



HEIn4.0



Swedish Council for
Higher Education



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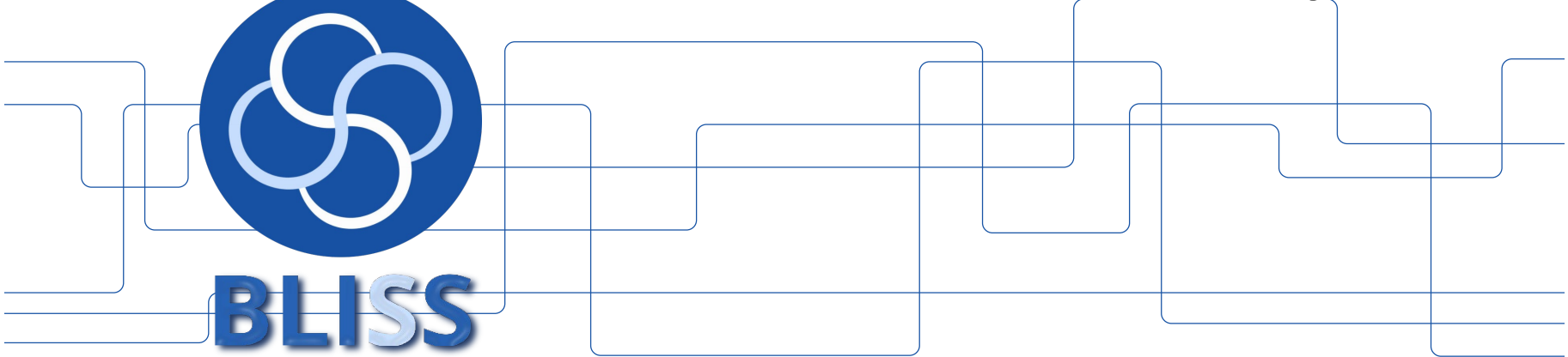
BLISS- Blended Learning Implementation for reSilient, acceSsible and efficient higher education

KA220-HED - Cooperation partnerships in higher education

Stockholm, Sweden. 24th and 25th of August 2022



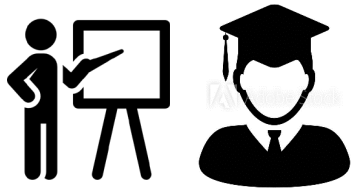
BLISS



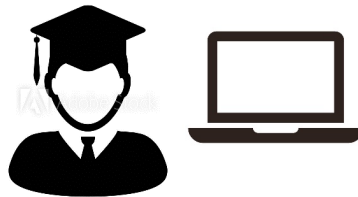
Genesis of this work

The current Covid-19 pandemic has forced HEI across the whole world to re-think, in a very short time, their learning strategy.

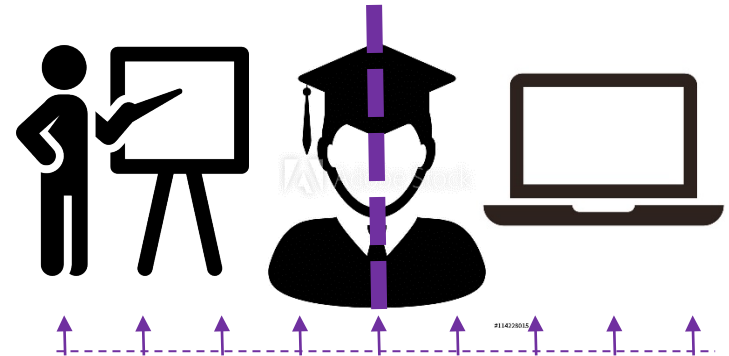
Before Covid



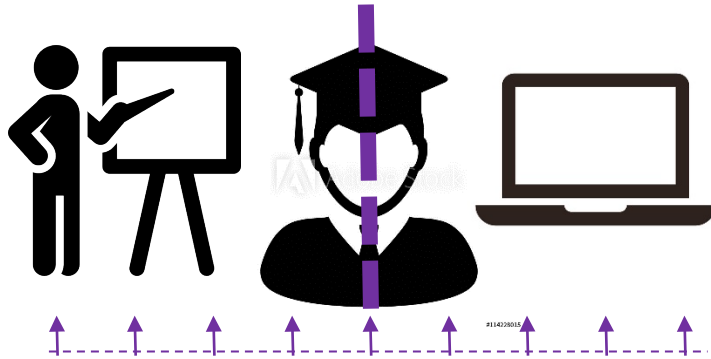
During Covid



What now?



Blended Learning (BL)



- **Face-to-face driver** – where the teacher drives the instruction and augments with digital tools.
- **Rotation** – students cycle through a schedule of independent online study and face-to-face classroom time
- **Flex** – Most of the curriculum is delivered via a digital platform and teachers are available for face-to-face consultation and support
- **Labs** – All of the curriculum is delivered via a digital platform but in a consistent physical location. Students usually take traditional classes in this model as well.^[25]
- **Self-blend** – Students choose to augment their traditional learning with online course work
- **Online driver** – Students complete an entire course through an online platform with possible teacher check-ins. All curriculum and teaching is delivered via a digital platform and face-to-face meetings are scheduled or made available if necessary.



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XPRES
Excellence in Production Research



Objectives

1. Design and implementation of specific educational units to be included in engineering curricula. These will be based on the state-of-the-art in the pedagogic field of blended learning. This activity will also leverage the recent experience of the consortium during the Covid-19 pandemic when HEI across the world were forced to increase their use of distance learning approaches.
 2. Provide a methodological support to rational implementation of blended learning strategies in HE curricula targeting an increase of efficiency and resiliency for the underlying educational systems as well as improved accessibility for the students
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Implementation

- 1) Analysis of the response to Covid-19 of the involved organisations. This will be done through the analysis of the documentation from available internal evaluation process as well as an aptly designed survey. This work aims at highlighting information regarding: adoption of online based approach, used IT tools, student learning experience, additional workload for HEI staff and related future plan.
 - 2) Analysis of the available literature in BL. This activity is aimed at contextualize the Covid-19 experience and suggest a novel view based on highlighting and structuring the use of successful pattern emerging from the study. **The literature will be also complemented by a specific LTT about BL hosted by the Royal Institute of Technology**
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Implementation

- 3: Classification of the activities in current engineering curricula according to potential application of BL approach and selection of the most promising one for development. In this phase the “lesson learned” during the Covid-19 pandemic will have a pivotal role. The consortium will look in detail at the impact of different balances of on-line and face-to-face activities on the results observed. This will highlight successful cases but also expose the needs for improvement and consequent expected results. This, in turn, will allow to rank and select candidates for the next phase.
 - 4: Development of the selected educational units using BL approaches. This phase will be carried out through a pedagogical approach based on the constructive theory on learning. The focus will be on the learner experience and the description will follow the alignment of the intended learning outcomes with the teaching and learning activities and the assessment task.
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Implementation

- 5: Implementation of the developed activity, evaluation and improvement based on learners' feedback. The educational unit will be run at an host institution as a stand-alone course or part of a larger course. The student experience will be evaluated through standard LEQ (learning experience questionnaire) and compared with traditional learning approaches. This phase will also include an internal LTT workshop where the single educational units will be presented by the institution that has developed them and made available for further use at the other participating institutions.
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Results

- Result 1: Mapping of the Covid-19 impact on the adoption of blended learning strategies. (Responsible: UNIMA)
 - Task 1.1 Analysis of the different documents produced by all the involved institution as response to Covid-19. Deliverables
 - *(1.1.1) Database of analysed document*
 - *(1.1.2) a set of requirement for completing the info from each institution*
 - Task.1.2 Definition of questionnaire to level the information from different institution. Deliverable:
 - *(1.2.1) Questionnaire for the Covid-19 impact survey*
 - Task 1.3 Survey on the Covid-19 impact. Deliverable:
 - *(1.3.1) Database of answer to the survey*
 - Task 1.4 Analysis of the results and conclusion. Deliverable:
 - *(1.4.1) A research paper detailing results and conclusion of the survey*
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Results

- Result 2: Characterization of blended learning responses to Covid-19 (Responsible UNIBG)
 - Task 2.1 Literature analysis.
 - *Deliverable (2.1.1) single institution research diaries*
 - Task 2.2. Synchronization and research diary.
 - *Deliverable (2.2.1) Research diary*
 - Task 2.3. Formulation of the requirements for blended learning engineering curricula
 - *Deliverable (2.3.1) Requirement for new curricula definition*
 - *Deliverable (2.3.2) Open access paper summarizing the finding of this activity*
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Results

- Result 3: Developing of blended learning educational units
 - Task 3.1 Selection of educational units to develop
 - *Deliverable (3.1.1): Ranking of the educational units identified*
 - Task 3.2 Development of the educational units
 - *Deliverable (3.2.1). Documentation for the educational units (Syllabus)*
 - Result 4: Implementation and evaluation of the proposed educational units
 - Result 5: Cross-application of educational units among the partners
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Objectives

What can we learn from Covid in term of optimal Blended Learning strategy?

- **Focus group** to elicit the main issues and trend related to the impact of covid-19 on the digital strategy of HEI across Europe. This will account for:
 - the double mission of the university: transmitting knowledge and developing the social capability of the students
 - Time: before, during and after covid
 - Kind of activity: level of understanding required
- Identification and analysis of current **best practices** at KTH in the domain of digital learning: this to extract good example and present them as useful inspiration for KTH teachers
- Related BLISS efforts:
 - Literature review on BL approaches
 - Report on impact of covid on HEI



Deliverable

- Scientific paper detailing the focus group effort and related analytical phase: first version already published in short form at the HelMeTo conference 2022 in Palermo (presentation on September 23rd)
- Workshop with lesson learned from Covid for KTH teachers: possibly as part of the digital learning course at KTH.



Contribution

Title: *How much digital learning is enough? Lesson learned from Covid-19*

Theme: impact of covid on work in higher education in the context of adoption of blended learning strategies.

Method: Focus Group, 13 participants. 45 min.

A working definition of BL: *the percentage of hours, included preparation, of activities classified as digital learning on the total workload, digital plus face-to-face, of the educational unit*

Preparation:

- (1) impact of the pandemic as depicted in literature,
- (2) pedagogical concepts such as taxonomies of learning, constructive alignment, communities of inquiry and approaches/tools for digital learning
- (3) the double role of universities in forming the students – including knowledge transfer as well as hub for meaningful social interaction



Results (1)

Blended learning strategy before and during Covid. The group answers con-firmed the finding of mainstream literature: the % of digital learning on the total volume of learning activities was in the range **0-5% before** the pandemic and rose to **90-100% during** the pandemic.



Back to the initial question

What can we learn from Covid in term of optimal Blended Learning strategy?

Results (2)

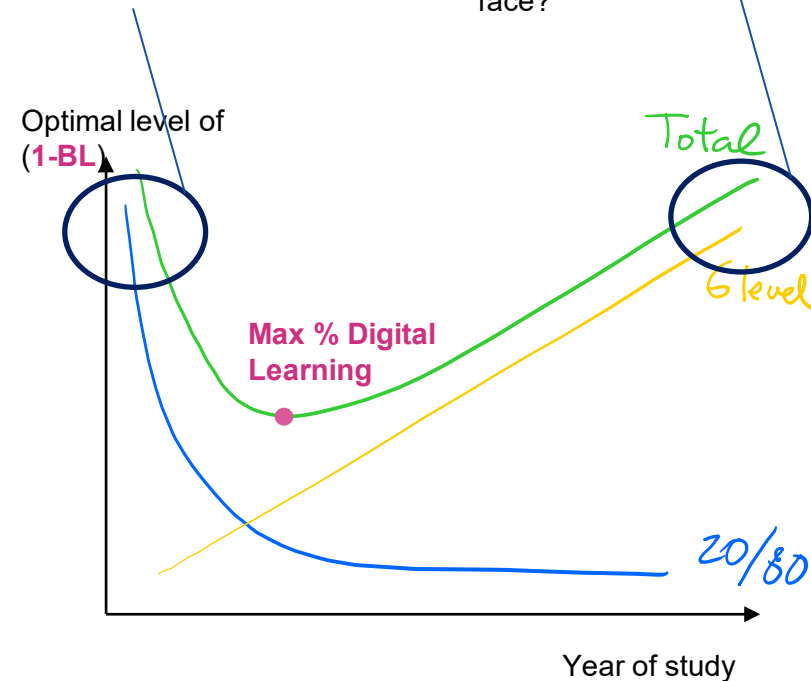
Optimal Blended learning strategy post Covid. The group considered the im-pact of two main factors influencing the optimal blended learning strategy:

- (1) the social dimension of students' interaction with peers and teachers
- (2) the Bloom's level of understanding of the specific educational unit considered.

The (1) factors optimal strategy consists of having a higher amount of face-to-face activities during the first years of study, to encourage early interaction among students. The factor (2) discussion indicates that the % of acceptable digital learn-ing activities is higher in the lower level of understanding and decreases as one goes up in the taxonomy. This is based on the assumption that interaction with teachers is more and more necessary as the complexity of the learning goals in-creases.

More interaction student-student

More interaction teacher-student: not necessarily face to face?





Results (3)

Obstacle/Challenges with implementing optimal Blended learning strategies. Difficulties were mentioned in bringing back the students to class for activities, such as lectures, that the students appreciated in digital, asynchronous form during the pandemic. This is especially true for working students.



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