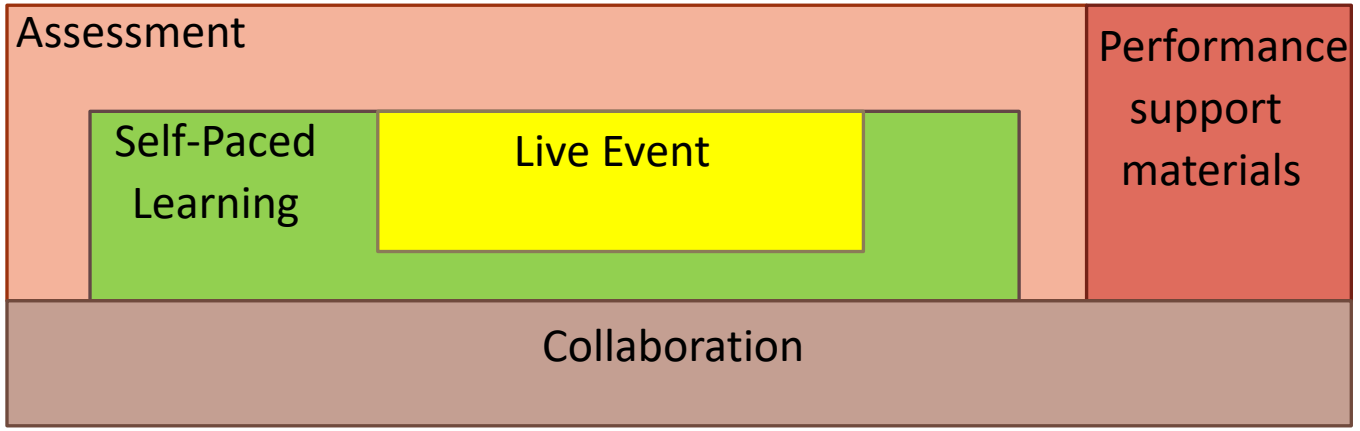
Blended Learning

Blended learning is a teaching model that relies on the strategies and systematic approach of combining time and types of learning, so that the best aspects of traditional face-to-face teaching, i.e. the teaching in a real classroom, and the online interactive teaching, using suitable digital and communication technologies, are combined.

- It is estimated that the future learning systems will be differentiated not by taking into account whether they combine different strategies, but how they combine them.
- New technologies (ICT) **can be** powerful pedagogic tools, not only as valuable sources of information, but also as the enhancement of human abilities and contexts for social interaction which support learning.
- The process of using technology for **the enhancement of learning never is and never should be merely a technical issue**. What certainly needs to be avoided is the introduction of new technologies without a clear didactic justification and goal.

Key factors of blended learning

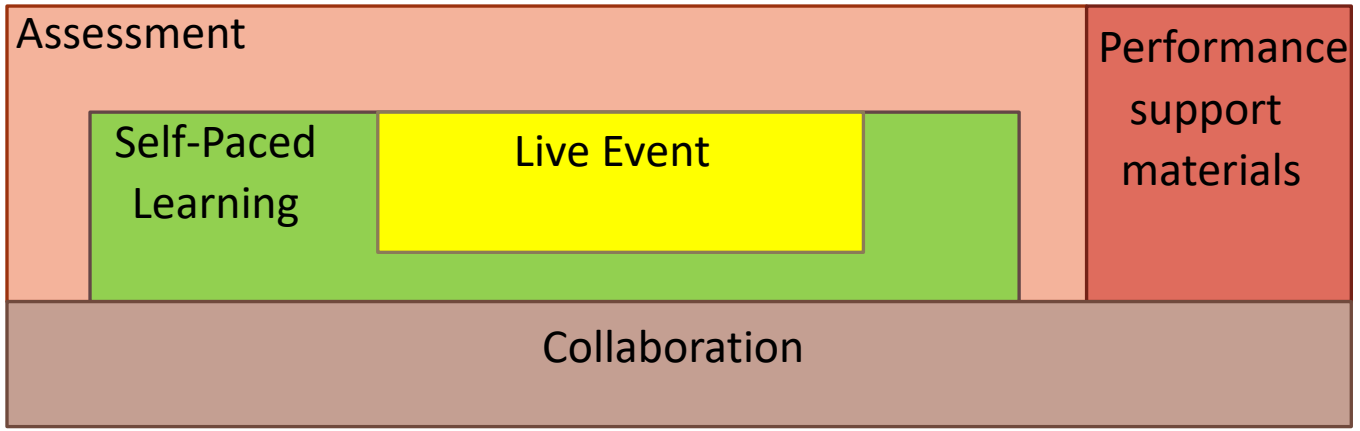
1) live events, which are synchronous learning events headed by the teacher, where the students participate concurrently in a real or virtual classroom
2) self-paced learning, i.e. learning where the student is autonomous, learning at his or her own pace at the time which is the most suitable for him or her
3) cooperation, students communicate among themselves in an appropriate format and environment (by email, as a part of a forum or on social networks)



Key factors of blended learning

4) assessment, the evaluation of students' knowledge, which can precede the live events and self-paced learning, so in these instances they aim at reinforcing the previous knowledge on which the new knowledge builds, while subsequent instances of testing the knowledge are obligatory in order to determine the accomplished level of knowledge and measure the achieved knowledge transfer

5) performance support materials, which can be diverse: printed, electronic, linear, non-linear, interactive or not



Blended Learning Design

1. **The role of physical space.** Use the face-to-face interaction when the activities are most suited to the use of physical space, classrooms, laboratories, computer rooms.

2. **Planning and designing teaching materials.** Along with the material that you have created yourself, also consider open educational resources and resources available to students in various libraries.

3. **Use of online spaces.** Use spaces and services for cooperation and communication, available at university level, as well as general open services. Discussion forums should be formed, as well as information exchange blogs, joint/shared notebooks, wiki pages, etc.

4. **Providing feedback.** Feedback must be timely, clear and concise.

Blended Learning Design

5. **Flexibility vs. structure.** Often when one adds flexibility, there may be a certain loss of structure. Therefore, setting deadlines, clear learning goals and expectations from students play an important role in blended learning.

6. **Class participation vs. class attendance.** Students must understand what is expected from them and what the educational requirements for the successful completion of a class are. They need to be clearly told that participation is important and required.

7. **Working hours.** Working hours are not restricted solely to classes, students need to be given additional help or opportunity to ask questions. For this purpose, consider using asynchronous and/or synchronous sessions.

Typical Instances of Blended Learning

- **Flipped classroom**
- **Project based learning** (the work on a concrete project and the learning is organized according to the needs that the realization of the project requires; the teacher is available to students for support in all stages of the project, especially when designing the activity plan; one of the ways for the lectures to be more intensively connected with the real life and to demonstrate the application of theory on real problems)

Based on a true story 1999.

Designing university courses

Investigating different processes of designing combined learning courses, three different designing approaches can be distinguished:

1) **low-impact of blended learning** – adding supplementary activities to the existing course,

2) **medium-impact of blended learning** – substituting activities in the existing course,

3) **high-impact of blended learning** – building the course from scratch based on the strategy which relies on the blended learning model.

Designing university courses

Low-impact of blended learning – adding supplementary activities to the existing course (phenomenon "course-and-a-half syndrome", the added activity happened to be a result of a pedagogical need and turned out to be a valuable addition to the traditional course)

Traditional f2f course

1	f2f -lecture
2	f2f -lecture
3	f2f -lecture
4	f2f - tutorial
5	f2f - tutorial
6	f2f –test

Addition

Low-impact blended course

1	f2f -lecture
2	f2f -lecture
3	f2f -lecture
4	f2f - tutorial
5	f2f - tutorial
6	f2f –test
7	Group discussion on Facebook

Designing university courses

Medium-impact of blended learning – substituting activities in the existing course (some parts of the course would be more effective as online activities)

Traditional f2f course

1	f2f -lecture
2	f2f -lecture
3	f2f -lecture
4	f2f - tutorial
5	f2f - tutorial
6	f2f –test

Replacement

Medium-impact blended course

1	f2f -lecture
2	google-hangout
3	f2f -lecture
4	Group discussion on Facebook
5	f2f - tutorial
6	online test

Designing university courses

High-impact of blended learning – building the course from scratch based on the strategy which relies on the blended learning model (the teacher should consider each learning outcome to determine the best way to achieve it; this approach conforms to *constructive alignment*, in which assessment tasks are aligned with the learning outcomes)

Traditional f2f course

1	f2f -lecture
2	f2f -lecture
3	f2f -lecture
4	f2f - tutorial
5	f2f - tutorial
6	f2f –test

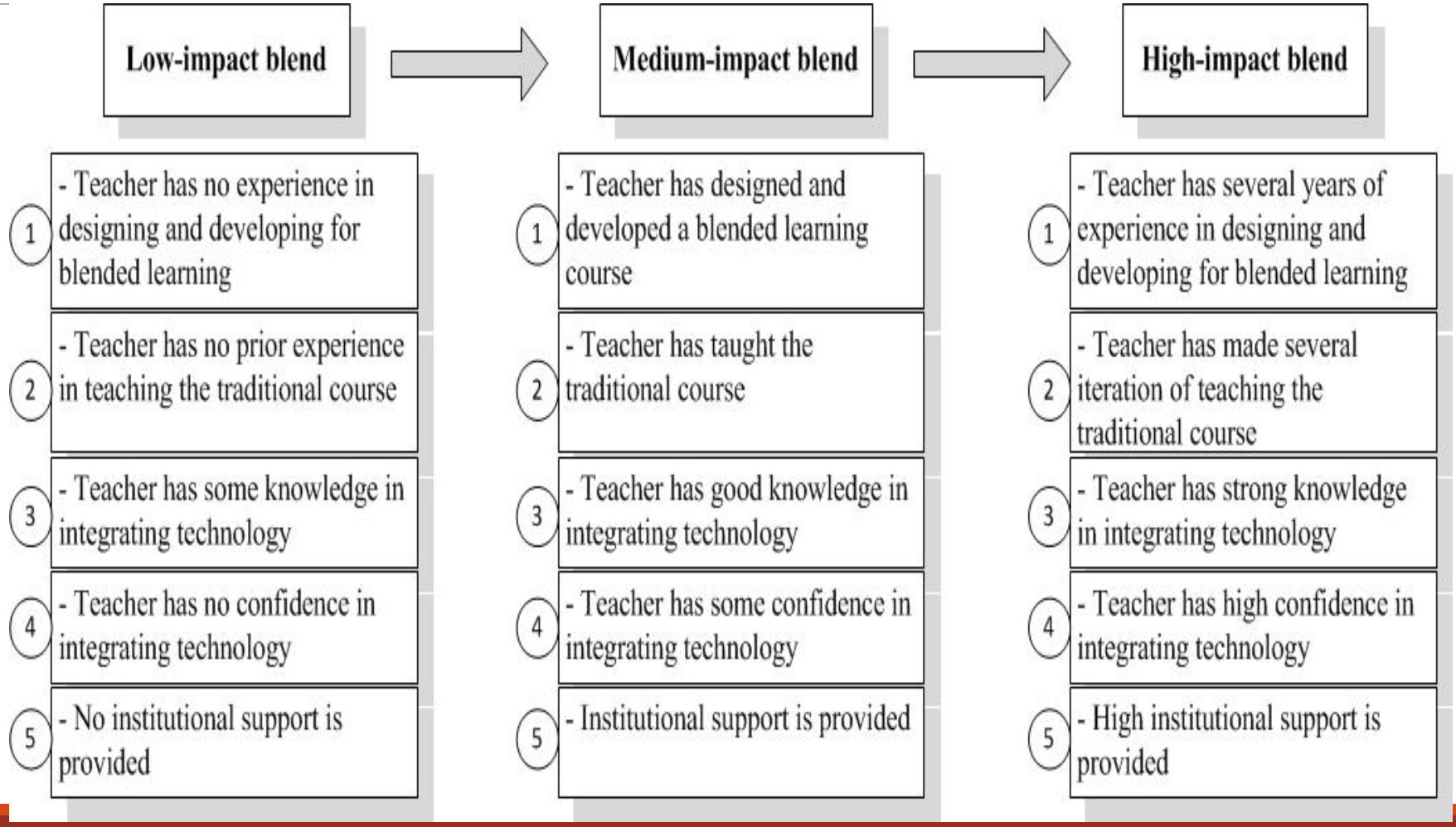
Redesign

High-impact blended course

1	f2f -lecture
2	pre lecture quiz – f2f-lecture
3	google-hangout – f2f-consultation
4	pre reading – f2f-tutorial
5	online test

Designing university courses

Factors influencing the choice of approach in the course design



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THANK YOU FOR YOUR ATTENTION!