



A Teacher's Guide to Online Education

Blekinge Institute of Technology, 2020

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Introduction

This document presents a best practice for online teaching at Blekinge Institute of Technology (BTH). The practices described are based on both scholarly articles and well-proven experience. The document is structured in the following sections:

- **Online course structure** offers advice on how to design an online course site.
- **Course content** discusses how different elements of learning can be adapted for online education.
- **Learning communities** describes how you can create a classroom experience online.
- **Examination in online education** provides recommendations on how to examine and assess students.

Each section is followed by a list of suggested further readings.

Part I: Online course structure

While traditional face-to-face teaching relies heavily on teaching effectiveness and instructors' regulation of course contents, the planning and setting up of the course site is of central importance in online learning (Al-Adwan, et al. 2013). It is a key determinant of student satisfaction and motivation (Eom & Ashill, 2016; Jaggars & Xu, 2016; Abdelmaaboud, et al. 2020). Even more importantly, along with interactive teaching styles and a teaching plan that encourages peer interaction, course design and learning material are key determinants in increasing student learning (Eom & Ashill, 2016; Goh, et al. 2016).

The structure of an online course is the actual learning environment of your course (Horzum, 2015). The course structure is made up of two major components:

- (1) Course objectives/expectations
- (2) Course infrastructure

The first component (1) includes learning outcomes, timing and the order of activities. The second component (2) points at the usability of the course web site and the organization of the course material into logical and understandable components. Besides the above major components, there are other aspects to be considered. Baldwin and Ching (2019) identify the following elements to be of central importance:

- Learning objectives are available
- Expectations regarding the quality of communication and participation are provided
- Policies are stated for behavior expectations
- Student-to-student interaction is supported
- Communication and activities are used to build community
- Rubrics for graded assignments are provided
- Technology is used to promote learner engagement/facilitate learning

- Instructor contact information is stated
- Links to institutional services are provided
- Assessments align with objectives
- Navigation is intuitive

Jagger and Xu (2016) express it somewhat differently and perhaps less detailed. They argue that courses opting for high quality should have:

- Clearly written learning outcomes
- A well-organized content
- A variety of opportunities for interpersonal interaction
- An effective use of technology

Regardless of which structure you choose, the course structure is a means for stimulating student learning and support instructor efficiency. It should be structured to support course materials inclusion and course interaction while at the same time harmonizing with instructor time pressure and budget restrictions. This requires careful thought and a fair amount of time should be spent on the planning and implementation of the course structure. In the wealth of well-proven experience that has developed at BTH, we have identified the following central aspects to be central with regards to course structure:

Visible learning objectives

Students should be informed at the beginning of a course about learning outcomes and in what ways they are linked to learning activities and the course material. Although this may seem evident for instructors, these connections are often far from clear to students. If students are made aware how the learning outcomes are linked to the course material and to learning activities their engagement and motivation are raised.

Intuitive Navigation

More than often the main course page tends to become static and fixed. It is advisable to make it more interactive and to update information weekly as this raises student engagement (Clark & Mayer, 2011). However, a too informative and constantly changing main page may instead create information overload and lead to confusion (Clark & Mayer, 2011). The trick is to balance more general information, such as “this study week the focus is on...,” vis-à-vis details on contents provided (typically via the module function in Canvas). Also, make sure that you think through the use of icons, links and text carefully. How will the use of these icons, links and texts assist the students in their learning process?

Create clarity by dividing the material into manageable chunks (Baldwin & Ching, 2019). These “chunks” may be based on time (weeks), content type (lecture vs. workshop or tutorial), or parts thereof. Avoid piling up large amounts of material in small fragments without a folder structure. The use of a mapping system also makes it easier for students to revisit course materials (e.g., a site under modules stating “Lecture 1 on Y, week X” can be created which can be clicked on to access files such as recorded lectures, readings, PowerPoints and alike).

Technology as a facilitator for learning

Communication software (e.g., Zoom) is at the center of online education. No matter how good your intentions are, without instructor visibility student tend to become less engaged and motivated (Jaggars et al, 2013). Uploading a lot of external generated video materials, for instance, may create the perception of a self-study course. Make sure that you upload such material sparsely.

Work on your own visibility by recording lectures or meeting students in class via Zoom or other tools. Built-in tools in Canvas, such as quizzes and self-tests (even if not graded), are often perceived

as fun and motivates students in their learning process. It is therefore a good idea to test various tools, e.g. using tablets, green screens or trying out new Canvas options. Testing should always be small-scale and should be accompanied by discussions with students on the idea behind the testing of the tool(s), as well as a formal or informal evaluation of the tool(s). What were the pros and cons of the tool(s)? How did the students perceive the tool(s) as supportive in their learning process?

Communication expectations

Although it is a good idea to create an upfront implicit contract with students on what rules or code of conduct applies for the communication with the instructor (e.g. e-mailing versus calling, or posting on course forums) it may easily backfire if too specified. Office hour policies or instructions that you only may contact instructors if “xxx applies” are often perceived by students as the instructor wanting to minimize his or her work effort in the course.

A dilemma is that students want quick access to instructors when they need help. To instructors, time and budget restrictions may make this impossible. To some extent, meeting students online via a conference tool a couple of times per week resolves this problem. It saves the instructor time spent on responding to plenty of separate e-mails or phone calls on the same issues from different students.

With regards to student-to-student chat or other asynchronous forum written contributions work experiences vary. On the one hand there is a risk that students perceive this as a burden rather than contributing to their learning. On the other hand, forum or chat text has the advantage that it can be accessed repeatedly by students. How well asynchronous student-to-student communication works really depends on study subject, the task or topic at hand, and the students themselves. Synchronous formal shorter student-to-student discussions during class tend to be appreciated by students.

Students tend to better organize themselves when it comes to informal student-to-student interactions. Communication problems related to group-work (including examination tasks) resemble those of campus courses. For instance, free-riding may occur whereby uneven effort is spent by members in a group. Behavioral policies and expectations are therefore important to communicate upfront along with course objectives and assessment criteria.

Timing of content release

There are two different methods, that may be considered as opposites in a continuum. The first one suggests that you release all course materials, including e.g., recorded lectures and examination tasks before or when the course starts. The other method suggests that you release material continually as the course proceeds.

Regardless of which method you choose, think carefully before choosing method and evaluate the results after each course, e.g. by integrating questions about course structure in the course evaluation.

The release-all-at-once method – advantages:

- Students can choose freely when to study what during the course's duration
- Students may more easily understand how different parts of the course are interrelated due to observability.

The release-as-you-go method – advantages:

- You as instructor may control the order and thereby the progression of theory and model contents assimilated by students in a way to better support their learning.
- You minimize the risk that students are not on the same page due to having accessed different material within a given time frame. This may minimize inquiries on different topics simultaneously and increase student interaction and completion of examination tasks.

Further readings

- Abdelmaaboud, A., et al. (2020). The influence of student-university identification on student's advocacy intentions: the role of student satisfaction and student trust. *Journal of Marketing for Higher Education*, 1-23.
- Al-Adwan, A., et al. (2013). Exploring student's acceptance of e-learning using Technology Acceptance Model in Jordanian universities. *The International Journal of Education and Development using Information and Communication Technology*, 9(2): 4-18.
- Baldwin, S.J. & Ching, Y-H. (2019). An online course design checklist: development and users' perceptions. *Journal of Computing in Higher Education*, 31(3): 156-172.
- Choe, R. C. (2019). Student satisfaction and learning outcomes in asynchronous online lecture videos. *CBE Life Science Education*, 18(4): 1-14.
- Clark, R. C., & Mayer, R. E. (2016). E-learning and the science of instruction: Proven guidelines for consumers and designers of multimedia learning. Hoboken: John Wiley & Sons, Incorporated.
- Eom, S., & Ashill, N. (2016). The determinants of students' perceived learning outcomes and satisfaction in university online education: An update. *Decision Sciences Journal of Innovative Education*, 14(2):185-215.
- Goh, C., et al. (2016). Students' experiences, learning outcomes and satisfaction in E-learning *Journal of E-Learning and Knowledge Society*, 117-128.
- Horzum, M. (2015). Interaction, structure, social presence, and satisfaction in online learning. *Eurasia Journal of Mathematics, Science and Technology Education*, 505-512.
- Jaggars, S., et al. (2013) Creating an Effective Online Instructor Presence. *CCRC Publications, Teachers College, Columbia University, April issue*.
- Jaggars, S., & Xu, D. (2016). How do online course design features influence student performance? *Computers and Education*, 95: 270-284.

Part II: Course content

There are challenges with both teaching and learning when courses are performed online. Students are not only separated from the teacher, but also from each other. This physical distance changes the learning environment quite drastically. How should we then adapt the course content to better suit an online learning environment? How can we formulate qualitative learning activities?

Lectures

One of the time-consuming tasks when developing online courses is the design of high-quality video lectures. Pre-planning lectures, slides, recording, and editing takes time and effort (Fayer, 2017). Keep in mind, however, that videos can often be re-used in other course iterations and that they could actually save time in the long run. Also, for the sake of variation, use different types of modes of instruction. Variation is a key factor for learning since students also have varying learning styles.

When planning and producing lectures, make sure that you always start with the course plan – what learning outcomes, learning activities and forms of assessment are stipulated and how are these aligned? (Biggs, 2011; Elmgren & Henriksson, 2014). As you plan the learning activities they should activate students and enable them to reach the learning outcomes. Also consider what technological tools you would like to use to activate and assess students. To activate students, a mix of prerecorded videos and engaging live sessions should be used. This mix of videos and lectures should be combined with other pedagogical methods to activate students, such as group work, workshops and seminars.

In this section we offer some advice on how to plan and carry out asynchronous videos, synchronous lectures, seminars and group work. Asynchronous videos/lectures are designed for self-study and are

available on Canvas with no time or space constraint. Synchronous videos occur in real-time, usually via Zoom, and help students feel connected even at a distance and often have interactive parts between teachers and students. Synchronous videos/lectures via Zoom often contain lectures, Q&A sessions, workshops, discussions, etc. These synchronous activities can be recorded and published on Canvas for the students to view and review throughout the course.

Asynchronous videos

The use of asynchronous videos is an excellent way of conveying course contents in an online course. As a teacher, this means that you can plan and prepare your material in advance. Furthermore, there is consistent evidence that students learn more deeply from words and visual graphics than words alone (Clark & Mayer, 2016). Online videos, when designed properly, can create both valuable and engaging online learning experiences.

Asynchronous videos are beneficial in a flipped classroom setting. Flipped classroom is pedagogical method where students have watched video and/or read course literature in advance and come well-prepared for lectures (Talbert, 2017). This means that synchronous videos and live sessions could be targeted for questions, active learning and more complex tasks that benefit from social interaction with peers and teacher guidance (Talbert, 2017). Since students have access to material prior to class and the possibility to re-watch the material, it saves time for the teacher who can focus on making sessions interactive. By using the flipped classroom method students can engage more creatively and broaden their knowledge and skills during lectures. When preparing your videos, there are a range of different video formats to choose from (Choe et al, 2019):

- **Classic classroom** – This video records the teacher close to a monitor or whiteboard. The teacher can walk between the monitor/whiteboard used for illustrations.
- **Weatherman** – This style focuses the teacher half-body, positioned in front of the screen, with a monitor or whiteboard to point at/draw on.
- **Demo** - The teacher demonstrates a tool or a technique, sometimes with a green screen as a background. Green Screen and studio are available for teachers in the library at BTH.
- **Learning glass** – The teachers write their illustration directly on a glass wall, teacher visible behind the glass.
- **Tutorials/demonstrations** – Records a screenshot or a demonstration/tutorial of example software or program.
- **Pen/Tablet** – Utilize a Wacom/iPad to illustrate and draw directly on the lecture slides.
- **Interview** – The teacher conducts a conversation asking questions and discuss with person B.
- **Talking Head in Slides** – The video records the lecture slides in full-screen format with the teachers talking head in the corner.
- **Slides**– Lectures slides in full-screen format with a narrative audio voice.

Before you choose video format consider the learning goals and the contents of the course. Also bear in mind that students appreciate a variation of video formats.

Planning asynchronous video lectures

First and foremost you must ensure that the audio is of good quality. Students must be able to hear clearly and they may not have the best equipment at hand. There is various software, such as e.g., Reach (provided by BTH) and Descript, which offers transcription of subtitles. This is especially useful when teaching in a second language or to international students.

Long lectures are ineffective online. Divide the videos into shorter segments. This is even more important if the material is complex. Segmenting the content into smaller parts simply makes it easier to grasp. The students may need time to consolidate what was presented. Distractions are also more present in a non-classroom environment, and many students attempt to multitask when watching lengthy lectures. When recording, ensure good pacing and minimizing distracting gestures. Breaking down the lectures in smaller parts is more beneficial for students to keep focus.

A recent study by Choe et al (2019) shows that online video, in general, improves student learning. Moreover, personal and engaging videos are rated higher, while videos that the students perceive as impersonal and unfamiliar are rated poorly. When designing the video lectures, use real-world examples and case studies. Also, include more illustrations, animations, and schematics than you would use in a face-to-face classroom.

Clark and Mayer (2016) argue that there is a big difference in students' perceptions of formal and personal language. Mayer suggests the use of personalized communication, use first- and second-person language. Make eye contact with the camera and address the student by changing words like "students" or "people" to "you." "Now let me tell you what we will demonstrate in this video." "How would you solve this problem?"

Synchronous lectures

Online courses can be a lonely experience for students, and they often report a disconnectedness compared with face-to-face classes. Teacher presence in an online course is a challenge and requires new ways for teachers to connect with the students (Fayer, 2017). A way to engage the students socially is to have the first introduction lecture online in an interactive fashion. During synchronous lectures, remember to leave room for queries and discussions. Zoom has a built-in poll system, where the teacher can ask questions the student answer anonymously.

As mentioned earlier, an excellent way to increase student activity is flipped classroom learning, where the students prepare by watching videos and reading course literature before the session. It allows the teacher to increase student activity and saves time for a more active environment in synchronous lectures.

In an online course, it is a good idea to arrange recurrent interactive lectures or seminars on a weekly basis to engage and motivate students, answer student questions and encourage students to reflect on course contents in order to stimulate more in-depth learning. The questions can be either sent before the lecture or during the sessions.

Planning synchronous lectures

- Familiarize yourself with Zoom on beforehand. Explore all settings and options.
- Ask students to turn on their web camera and audio during the lecture.
- Use the BTH guideline, Code of Conduct, for Zoom and share it with students.
- Address the students by using their name; engage and interact with them (Clark & Mayer, 2016).
- Prepare and leave time for improvisation; the students can easily drive the content by their questions.
- Invite guests for the lectures; present new ideas and concepts.

Seminars and workshops

A seminar is when a small group of students are brought together to engage in a specific topic (Jons, 2015). Dialogues, discussions and interaction between students and the seminar moderator as well as between students themselves are expected to a great extent. One of the prominent challenges in an online environment is overcoming technological issues (Farooq and Mattesson, 2016). It is therefore important that the moderator not only monitors discussions, but also pays attention to and is well acquainted with the technical tools. If possible, perform a trial session in advance.

For a successful outcome of an online seminar, it is important to plan and structure the seminar properly. There are activities to plan and consider before, during and after the seminar. These activities are not only valid for online courses but are even more important in an online environment:

Before:

- State the purpose of the seminar and clarify it to students.
- Plan the seminar in detail and set an agenda, e.g. introduction content, discussion subjects, group sizes, times, closure content.
- Clarify to the students what is expected from them in terms of preparations.
- Send out invitation and agenda with a link to the online event.
- Familiarize yourself with the technical tools.

During:

- Show the agenda and clarify the purpose and the different sections of the seminar in the very beginning.
- Introduce the theme/subject.
- Activate students from the start by involving them in learning activities.
- Use “breakout rooms” in Zoom for group discussions for larger student groups.
- If possible, use a chat for questions (might require extra personnel for handling).
- Describe the post-seminar work, if there is any.
- Sum up before closing the seminar.

After:

- Give feedback on the purpose of the seminar.
- Analyze and evaluate what went well and what could be improved.

Group work

Unlike online seminars, online group work can take place asynchronously, in the same manner as in a campus course. Students must have a chance to communicate by video, voice and in writing. For instance, make Zoom (or any other video platform) available for students for discussions and sharing material. There are several tools available for collaboration purposes. Make sure to define what is mandatory and what is not.

According to Forslund Frykedal (2008), group work benefits from tasks with common requirements and solid form:

The form of the task describes the framework for execution and workflow for different parts. A solid form means that students get help with structuring the work process and they are given guidance on how to go about achieving the goals. When the form of the task is vague, the students must agree on the steps to be taken in order to achieve the goals. An uncertainty about what is to be done gives room for different wills to take their place. These factors can lead to frustration and conflicts within the group.

This means that the group-assignment must be well-defined to remove possible obstacles in the workflow. It is important to construct divisible tasks in a group work assignment for students to be able to distribute the work between them in an adequate way. Furthermore, it is essential to make clear how the group-assignment is to be presented and how results and presentations are assessed.

Project work

Projects can be used in both online and campus-based courses. The definition of a project is a limited task to be carried out within a certain time-limit and with pre-set goals. It may be performed in groups or individually. If performed in groups, it is essential to clarify the assignment and the expected outcome. As in the group work set up, the availability of adequate collaboration tools is of importance. Make clear what kind of support they can expect and in which form.

Projects are usually executed in different phases for monitoring the project according to a project methodology. Common phases are:

- Planning/initiation
- Execution
- Closure

Each phase requires specific attention and comprises particular activities. It is important to provide students with productive conditions and suitable tools to be able to perform the project according to the set methodology. As an instructor, you should carefully specify what is required in terms of documentation and expected outcome (Eklund, 2011).

Self-study

In an online course self-study is expected of students to a high degree. The acquisition of knowledge is most probably done by literature reviews of course literature, articles in the field, videos and other sources. It can be challenging to motivate students to self-study. For many students, self-study is a big threshold that needs to be overcome. To help the student structure their studies it is essential to be aware of the students' situation and to define the scope and the order of the course material. Why is it important to read the literature? What should be read when? What is mandatory? How will the knowledge be assessed? Also make sure that all the course material is available well in advance, all the way through the course period.

A quiz is a suitable tool to measure acquired knowledge and enhance learning effects (Ziden & Rahman, 2013). It can serve as a diagnostic test for a teacher to gain knowledge of the students' perception of a knowledge area. It can also serve as a form of assessment. A quiz can be a tool for learning, especially if students are encouraged to take the quiz several times until a certain level of understanding is reached.

Written material

Online learning takes place asynchronously. Students are spread out geographically and across time zones. This suggests that the written materials (e.g. assignment descriptions, lab guides and training exercises) need to be detailed and well worked through. Keep in mind that students do not always have the possibility to ask questions. For each course module, there should be, course literature and related reading, written training exercises and assignment descriptions and requirements. By using this basic structure students can more easily focus on the intended learning outcomes and engaging in learning activities. Examples of course structure can be seen on <https://dbwebb.se> where the web programming program have published their material.

Further readings

- Almulla, M.A. (2020). The Effectiveness of the Project-Based Learning (PBL) Approach Way to Engage Students in Learning. *Sage Open*, 10(3):1-15.
- Biggs, J., & Tang, C. (2011). Teaching for Quality Learning at University. Open UP. Blekinge Institute of Technology. (2020). *To Teach at BTH*. <https://bth.instructure.com/courses/2536/pages/vett-och-etikett-i-zoom-slash-code-of-conduct-for-zoom?module_item_id=56919>. Downloaded 2020-11-26.
- Chapman K. J., & Van Auken S. (2001). Creating positive group experiences: An examination of the role of the instructor on students' perceptions of group projects. *Journal of Marketing Education*, 23(2): 117–127.
- Choe, R. C., et al. (2019). Student satisfaction and learning outcomes in asynchronous online lecture videos. *CBE Life Science Education*, 18(4):1-14.
- Clark, R. C., & Mayer, R. E. (2016). E-learning and the science of instruction: Proven guidelines for consumers and designers of multimedia learning. Hoboken: John Wiley & Sons, Incorporated.
- Gibson, P. A., & Dunning, P. T. (2012). Creating Quality Online Course Design through a Peer-Reviewed Assessment. *Journal of Public Affairs Education*, 18(1): 209-228.
- Gillies R. M. (2013). Structuring cooperative group work in classrooms. *International Journal of Educational Research*, 39(1): 35–49.
- Guo, P., et al. (2020). A review of project-based learning in higher education: Student outcomes and measures. *International Journal of Educational Research*, 102: 1-13.
- Eklund, S. (2011). Arbete i projekt: individen, gruppen, ledaren. *Studentlitteratur*.
- Elmgren, M., & Henriksson, A.-S. (2014). Universitetspedagogik, *Studentlitteratur*.
- Farooq, O., & Mattesson, M. (2016). Opportunities and Challenges for Students in an Online Seminar-Style Course in LIS Education: A Qualitative Case Study. *Journal of Education for Library and Information studies*, 57(4): 271-282.
- Fayer, L. (2017). A Multi-Case Study of Student Perceptions of Instructor- Created Videos in Online Courses. *International Journal Scholarship Technology Enhanced Learning*, 1(2): 67-90.
- Forsell, J. et al. (2020). Handbok för grupparbete – att skapa fungerande grupparbeten i undervisning. *Studentlitteratur*.
- Forslund Frykedal, K. (2008). Elevers tillvägagångssätt vid grupparbete – om ambitionsnivå och interaktionsmönster i samarbetsituationer. *Linköping Studies of Behavioural Science*.
- Johnson D. W., Johnson R. T., & Smith K. A. (2014). Cooperative learning: Improving university instruction by basing practice on validated theory. *Journal on Excellence in College Teaching*, 25: 85–118.
- Jons, L. (2015). Seminarier i högre utbildning: erfarenheter och reflektioner. *Studentlitteratur*
- Lo, M.L. (2012) Variation Theory and the Improvement of Teaching and Learning. *Gothenburg studies in educational sciences* 323, Gothenburg UP. <<http://gupea.ub.gu.se/handle/2077/29645>>
- Rivas, R., & Toseland, R. (2005). An Introduction to Group Work Practice. *Longman*.

- Smith, K. (1996). Cooperative Learning: Making “Groupwork” Work. *New Directions for Teaching and Learning* 67, Josey-Bass.
- Talbert, R. (2017). Flipped Learning. *Stylus Publishing*.
- Wilson, K. J., Brickman, P., & Brame, C. J. (2018). Group Work. *CBE Life Sciences Education*, 17(1): 1-5.

Part III: Learning communities

Following the works of Vygotskij and more recent theorists in the socio-cultural tradition (see e.g., Säljö, 2000), the authors of this guide assume that learning takes place primarily in the social exchange between individuals. On campus these exchanges between teachers and students and between students and students occur spontaneously, without planning. In an online setting, where students are often separated in both time and distance, such exchanges must be carefully planned. Social exchanges are crucial they foster a community. Another important aspect of fostering a community is to be active as a teacher (Berry, 2019). Hammond (2000) describes various catalysts to use when creating a community, one of which is to invite students from previous course iterations to assist the new student group.

In the following section we explore different ways of encouraging teacher-to-student and student-to-student communication. These including e-mails and direct messaging, forums, assignments and feedback, chat as well as video conferences and hangouts.

E-mails and direct messaging

In online training, engaging the students in the learning process is central. An effective student engagement is necessary to increase course completion percentage (Moriera, 2020). Also e-mails should not be used as a primary communication channel, strategic use of email can enhance the learning environment (Hassini, 2006; Ziden & Rahman, 2013).

One advantage with e-mail is that you can send out

messages to a large group of students at the same time (Moriera, 2020). Even if you use the same text, the e-mail is perceived as specific and personal by each of the students. E-mails can also be used to deliver an urgent or strong call for action. In other words, you can by using e-mail engage you students by asking them to do something on the online learning platform.



The best answer to the question,
'What is the best method of teaching?'
is that it depends on the goal, the
student, the content and the teacher.

But the next best answer is
'Students teaching students'

McKeachie, 1987

When using e-mails in online learning, it is important to follow a logical progression (Moriera, 2020). Engage the students in training patterns that help them attend the online course in the best and most effective way. You can

increase the complexity of the e-mails, step by step, as long as you take your time to check the feedback resulted from each e-mail.

Forums

Online forums can be used with great success as a one-to-many communication format. The biggest advantage with forums over one-to-one communication is that more people can see the questions and more people can reply. The biggest advantage with forums when comparing to synchronous communication is that the exchange is saved and can be used later. Both forums and chat need catalysts (Hammond, 2000). Catalysts help lay the foundation for student-to-student learning and both their own and other students learning is improved. Preferably, the catalysts are students driving the student-to-student learning. In some cases, teachers can even hinder the student-to-student learning when students ask the teacher direct questions instead of letting other students answer.

Assignments and feedback

Assignments and feedback are often missed opportunities for meaningful exchanges. Feedback is one of the most positive impact factors driving learning (Hattie & Timperley, 2007). Using this opportunity to create a valuable exchange between you and the student can both contribute to better learning and a better community. Lack of meaningful feedback is one of the biggest challenges for online learners. So how create a learning environment that prevents students from feeling isolated? Belin (2019) suggests six ways to provide meaningful feedback to online learners:

1. Set clear expectations

By setting clear expectations and giving specific instructions, students get a better idea of what is expected of them, and it saves both parties time. Share specific guidelines on writing discussion posts and grade metrics to communicating due dates. Be specific about your response time and establish class participation rules.

2. Make it actionable

If you find yourself giving feedback along the lines of “it needs work” or “good job,” you need a change in strategy because nothing confuses students more than vague feedback. If you are impressed with an assignment, don’t just leave it to “good job.” Instead, tell the student what stood out and left you impressed. Similarly, if someone needs to improve, specify what exactly and the approach they can take. Your students need to derive value from your feedback. Every time you are giving feedback, make it goal-oriented and actionable.

3. Personalize it

It is common for students in online learning settings to feel distant and isolated during the course. One of the best ways to prevent your students from feeling this way is by delivering personalized feedback. Students who receive personalized feedback have higher levels of course satisfaction and perform academically better than those students who receive

only collective feedback. A simple act, like using the student’s name while writing feedback, also helps in developing your connection with the student.

4. Share In Audio Format

By integrating audio in your feedback mechanism, you avoid risks of your written feedback being misunderstood. When receiving audio feedback, students tend to be more engaged, are better able to understand the real intent, and retain the information. Make sure you have your notes ready before you begin recording and always begin with the student’s name.

5. Be timely

When a student waits too long to receive feedback, it impacts their motivation and leaves them feeling unsure. The online way of learning tends to widen this gap. When you deliver timely feedback, it lets students know that you are as actively involved in the course as they are. If possible, commit to providing feedback within 48 hours, while the assignment is still fresh in the students’ minds.

6. Encourage Peer Feedback

A great way to give feedback while promoting increased interaction and engagement in online classes is by encouraging peer reviews. Peer feedback is when students review each other’s work and provide meaningful feedback. You can take a back seat and moderate this exercise by letting student indulge in a healthy exchange of perspectives.

Chat

Online chats and discussions are efficient ways for students to communicate with other students and teachers in a course. They promote real-time discussion and give students a direct connection with both the instructor and other peers (Blackmon, 2012). This direct connection may lead to a faster progression of learning and a deeper dive into course material. To ensure inclusivity and that everyone feels safe, online chats must be properly planned and specific rules and regulations must be implemented.

Chat is to be used when students are the most active members of the chat room. When students are active in the chat it facilitates real student-to-student learning, which is one of the more efficient ways of learning. The main advantage of chat is that students can get quick answers when questions appear. One problem with chat is that questions and answers disappear in the chat history after the session has ended. Another potential problem is that difficult or complex questions may be difficult to answer in a short form answer. In those instances a forum may be preferred. Examples of chat clients are Discord, Gitter, Slack and Teams (Tyrer, 2019).

Video conferences and hangouts

Video is a rich format that can be used as synchronous one-to-many learning or many-to-many learning (Al-Samarraie, 2019). One advantage with videos is that we can both see and hear teachers and students. This can certainly also be a disadvantage, especially if too many people are talking at the same time. Use the video conference format for teaching methods when it is appropriate and use the strengths of the format. The most important component is sound (invest in a proper microphone!) Another important component is lighting.

New York University (NYU) has a resource page where some best practices for video conferences are presented. These are specifically well suited for hybrid environments (when both campus and online students participate in the same course) and include the following:

- Work to bridge the social barriers of students sitting as groups in separate rooms by:
 - Learn all students' names (encourage students to write their name on the screen)
 - Call on students from all (geographical) locations.
 - Ask the remote location as well as your classroom if anyone has questions.
 - Ask students in one location to comment on opinions, answers, etc. offered by students in the other.
 - Set up cross-site project groups early in the semester.
 - Avoid conversations with people in your room while students or faculty in the remote location are talking.
- Recognize that you and your students are more or less on camera in a TV studio. Keep in mind the basics of voice-activated microphones (it is easier to engage in a dialogue when one person is speaking at a time vs. interruptions) and point out the camera's ability to present significant light and dark contrast (avoid wearing highly contrasting clothing nor all bright or all dark).
- Establish and communicate ground rules and guidelines for videoconferencing etiquette.
- Make sure that materials that you plan to distribute in your physical classroom are also available online and accessible by the students in the remote locations.
- Be cognizant of less overt forms of communication that could be lost in videoconferencing classrooms, such as body language suggesting confusion or discomfort.

Further readings

- Al-Samarraie, H. (2019). A scoping review of videoconferencing systems in higher education: Learning paradigms, opportunities, and challenges. *International Review of Research in Open and Distributed Learning*, 20(3):121-140.
- Belin, A. (2019). Blog. <<https://elearningindustry.com/meaningful-feedback-for-online-learners-provide-courses>> Downloaded 27 November, 2020.
- Berry, S. (2019). Teaching to Connect: Community-Building Strategies for the Virtual Classroom. *Online Learning*, 23(1): 164-183.
- Biggs, J., & Tang, C. (2011). Teaching for Quality Learning at University. *Open UP*.
- Blackmon, S. (2012). Outcomes of Chat and Discussion Board Use in Online Learning: A Research Synthesis. *Journal of Educators Online*. 9(2).
- Hammond, M. (2000). Communication within on-line forums: the opportunities, the constraints and the value of a communicative approach. *Computers & Education*, 35(4): 251-262.
- Hassini, E. (2006). Student–instructor communication: The role of email. *Computers & Education*, 47(1): 29-40.
- Kugel, P. (1993). How professors develop as teachers. *Studies in higher education*, 315-328.
- McKeachie, W. J. (1987). Teaching and learning in the college classroom: A review of the research literature. *Ann Arbor*.
- Moriera, I. Blog: <<https://www.docebo.com/blog/use-emails-in-online-training-elearning/>> Downloaded 26 September, 2020.
- NYU resource page: <<https://www.nyu.edu/faculty/teaching-and-learning-resources/strategies-for-teaching-with-tech/instructional-video-and-web-conferencing/teaching-with-video-conferencing.html>>
- Säljö, R. (2000). Lärande i praktiken. *Prisma*.
- Talbert, R. (2017). Flipped Learning. *Stylus Publishing*.
- Tyrer, C. (2019). Beyond social chit chat? Analysing the social practice of a mobile messaging service on a higher education teacher development course. *International Journal of Educational Technology in Higher Education*, 16(1): 13.
- Vygotskij, L. S. (2012). Thought and Language, revised and expanded edition. MIT Press
- Ziden, A. A., & Rahman, M. F. (2013). Using SMS Quiz in Teaching and Learning. *Campus-Wide Information Systems*.

Part IV: Examination in online education

The way in which the examination influences teaching and learning is commonly described as "washback" or "backwash". Backwash is driven by two factors; students want to pass their exams and teachers want their students to pass. This implies



If you want to change student learning then change the methods of assessment.

Brown & Atkins, 2017

that the teacher's didactic choices to a large extent are test driven; their teaching mirrors the test because they want their students to pass the exam (Hughes, 1989; Hult, 1997; Cheng, 1997; Ahmad & Rao, 2012). To avoid backwash, researchers have emphasized the need for congruity between tests and curriculum objectives,

learners' self-evaluation, meaningful feedback, authentic tasks, a variety of testing and tasks, an increased understanding of testing criterion by the teachers and students and detailed score reporting by the testers. (Hughes, 1989; Bailey, 1996; Biggs, 1995; Ahmad, 2012). Therefore, make sure that you constructively align your course by carefully linking the learning outcomes and the learning activities to the examination. The examination then becomes a quality assurance of these outcomes (Biggs & Tang, 2011; Elmgren & Henriksson, 2014).

An examination has two main purposes; a formal purpose and a pedagogical purpose (Boud, & Falcikov, 1998; Elmgren & Henriksson, 2014). The formal purpose is about control of the intended knowledge and documentation of performance. The pedagogical aspect involves how teaching has affected students' learning, the visualization of where possible learning support is needed, status control for students of their own knowledge level and what they need to learn and an additional opportunity for learning.

Summative examination

A summative examination includes grading, selection and prediction. This examination form is often used at the end of a course. The examination summarizes the entire course but does not necessarily aim at developing the students' learning. Feedback given after a summative examination has been proven to be ineffective as students often has moved on to subsequent courses (Hattie & Timperley, 2007).

Summative examinations often include large quantities of knowledge. They most often result in students studying intensively during a short period of time, which results in surface learning rather than deep learning (Biggs & Tang, 2011; Elmgren & Henriksson, 2014). The advantage of a summative examination is that it can focus on the entire course if placed at the end of the course (Hattie & Timperley, 2007).

To recreate a summative on-site written examination online is complex, especially if the examination is planned in the same way as it would on campus. For instance, cheating, monitoring and prohibited collaboration between students tend to occur to a larger degree online. Therefore, it is recommended to adapt the examination to the online format, for instance by reformulating the exam into an open book exam. If this is done with requirements of reasoning and penetrating answers, cheating and prohibited collaboration are rendered more difficult. Alternatively, collaboration may also be allowed. An examination of this kind can be carried out in both Inspera and Canvas with a recommendation of using Urkund. If calculations or other reasoning are involved, you can also require the handing in of calculations and notes. If this is not possible in the digital tool, you can ask the student to take photos of their work and attach these when handing in the examination.

Formative examination

Formative assessment includes aspects such as diagnosis, evaluation, guidance and motivation. Most often it takes place continuously during a course. Principally, it is about giving feedback that shows what students need to improve and develop. Here you can talk about “the gap” in the sense that there is a gap between the students’ current results and the desired level established from course criteria (Hult, 1997).

The formative way of working consists of two different but intertwined methods (Hult, 1997). First, the assessment of the handed-in answers which results in points given and/or grading and second, the feedback to the student about what he/she needs to improve and develop to reduce “the gap”. If grading is included in the feedback, the teacher needs to consider that feedback on a grade is most often seen as an explanation to the grade more than a forward-looking support for development and learning of knowledge. It may thus be productive to consider whether grading is required and if the continuous formative examination can be replaced with compulsory assignments with feedback.

A formative way of working can also include peer-review and self-assessment as it increases student understanding of criteria and quality (Elmgren & Henriksson, 2014). Another way of structuring a formative way of working online is have recurrent minor assignments with quick assessment/feedback instead of a number of major assignments. Build a clear structure where continuous examination assignment, deadlines and assessment/feedback are given at the exact same time slots on a weekly basis. This provides clarity, speed and progression in the teaching and reduces the number of dropouts (Hult, 1997). The recurring structure has a motivating effect and students more often tend to complete their studies. The examinations simply build up the contents of the course.

Bear in mind that formative structures do not in any way oppose summative examinations. On the contrary, a number of formatively assessed assignments can build a knowledge base at which a summative final examination can “summarize” and assess the contents of the entire course (Hult, 1997).

The process

Using a formative way of working, it is important to visualize the learning process to the students. This means that you engage the students in their own learning. This is done by explaining the learning activities and the feedback prior to subsequent steps, visualizing the connections between activities or even engaging the students in peer-review exercises (Elmgren & Henriksson, 2014). Students who participate in peer-review exercises achieve better study results as they gain bigger insight and understanding regarding criteria and their own learning (Hult, 1997).

Authentic assessment

Students learn for their future professions. For this reason it is productive to use real-life problems when assessing the students. This makes the assessment more relevant and improves student motivation. According to Grant Wiggins (1998), an assignment is authentic if it is:

- Realistic.
- Requires judgment and innovation.
- Asks the student to “do” the subject.
- Replicates or simulates the contexts in which adults are “tested” in the workplace or in civic or personal life.
- Assesses the student’s ability to efficiently and effectively use a repertoire of knowledge and skills to negotiate a complex task.
- Allows appropriate opportunities to rehearse, practice, consult resources, and get feedback on and refine performances and products.

Examples of authentic assessment (Center for Innovative Teaching and Learning <<https://citl.indiana.edu/teaching-resources/assessing-student-learning/authentic-assessment/index.html>>):

Nursing: Provide a case study of a patient and ask students to assess and create a plan of care.

Business: Develop a business/marketing/sales plan for an imaginary (or real) company in a student’s area of interest.

Computer science: Troubleshoot a problematic piece of code; Develop a website/app to solve a particular problem and/or meet a set of criteria.

Authentic assessments can be contrasted with conventional test questions, which are often indirect measures of a student’s ability to apply the knowledge and skills gained in a course. Although conventional tests have an important place in courses, they cannot take the place of authentic assessments. The table below, borrowed from Wiggins, illustrates the differences between typical tests and authentic assessments.

Authentic assessment engage students in deeper learning (Elmgren & Henriksson, 2014). Certain set-ups may be rendered more difficult in and through online education while other modes of procedure will not be affected at all. For example, a verbal account for outsiders may as well take place online as in a lecture hall and an examination in programming can be placed in the digital environment where programmers usually work.

Typical tests	Authentic tasks	Indicators of authenticity
Require correct response	Require a high-quality product or performance, and a justification of the solutions to problems encountered	Correctness is not the only criterion: students must be able to justify their answers
Must be unknown to the student in advance to be valid	Should be known in advance to students as much as possible	The tasks and standards for judgment should be known or predictable
Are disconnected from real-world contexts and constraints	Are tied to real-world contexts and constraints: require the student to "do" the subject	The context and constraints of the task are like those encountered by practitioners in the discipline
Contain items that isolate particular skills or facts	Are integrated challenges in which a range of skills and knowledge must be used in coordination	The task is multifaceted and complex, even if there is a right answer
Include easily scored items	Involve complex tasks that for which there may be no right answer, and that may not be easily scored	The validity of the assessment is not sacrificed in favor of reliable scoring

Variation

A variety of learning activities as well as varied forms of assessment are beneficial for learning. It is also necessary for inclusivity and fairness (Biggs & Tang, 2011; Elmgren & Henriksson, 2014; Marton & Booth (1997); Ramsden, 2003). Students have different learning styles. While some prefer audio, other prefer visuals or more activate exercises or practical elements. Variety gives more students the opportunity to learn. It is essential to vary both learning activities and forms of assessment in order to avoid giving students with particular learning styles an advantage. But variety is also important for life-long learning. It prepares students for new ways of learning, of tackling problems and various ways of applying knowledge. (Elmgren & Henriksson, 2014). In a formative context, a course of 7.5 credits could, e.g. be structured in the following way:

Week 1: Written assignment, individual memo

Week 2: Quiz

Week 3: Written assignment, essay

Week 4: Online seminar

Week 5: Hand-in examination (summative)

Examination formats

The ways in which separate questions are asked and in which context determine which competences are required. Multiple-choice questions, which can be automatically corrected and thereby save time, have led to surface learning (Biggs & Tang, 2007; Elmgren & Henriksson, 2014). For example, to measure an analysis ability a different formulation of a question is required and possibly a context of other types of questions

When it comes to online education, questions that require discussions and reasoning are to be preferred. Not only in order to engage students in deep learning, but it also makes cheating more difficult. As a quick assessment/feedback cycle gives on-line education progression and increases students motivation, the situation needs to be tenable for the instructing teacher/assessor.

Further readings

- Ahmad, S., Rao, C. A. (2012). Review of the Pedagogical Implications of Examination Washback. *Research on Humanities and Social Sciences 2 (7): 11-21.*
- Biggs, J. B. (1995), Assumptions underlying new approaches to educational assessment. *Curriculum Forum, 4(2), 1–22.*
- Boud, D. & Falchikov, N. (red). (2007). Rethinking assessment in higher education: learning in the longer term. *Routledge.*
- Brown, G., Atkins, M. (1999). Effective teaching in higher education. *London: Routledge.*
- Cheng, L. (1997). How does washback influence teaching? Implications for Hong Kong. *Language and Education, 11(1), 38-54.*
- Gibson, P. A., & Dunning, P. T. (2012). Creating Quality Online Course Design through a Peer-Reviewed Assessment. *Journal of Public Affairs Education. 18(1): 209-228.*
- Elmgren, M., Henriksson, A.-S. (2014). Universitetspedagogik. *Studentlitteratur.*
- Hattie, J. (2008). Visible learning: A synthesis of over 800 meta-analyses relating to achievement. *Taylor & Francis.*
- Hattie, J., Timperley, H. (2007). The power of feedback. *Review of educational research, 81-112.*
- Hughes, A. (1989). Testing for language teachers. *Cambridge: Cambridge University Press.*
- Hult, A. (1997). Examinera mera? - en analys av examination.
- Hrastinski, S (2019). Digitalisering av högre utbildning. *Studentlitteratur.*
- Marton, F., Booth, S. (1997). Learning and Awareness. *Erlbaum.*
- Ramsden, P. (2003). Learning to teach in higher education. *2 ed. Routledge.*
- Universitetskanslersämbetet (2020) *Rättssäker examination. 4th ed.*
- Wiggins, G. (1998). Ensuring authentic performance. *Educative Assessment: Designing Assessments to Inform and Improve Student Performance. Jossey-Bass, 21-42.*
- Wiggins, G., McTighe, (2005). Understanding by design. *2., esp. ed. Alexandria, Va.: Association for Supervision and Curriculum Development.*

Final remarks

This document discusses the aspects of structure, content, communication, and examination for online education best practice. Our discussions and suggestions are based on both educational research and well proven experience. We suggest that you view this as a palette of available options for your online course and hope that you can find inspiration to search further in scholarship and in the practices at your department or other departments and universities.

A main limitation of the best practices discussed is the undisputable fact that each element is discussed in isolation. As we all know, real life practice is complex and it is a challenge to harmonize separate elements into one whole course.

There are, of course, aspects of online learning that are not addressed in this guide. We would like to emphasize that, in a similar way to how we should all work continually to improve our pedagogical practices teachers, this document is a work-in-progress that will continue to evolve. New sections and themes will be added in the near future.