Lecture Design Patterns: Improving the Beginning of a Lecture

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Lectures are still a common method of instruction in academic institutions. But it requires a careful design of lectures in order to make them of pedagogical value. Special attention hereby needs to be paid at the beginning of a lecture, as the beginning is crucial for the success of the whole lecture. A bad beginning where students not even start to pay attention or drift away fast is hard to recover from, such recovery requires extra attention. A good beginning can contribute to an atmosphere where learning is more likely to happen.

In this paper we propose five patterns that help with designing a good beginning of lectures: CLEAR STARTING SIGNAL, SURPRISE BEGINNING, EMPHASIZE RELEVANCE FIRST, ENTRENACE MATERIAL, and LATE ATTENDANT DISCOURAGEMENT.

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1. INTRODUCTION

Different parts of lectures require different attention. The beginning, the middle—or the multiple middle parts—and the end of a lecture certainly show different characteristics. At the start of a lecture the initial focus is on gaining the attention of students. Also of importance in the beginning is triggering the interest of students so that they are actively involved in the lecture. In the middle of a lecture one mainly has to deal with the problems related to the attention span of the students, which becomes shorter over time. At the end of a lecture the students often start to drift away with their thoughts towards the pause or the next lecture. As a teacher you want to make sure that they take out of this lecture as much as possible.

Interactivity plays an important role in all moments of the lecture. In [Köppe and Schalken-Pinkster 2013a] we described some patterns that help with increasing interactivity in lectures. However, especially in the beginning of a lecture there are some special issues:

—You need to communicate the setting of the lecture.
—You need to get the attention of the students, preferably in a way that helps to keep the attention as long as possible.
—A bad beginning is likely not to contribute to a successful lecture.

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Looking at the beginning of a lecture and how to design it is part of lecture structuring. It requires a suitable content selection and suitable delivery form selection [Köppe and Schalken-Pinkster 2013b].

One thing often recommended regarding lectures is to give an overview of the lecture structure in the beginning of the lecture. The experience of the authors is that this advice in many cases does not automatically add much to the quality of the lecture, it rather seems to be an automatism that isn’t questioned. Even if lecture overview (not described as pattern) is applied in an appropriate way, our experience is that it doesn’t add less value compared to the other proposed patterns. We therefore did not include it in this paper.

In the inventory of lecture relevant patterns and their categorization [Köppe 2013] it became evident that not many patterns are described yet that address explicitly the beginning of a lecture. These existing patterns are summarized in the Appendix. In this paper we propose five additional patterns that do address the beginning. Table I provides an overview of them.

<table>
<thead>
<tr>
<th>Pattern Name</th>
<th>SUMMARY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clear starting signal</td>
<td>Show the students through a clear signal that the lecture is starting.</td>
</tr>
<tr>
<td>Surprise beginning</td>
<td>Start the lecture with an unexpected activity that draws the attention and interest of the students.</td>
</tr>
<tr>
<td>Emphasize relevance first</td>
<td>Show the students in the beginning of the lecture why the later content is relevant for them.</td>
</tr>
<tr>
<td>Preparation material check</td>
<td>Establish some check (incl. consequences) that the students have studied the required preparation material.</td>
</tr>
<tr>
<td>Late attendant discouragement</td>
<td>Create a playful intervention that discourages attendants to be late.</td>
</tr>
</tbody>
</table>

Table I: Five additional patterns that are applicable at begin of lecture

Note that some of these patterns are more useful for a series of lectures, because the intended effect is targeted at the next lecture (late attendant discouragement) or the pattern is referring to a previous lecture (preparation material check). The remaining patterns (clear starting signal, surprise beginning, emphasize relevance first) are also useful for single lectures or speeches because they are only focused on the lecture at hand.

In [Köppe 2013] it is stated that most lecture patterns are applicable to all group sizes. Some patterns, however, are less suited for larger groups because of their required interactivity. They are targeted at smaller group sizes up to 40 students. In table II we categorize our proposed patterns into relevant group sizes.

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
<th>Patterns</th>
</tr>
</thead>
<tbody>
<tr>
<td>GS1</td>
<td>Independent of group size</td>
<td>CLEAR STARTING SIGNAL, SURPRISE BEGINNING, EMPHASIZE RELEVANCE FIRST, PREPARATION MATERIAL CHECK</td>
</tr>
<tr>
<td>GS2</td>
<td>Small to medium groups, up to 40 students.</td>
<td>LATE ATTENDANT DISCOURAGEMENT</td>
</tr>
</tbody>
</table>

Table II: Categorization in group size

The patterns are described using an adapted version of the Alexandrian pattern format [Alexander et al. 1977]. The first part of each pattern is a short description of the context, followed by three diamonds. In the second part, the problem (in bold) and the forces are described, followed by another three diamonds. The third part offers the core of the solution (again in bold), the solution in more detail, the positive and negative consequences of the pattern application—which are part of the resulting context—and a discussion of possible implementations. This is followed by examples of the pattern implementation, shown in italics.
2. THE PATTERNS

CLEAR STARTING SIGNAL

Before a lecture students typically are busy with other activities, such as conferring, playing games, social media, texting, surfing the web etc. You want to begin a new lecture.

When the lecture begins, many students are still focused on other activities than the lecture at hand. Such a beginning is not of much value for both students and lecturer.

Fellow Student Interactions. Between lectures—or at the beginning of a day—the students meet their peers and exchange all sorts of information. These interactions are often not related to the content of the lecture they are about to attend. The undisturbed duration of these interactions would often extend the time which is available until the beginning of the lecture.

Social Media. Many students make extensive use of different social media—especially during the pauses between lectures—for communication with friends who are not physically present or simply surf the web.

Games. Playing games is an especially engrossing activity at the beginning of a lecture. In extreme cases, students may not even perceive the lecture has started.

Therefore: establish a signal which clearly transports the message that the lecture will start now.

By giving this signal the students are made aware of the fact that they now have to stop with their other activities—peer discussions, social media activities, surfing the web etc.—and should focus on the beginning lecture. Such signal is important, as otherwise the value of continuing with their activities might stay high for the students because of their social importance.

This signal should be clearly recognizable. It could be established by the teacher only (e.g. saying in a loud voice something like “Let’s start the lecture” or closing the door to the room with a loud noise) or it could be a signal the teacher and the students both determined and agreed on.

It also could be formulated as question (“Shall we start with the lecture?”), but the degree of success of this pattern implementation is highly dependent on the lecturer-student relation. If the acceptance level of you as lecturer is low, then there is a chance that the students simply will answer “no” which requires unnecessary extra action (a re-application of this pattern using another signal which does not give the students a choice). If the relation between you as lecturer and students is good, the students will understand the rhetoric character of the question and see it as clear starting message.

It could be that the students become used to that ritualized starting signal which increases the chance that they will ignore it. In other words: some starting signals tend to become less powerful after a while. For example a ritual like closing the door with a loud noise may be less effective over time. Using a SURPRISE BEGINNING could help in avoiding this problem. It also helps when the CLEAR STARTING SIGNAL might not be loud or strong enough to catch the students’ attention.

It is also possible for students to be late, and as they miss out on the CLEAR STARTING SIGNAL, they often stay in their prior thinking mode. Foremost, students should be encouraged to be on time when attending a lecture. If there are still late attendants some kind of punishment of LATE ATTENDANT DISCOURAGEMENT can be applied.

Applying this pattern requires that you have to BE THERE FIRST [Fricke and Völter 2000]. When you come late, then use your entrance to the lecture room as starting signal.

It might be difficult to apply this pattern if you replace another lecturer occasionally, as your colleague might have established a different signal for this group than you use. In that case a more basic way is likely most appropriate, like stating with a loud voice that the lecture starts.
Christian Köppe often uses the loud shutting of the door as starting signal. This becomes a ritual, after a few lectures the students know that the lecture is about to start already when he starts walking towards the door. In some cases the students asked him to close the door as some students still not were paying attention. This also improved the relationship between him and the students. However, after a few weeks (or lectures) the effect wears off, so he starts to combine it with a SURPRISE BEGINNING.

Using visual media can also attract students’ attention at the beginning of a lecture. For instance starting a countdown, or an introduction video. If sound is available in the lecture hall you can add music (especially for students who are not visually focused on the presentation screen) and / or a big bang at the end of the countdown.

Axel Schmolitzky from the HAW Hamburg shows a beginning slide before the actual lecture starts, providing some general course and lecture information. Changing from this slide to the next one is the signal that the lecture starts.
SURPRISE BEGINNING
also known as: Attention Bait

You want to give a CLEAR STARTING SIGNAL at the beginning of lecture, but also apply IMAGINATION STIMULATION [Köppe and Schalken-Pinkster 2013b].

Even though all students are aware of the start of the lecture, some are still stuck in their old thoughts and have difficulties focusing their attention on the lecturer and the lecture.

External Motivation. A CLEAR STARTING SIGNAL might attract the attention of the students, but this is mainly an external motivation for being attentive. However, it is internal motivation that helps to also make a mind switch, which is necessary for being open for new material.

 Interruption Only. Another shortcoming of external signals is that it just interrupts the former activities but does not necessarily point to a new direction of the flow of activities.

 Circle of Thinking. Sometimes students are in a circle of thinking, making it hard for them to come away from their old thought and to break the circle.

 Memory Umbrella. Interesting stories related to a certain content can help with remembering the content better than if just the plain content is presented.

Therefore: Start the lecture with an unexpected activity—like telling a story, showing an interesting picture, or playing some unfamiliar music—which draws much attention and interest of the students over a longer period of time so that they are completely distracted from their old thoughts and open for new ones.

This activity should optimally have some relation with the actual topic of the lecture. If students have experienced this (that it is worth listening and following the story), then they become interested in what this story might have to do with the actual content of the lesson. Once the students are interested and get curious due to the surprise, they will forget their former activities and pay full attention.

Another advantage is that if the students find the story interesting than it is easier for them to remember the story and, later on, to relate the content of the lecture to the story again. They actually remember the content of the lecture better, which is another nice generative effect of this pattern.

A SURPRISE BEGINNING also helps to break a possible “circle of thinking” and distracting the students from their old thoughts; a well-known tactic from social-pedagogy.

Especially in the beginning, a medium could be used for the SURPRISE BEGINNING that is different from the rest of the lecture, like a piece of music or a personal photo. If you then do CHANGE MEDIA [Fricke and Völter 2000], the positive effect might become even stronger.

The surprise beginning could also be a COLORFUL ANALOGY [Anthony 1996] of the content to be covered later in the lecture. That already creates some context and provides a good place to go back to.

The unexpected activity can also be used to EXPAND THE KNOWN WORLD [Pedagogical Patterns Editorial Board 2012], being something well known to the students, but also related to the content of the lecture.

Providing a large example, as described in LAY OF THE LAND [Pedagogical Patterns Editorial Board 2012], might be presented as surprise (even though not a very strong one), as most students are used to being presented a collection of topics covered in the course instead of getting the big picture.

In one lecture the first author projected the picture in Figure 1 on the board. This was already visible to the students when they entered the room. Most of the students saw that picture and asked the lecturer what this is about, getting no
answer at that moment. When the time for starting the lecture was right, the lecturer asked who of the students does know what this picture shows and where it was taken.

The students then were told that this picture was taken in Wroclaw/Poland during a city tour as part of a conference program. At the registration desk the conference participants were asked to check at another desk if all the data they had submitted using the official registration form were correct in the system. This was not the case for most participants. The lecturer then asked the students what they usually would expect in such situation, leading to answers like "all data are correct in the system or you get an error message" or "if your data are in the system then they should be completely correct". These answers then were used to lead the discussion towards the basic characteristics of database transactions, which then became the topic of the lecture.

Figure 2 shows a record cabinet. Again, this picture was projected prior to the students’ entering of the lecture room. This triggered a discussion on music in general first. This discussion then was lead by the lecturer towards questions related to organizing such a record collection, e.g. sorting by artist or genre or record label. The main idea of giving each record a specific position according to one sorting criterion (artists alphabetically sorted) and pointing to this position from other criterion led to a discussion of the fundamentals of relational databases.
EMPHASIZE RELEVANCE FIRST

You’re planning your lecture, probably with the help of LECTURE STRUCTURING and SUITABLE CONTENT SELECTION [Köppe and Schalken-Pinkster 2013b]. You ask yourself how to keep the attention of the students after you caught it in the beginning with a CLEAR STARTING SIGNAL or a SURPRISE BEGINNING.

If students do not have the feeling that they get something of value in your lecture, then they’re likely to drop out fast and the lecture becomes a burden—for both teacher and students.

Unseen Relevance. Lecturers often seem to assume that all students are intrinsically motivated and automatically see the value of everything they do in the lectures. But especially beginning students have difficulties with placing the covered specific content into a bigger context, hereby seeing—and feeling—the relevance of it. If this relevance is not experienced by the students, it is harder for them to pay attention.

Hear vs. Feel. Just telling the students that the content covered is relevant also not seems to be sufficient.

Attention Loss. Additionally, the longer it takes before the relevance is seen, the harder it becomes to create this experience because of the increased attention loss.

Therefore: Show the students in the beginning of your lecture why the later content is of relevance for them.

The main intention of offering something of relevance is to trigger the interest of the students. Let them experience and feel that being in your lecture is a must and of added value for them by showing them why. In some cases it is sufficient to show the students what they will get out of the lecture (e.g. in the form of an agenda or by showing the learning objectives), which is the most simple implementation of this solution. However, the relevance does not necessarily have to be something which also is relevant for passing tests and getting grades. The pattern is more powerful if the shown relevance triggers the intrinsic motivation of the students. This is also described in the related patterns MOTIVATE STUDENTS [Standl 2013] and IMAGINATION STIMULATION [Köppe and Schalken-Pinkster 2013b].

The effect of EMPHASIZE RELEVANCE FIRST can be increased by combining it with SURPRISE BEGINNING and by using it consciously as IMAGINATION STIMULATION [Köppe and Schalken-Pinkster 2013b].

However, the content covered later in the lecture should indeed be related to what was shown in the beginning of the lecture. Otherwise you will still loose the students’ attention after a while and have to put extra effort into getting it back.

There are a few patterns related to EMPHASIZE RELEVANCE FIRST. LAY OF THE LAND [Pedagogical Patterns Editorial Board 2012] is a specific variant of EMPHASIZE RELEVANCE FIRST. It lets the students see a large artifact that covers major themes, so that they know where the lecture is heading and how the topics covered later in the lecture belong together. Another more specific variant is PROBLEM ORIENTATION [Fricke and Völter 2000], where first a problem is introduced that can be solved with what is covered later in the lecture.

The emphasis of the pattern SEE BEFORE HEAR [Pedagogical Patterns Editorial Board 2012] is to show the relevance of a topic (or concept) first before discussing it in class, hereby also (partly) emphasizing the relevance first. EMPHASIZE RELEVANCE FIRST can also be part of the implementation of SET THE STAGE [Pedagogical Patterns Editorial Board 2012], which says that the students should be prepared before introducing new material by reviewing prerequisites, showing the target and context, and providing an outline.

In a course on database development, a picture of record cabinet was shown in the beginning of the first lecture (see example of SURPRISE BEGINNING). The students were then asked questions like how to search a certain record, how to organize the records and what optimalizations can be done in the administration of the records, which led to a living discussion. This discussion showed the students the relevance of the topics that were covered later in the lecture (and the following lectures).
One of the assignments in a course on object-oriented programming was the development of a game for a mobile Java-based platform. All OO-concepts covered in the course (like inheritance, polymorphism etc.) where also required in the realization of the game assignment. To show why these concepts are introduced, the lecturer showed in the beginning of the lecture a selected variety of games that were developed by previous years' students. While showing the games, the lecturer also highlighted some specific applications of the OO-concepts, like different kinds of monsters which have some common behavior, but also some differing one. Another example was a playing figure that behaved differently depending on its internal state (changed by different “power-up’s”). Showing first the final products motivated the students (“games are cool”) and showed also that the topics covered later in the lecture/s are relevant for realizing these final products.
PREPARATION MATERIAL CHECK

also known as: Entrance Material

Students are required to study some material or content prior to the lecture because this material or content is needed to successfully run the lecture. This is often the case when e.g. a textbook has to be studied individually and the lectures are mainly reflecting and extending the covered material. It is also an essential part of the flipped classroom approach. Studying in that context can be by reading, making exercises, looking up content on the internet, writing a small survey etc.

Students often do not study the required material or content before class and are therefore not prepared sufficiently for the next lecture. This generally lowers students’ learning and also disturbs your lecture planning.

Missing Prerequisites. If the students haven’t studied the material upfront, then the content of the lecture cannot rely on some certain knowledge level and is likely to fail with realizing the objectives.

Knowledge Relation Gap. On the other hand, ignoring that the students haven’t studied the material and just giving the lecture as planned leads to students who cannot relate some (if not most) of the newly presented material to prior knowledge.

Therefore: Establish some check that the students have studied the material or content and are therefore prepared for the lecture. There should be appropriate consequences if the check shows that students aren’t prepared.

There are two important aspects in this solution, which will be elaborated in the next paragraphs: the check should also be in line with the learning objectives and the consequences need to be clear, but not discouraging.

Having a check that is in line with the learning objectives not only helps you to assess the degree to what the students have prepared themselves. It also helps the students, as it is a self assessment which lets them see where they stand regarding certain learning objectives.

The consequences of not passing the check should be clear to the students and focus on encouraging to do the preparation instead of punishing the students for not doing them.

Implementing this solution can be done in different ways. It can be a requirement that each student must submit some material prior to class to indicate he or she did the readings. This could be a one page paper with a summary or the analysis of the reading. It also could be answers to a quiz you will give at the beginning of class.

Allan Kelly also suggested to randomly pick one or two students to present their summary, which is an application of SHOTGUN SEMINAR [Pedagogical Patterns Editorial Board 2012] (also suggested by Henry Walker [Walker 2014]).

It is especially incentive for students to complete prior preparation if the homework is referenced explicitly in some class activity [Walker 2014].

Applying the solution will increase the number of students who come prepared to class. It might also influence the degree and quality to which students do prepare, depending on if the check also is qualitative. However, it also might require extra lecturer’s time, as the checks need to be examined and also administrated if they e.g. are part of grading.

Henry Walker lets students respond to required reading with writing—either a summary or questions for class discussion. These responses also count for 5%-10% of a final grade, which according to Walker “often provides an adequate incentive to encourage students to read the assigned material” [Walker 2014].

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1This pattern is initially proposed by Mary Lynn Manns and commented on by Allan Kelly.
LATE ATTENDANT DISCOURAGEMENT

Sometimes students enter the classroom or lecture hall when you just started the lecture. You want to cope with these late attendants in a positive way.

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Late attendants, especially in small classrooms or lecture halls with doors near the lecturer, can be quite disturbing. Not only do they miss part of the lecture, they can disturb the flow of the lecture and break the concentration of other attending students.

Missing Information. Not letting the student in during the lecture, or until the next break, takes care of the problems as described, but it is not very stimulating. The student misses part—if not all—of the lecture and therefore may miss important information and may start lagging behind schedule which is not very motivating.

Late Attendance Normality. On the other hand, ignoring late attendants completely does not cope with any of the problems and may result in a negative loop: students may think it’s not a problem, or even normal to be late because the problem is not addressed.

Embarrassment. Finally the lecturer can somehow embarrass the late attendant (as some kind of punishment) or get angry at the student. This may scare late attendants so much that they decide not to come at all if there’s a chance they are going to be late.

🔴🔴🔴

Therefore: create a playful intervention that discourages attendants to be late.

The intervention should be playful, but not overly funny (with the risk of being humiliating or intimidating). Preferably it should be related to the subject at hand, but that can be quite difficult to achieve. The playfulness is important for keeping the intervention positive: other students witnessing the intervention should also be motivated by it to be on time, not scared of being late. A little social pressure can work, but this is a fine line because we don’t want the student to be humiliated in front of the whole room. The students who were on time also should experience it as recognition of their being on time.

The intervention also needs to be appropriate for the context. There is a difference between late attendants in a work group of 15 students and late attendants in a lecture hall with 400 students. The bigger the group is, the more difficult it will be to apply the solution of this pattern. The students also need to be able to be on time. If this is not guaranteed, then the students can’t change the situation by themselves and the pattern shouldn’t be applied.

The pattern EMPHASIZE RELEVANCE FIRST might have the generative effect of also tackling the problem of late attendants, as it is intended to stimulate the intrinsic motivation of the student to be on time. In that case the late attendants are implicitly punished by missing the relevant information. A similar effect—students being on time because of intrinsic motivation—might also be achieved by applying SURPRISE BEGINNING.

The most simple application of the pattern is to greet every late attendant with a loud “Good Morning”, hereby clearly showing that you recognized his or her being late. This also focuses the attention of the whole class for a short moment on this student, creating a little social pressure.

Another example implementation of the pattern is for late attendants to treat the lecturer or the classroom (if it’s not too large) to a snack or coffee. This is positive for all, and still playful. Make sure the costs for the late attendant stay low.

Late attendants can also be drawn in on the subject at hand. This requires some improvisation skills from the lecturer, and it’s also important not to intimidate the student. For example when the students enters the classroom when you are working out the solution to a programming exercise, you can ask him or her how to proceed with the problem at hand.
3. CONCLUSION

Educational design patterns help with different aspects of lecture design. But especially for the important beginning of a lecture not many patterns were described yet. In this paper we proposed five patterns that help lecturers to improve the beginning of their lectures. We also summarized the existing patterns that are applicable for the design of lecture beginnings.

These patterns are added to the body of patterns on lecture design. The goal is to work towards a pattern language of lecture design that supports lecturers in their design process and shows that lectures still can be a valuable educational method.

4. ACKNOWLEDGEMENTS

We want to thank our shepherd Chris Kohls. These patterns have improved substantially because of his insightful and challenging comments. We also thank all participants of the EuroPLoP’14 education writers’ workshop.

REFERENCES


In an earlier inventory of existing patterns that can be applied for lecture design, we found patterns that belong to the category applicable at the begin of a lecture (with code Mol3.1 in the categorization system proposed in [Köppe 2013]). Table III gives a summary of these patterns.

<table>
<thead>
<tr>
<th><strong>Pattern Name</strong></th>
<th><strong>SUMMARY</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>BE THERE FIRST</strong> [Fricke and Völter 2000]</td>
<td>Be present in the lecture hall before the lecture starts and preferably also before the students arrive. This is especially important in the first dates of a lecture series.</td>
</tr>
<tr>
<td><strong>COLLABORATIVE SUMMARY</strong> [Köppe and Schalken-Pinkster 2013a]</td>
<td>Start with summarizing content covered in the previous or earlier lectures. Let the students come up with the elements of the summary and write it down on a visible place like a whiteboard, a projected text document etc.</td>
</tr>
<tr>
<td><strong>WELCOME THE PARTICIPANTS</strong> [Fricke and Völter 2000]</td>
<td>Build a personal connection with the students by explicitly welcoming and doing some “small-talk”.</td>
</tr>
</tbody>
</table>

Table III. : Patterns that are applicable at begin of lecture

Table IV contains summaries of all other referenced patterns (in alphabetical order), adapted from [Köppe 2013; Köppe and Schalken-Pinkster 2013b].

<table>
<thead>
<tr>
<th><strong>Pattern Name</strong></th>
<th><strong>SUMMARY</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>COLORFUL ANALOGY</strong> [Anthony 1996]</td>
<td>Use a colorful analogy to introduce a concept that has a lot of boring, detailed ramifications. This also provides a place to go back to to recall the details.</td>
</tr>
<tr>
<td><strong>EXPAND THE KNOWN WORLD</strong> [Pedagogical Patterns Editorial Board 2012]</td>
<td>Explicitly link a new concept to experiences the students already have when introducing it.</td>
</tr>
<tr>
<td><strong>IMAGINATION STIMULATION</strong> [Köppe and Schalken-Pinkster 2013b]</td>
<td>Add activities to a lecture and use delivery forms and contents that stimulate the students’ imagination.</td>
</tr>
<tr>
<td><strong>LAY OF THE LAND</strong> [Pedagogical Patterns Editorial Board 2012]</td>
<td>Show students early in the course a large artifact that covers the major course themes, have them examine it so that they know where the course is heading to and can better place the details covered later.</td>
</tr>
<tr>
<td><strong>LECTURE STRUCTURING</strong> [Köppe and Schalken-Pinkster 2013b]</td>
<td>Investigate and design the optimal flow of the contents and delivery forms of a lecture.</td>
</tr>
<tr>
<td><strong>PROBLEM ORIENTATION</strong> [Fricke and Völter 2000]</td>
<td>Introduce a new topic by showing a problem it solves, that way the students know where you will lead them.</td>
</tr>
<tr>
<td><strong>REGULAR ATTENTION RECUPERATION</strong> [Köppe and Schalken-Pinkster 2013b]</td>
<td>Add activities to a lecture and vary in delivery forms to allow students to recuperate their attention.</td>
</tr>
<tr>
<td><strong>SEE BEFORE HEAR</strong> [Pedagogical Patterns Editorial Board 2012]</td>
<td>Give learners the opportunity to see and experience a new concept before they hear about it.</td>
</tr>
<tr>
<td><strong>SET THE STAGE</strong> [Pedagogical Patterns Editorial Board 2012]</td>
<td>Prepare students before introducing new material by reviewing prerequisites, showing the target and context, and providing an outline.</td>
</tr>
<tr>
<td><strong>SHOTGUN SEMINAR</strong> [Pedagogical Patterns Editorial Board 2012]</td>
<td>When student groups research a topic, encourage them all to work on the topic by choosing the presenter randomly right before the presentation.</td>
</tr>
<tr>
<td><strong>SUITEABLE CONTENT SELECTION</strong> [Köppe and Schalken-Pinkster 2013b]</td>
<td>Ensure that mainly content is selected and delivered that fits lectures as form of content delivery for the learning goals.</td>
</tr>
<tr>
<td><strong>SUITEABLE DELIVERY FORM SELECTION</strong> [Köppe and Schalken-Pinkster 2013b]</td>
<td>Explore different delivery forms and select the valuable ones for your lecture design so that the students are engaged and that the delivery forms fit the content.</td>
</tr>
</tbody>
</table>

Table IV. : Summaries of referenced patterns