Design of teaching

Welcome to the session about design of teaching.

I have the following agenda:

- Teaching & Learning / Learning Design
- Didactical situation / didactical process
- Didactical parameters
- Learning models
- Evaluation

The main question is “What serves students best?” The question is important because object of a teaching strategy is the learning process of students. The following will try an answer to this question.

Teaching is not easy. As teaching implies always learning this makes it difficult. The main reason for this is, that it is not really possible to anticipate the learner’s side or to step into the role of the learner and see the learner’s needs. One way to deal with this problem is learning design.

Learning design

Learning design is thoughtful planning of teaching and learning and deals mainly with structure, methods and learner autonomy. Structure

means there is a basic frame that gives orientation to the learner. Methods mean that there are different ways to design the structure and this implies more or less autonomy or guidance of the learner.

Didactical situation

We start off with the didactical situation. This again means there are two sides. The “almighty teacher” and the students who are on the way to become experts. Very often the teaching process is one sided, for instance in a lecture where the teacher gives a lot of information and transmits knowledge. Students on the other side are supposed to understand this and process the content new to them. This is also a very common model of teaching as it involves little activity on the student side. Of course there are lectures with questions and small tasks so that students have to be active. But they are probably less active than when they learn on their own.

Modern didactics tries to break the passive role of the learner and wants to have a more active learner. The more active the learner, the more effective is learning because learners are required to get a deeper understanding of learning content. In this regard not only the activity itself is decisive but also the role of the teacher and the learner. Modern views on the role of teaching see the teacher’s role more or less as a learning coach not prescribing the learning process but supporting it, the so called guide by the side.

Didactical process

So teachers see themselves directed towards a learning process with a start and an end. The end is characterized by a set of goals that learners have to reach. This means they have to acquire learning goals,

competencies to become in the end an expert in their field in a certain amount of time. The learning process can be designed by taking into consideration several so called didactical parameters. The parameters might require action by the teacher depending on their state.

Goals

One important step in the design of a course is the definition of goals. There are goals on different levels. Relevant for the learning process can be the institutional goals. For instance an institutional goal may be that students acquire very early research competencies. This then is a goal that can get reflected in the learning design.

The teacher normally pursues subject directed goals around the content and the methods of a field. But there might also be goals and skills outside the subject related goals, for instance computational or presentation skills that play a role.

Last but not least the goals the learner has might not always be consistent with the teachers or institutional goals. For instance more important for a student than the acquisition of different levels of competency may be the passing of the course. Therefore it is important to talk about goals so that the teacher and learner may not be in

all respects congruent but at least are aware of the respective goals.

Learning Goals

Very often referred to in the learning design is a taxonomy of learning goals. This taxonomy makes up different levels of cognitive and procedural skills. Memorizing and understanding are the basic levels. Only when I have understood and know something it is possible to apply knowledge and go further, for instance with analysing, evaluating and creating. This means there are higher order learning goals which imply

an in depth understanding of the field. These can be used to design learning sequences and learning tasks. The taxonomy however need not be fulfilled in detail. Relevant is the insight that higher learning goals imply more intensive and broader learning activities. If they are not done the knowledge acquired remains in a sort of still state.

All learning activities should be designed with a reference to learning goals. This makes the learning activity relevant and transparent.

Target group

In general not all characteristics of the target group that are important for the learning process are known beforehand. There are a lot of variables and characteristics that can influence the learning process. Every learner is different and a group of learners can be more or less homogenous. If the group members differ very much in these respects it is difficult to design a one

size fits all learning process. If so, some learners fall behind, do not understand the requirements or what they are supposed to do. Of course the learning design cannot consider all learner variables. But it helps to be aware of them to take appropriate measures.

Prior knowledge and prior learning experiences

One important variable is the degree of prior knowledge and also prior learning experiences. Prior knowledge means learners can more easily process new information and incorporate it into their existing knowledge base. By installing questionnaires or polls teachers can get to know the amount of prior knowledge and adapt teaching strategies accordingly.

Prior learning experiences can mean that learners for instance are used to learn on their own and acquire new content with their own methods. This is usually relevant on the way from school to university learning but also when learners come from different institutional backgrounds. One

consequence for the teaching strategy may be that a stronger guidance of learning activities is necessary.

Motivation

Also motivation can be found in various forms and at various degrees in learners, some may be very ambitious while are others pursue the maxime of doing only a minimum to be successful. This is of course related to personal goals and values that students connect to a course or a learning activity. Usually there is a mixture of intrinsic and extrinsic motivation, which means driven by

interest or external rewards. Depending on the motivational state several strategies can be applied, for instance setting up challenging tasks or rewards.

Socio cultural background

Other variables like gender, age, language and cultural background refer to the socio- economic status of students which cannot be always addressed directly but at the least form determinants of learning and communication behaviour. This may play a role in learning tasks that are designed for collaboration but also in general when participation is required. Teaching strategies could be in this respect to make participation possible at a greater degree than usual.

Accessibility

Special attention should be drawn to accessibility. There may be learners with impairments, of hearing or seeing for instance. These may be quickly judged as special needs but considering accessibility means also an advantage for all learners as it usually leads to a better usability of a course. This is referring mainly to the online part of a course.

In general ways of considering learner variables is to set up questionnaires with anonymous answers at the beginning of a course to get to know knowledge and interests of students. Also direct communication about interests and plans can give an orientation about the learners.

Conditions

There is a range of parameters that are influential but cannot be changed from the teacher's perspective. They are also to be considered and moderated in the learning design.

Content

The topic or content is often set because it is part of the curriculum. Even the amount of content may be fixed. The amount of content and the difficulty of the content can influence the design of a course and can have effects on the learner, for instance motivation. Very often there is too much learning content which may lead to an overload of the learner resulting in shrinking motivation. Helpful can be to subdivide learning content in smaller parts and units.

Level of knowledge

Also the level of knowledge is very often set. Courses are offered for a certain level of knowledge and learning activities should be designed accordingly. A problem could be that learners are not aware of the level of knowledge they are supposed to have. A remedy to this would be to provide small tests for self assessment.

Credits and workload

Credits and workload form also part of fixed conditions. They determine on the other hand the teaching freedom. With more credits there is also room for more learning activities. However disregarding the workload may lead to frustration if the workload of the course does not correspond the amount of credits given. The learning

tasks have to be made transparent and hidden tasks avoided.

Duration / time

Every course also has a fixed duration and a distribution of time slots. This usually refers to synchronous sessions. Depending on the learning design it has to be planned how synchronous sessions are used and combined with asynchronous activities.

Assessment

The type of assessment is determined beforehand, a written or oral exam or other tasks that are mandatory. The kind of assessment guides very much the learner activity. If this is disregarded the learning activities offered might run the risk of being not seen as appropriate. On the other hand a very strong orientation towards learning for the exam might imply that not all learning goals are reached in a sufficient manner.

Group size

The group size is also important. The larger the group less possible seems to be active learning and possibilities for participation. This has to be carefully designed then and especially for large groups participatory technology (voting tools) can be used.

Course type

University courses usually are offered in fixed types like seminar or lecture. The latter induces a greater amount of instruction with less chances for active learning and participation.

Obligatory / voluntary

According to the study plan some courses are offered as obligatory, some as voluntary. This might have consequences for the motivational mindset of the students who might be more motivated when they are allowed to choose a course.

The parameters I described until play a role in learning design and function as enablers or disablers as they allow for specific learning designs. Some of them may be more relevant than others. Depending on the situation the learning design should take this into consideration.

Planning sheet:

Didactical parameters: Describe the didactical parameters of a course you taught.

Now that you have dealt with the didactical parameters we can come to the design of the course.

Course

The course is the basic object of learning design. A course is divided or segmented into serveral units or lessons which can be structured along various criteria, for instance along the taxonomy of learning goals or from easy to complex or simply according to the logic of contents. An important design decision is the question if the learner has to follow a strict learning path or if the learner can jump between different units. Usually advanced learners need not follow necessarily a specific prescribed path but can more or less follow their own strategy.

Synchronous / asynchronous

With digital learning technologies there are also possibilities to design a course with synchronous and asynchronous phases. Synchronous phases can be local but also online with webconferencing technology. Synchronous phases are especially suited for intensive communication and dialogue. Asynchronous phases can be designed of course for individual learning, self study mainly where exchange can be performed asynchronously via messenger or forums.

Tasks / activities

Each unit of a course can then be designed with elements from the areas of content, assessment or collaboration. For each area there exist several forms of representation, for instance textbooks, videos for the area of content. Ideally the provision of a content element is combined with a learning task, done individually or collaboratively.

➔ Example

The different areas allow for different methods. Especially digital learning tools can be implemented and used to provide variety and even increase

motivation alongside with specific methods like problem, collaborative or research oriented learning.

Learning models

The precise design follows the chosen learning model. I suggest here three learning models that can be used as a pattern to construct a course.

First the instruction based learning model: Its main focus is the delivery of basic knowledge. It is directed towards

beginners and works with guided and prescribed activities.

Just the opposite is the explorative learning model which requires more initiative by the learners. It is highly self directed and makes use of higher learning goals following the taxonomy of Bloom.

The self study learning model can be used to design learning phases without synchronous sessions. It requires self regulation as an individual learning strategy and can be used to learn basics but also to go deeper into a topic. All three models can be combined in a single course.

Which learning model is best suited to your course?

Evaluation / feedback

To measure or get an insight into the success of the learning design several evaluation or feedback methods can be used. It can be differentiated between formative and summative evaluation. Evaluation also means that students give feedback to the learning design of the course. Formative means proceeding with different types of questionnaires during the course to have the chance to adapt the learning design. For instance if the pace of the course is too fast, there is

the possibility to slow down and to give the possibility to repeat certain parts. The summative form of evaluation is at the end of the course and is ideally related to the goals of the course. For instance a question could be if the learning activities have contributed to the goal acquisition.