

European Maturity Model for Blended Education

Implementation guidelines

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Implementation Guidelines

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This report is founded on the European Maturity Model for Blended Education:

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<https://embed.eadtu.eu/download/2470/European%20Maturity%20Model%20for%20Blended%20Education.pdf?inline=1>



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Introduction

EMBED, a strategic partnership

The EMBED project partnership is established by EADTU (coordinator), connecting the KU Leuven (Belgium), Delft University of Technology (The Netherlands), Aarhus University (Denmark), University of Edinburgh (United Kingdom), Dublin City University (Ireland) and Tampere University of Applied Sciences (Finland).

During a period of three years (2017-2020) experts in the field of quality assurance, online and blended learning worked closely together to achieve different objectives related to the sustainable implementation of blended education. The project partners embraced a multilevel framework in order to develop a maturity model for blended education. It distinguishes maturity at the course and program level (micro) and at the institution level (meso). The intent is also to provide relevant information to governments (macro). The macro level is not addressed in this report.

Towards a European Maturity Model (EMM)

By means of the European Maturity Model (EMM) the partners wish to frame conceptual and implementation issues regarding blended learning, teaching and education. Aim is to indicate the 'maturity' of practices by means of dimensions and indicators deemed relevant. Instructors but also decision makers within higher education institutions and educational service centres may apply the model for continuous improvement purposes. As a consequence, it may help, inspire and guide anyone who wants to implement blended teaching in his/her institution in a sustainable manner.

As previously mentioned, the EMM consists of three levels, namely the course, programme and institution level. Each level encompasses multiple dimensions, which united give a comprehensive overview of the 'maturity' at the selected level of assessment. Corresponding to the maturity level, there is more or less room for continuous improvement of a particular practice. The EMM is on the one hand based on a literature synthesis, on the other hand on results of about thirty interviews with instructors and educational managers within the EMBED partner institutions. These research efforts resulted in an extensive [report about the status of affairs in the field of blended education, teaching and learning](#) and a [repository of proven practices](#). Subsequently, the first draft of the maturity model was compiled.

Between December 2018 and July 2019, twenty-eight European experts in the field of online and blended learning were involved in a three-round Delphi study, which led to adaptations of the original model and a validation of the current maturity model. Consensus was achieved regarding the set of dimensions and indicators of the EMM. [The model](#) was published on the project website in May 2020.

In order to make the EMM useful for all stakeholders, implementation guidelines were developed. These are specified for each dimension of the model. They provide background information, examples, models, tips and tricks, as well as recent references to resources, in line with the foundations of the EMM. A number of these guidelines were integrated in the Massive Open Online Course (MOOC) 'Making Blended Education Work' which is based on the EMM and the EMBED project (see <https://www.futurelearn.com/courses/making-blended-education-work>).



The screenshot shows the course page for 'Making Blended Education Work' on FutureLearn. At the top left, it says 'Online Courses / Teaching'. Logos for 'THE UNIVERSITY of EDINBURGH', '[embed] European Maturity Model for Blended Education', and the European Union flag are displayed. The course title 'Making Blended Education Work' is prominently featured, followed by a 4.8 rating from 53 reviews. A description states: 'Explore challenges and advance blended learning practices in higher education.' A pink button says 'Join course for free'. Below this, it notes '5,403 enrolled on this course'. On the right, there is a large image of hands holding a tablet with a blurred city background. At the bottom, four icons provide course details: 'Duration 5 weeks', 'Weekly study 2 hours', '100% online Try this course for free', and 'Extra Benefits From €59 Find out more'.

Figure 1: The EMBED MOOC website

Foundations of the EMM

The maturity model's aim is to map blended learning practices, conditions, strategies and policies in a systematic manner and, ultimately, to identify tracks for optimization or change. The EMM can be used to assess the maturity of blended courses, programs and institution-wide provisions. Important to note is that the EMM does not state anything about their quality; it only covers their maturity (see further). Before elaborating on the dimensions and interactions of the maturity model, we refer to a series of explicit assumptions of the model.

1. Blended learning, teaching and education

In the context of EMBED the following definitions were developed and used as backdrop to the EMM:

- **Blended learning** refers to learning as a result of a deliberate, integrated combination of online and face-to-face learning activities.
- **Blended teaching** refers to designing and facilitating blended learning activities.
- **Blended education** is the formal context in which blended teaching and learning take place, determined by policies and conditions with regard to the organization and support of blended teaching and learning.

2. Maturity of practices

The concept of 'maturity' relates to the degree of formality and optimization of the design, evidence-based decision making, documentation and CQI(CQI) which characterize the uptake of blended practices, or the implementation of dedicated conditions and strategies. When backed up by research or practical evidence, a course or program design is reinforced. The extent to which CQI processes and products are embedded in a course or program determines the maturity level of a blended learning practice. These allow course instructors/designers to continuously enhance blended practices in an iterative manner.

Maturity does not equal quality. High- or low-quality approaches can be in place within each of the maturity levels. Moreover, it has been observed that repeating a practice at a particular maturity level does not *per se* results in an actual increase in terms of maturity.

3. The action levels and key actors

Two action levels are distinguished in the model: the micro and meso level. The EMM deems the main actor at the micro level to be the instructor or the instructional designer of a course. At the meso level different key actors, teams, or bodies for decision making and management play a role. Program coordinators, deans and department heads or heads of teaching and learning centers are involved, among others.

4. The constructive alignment

It is assumed that instructors or instructional designers are knowledgeable about how to align course objectives or expected outcomes with target student groups, learning activities and assessment (both formative and summative).

5. The value of (informed) design

The EMM explicitly adheres to a design-focused approach of courses and programs. Consequently, growth in maturity is considered as a result of the ability of (teams of) instructors, instructional designers and others involved, to make informed decisions. This includes using design principles and/or instructional theories, from blended course design right up to whole program design, that is the organization, planning and documentation of a structured series of courses or units).

The EMM framework

The EMM consist of 21 (sub)dimensions, divided over three levels. The following table provides an overview of all the (sub)dimensions of the EMM.

COURSE LEVEL	PROGRAMME LEVEL	INSTITUTION LEVEL
Course design process <ul style="list-style-type: none"> ○ Selection of blended learning activities and their sequence ○ Selection of blended learning tools Course flexibility Course interaction Course experience <ul style="list-style-type: none"> ○ Student learning ○ Study load ○ Inclusiveness 	Programme design process <ul style="list-style-type: none"> ○ Programme coherence ○ Alignment and coherence of blended learning tools Programme flexibility Programme experience <ul style="list-style-type: none"> ○ Student learning ○ Study load ○ Inclusiveness 	Institutional support Institutional strategy Sharing and openness Professional development Quality assurance Governance Finances Facilities

The EMM user guidelines

The model can guide discussions on blended teaching and education in an institution, a department, a team of educational managers or instructors. In this regard, one's engagement in such conversations are *in se* more important and deemed valuable than the 'scoring' of maturity. It is essential to involve the right stakeholders. These differ according to the subject of the discussions, that is the agreed number of dimensions that will be debated.

Optimally, the model is employed in a team-based, interactive manner, with the aim of reaching consensus. To this end, it seems that a workshop is the most appropriate manner to use the model (as demonstrated during the [2020 European Learning & Teaching Forum](#)). In one or more sessions, the participants determine individually and cooperatively the maturity level of the different model dimensions. We recommend to follow the next steps:

1. A facilitator with knowledge of the EMBED framework guides the sessions. The facilitator introduces the EMM, elaborates on the action level (e.g., course, programme or institution) and explains the setup of the workshop. It should be clear for all participants which level and what subject matter they will discuss in detail (e.g., which course or which programme). Each participant individually assesses the maturity level of each dimension. To this end, both the [EMM framework](#) as well as the [digital materials](#) - the maturity self-assessment tool and worksheets - support this process. In particular, the participants create a spider graph based on the scores of their present maturity assessment. Such visualization gives a clear overview of the current state of affairs.

2. The facilitator discusses with all participants the results of the self-assessments. The goal of this third phase is to reach consensus on the scoring of the present maturity level of a specific dimension. are retained and used to justify why a specific level of maturity has (not) been designated to a particular practice). These are used in the following step.
3. The participants create an action plan, which includes what one wishes to change, the reason(s) behind, a specification of who needs to be involved, and when the change should be implemented. A template for such action plan is also downloadable from the [EMBED website](#). It is recommended that when changes are extensive, it is more useful to initiate a (small) project and involve a project team to design, plan and implement the changes.
4. After the changes are implemented, the results of the action plan or project are evaluated using the same framework and materials.
5. It is further recommended that participants make monitor on regular occasions whether the maturity levels maintain the same level, increase or decrease.

Not only participants of the above-described workshop may use the EMM; any individual instructor, instructional designer or team interested in how to mature in blended teaching or education, will find the EMM framework and materials easy-to-use and useful resources or sources of inspiration for introducing (new) blended practices.

More information

Further information about the EMBED project, its partnership, or related publications, please visit <https://embed.eadtu.eu>. Questions, remarks or additions to the model or the implantation guidelines, are more than welcome by [e-mail](#).

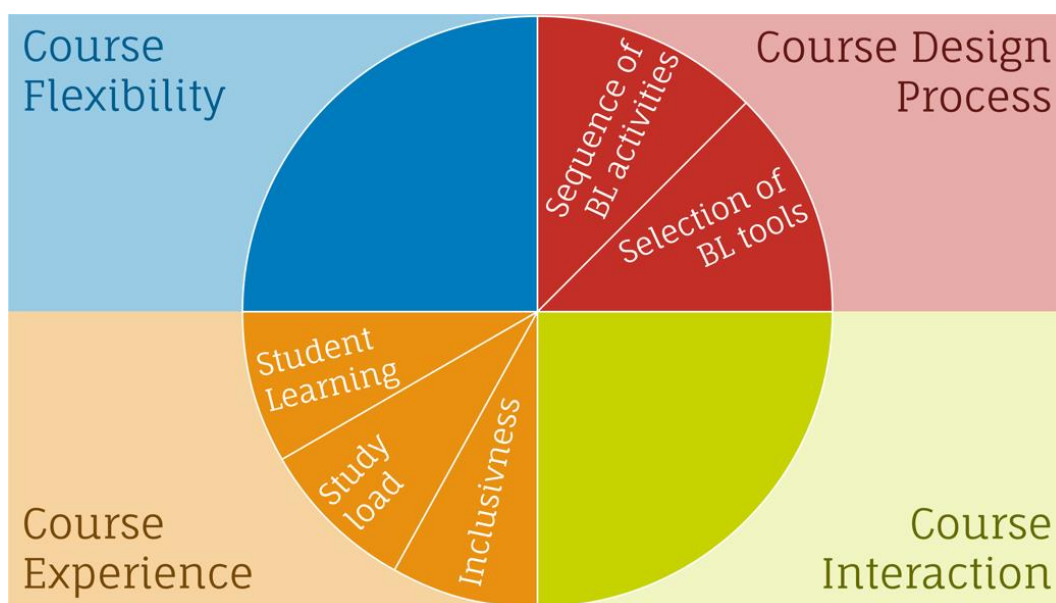
Course Level

Course Level

The course level 'refers to the core of the educational system, where both learning processes and instructional processes are situated'. It refers to the primary educational process, in other words the development, execution and evaluation of courses. The stakeholders of this level are mainly teachers/ educators and students, but also instructional designers, learning developers, content developers and sometimes management.

The course level consists of the following four dimensions and corresponding subdimensions:

- [Course design process](#)
 - [Selection of blended learning activities and their sequence](#)
 - [Selection of blended learning tools](#)
- [Course flexibility](#)
- [Course interaction](#)
- [Course experience](#)
 - [Student learning](#)
 - [Study load](#)
 - [Inclusiveness](#)



COURSE DESIGN PROCESS

The process of planning, designing, developing and evaluating a blended learning course.

Selection of blended learning activities and their sequencing

The rationale for the deliberate selection and integration of face-to-face and online learning activities.

Level 1 Explorative	Level 2 Design-based	Level 3 Course cycle
No considered selection and integration of face-to-face and online learning activities.	Learning activities (both face-to-face and online) are deliberately selected, integrated, and sequenced based on a design method or design principles.	Learning activities (both face-to-face and online) are deliberately selected, integrated, and sequenced based on a design method or design principles. Quality assurance processes are deliberately embedded in order to continuously improve a course in an iterative manner.

Implementation Guidelines

In order to mature in this dimension, one should apply a design model or a set of design principles for the selection, integration and sequencing of face-to-face and online learning activities. These include particular logics and/or methods to design blended learning. Some examples from the field: the Integrated Course Design (Dee Fink, 2003), the ABC Learning Design method (Young & Perović, 2020) and the Carpe Diem design method (Salmon, 2020).

To reach the highest level of maturity (Course cycle), adequate quality assurance (QA) principles must be in place in order to continuously improve a course design. Multiple data sources from the current or past runs of a course can be used, i.e., course grades, students experience questionnaires or (group) interviews, interviews with lecturers, learning analytics, etc. These data inform action plans that stipulate how to improve or redesign a course. Frameworks such as the e-learning Maturity Model (Marschall, 2005) may provide the actual QA standards hereto.

References

Dee Fink, L. (2003). *A Self-Directed Guide to Designing Courses for Significant Learning*. Retrieved from <https://deefinkandassociates.com/GuidetoCourseDesignAug05.pdf>

Salmon, G. (2020). *Carpe Diem - A team based approach to learning design*. Gilly Salmon. Retrieved from <https://www.gillysalmon.com/carpe-diem.html>

Marshall, S. (2005). *e-Learning Maturity Model*. E-Learning Maturity Model. Retrieved from <http://e-learning.geek.nz/emm/publications.php>

Young, C., & Perović, N. (2020). *ABC Learning Design @ UCL*. UCL Home. Retrieved from <https://blogs.ucl.ac.uk/abc-ld/>

Selection of blended learning tools

The rationale for selecting tools for the delivery and organisation of blended learning activities

Level 1 Tool-based	Level 2 Design-based	Level 3 Course cycle
The selection of particular tools is based on their availability at the institution.	The selection of particular tools is based on learning activities, informed by evidence or experience.	The selection of particular tools is based on learning activities, informed by evidence or experience. This process is monitored, evaluated and changed based on quantitative and qualitative data.

Implementation Guidelines

As to reach maturity level 2 (Design-based), the selection of learning tools during the course design process should be based on evidence or experience. Some relevant evidence is available. Glover and colleagues (2016), for example, developed a menu for selecting appropriate learning tools. Some institutions also developed supporting materials and guidelines, among others: the Tool Wheel based on the conversational framework of Laurillard (Last, Jongen & Hardy, 2020), the Wheel of Pedagogy (Radboud Teaching and Learning Centre, 2020) or the Tool Guide (Educate-it, 2020)

The third maturity level of this dimension is labeled as ‘Course cycle’ because the outcomes of the selection of tools are systematically monitored, evaluated and changed, based on quantitative and qualitative data. These data consist of learning analytics (how (often) are tools used?), surveys and interviews with students and instructors (what are their user experiences?) and/or feedback from tool administrators (is the selected range of tools proven to be useful, easy-to-use and efficient?).

References

- Educate-it. (2020). *Tool guide*. Retrieved from <https://educate-it.uu.nl/en/tool-guide/>
- Glover, I., Hepplestone, S., Parkin, H. J., Rodger, H., & Irwin, B. (2016). Pedagogy first: Realising technology enhanced learning by focusing on teaching practice. *British Journal of Educational Technology*, 47(5), 993–1002. Retrieved from <https://doi.org/10.1111/bjet.12425>
- Last, B., Jongen, S., & Hardy, P. (2020). *Tool wheel*. Maastricht University Library. Retrieved from https://tutorials.library.maastrichtuniversity.nl/Tool_Wheel/
- Radboud Teaching and Learning Centre. (2018). *The Educational ICT Toolbox*. Retrieved from <https://www.ru.nl/lecturers/education-ict/lecture-halls-pc-rooms/pc-rooms-study-halls/what-types-educational-tools-available/>

COURSE FLEXIBILITY

Opportunities for learners to adjust particular features of the blended learning course, based on their needs and preferences. This includes features such as the selection of learning activities, the selection of resources, the mode of delivery (online/face-to-face activities), pace (educator-paced/self-paced).

Level 1 No flexibility	Level 2 Flexible	Level 3 Adaptive flexible
No deliberate course flexibility.	The course's flexibility is deliberately designed. Its design is based on evidence or experience.	The course's flexibility is deliberately designed. Its design is based on evidence or experience. Continuous quality improvement is deliberately embedded in order to enhance course flexibility.

Implementation Guidelines

Level 2 of the course flexibility dimension (Flexible) states that course flexibility is deliberately designed, based on theory or experience. If in search of more background or examples, Andrade and Alden-Rivers (2019), developed a framework for sustainable growth of flexible learning opportunities. Additionally, the report regarding 'Flexible pedagogies' (Gordon, 2014) and the report 'Flexible Learning' (Universities UK, 2018) show some useful examples to design flexibility.

To obtain maturity level 3 (Adaptive), CQI is embedded to assess and enhance course flexibility on a regular basis. Therefore, quantitative or qualitative user experience accounts from students can be collected to understand how students perceive the course flexibility. These include survey and interviews data, which may be complemented with behavior data from the learning management system (LMS). Applying techniques such as educational data and process mining leads to further insight into the data (Pechenizkiy, 2012).

References

- Andrade, M. S., & Alden-Rivers, B. (2019). Developing a framework for sustainable growth of flexible learning opportunities. *Higher Education Pedagogies*, 4(1), 1–16.
<https://doi.org/10.1080/23752696.2018.1564879>
- Gordon, N. (2014). *Flexible pedagogies: technology-enhanced learning*. The Higher Education Academy. Retrieved from <https://www.advance-he.ac.uk/knowledge-hub/flexible-pedagogies-technology-enhanced-learning>
- Pechenizkiy, M. (2012). *Educational Data and Process Mining*. TU/e Data Mining Expertise Group Research. Retrieved from <https://www.win.tue.nl/%7Empechen/projects/edm/>
- Universities UK. (2018). *Flexible learning: The current state of play in UK higher education*. Retrieved from <https://www.universitiesuk.ac.uk/policy-and-analysis/reports/Documents/2018/flexible-learning-the-current-state-of-play-in-higher-education.pdf>

COURSE INTERACTION

Extent to which the blended course facilitates learners' interaction (learner-content, learner-learner, learner-educator).

Level 1 Non-responsive	Level 2 Interactive	Level 3 Responsive
No deliberate course interaction.	Interaction in the course is deliberately designed, informed by evidence or experience.	Interaction in the course is deliberately designed, informed by evidence or experience. Interactions are monitored, evaluated and changed based on data and feedback.

Implementation Guidelines

Level 2 of the dimension course interaction (Interactive), describes that interaction in a course is deliberately designed, informed by evidence or experience. Such endeavour might be supported by the interaction theory of Anderson (2003) or Stanley's model (2013) which extends Anderson's reasoning and presents 'The 5 Interactions of A Robust Blended Learning Model'.

The highest maturity level, (Responsive), is characterized by monitoring, evaluating and adjusting the interactions in a course. In this regard, both the quantity and quality of the interactions are scrutinized. For student-content interaction this involves questions such as 'how often and how long do students study the materials?', 'how do they interact in the online environment' and 'how do they score on tests?' (based on user and usage data from the LMS and interactive course ware). For student-student interaction, it is looked at how often face-to-face and online interactions take place in the digital and physical learning spaces (e.g., discussion boards, chat apps, meetings) and what can be observed regarding the quality of the interactions (do students ask questions, collaborate, etc.). For student-teacher interactions it is investigated what kind of interactions students and teachers have (one-way interaction, or two-way interactions), their quantity and quality. Additionally, these data may be further evaluated in terms of student and instructor satisfaction against the background of models of change and improvement. Recent developments in the field of adaptive learning analytics, eye tracking and multimodal data capturing with or without wearables allow for analysing complex interactive student or instruction behaviour and their relationship with a plethora of learning outcomes.

References

- Anderson, T. (2003). Getting the Mix Right Again: An Updated and Theoretical Rationale for Interaction. *The International Review of Research in Open and Distributed Learning*, 4(2), 1–14. Retrieved from <https://doi.org/10.19173/irrodl.v4i2.149>
- Stanley, T. (2013). *The 5 Interactions Of A Robust Blended Learning Model*. Teachthought. [1. Introduction](#), [2. Student-student-interaction](#), [3. Student-Teacher interaction](#), [4. Student-community interaction](#), [5. Student-material interaction](#), [6. Student-technology interaction](#).

COURSE EXPERIENCE

The extent to which a course enhances students' learning and eliminates any obstacles that stand in the way of learning.

Student learning

The use of blended course features which facilitate students' self-regulated learning (orienting and planning, monitoring, adjusting and evaluating).

Level 1 Standard	Level 2 Advanced	Level 3 Comprehensive
No deliberate consideration for student learning.	Blended course features are used in order to facilitate student learning, informed by evidence or experience.	Blended course features are used in order to facilitate student learning, informed by evidence or experience, and continuous quality improvement is deliberately embedded in order to enhance student learning.

Implementation Guidelines

To reach maturity level 2 of this dimension (Advanced) it is important that (features of) the blended course facilitate self-regulated learning (SRL). This can be done in various ways, for example by integrating the seven recommendations of Quigley, Muijs and Stinger (2018). Also, particular technology-supported tools contribute to the facilitation of self-regulated learning in a blended learning environment, such as pedagogical agents, learning analytics and data visualization (Triquet, Peeters, & Lombaerts, 2017).

The third level (Comprehensive) refers to embedded CQI approaches which enhance self-regulated student learning. In general terms, SRL student data are collected and, subsequently, targeted interventions in a blended course are planned in order to improve the facilitation of SRL. This involves adapting or changing specific course features. Triquet et al. (2017) describe 7 methods to measure SRL among students and link these to two instruments for practice (a survey and a semi-structured interview).

References

- Quigley, A., Muijs, D., & Stringer, E. (2018). *Metacognition and self-regulated learning*. Education Endowment Foundation. Retrieved from <https://educationendowmentfoundation.org.uk/tools/guidance-reports/metacognition-and-self-regulated-learning/>
- Triquet, K., Peeters, J., & Lombaerts, K. (2017). *Self-Regulated Learning Online: Benefits, Empirical Foundations, Multi-level, and Multi-modal Promotion & Evaluation thereof for Teacher Professional Development. Contributing SRL Part to Teach-UP. A policy experimentation co-funded by Erasmus+. Deliverable D1.1: Gaps in ITE and CPD provision report*. Department of Educational Sciences, Vrije Universiteit Brussel. Retrieved from http://teachup.eun.org/documents/556205/1092039/TeachUP_D1.1b_Self-Regulated-Learning-Online.pdf/3d155d94-8a05-4cde-b18c-d6a33f4fc2b9

Study load

The match between the intended and achieved study load of a course (distribution and correctness).

Level 1 Standard	Level 2 Advanced	Level 3 Comprehensive
The calculation of course study load is based on guesses.	Course study load is calculated based on experience. Different course elements (e.g., online learning activities, face-to-face learning activities, exam preparations) are taken into consideration for the calculation of the study load.	Course study load is calculated based on data and experience. All course elements (e.g., online learning activities, face-to-face learning activities, exam preparations) are taken into consideration for the calculation of the study load. The study load is monitored, evaluated and changed based on quantitative and qualitative data.

Implementation Guidelines

This dimension refers to the (mis)match between the intended and achieved study load of a blended course. Particular to blended learning environments is the fact that study load should consider both face-to-face learning activities (e.g., in-class lectures, tutor sessions, tutorials, excursions, lab sessions) and online learning activities (e.g., video watching, readings, exercises, discussions, simulations). At the second maturity level (Advanced), study load is estimated based on experience. The Erasmus University (2009) and Radboud University (2018) in the Netherlands, for example, have common guidelines about how to calculate study load. Students are informed on how much time they should spend on a specific topic or an assignment, which aids them to plan and manage their study time. This can be done in a paper-based manner as part of the course syllabus or by incorporating a specific instrument in the LMS (see Figure 1).















2.1 Residual Stresses 		<input type="checkbox"/>
 Web Page		
Read 'Teacher notes'	5 min	
Read 'Book of Schijve'	40 min	
Watch video on cold hole expansion	2 min	
<hr/>		
2.2 Basics of stress and strain concentratoins 		<input type="checkbox"/>
 Web Page		
Watch 'Basics of stress and strain concentrations'	16 min	
Presentation on causes of stress concentrations and the definition of stress concentration factor.		
Read 'Book of Schijve'	50 min	
<hr/>		
2.3 Working with the stress concentration factor 		<input type="checkbox"/>
 Web Page		
Watch 'Working with the stress concentration factor'	10 min	
Watch 'Superposition principles'	10 min	
Read Book of Schijve	50 min	

Figure 2 A Learning Management System, including study load indications for students

On level 3 of this dimension (Comprehensive), the study load is based on data as well as experience. This means that various data sources, both quantitative and qualitative, are included to monitor, evaluate, and adjust the study load of a course. Examples of quantitative data are statistics from the LMS (how often a page is accessed and for how long), data from learning tools and from course evaluation surveys. Qualitative data can be gathered by means of focus groups and interviews with students to gain additional insights related to the study load. Based on these various data sources, the study load is evaluated and, if needed, adjusted.

References

- Erasmus University. (2009). *Calculating study load*. Retrieved from https://www.eur.nl/sites/corporate/files/15_Studielastberekening_juli_2007_ENd.pdf
- Radboud University. (2018). *Credits and study load*. Course Guides FFTR 2018. Retrieved from <https://www.ru.nl/prospectus/2018/fftr/rules-regulations/courses-exams/credits-study-load/>

Inclusiveness

The consideration for the diverse needs (including accessibility aspects) and backgrounds of all students to create an online and face-to-face course experience where all students feel valued, safe, have a sense of belonging, and where all students have equal access to learn.

Level 1 Standard	Level 2 Advanced	Level 3 Comprehensive
No deliberate consideration for inclusiveness.	Initial attempts to facilitate and include the different needs and backgrounds of all learners. Special attention is paid to social belonging and identity in the online course environment. This process is informed by evidence or experience.	The different needs and backgrounds of all learners are included and facilitated. Students feel valued, safe, and have a sense of belonging. The realization of inclusiveness is based on evidence or experience. Continuous quality improvement is deliberately embedded in order to improve inclusiveness in the course.

Implementation Guidelines

Inclusiveness is an important, yet complex dimension of a blended course. A series of blended course features have to be taken into consideration in order to design or assess its inclusiveness. Maturity level 2 (Advanced) is related to the fact that students feel valued, safe, and have a sense of belonging. Salmon (2020) has developed a five-stage framework to support incorporation of these aspects into the course design. It covers both the technical and social aspects of learning. Although it aims online learning with so-called 'e-tivities' and 'e-moderation', all features may be implemented for blended teaching and learning purposes. Another facet of inclusiveness is that all materials are accessible to diverse learners. This requires that images are accompanied by explanatory texts, that alternative font styles are available (e.g., headings, paragraphs), that videos include closed captions or transcripts, and that fonts are preferably sans serif. The University of Edinburgh (2020) offers a useful checklist for assuring the accessibility of both materials and collaborative learning activities. Informed by the experiences of instructors, inclusiveness may be (come) part of the course enhancement processes. The accessibility toolkit (Coolidge, Doner, Robertson & Gray, 2018) and the paper by Gronseth (2018) also offer concrete guidelines for implementing accessibility principles. Finally, Leiden University and Romein (2017) collected 11 teacher stories of inclusive teaching. This booklet can stimulate and inspire others to improve the inclusiveness of their course.

Level 3 of inclusiveness (Comprehensive) states that the different needs of all students must be supported. This means that all the efforts of level 2 should be implemented at the maximum. Additionally, CQI is embedded with targeted actions to enhance the inclusiveness of a blended course. Course evaluations, complemented with inclusiveness data obtained by means of surveys, focus groups and interviews are common ways of assessment.

References

- Coolidge, A., Doner, S., Robertson, T., & Gray, J. (2018). *Accessibility Toolkit* (2nd edition) [E-book]. BCcampus. Retrieved from <https://opentextbc.ca/accessibilitytoolkit/>
- Gronseth, S. (2018). Inclusive Design for Online and Blended Courses. *Educational Renaissance*, 7(1), 14–22. <https://doi.org/10.33499/edren.v7i1.114>
- Salmon, G. (2020). *Five Stage Model*. Gilly Salmon. Retrieved from <https://www.gillysalmon.com/five-stage-model.html>
- The University of Edinburgh. (2020). *Accessibility Checklist*. Retrieved from <https://www.ed.ac.uk/information-services/learning-technology/accessibility/checklist>
- Universiteit Leiden, & Romein, D. (2017). *Teacher's tales: On the road to inclusive teaching*. ICLON - Leiden University. Retrieved from <https://www.universiteitleiden.nl/binaries/content/assets/algemeen/diversiteit/boekje-teachers-tales-webversie.pdf>

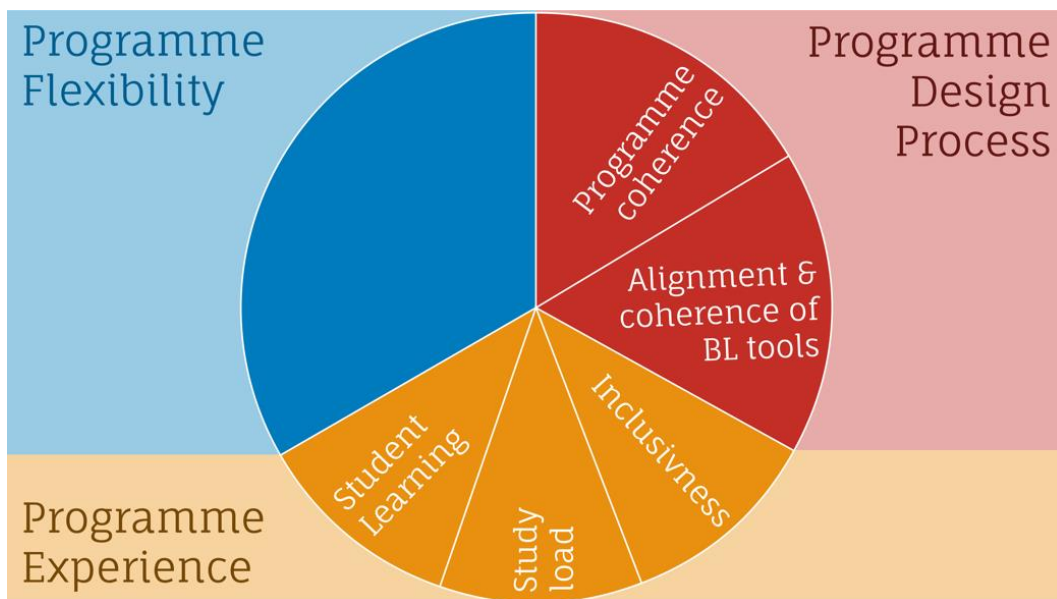
Programme Level

Programme level

The programme level refers to educational programmes or curricula. A programme is a structured series of educational courses. The stakeholders of this level are mainly teachers/educators and students, but also instructional designers, learning developers, content developers and management.

The programme level consists of the following three dimensions and corresponding subdimensions:

- [Programme design process](#)
 - [Programme coherence](#)
 - [Alignment and coherence of blended learning tools](#)
- [Programme flexibility](#)
- [Programme experience](#)
 - [Student learning](#)
 - [Study load](#)
 - [Inclusiveness](#)



PROGRAMME DESIGN PROCESS

The process of planning, designing, developing and evaluating a blended learning programme.

Programme coherence

The vertical (course-programme) and horizontal alignment (between courses) of a blended programme.

Level 1 Ad hoc	Level 2 Design-based	Level 3 Programme cycle
No deliberate consideration for the horizontal and vertical alignment in a blended programme design.	Deliberate consideration for the horizontal and vertical alignment in the blended programme design, based on a shared vision, and a design method or principles.	Deliberate consideration for the horizontal and vertical alignment in the blended programme design, based on a shared vision on blended learning, and a design method or principles. Continuous quality improvement is implemented in order to enhance a programme in an iterative manner.

Implementation Guidelines

During the design process of blended learning programmes, a first aspect of maturity is related to programme coherence, that is deliberately considering the horizontal and vertical alignment in a blended learning programme. There are several models, methods and guidelines which can be applied, such as the 4C/ID model (Van Merriënboer, 2019), the Curriculum Spider Web of Van den Akker (2010), O'Neill's 'Curriculum Design in Higher Education Guide' (2015), or the principles of curriculum alignment principles (Biggs, 2002 & EDULAB - Maastricht University, 2020). When designing a curriculum, it is advised to consider cross-curricular elements (the horizontal alignment), such as the support for student learning (see also [programme coherence: student learning](#)). Also, an appropriate distribution of online and face-to-face time throughout the same course is important (e.g., offer first-year students more on-campus time and fourth-year students more online time).

Maturity level 3 (Programme cycle) indicates that CQI mechanisms are implemented in order to assess and improve program coherence. A curriculum is regularly reviewed and improved accordingly. O'Neill (2015) posits that programme evaluation should occur comprehensively, using multiple methods and involving multiple stakeholders. She published guidelines and principles to evaluate a programme. Glatthorn, Boschee, Whitehead and Boschee (2018) also offer a wide range of guidelines, resources and checklists for programme evaluation.

References

- Biggs, J. (2002, October). *Aligning the curriculum to promote good learning*. Constructive Alignment in Action: Imaginative Curriculum Symposium. Retrieved from <https://www.qub.ac.uk/directorates/AcademicStudentAffairs/CentreforEducationalDevelopment/FilestoreDONOTDELETE/Fileupload,210764,en.doc>
- EDLAB - Maastricht University. (2020). Programme Level. Retrieved from <https://constructivealignment.maastrichtuniversity.nl/programme-level/>
- Glatthorn, A. A., Bosschee, F., Whitehead, B. M., & Boschee, B. F. (2018). Curriculum Evaluation. In *Curriculum Leadership: Strategies for Development and Implementation* (Vol. 3, pp. 356–381). SAGE Publications. Retrieved from https://www.sagepub.com/sites/default/files/upm-binaries/44333_12.pdf
- O'Neill, G. (2015). *Curriculum Design in Higher Education: Theory to Practice* [E-book]. Retrieved from <http://hdl.handle.net/10197/7137>
- Van den Akker, J. (2010). Building bridges: how research may improve curriculum policies and classroom practices. In S. M. Stoney (Ed.), *Beyond Lisbon 2010: Perspectives from Research and Development for Education Policy in Europe* (Vol. 10, pp. 177–195). Consortium of Institutions for Development and Research in Education in Europe. Retrieved from <https://ris.utwente.nl/ws/portalfiles/portal/5601607/Akker-building-YB+10++Beyond+Lisbon+2010-2.pdf>
- Van Merriënboer, J. J. G. (2019). *The Four-Component Instructional Design Model: The Four-Component Instructional Design Model*. School of Health Professions Education, Maastricht University. Retrieved from <https://www.4cid.org/about-4cid>

Alignment and coherence of blended learning tools

The rationale for the alignment and coherence of educational tools in blended learning programmes.

Level 1 Ad hoc	Level 2 Design-based	Level 3 Programme cycle
No deliberate alignment and coherence of tools used in a programme.	The alignment and coherence of the tools used in a programme are based on learning activities in courses, coordinated by the educators in the programme, and informed by evidence or experience.	The alignment and coherence of the tools used in a programme are based on learning activities in courses, coordinated by the educators in the programme, and informed by evidence or experience. This process is monitored, evaluated and changed based on quantitative and qualitative data.

Implementation Guidelines

The alignment and coherence of blended learning tools is part of the programme design process. To reach maturity level 2 (Design-based) it is important that there is a coherence between the educational tools used in a programme. This can be achieved, for example, by ensuring that students only work in one LMS, or that only one specific video conference tool is used. Switching between similar tools in a programme might have a negative effect on students' learning processes. The blended learning tools of a programme should be aligned with the tools used on the work floor, in compliance with the educational view at the programme level, and the tools offered within an institution. The latter also relates to the privacy and security issues which may arise when conforming to legislation, for example, the General Data Protection Regulation (European Commission, 2017). Institutions may offer support by providing a clear overview of vetted tools and a process to vet new blended learning tools. An example is the Advisory Committee Educational Tooling of Delft University of Technology (2020). The coordination of the coherence and alignment of the blended learning tools is a shared responsibility of both the instructors and the programme manager or coordinator.

Maturity level 3 (Programme cycle) is attained when the alignment and coherence of blended learning tools is monitored, evaluated and modified based on quantitative and qualitative data. Instruments, like the Rubric for eLearning tool evaluation (Anstey & Watson, 2018), can be used to evaluate blended learning tools. Statistics and tool usage reports, next to surveys and interviews with lecturers and students can be employed to assess the alignment and coherence of blended learning tools.

References

- Anstey, L. M., & Watson, G. P. L. (2018). *Rubric for eLearning Tool Evaluation*. Centre for Teaching and Learning, Western University. Retrieved from <https://teaching.uwo.ca/pdf/elearning/Rubric-for-eLearning-Tool-Evaluation.pdf>
- Delft University of Technology. (2020). *Educational Tooling – Brightspace Support*. Brightspace Support. Retrieved from <https://brightspace-support.tudelft.nl/educational-tooling/>
- European Commission. (2017). *Data protection in the EU*. Retrieved from https://ec.europa.eu/info/law/law-topic/data-protection/data-protection-eu_en

PROGRAMME FLEXIBILITY

Opportunities for learners to adapt particular features of the blended learning programme. This includes features like the selection of courses/tracks, the mode of delivery (blended course, online course, traditional course), workload (full time/part time), pace (institution paced/self-paced), progress in a programme, and the possibility to follow courses at other institutions.

Level 1 No flexibility	Level 2 Flexible	Level 3 Adaptive flexible
No deliberate programme flexibility.	The flexibility in a programme is deliberately designed. Learners have some opportunities to adapt particular features of the blended learning programme. This process is informed by evidence or experience.	The flexibility in a programme is deliberately designed. Learners have many opportunities to adapt particular features of the blended learning programme and receive advice on their options. The offering of flexibility is based on evidence or experience. Flexibility is monitored, evaluated and changed based on quantitative and qualitative data.

Implementation Guidelines

This dimension refers to the extent that learners can adapt particular features of a blended learning programme. This includes features like the selection of courses/tracks, the mode of delivery, workload, pace, progress in a programme, and the possibility to follow parts of the programme in other institutions. At the second maturity level, the flexibility of a programme is deliberately designed. In ‘The Zone Flexible Education’ (2019) from the SURF Acceleration Plan four paths for flexibilization are described: (1) At your own pace, (2) Off the beaten track, (3) MyDiploma and (4) modular learning. This publication may be inspirational for decision makers at the programme level. Also, the report ‘Flexible learning: The current state of play in UK Higher Education’ (Universities UK, 2018) gives an interesting overview of opportunities for programme flexibility.

To reach the third level (Adaptive flexible), the flexibility is monitored, evaluated and changed based on several quantitative and qualitative data sources and tools. Surveys and interviews, with both students, instructors, programme directors, and management give insights in the quality and processes related to flexibility. Also, techniques like process mining add to the understanding about student navigation in a flexible programme. Both an article by Nirmal Patel (2020) and a paper by Cairns, Gueni, Assu, Joubert and Khelifa (2015) provide some interesting examples on how process mining.

References

- Crains, A. H., Gueni, B., Assu, J., Joubert, C., & Khelifa, N. (2015, June). Analyzing and improving educational process models using process mining techniques. In C. Ernst & A. Schmidt (Eds.), *IMMM2015* (pp. 15–22). Retrieved from https://www.researchgate.net/profile/Hicheur_Awatf/publication/281104380_Analyzing_and_Improving_Educational_Process_Models_using_Process_Mining_Techniques/links/55dc70fd08aeb38e8a8d15ef/Analyzing-and-Improving-Educational-Process-Models-using-Process-Mining-Techniques.pdf
- Patel, N. (2020). Let's do Educational Process Mining! - Playpower Labs. Medium. Retrieved from <https://medium.com/playpower-labs/lets-do-educational-process-mining-5dcfd1e606ba>
- Universities UK. (2018). *Flexible learning: The current state of play in UK higher education*. Retrieved from <https://www.universitiesuk.ac.uk/policy-and-analysis/reports/Pages/flexible-learning.aspx>
- Zone Flexible Education. (2019). *Flyer zone Flexibilisation: Four flexible student routes*. Acceleration plan Educational Innovation With ICT. Retrieved from <https://versnellingsplan.nl/english/publication/flyer-zone-flexibilisation/>

PROGRAMME EXPERIENCE

The extent to which a programme enhances students' learning and eliminates any obstacles that stand in the way of learning.

Student learning

The use of blended programme features which facilitate students' self-regulated learning (orienting and planning, monitoring, adjusting and evaluating).

Level 1 Standard	Level 2 Advanced	Level 3 Comprehensive
No deliberate consideration for student learning at the programme level.	Students are guided and supported throughout the blended programme on self-regulating their learning. Students and teaching staff are made aware of the blended nature of the programme, and what this means for both learning and teaching.	Students are guided and supported throughout the blended programme on self-regulating their learning. The blended aspect of the programme is internalized in all processes for the students and teaching staff. These processes are monitored, evaluated and adjusted based on quantitative and qualitative data.

Implementation Guidelines

The second maturity level (Student learning) implies that the self-regulated learning (SRL) of students is facilitated throughout the blended learning programme. The first step is to make students and lecturers aware of what SRL entails. Resources like Quigley, Muijs and Stinger (2018) can be used to facilitate this process. The next step is to design and incorporate SRL activities in a programme. SRL activities can be incorporated in existing courses or facilitated in another way. Reducing the amount of scaffolding and feedback throughout the programme is something which needs to be considered when incorporating SRL activities in programmes (this is also closely linked with the dimension Programme design process: programme coherence). The 'Self-Regulation Empowerment Program', described by Cleary and Zimmerman (2004) is an example of how this can be executed in practice. Besides the awareness of SRL, students and teachers should also be knowledgeable about the blended nature of a programme. The expectations, deadlines, and organisation of courses are key information which enables students to plan their own learning. Guidelines, tips, best practices, study groups and checklists about 'how to study in a blended programme' can support students and staff.

To reach maturity level 3 (Comprehensive) a programme must actively offer support and guidance for students to develop and improve their SRL skills. This implies that SRL-related activities are incorporated in every course of a programme. Level 3 also describes that the blended aspect of a programme is internalised in all processes for students and teaching staff. All students and staff should be trained in SRL. These processes are monitored, evaluated and adjusted based on data. Both qualitative (e.g., surveys, observations, interviews) and quantitative data (e.g., from learning platforms, student information systems, or other applications). Also, monitoring the SRL skills of students is done on a regular basis. This data can be used to evaluate the SRL activities in a course. Both Winne & Perry (2012) and González-Torres & Torrano (2008) describe methods and instruments to measure self-regulated learning.

References

- Cleary, T.J. & Zimmerman, B.J. (2004). *Self-regulation empowerment program: A school-based program to enhance self-regulated and self-motivated cycles of student learning*. Retrieved from https://knilt.arcc.albany.edu/images/7/74/Cleary_and_zimmerman.pdf
- González-Torres, M. C., & Torrano, F. (2008). Methods and instruments for measuring self-regulated learning. In A. Valle & J. C. Nunez (Eds.), *Handbook of Instructional Resources and Their Applications in the Classroom* (pp. 201–219). Macmillan Publishers. Retrieved from https://www.researchgate.net/publication/295103631_Methods_and_instruments_for_measuring_self-regulated_learning
- Quigley, A., Muijs, D., & Stinger, E. (2018). *Metacognition and self-regulated learning, Guidance report*. Education Endowment Foundation. Retrieved from https://educationendowmentfoundation.org.uk/public/files/Publications/Metacognition/EEF_Metacognition_and_self-regulated_learning.pdf
- Winne, P. H., & Perry, N. E. (2000). Measuring self-regulated learning. In M. Zeidner, M. Boekaerts, & P. R. Pintrich (Eds.), *Handbook of Self-Regulation* (pp. 531–566). Elsevier Academic Press. Retrieved from https://www.researchgate.net/publication/232472158_Measuring_Self-Regulated_Learning

Study load

The match between the intended and achieved study load of a programme (distribution across courses and correctness).

Level 1 Standard	Level 2 Advanced	Level 3 Comprehensive
No deliberate alignment of study load between courses in a blended programme.	The study load, including deadlines, of a course is aligned to that of other courses in a blended programme.	The study load, including deadlines, of different courses in a blended programme are aligned, monitored, evaluated and adjusted.

Implementation Guidelines

The second maturity level in the dimension 'Programme experience: study load' requires that study load between courses is deliberately aligned. In an ideal world, the study load of a course is equally divided for each week (e.g., a 10-week course of 7.5 ECTS should have a study load of approximately 21 hours per week). Usually this is not the case. Deadlines (i.e. assignments, exams, etc.) in a course can cause peak study loads. This does not cause a problem per se, unless the study load of different courses in a programme is not taken into consideration at the same time.

To attain level 2 (Advanced), the study load and peaks of parallel courses in a programme are taken into consideration. For example, Figure 2 shows a graph of the study load in two courses (both 7.5 ECTS courses). The peak loads are distributed over several weeks and are proportionally distributed across courses in the same programme. Creating such overview is useful to align the study loads and peak loads in a programme.

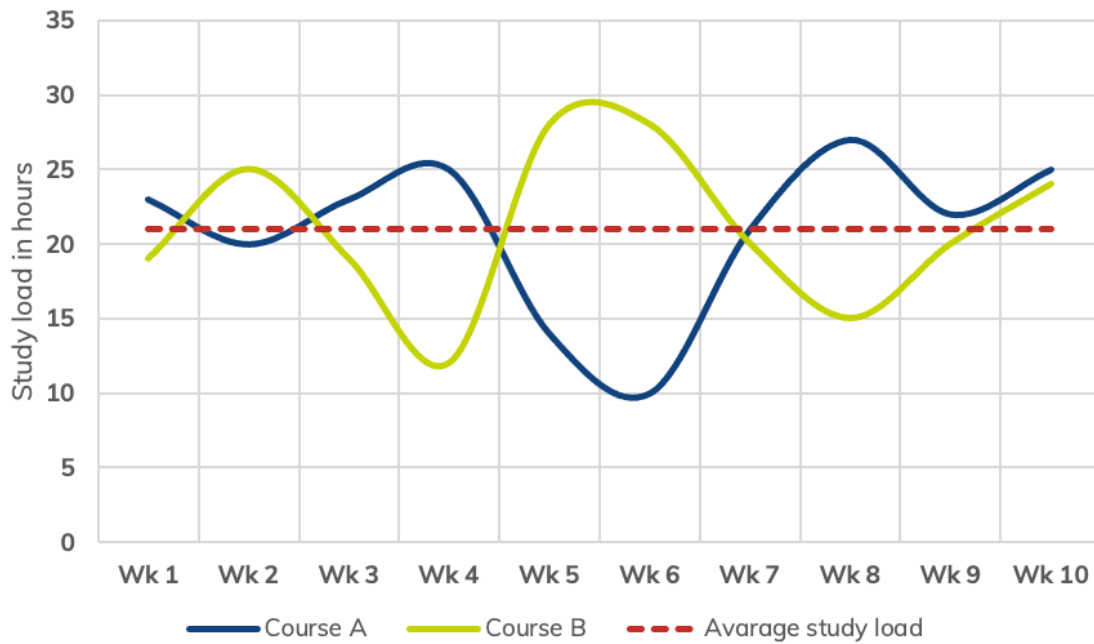


Image 2: example of a study load alignment graph.

Deliberately proportioning study loads in a programme does not mean that two or more courses cannot have the same deadlines (and corresponding peak loads). It means that this should be a deliberate decision. When peak loads coincide, it is important that students are equipped with the necessary SRL skills to manage and plan their learning. Senior-year students are usually better at studying with non-aligned deadlines than freshmen.

Level 3 (Comprehensive) describes that the study load in a programme must be monitored, evaluated and adjusted. The tools and instruments described in 'Course Experience: Study load' can also be used at the programme level. It is advised to gather data for the programme level and the alignment between courses. This can be done by adding questions to student surveys or using study load alignment chart(s).

Inclusiveness

The consideration of the diverse needs and backgrounds of students in order to create a programme where all students feel valued, safe, have a sense of belonging, and where all students have equal access to the online and face-to-face environments of the blended learning programme.

Level 1 Standard	Level 2 Advanced	Level 3 Comprehensive
No deliberate consideration for inclusiveness between courses.	Initial attempts to align inclusiveness in a collection of courses. Special attention is paid to social belonging and identity in the online environment of the programme. This process is informed by evidence or experience.	Inclusiveness is aligned in all of a programme's courses. Students feel valued, safe, and have a sense of belonging. The realization of inclusiveness is based on evidence or experience. Continuous quality improvement is deliberately embedded in order to improve inclusiveness in the programme.

Implementation Guidelines

Level 2 of the inclusiveness dimension refers to initial attempts undertaken to create a series of inclusive courses in a programme, especially with regard to social belonging and identity in the online part of the programme. This process is informed by evidence or experience. To facilitate such process, the EQUiP (2020) user guide may be a useful resource. It specifically focuses on designing and teaching inclusive international programmes. The 'Universal Design Principles' (Cast, 2018) also offers an array of possibilities to design and develop an inclusive programme. Finally, the report 'Diversity, equity and inclusion in European higher education institutions' (Claeys-Kulik, Jørgensen & Stöber, 2019) reviews inclusion in European HE.

Maturity level 3 (Comprehensive) describes that inclusiveness is incorporated in all courses of the same programme. Also, CQI procedures are implemented which concentrate on inclusiveness. Tools like the 'Measurement Including Tool' (Alberta Urban Municipalities Association, 2017) or the tool developed by Kielblock (2018) facilitate processes of evaluation. Surveys, interviews and focus groups can be organised to gain additional data and insights.

References

- Alberta Urban Municipalities Association. (2017). *Measuring inclusion tool*. The Welcoming & Inclusive Communities Initiative. Retrieved from https://auma.ca/sites/default/files/Advocacy/Programs_Initiatives/WIC/measuring_inclusion_tool_-_paper_user_0.pdf
- CAST. (2018). *The UDL Guidelines*. UDL Guidelines. Retrieved from <https://udlguidelines.cast.org/>
- Claeys-Kulik, A. L., Jørgensen, T. E., & Stöber, H. (2019). *Diversity, Equity and Inclusion in European Higher Education Institutions: Results from the INVETED project* (C. Royo & H. Mariaud, Eds.). European University Association asbl. Retrieved from https://eua.eu/downloads/publications/web_diversity%20equity%20and%20inclusion%20in%20european%20higher%20education%20institutions.pdf
- EQUIIP. (2018). *User Guide*. Educational Quality at Universities for Inclusive International Programmes. Retrieved from <https://equiip.eu/userguide/>
- Kielblock, S. (2018). *Inclusive Education for All: Development of an Instrument to Measure the Teachers' Attitudes*. Retrieved from <https://d-nb.info/1162053941/34>

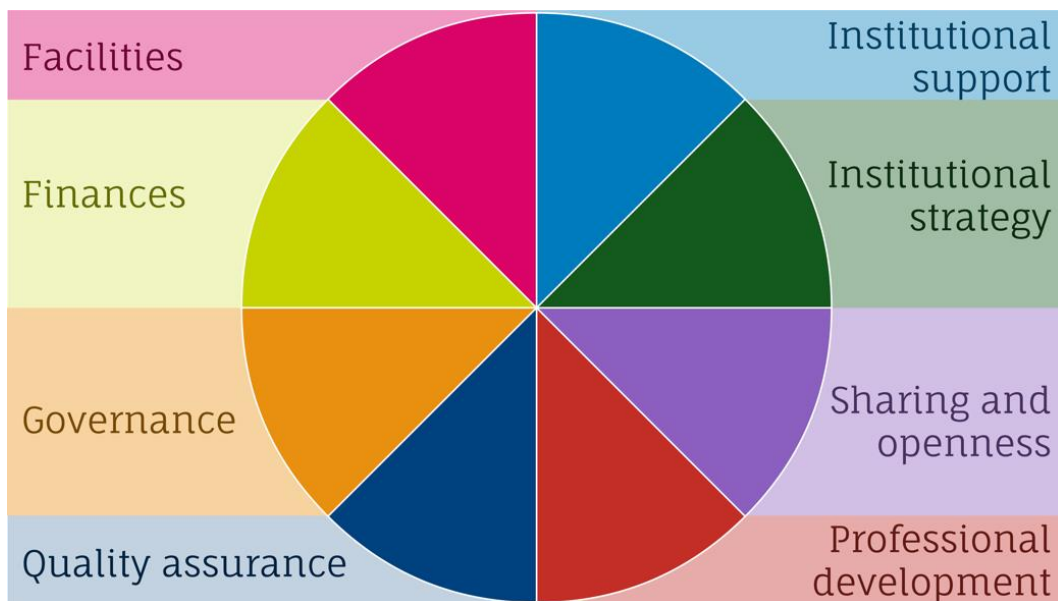
Institution Level

Institution Level

The institution level refers to the formal context of blended learning and education. This is determined by policies and conditions with regard to the organization and support of blended learning. At the institutional level different key actors, teams, or bodies play a role in the decision- making process. Among others, programme coordinators and heads of teaching and learning centres are involved.

The institution level consists of the following eight dimensions:

- [Institutional support](#)
- [Institutional strategy](#)
- [Sharing and openness](#)
- [Professional development](#)
- [Quality Assurance](#)
- [Governance](#)
- [Finance](#)
- [Facilities](#)



INSTITUTIONAL SUPPORT

The manner in which an institution supports teachers and students' blended learning activities

Level 1 Ad Hoc	Level 2 Consolidated	Level 3 Strategic
Limited support for blended learning and teaching aimed at individual teaching staff and students	Dedicated support for blended learning and teaching is available for all teachers, students and departments.	Support for blended learning and teaching is part of the standard support services of the institution. Continuous quality improvement is deliberately embedded in order to improve the support for blended learning.

Implementation Guidelines

Maturity level 2 of the dimension institutional support requires from an institution that it offers dedicated support to all teachers, students, and departments for blended teaching and learning. This may be a complex endeavour. SURF (2018) published a decision aid with five different approaches regarding the organization of support in an educational organization (e.g., central vs. decentralised support, top-down vs. bottom-up innovation). Also, the JISC guide supports students and staff to work successfully with digital technologies (JISC, 2015), and offers tips and use cases to organise the support for students and staff.

To reach maturity level 3 (Strategic) the institutional support is fully integrated in the standard services of the HE institution. This means that there are no dedicated support desks, but that instructors and students may ask for help from the standard services to get support for blended education purposes. CQI is embedded in order to improve the support for blended learning, using various data sources. These include qualitative data, based on user surveys and interviews, complemented with quantitative data about the most frequently asked questions, about the search queries on the website or the most often visited web pages of the support site. Applications like business intelligence platforms, website analytics, and ticketing systems for help requests can facilitate the support process and provide meaningful insights.

References

- JISC. (2015). *Support students and staff to work successfully with digital*. Retrieved from <https://www.jisc.ac.uk/guides/enhancing-the-digital-student-experience/support-students-and-staff>
- SURF. (2018). *Decision aid: Realising support structures for it-driven educational innovation*. Retrieved from <https://www.surf.nl/files/2019-04/decision-aid-realising-support-structures-for-it-driven-educational-innovation.pdf>

INSTITUTIONAL STRATEGY

The extent to which blended learning, teaching and education are embedded in the vision, educational model and goals of an institution

Level 1 Ad Hoc	Level 2 Consolidated	Level 3 Strategic
No uniform blended learning strategy is in place.	A dedicated blended learning strategy is consolidated within the institution. University administrators recognize and advocate the importance of blended learning, teaching and education.	Blended learning is an integral part of the institutional strategy. The strategy is embedded in the whole institution (throughout faculties and departments), well documented, and evaluated and adjusted on a regular basis. University administrators and departments recognize and advocate for the importance of blended learning, teaching and education.

Implementation Guidelines

The institutional strategy describes the extent to which blended learning, teaching and education are embedded in the vision, the educational model and goals of an institution. To reach maturity level 2, a dedicated blended learning strategy is consolidated in the institution. JISC offers a couple of resources and tools to start developing a vision and a strategy. These include the 'Vision and Strategy Toolkit' (JISC, 2020a), the 'Digital learning in Higher education' (JISC, 2020b) and 'Innovation in Higher Education' (JISC, 2020c). The EEF guide 'Putting Evidence to Work - A School's Guide to Implementation' (EEF, 2019) aids institutions with implementation. Although this publication is more focused on primary and secondary schools, the recommendations are equally useful for HE institutions. Besides a strategy and vision, the role of university administrators is very important. University leadership should recognize and advocate the importance of blended learning, teaching and education. This should be done at management and town hall meetings, during education days and events, in newsletters and other forms of communications, conferences, gatherings and events involving other institutions, and so forth.

To reach maturity level 3 (Strategic), blended learning, teaching and education is an integral part of the institutional strategy. The strategy is embedded in the whole institution implying that the strategy is actively shared and promoted (e.g., documentation, videos, events) in the whole institution. The different departments and faculties of an institution embrace the strategy and incorporate it into their own policies and procedures. Strategy is implemented using implementation plans, and this process is regularly evaluated and adjusted. Therefore, multiple stakeholders (e.g., deans, management, support staff, instructors, and students) are consulted. In addition, other data sources are used to evaluate the institutional strategy. Finally, university administrators, faculties, and other departments recognise and advocate the importance of blended learning, teaching and education. This is done at all levels of the institution.

References

- Education Endowment Foundation. (2018). *Putting evidence to work: A school's guide to implementation*. Retrieved from https://educationendowmentfoundation.org.uk/public/files/Publications/Implementation/EEF_Implementation_Guidance_Report_2019.pdf
- JISC. (2020a). *Vision and strategy toolkit*. Retrieved from <https://www.jisc.ac.uk/guides/vision-and-strategy-toolkit>
- JISC. (2020b). *Digital learning in higher education*. Retrieved from <https://www.jisc.ac.uk/guides/digital-learning-in-higher-education>
- JISC. (2020c). *Innovation in higher education*. Retrieved from <https://www.jisc.ac.uk/guides/innovation-in-higher-education>

SHARING AND OPENNESS

The degree to which an institution facilitates communities for sharing blended practices, materials and courses.

Level 1 Ad Hoc	Level 2 Consolidated	Level 3 Strategic
Individual teachers or departments share 'blended' best practices with colleagues.	Communities for sharing 'blended' best practices are facilitated. Processes and/or platforms are in place for sharing good practices and/or materials.	Communities for sharing 'blended' best practices are facilitated, actively built and maintained. Processes and platforms are in place for sharing good practices and materials. Processes are in place for quality assurance of the shared materials.

Implementation Guidelines

The dimension 'Sharing and openness' describes the extent to which an institution facilitates communities and platforms for sharing good practices, materials and courses. For maturity level 2 (Consolidated), communities are facilitated. Models like the 'community of practice' (Wenger, 2011 and Farnsworth, Kleanthous, & Wenger-Trayner, 2016) can be used to build professional communities of instructors. Additionally, platforms that facilitate communities and the sharing of best practices, are supported. Such platform may be an institutional platform like the 'Online Learning Hub', 'CELT Toolboxes', 'OpenEd', or (inter)national platforms (e.g., SURF Communities or Empower). Using standardized templates (Alwazae, Perjons & Johannesson, 2015) enable an institution to share and disseminate best practices. Besides sharing best practices, also courses materials are exchanged. This is possible within an institution, using repositories, shared folders or other platforms. Furthermore, establishing an open course ware (OCW) website can contribute to the openness of an institution. Examples include MIT, Harvard or TU Delft.

At the maturity level 3 (Strategic) communities are actively built and maintained. One way in which this can be achieved, is with 'community facilitation teams. These schedule meetings, events, publications, and so forth. Moreover, QA processes are in place for sharing materials. These can be designed by using frameworks like 'OERTrust' (Almendro & Silveria, 2018) or the 'Quality Assurance of Open Educational Resources' (SURF, 2020).

References

- Almendro, D., & Silveira, I. F. (2018). Quality Assurance for Open Educational Resources: The OERTrust Framework. *International Journal of Learning, Teaching and Educational Research*, 17(3), 1–14. Retrieved from https://www.researchgate.net/publication/323882739_Quality_Assurance_for_Open_Educational_Resources_The_OERTrust_Framework
- Alwazae, M., Perjons, E., & Johannesson, P. (2015). Applying a Template for Best Practice Documentation. *Procedia Computer Science*, 72, 252–260. Retrieved from <https://doi.org/10.1016/j.procs.2015.12.138>

- Farnsworth, V., Kleanthous, I., & Wenger-Trayner, E. (2016). Communities of Practice as a Social Theory of Learning: A Conversation with Etienne Wenger. *British Journal of Educational Studies*, 64(2), 139–160. Retrieved from https://www.researchgate.net/publication/291423559_Communities_of_Practice_as_a_Social_Theory_of_Learning_a_Conversation_with_Etienne_Wenger
- SURF. (2020). Quality assurance of open educational resources. SURF. Retrieved from <https://www.surf.nl/en/quality-assurance-of-open-educational-resources>
- Wenger, E. (2011). Communities of practice: A brief introduction. Retrieved from <http://hdl.handle.net/1794/11736>

Examples of platforms for sharing materials and best practices:

- [TU Delft - Online learning Hub](#)
- [UTwente - CELT Toolboxes](#)
- [The University of Edinburgh - OpenED](#)
- [SURF Communities](#) (only in Dutch)
- [EADTU - EMPOWER](#)

Examples of Open Course Ware platforms

- [MIT](#)
- [University of Michigan](#)
- [TU Delft](#)

PROFESSIONAL DEVELOPMENT

The extent to which teaching staff are able to develop their blended teaching skills

Level 1 Ad Hoc	Level 2 Consolidated	Level 3 Strategic
A few different workshops or courses related to blended learning and teaching are offered.	Solid efforts to organise workshops and/or courses related to blended learning and teaching are offered for the teaching staff. The blended teaching activities of staff are incidentally recognized.	All teaching staff is trained in blended learning and teaching. The institution offers a well aligned portfolio of workshops and/or courses (related to blended learning and teaching) for the continuous professional development of their staff. The blended teaching activities of staff are recognized and valued by the institution.

Implementation Guidelines

At maturity level 2 (Consolidated), institutions organise workshops, courses and other professional development instances related to blended teaching and learning. In ‘Building blocks for effective professional development’ one finds scenarios for training, as well as 37 building blocks for the professional development of instructors in HE (Zone Facilitating Professional Development for lectures, 2020). Also, the Digi Competence Framework (Redecker & Punie, 2017) offers guidelines regarding the offer of training and workshops. It presents six categories with 22 competences deemed necessary for instructors to acquire when being involved in digital education. Besides organising an array of training possibilities and workshops, the institution needs to recognise blended teaching activities and staff’s professional development. This signifies that the institution should at the very least provide time and appreciation for the professional development of staff.

In maturity level 3 (Strategic), all teaching staff are trained. The topic of blended learning, teaching and blended course design are incorporated in mandatory training possibilities (for example, by means of [University Teaching Qualifications](#)). A well-aligned portfolio of training possibilities is also offered for the continuous professional development of teaching staff. Although it is not explicitly mentioned in the maturity model, it is important to embed CQI procedures in courses and workshops. Both qualitative (surveys, interviews, focus groups) and quantitative (learning analytics) data can be used. Further, a peer review involving other institutions can be organised to assess the portfolio of training possibilities (see also the publication of VSNU (2018)). To conclude, the blended teaching activities of all staff are recognised and valued by the HE institution.

References

- Redecker, C., & Punie, Y. (2017). *Digital Competence Framework for Educators (DigCompEdu)*. Publications Office of the European Union. Retrieved from <https://ec.europa.eu/jrc/en/publication/eur-scientific-and-technical-research-reports/european-framework-digital-competence-educators-digcompedu>
- VSNU. (2018). *Professionalisation of university lecturers: The UTQ and beyond*. Retrieved from <https://www.vsnu.nl/files/documenten/Professionalisation%20of%20university%20lecturers.pdf>
- Zone Facilitating Professional Development for Lecturers. (2020). *Building blocks for effective professional development*. Acceleration plan Educational Innovation With ICT. Retrieved from <https://versnellingsplan.nl/english/publication/building-blocks-for-effective-professional-development/>

QUALITY ASSURANCE

The process where blended courses, programmes, strategy, rules and regulations are evaluated and revised on a regular basis

Level 1 Ad Hoc	Level 2 Consolidated	Level 3 Strategic
No deliberate quality assurance for blended courses, programmes, strategy and policies.	Special processes for evaluation of blended courses, programmes, strategy and policies are developed and implemented. Some research is conducted on blended courses and/or programmes.	Quality assurance for blended courses is part of the standard quality assurance processes of the institution. The evaluation and improvement are based on clear criteria and multiple data sources. The institution has a research agenda for researching its own courses, programmes and education.

Implementation Guidelines

Quality assurance is the process during which blended courses, programmes, strategies, rules and regulations are evaluated and revised regularly. Maturity level 2 (Consolidated) requires that dedicated processes for QA evaluation and improvement are implemented. It is advised to use QA frameworks to this end, like the generic ‘Standards and Guidelines for Quality Assurance in the European Higher Education Area’ (ENQA, ESU, EUS, & EURASHE, 2015). The ‘Statutory Quality Assurance Guidelines’ (QQI, 2018) provide specific QA guidelines for blended learning programmes. The ‘UCD Quality Framework’ (UCD, 2015) is an example of QA at the University College Dublin. Another framework which may be used or combined is the ‘E-xcellence framework’ (EADTU, 2016), originally a QA framework for e-learning. It is supported by a manual, videos, and other materials for implementation. Besides implementing a dedicated QA framework, QA studies must be conducted on blended courses and/or programmes. Individual researchers, a research institution or a department may be involved for this purpose.

To reach maturity level 3, labeled as ‘Strategic’, QA for blended education is part of the standard QA approach of an HE institution. There are no separate processes or procedures for blended education, on the contrary, they are integrated in the standard approach, with a shift from quality assurance to CQI. Working on a quality culture in a HE institution can contribute to this process. The report ‘Quality culture in European universities: A bottom-up approach’ (EUA, 2006) gives some insight into quality cultures and implementation. Besides striving towards CQI or a quality culture, this maturity level describes that the institution has a research agenda for researching its own courses, programmes and education. Both Zeichner (2005) and the National Research Council (1999) give insights into how to design and execute such a research agenda. Collaboration with other higher education institutions or research institutions can enhance research and the dissemination of findings and results.

References

- EADTU. (2016). *E-xcellence: Quality Assessment for E-learning, A benchmarking approach* (No. 3). European Association of Distance Teaching Universities. Retrieved from <https://e-xcellencelabel.eadtu.eu/e-xcellence-review/manual>
- ENQA, ESU, EUS, & EURASHE. (2015). *Standards and Guidelines for Quality Assurance in the European Higher Education Area (ESG)*. EURASHE. Retrieved from <https://enqa.eu/index.php/home/esg/>
- EUA. (2006). *Quality Culture in European Universities: A Bottom-Up Approach*. European University Association. Retrieved from <https://eua.eu/resources/publications/656:quality-culture-in-european-universities-a-bottom-up-approach.html>
- National Research Council. (1999). *Proposing a Research and Development Agenda*. In *How People Learn: Bridging Research and Practice* (pp. 30–64). National Academy Press. Retrieved from <https://www.nap.edu/read/9457/chapter/6>
- QQI. (2018). *Statutory Quality Assurance Guidelines for Providers of Blended Learning Programmes*. Quality and Qualifications Ireland. Retrieved from <https://www.qqi.ie/Publications/Publications/Statutory%20QA%20Guidelines%20for%20Blended%20Learning%20Programmes.pdf>
- University College Dublin. (2018). *UCD Quality Office | UCD Quality Framework*. UCD Quality Office. Retrieved from <https://www.ucd.ie/quality/ucdqualityframework/>
- Zeichner, K. M. (2005). *A Research Agenda for Teacher Education*. In M. Cochran-Smith & K. M. Zeichner (Eds.), *AERA Panel on Research in Teacher Education* (pp. 737–759). American Educational Research. Retrieved from https://www.researchgate.net/publication/303382056_A_Research_Agenda_for_Teacher_Education

GOVERNANCE

The way in which the vision and policies are translated to rules, regulations and actions that facilitate blended education

Level 1 Ad Hoc	Level 2 Consolidated	Level 3 Strategic
<p>Some informal policies, rules, regulations, action plans and guidelines (e.g., legal, ethical, privacy, data) related to blended learning are used in the institution. The institution does not have standardized models for blended course and programme design.</p>	<p>Policies, rules, regulations, action plans and guidelines (e.g., legal, ethical, privacy & data) related to blended learning are developed and implemented in the institution. Some key actors in the institution are involved in the process of developing new and existing policies, rules, regulations and action plans. Models for blended course and programme design are shared in the institution.</p>	<p>Policies, rules, regulations, action plans and guidelines (e.g., legal, ethical, privacy & data) related to blended learning are embedded in the standard governance structure of the institution. The governance of the institution is systematically reviewed and adjusted. Key actors, at different levels in the institution, are involved in the process of reviewing, adjusting and developing new and existing policies, rules, regulations and action plans. Standardized models for blended course and programme development are provided.</p>

Implementation Guidelines

Governance refers to the way in which the vision and policies of a HE institution are translated into rules, regulations, and actions that facilitate blended education. Maturity level 2 (Consolidated) describes that policies, rules, regulations, action plans, and guidelines related to blended education are developed and implemented. Developing effective governance and policies can be a challenging endeavor. Dobbins, Knill and Vögtle (2011), next to Mader, Scott and Raza (2013) offer some insights into these topics. In addition, the guide ‘Developing organisational approaches to digital capability (Killen, Beetham, & Knight, 2017) explains how to develop a culture, infrastructure and practices regarding digital capacity of the organisation.

Maturity level 2 of the dimension Governance describes that some key actors in the institution are involved in the process of developing new and existing policies, rules regulations and action plans. These key actors can be lecturers, students, policy officers, educational advisors, deans, and/or (vice)-rectors. To identify the key actors, Mirriahi, Dawson and Hoven (2012) offer a useful approach. The last aspect of maturity level is that the models for blended course and programme design are shared within the institution (see also the dimensions [course design process](#) and [programme design process](#)). This will lead to a more standardised approach of developing blended education.

Maturity level 3 (Strategic) calls for policies, rules, regulations, action plans and guidelines to be embedded in the standard governance structure of a HE institution. There are no separate policies or regulations regarding blended teaching and learning; they are part of the default or standard education formats. The governance of a HE institution is also systematically reviewed and adjusted. Hereto, Davies (2000) offers research methods to evaluate and review policies. Building upon level 2, key actors at different levels of the institution are involved in the process of reviewing, adjusting and developing policies. This necessitates the involvement of, among others, policy officers, students, instructors, management. Finally, the institution provides standardized models for the development of blended education.

References

- Davies, P. (2000). The Relevance of Systematic Reviews to Educational Policy and Practice. *Oxford Review of Education*, 26(3–4), 365–378. Retrieved from https://www.tandfonline.com/doi/pdf/10.1080/713688543?casa_token=QOkdf3za0BMAAAA:dkBrlaP2wXy_QsQ9VHm8dkzjWoaDq6ha06DPZit3eldeoV1cgs_ElhS4GbxZIktjef6H7k4oy4
- Dobbins, M., Knill, C., & Vögtle, E. M. (2011). An analytical framework for the cross-country comparison of higher education governance. *Higher Education*, 62(5), 665–683. Retrieved from https://www.researchgate.net/publication/226613113_An_analytical_framework_for_the_cross-country_comparison_of_higher_education_governance
- Hopster-den Otter, D., Ter Beek, M., Nouta, J., Alvarez, C., & Kuypers, M-J. (2020). *The integral IT motion sensor: A guide to accelerate educational innovation with IT*. Utrecht, the Netherlands: Acceleration Plan Educational Innovation with IT. Retrieved from <https://versnellingsplan.nl/english/publication/integral-it-motion-sensor/>
- Killen, C., Beetham, H., & Knight, S. (2017). *Developing organisational approaches to digital capability*. Jisc. Retrieved from <https://www.jisc.ac.uk/guides/developing-organisational-approaches-to-digital-capability>
- Mader, C., Scott, G., & Abdul Razak, D. (2013). Effective change management, governance and policy for sustainability transformation in higher education. *Sustainability Accounting, Management and Policy Journal*, 4(3), 264–284. Retrieved from https://www.researchgate.net/publication/257611941_Effective_Change_Management_Governance_Policy_for_Sustainability_Transformation_in_Higher_Education
- Mirriahi, N., Dawson, S., & Hoven, D. (2012, November). Identifying key actors for technology adoption in higher education: A social network approach. In M. Brown, M. Hartnett, & T. Stewartd (Eds.), *Ascilite2012 Conference Proceedings* (pp. 664–673). Ascilite2012. Retrieved from https://www.ascilite.org/conferences/Wellington12/2012/images/custom/mirriahi._negi_n_-_identifying_key.pdf

FINANCES

The extent to which financial resources are allocated to develop, support, and stimulate blended learning

Level 1 Ad Hoc	Level 2 Consolidated	Level 3 Strategic
No allocation of financial resources specifically for blended learning purposes.	Financial resources are incidentally allocated (e.g., projects, pilots) to develop, support, stimulate and improve blended learning and teaching. The allocation of the resources is evaluated.	Financial resources are structurally allocated to develop, support, stimulate and improve blended learning, teaching and blended education. The allocation of the resources is systematically evaluated and adjusted, based on clear criteria and qualitative and quantitative data.

Implementation Guidelines

In order to reach maturity level 2 (Consolidated), financial resources are allocated ad hoc to develop, support, stimulate and improve blended learning and teaching. Besides external funds (e.g., from government), it is important to allocate internal budgets to innovation. As Schopenhuizen and Kaltz (2020) indicate, when experimentation is not only dependent on external funds, it will contribute to the increase of the adoption, implementation and long-term sustainability of initiatives. Budgets can be used for hiring (more) staff, student assistants, for conducting experiments and pilots, for engaging an innovation team, for procuring new educational tools, to award grants, prizes, and so on. A study with five HE institutions in the Netherlands shows that funds are mostly used to employ people. Approximately half of a regular innovation budget (40 to 70%) goes to providing various types of support. Depending on the institution, between 15 and 40 percent are invested in facilities, licenses and tools (SURF, 2018). Also, some Dutch institutions have ‘education fellows’ who experiment with innovative methodologies and technologies. They receive a budget for this purpose and become a ‘champion of innovation’ (Centre for academic teaching, 2020; TU Delft Teaching Academy, 2020). This approach accelerates innovation.

Maturity level 3 (Strategic) entails that financial resources are structurally allocated. Besides occasional funds, a structural budget is allocated to innovation and blended education. However, it may be difficult to distinguish between structural and incidental funds. SURF (2018) describes that ‘when it comes to distributing the budget, it turns out to be difficult to distinguish between the innovation budget and money for ongoing affairs.’. Therefore, it is crucial to systematically evaluate and finetune the financial resources of an institution. This is done by using clear criteria for projects (e.g., project plans, including clear criteria, results, budgets and deadlines), support staff (e.g., write personal development plans, with criteria and deadlines), pilots (e.g., pilot plan, including criteria, results, budgets, timelines), and so forth. Qualitative and quantitative data are needed to evaluate the allocation of resources.

References:

- Centre for Academic Teaching. (2019). Teaching fellows. Universiteit Utrecht. Retrieved from <https://www.uu.nl/en/education/top-lecturers-and-top-students/teaching-fellows>
- Schophuizen, M., & Kalz, M. (2020). Educational innovation projects in Dutch higher education: bottom-up contextual coping to deal with organisational challenges. *International Journal of Educational Technology in Higher Education*, 17(1), 17–36. Retrieved from <https://doi.org/10.1186/s41239-020-00197-z>
- SURF. (2018). Decision aid: realising support structures for IT-driven educational innovation. Retrieved from <https://www.surf.nl/en/decision-aid-realising-support-structures-for-it-driven-educational-innovation>
- TU Delft Teaching Academy. (2020). Education Fellows. TU Delft. Retrieved from <https://www.tudelft.nl/tu-delft-teaching-academy/get-inspired/education-fellows/>

FACILITIES

The extent to which institutions are equipped to facilitate blended learning and teaching.

Level 1 Ad Hoc	Level 2 Consolidated	Level 3 Strategic
Limited availability of blended learning and teaching facilities.	A wide variety of facilities is available. This includes both digital (e.g., digital learning environment, educational tools) and physical (e.g., video recording studios, the availability of different classroom set-ups) facilities.	A wide variety of facilities is available. This includes both digital (e.g., digital learning environment, educational tools) and physical (e.g., the availability of different classroom set-ups, video recording studios) facilities. Teachers have influence on the scheduling of the facilities. The development of facilities is aligned with the institutional strategy. The quality, quantity and assortment of facilities is systematically evaluated and adjusted, based on clear criteria and multiple data sources.

Implementation Guidelines

The dimension ‘Facilities’ describes the extent to which institutions are equipped with physical and digital facilities to enable blended learning and teaching. Physical facilities include equipment and spaces to create media for educational purposes. For example, a video recording studio, hardware like a lightboard (Peshkin, 2020), or a virtual reality studio. It is important that these media facilities are also manned and financially supported (see also the dimension of [Institutional Support](#)). Another aspect belonging to physical facilities is the opportunity to have different classroom setups. The e-book ‘Learning Spaces’ (Oblinger, 2006), the ‘Cookbook Education spaces’ (Van der Zande & Bogerd, 2018), as well as the ‘UK higher education Learning Spaces’ (JISC, 2018) provide readers with inspiring ideas and guidelines on in this regard. Choosing consciously between these different classroom setups can be challenging for instructors. Tools like the Education Spaces Viewer (TU Delft, 2020) can aid them in this process.

Digital facilities include the virtual learning environment (VLE) and other instructional tools for information processing, communication and interaction purposes. A VLE is an indispensable tool for blended teaching and education. All tools offered by a HE institution should align with those used in courses and programs. Alhogail and Mirza (2011) describe the implementation of a VLE from a change management perspective. They provide a framework with different aspects for its successful implementation.

Maturity level 2 (Consolidated) states that a wide variety of both types of facilities is available. At maturity level 3 (Strategic), instructors have an influence on scheduling (room) facilities. For example, instructors may choose the classroom set-up for their face-to-face sessions. This prevents, for example, that a project-based course is scheduled in a lecture theatre. Level 3 also indicates that the range of teaching facilities, both physical and digital, is evaluated and adjusted systematically, based on clear criteria and multiple data sources. Contributions such as 'A Rubric for Evaluating E-Learning Tools in Higher Education' (Anstey & Watson, 2018) and 'Evaluating Virtual Learning Environments: what are we measuring' (Dyson & Campello, 2003) provide adequate frameworks for the evaluation of digital facilities. The chapter 'Assessing Learning Spaces' from Hunley and Schaller (2006), is helpful in assessing physical facilities and deciding upon the specific data sources (e.g., interviews, focus groups, surveys, and photographic studies).

References

- Alhogail, A., & Mirza, A. A. (2011). Implementing a virtual learning environment (VLE) in a higher education institution: A change management approach. *Journal of Theoretical and Applied Information Technology*, 31(1), 42–52. Retrieved from https://www.researchgate.net/publication/289791828_Implementing_a_virtual_learning_environment_VLE_in_a_higher_education_institution_A_change_management_approach
- Anstey, L. M., & Watson, G. P. L. (2018). Rubric for eLearning Tool Evaluation. Centre for Teaching and Learning, Western University. Retrieved from <https://teaching.uwo.ca/pdf/elearning/Rubric-for-eLearning-Tool-Evaluation.pdf>
- Dyson, M. C., & Campello, S. B. (2003). Evaluating Virtual Learning Environments: what are we measuring. *Electronic Journal of E-Learning*, 1(1), 11–19. Retrieved from https://www.researchgate.net/publication/228496948_Evaluating_Virtual_Learning_Environments_what_are_we_measuring
- Hunley, S., & Schaller, M. (2006). Assessing Learning Spaces [E-book]. In D. G. Oblinger (Ed.), *Learning Spaces* (p. 13.1-13.11). Educause. Retrieved from <https://www.educause.edu/research-and-publications/books/learning-spaces/chapter-13-assessing-learning-spaces>
- JISC. (2018). *UK Higher Education Learning Space Toolkit: case studies*. Retrieved from <https://www.jisc.ac.uk/full-guide/learning-space-toolkit-case-studies>
- Oblinger, D. G. (Ed.). (2006). *Learning Spaces*. EDUCAUSE. Retrieved from <https://www.educause.edu/research-and-publications/books/learning-spaces>
- Peshkin, L. (2020). *Lightboard.info*. Lightboard. Retrieved from <https://lightboard.info/>
- TU Delft. (2020). *Education Spaces Viewer*. TU Delft Education Spaces Viewer. Retrieved from <https://esviewer.tudelft.nl/#>
- Van der Zanden, P., Bogerd, T., & Van Loon, I. (2018). *Cookbook Education Spaces: requirements for Education Spaces TU Delft campus (No. 2)*. TU Delft. Retrieved from http://homepage.tudelft.nl/9c41c/Cookbook_Education_Spaces_v2_0.pdf

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European Maturity Model
for Blended Education