

## Democratic co-determination and responsibility of lecture content

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### INTRODUCTION

Lecturing has been used as a teaching method for many years in the universities. In 1963 J. R. Trott [1] wrote "*Though we overdo lecturing, some things that need to be taught can be conveyed in no other way*" (p.72). However, over the last many years, lecturing has been seen as an unfruitful way to foster learning. As Spence [2] write in an article in Change "*We won't meet the needs for more and better higher education until professors become designers of learning experiences and not teachers.*". Spences' answer is to abandon lecturing and use problem-based teaching methods. But, as Burgan [3] points out, "*Spence ask faculty members to believe that the seemingly uninterested students sentenced to their tutelage are actually eager learners who have long been thwarted in their longing to take part in mutual discovery. When faculty object to this rosary vision it may be because they know from experience... They know that many students are apt to slack off without the support of a structure that makes some demands upon them.*" (p. 31)

Hobson [4] refers to several studies that have shown that only 20 - 30% of the students prepare for class. With such a low number of prepared students it follows that teachers lecture on everything and the prepared students to stop preparing; they become audience, so to say. So what to do end this unfortunate spiral?

In our proposed setup we take our starting point in an already existing course comprised of the traditional elements; literature, presentations and exercises. But in order to change the mentioned trend whereby students prepare less and less, we turn the course execution "upside down", in which it is the students that decide what the actual presentation is to cover and not the teacher. This is accomplished by requiring that the students provide feedback based on their *lack of understanding* after having read the entire material at home and having discussed it in groups at the lecture session. An important point is likewise that the workload required of the teacher to incorporate this course design is neglectable.

This approach is inspired by Herskin [5] and implicitly requires that the students take active responsibility for their own learning and thus come prepared to class.

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In this paper we investigate whether student actually do change their behaviour in regard to their preparation as well as evaluating other related aspects. We thus want to evaluate the students view on the following:

- A change in preparation - do the students actually prepare before class?
- Effect of improved preparation - How does this change in preparation show?
- Group discussion session - what happens when the students discuss the lecture topics in groups?
- An acceptance of the approach - how did the students find the design of the course?

## 1 THE HERSKIN MODEL

In his book “Teaching technique for university teachers” [5] (in Danish “Undervisningsteknik for universitetslærere”), Bjarne Herskin has described a model for courses: the synergy-model. The main goal for this model is to ensure that students will behave in a desired way, namely to study before class and behave like active students in class; in a general sense; take responsibility for their own learning. He argues that the typical design with lectures and smaller (class) activities pacifies the students and thus hinders their transformation to self-directed learners.

Herskin has chosen the name “the synergy model” to indicate that the overall goal on the operational level is to create synergy between the different activities that the teacher and the students do. In a traditional set-up, the teacher focuses on the lecture and what is to happen there - how (s)he can teach the students about the content for that week. Instead the focus must be on all activities - it is up to the teacher to design activities that demand the students to be active outside the lectures.

### 1.1 The synergy-model

Since the model not just focuses on what is to happen in the lectures but on the total study effort, the time perspective is typically a week or a fortnight. The activities can be seen as a cycle. The cycle starts with a “key-introduction”. The purpose of the key-introduction is to motivate the students and help them to pick open the text. The next phase is the individual and group-based homework that have some exercises/cases as a starting point. The third part is the active learning activities in a face-to-face setting. The last part is the recapitulation by the teacher of the main points. Figure 1 provides a graphical overview of the model.

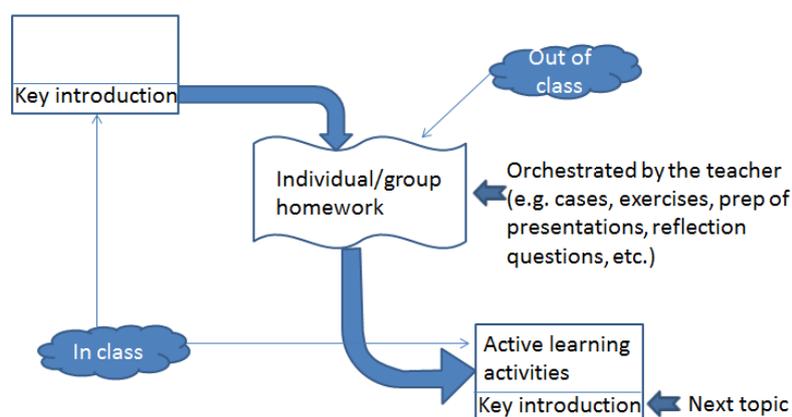


Fig. 1 The synergy model by Herskin

The synergy model has the same focus as what now is known as the “flipped classroom” [6]. But for many, the term “flipped classroom” requires that the lecture is digitized (for example video-mediated) and the students can see the lecture outside the classroom.

## 2 THE NEW COURSE DESIGN

Using Herskin's synergy model as inspiration a traditional created course is "turned upside down". By "traditional course" is understood a course that consists of a number of lectures. Each lecture is outlined and illustrated in the accompanying literature and presentation *and* finally supplemented by an associated exercise. The *execution* of a given lecture thus assumes that the student has read said literature, attends the presentation in an attentive fashion followed by completing the associated exercise.

From a lecturer's point of view the approach proposed only instigates changes in the presentation. Instead of carrying out the lecture presentation in the traditional fashion where the lecturer talks, then it is turned around meaning that the students have studied (hopefully) the literature, read the presentation and inspected the exercise. If this is done sufficiently they will have some passages that they understand and some they do not. The whole idea is to empower them to decide what the actual presentation in fact should cover. In essence it could be parts from the literature, from the original presentation or elements from the exercises that they need clarification on.

It becomes a democratic co-determination in the sense that instead of starting a lecture with the pre-planned presentation, the students are divided into groups of approximately 10. In these groups they then discuss the pre-planned literature, presentation and exercise (the three group focal-points). After about 35-50 minutes, depending on the topic, each group mails a list of subtopics they think need clarification to the lecturer. The combined list from all groups then makes up a prioritized list of subjects that the actual presentation should encompass. In respect to Herskin synergy model our variation, as seen in figure 2, stems from the fact that our "homework" revolves solely around studying and not completing exercises/working on cases. Furthermore the actual presentation naturally does not revolve around these exercises/cases.

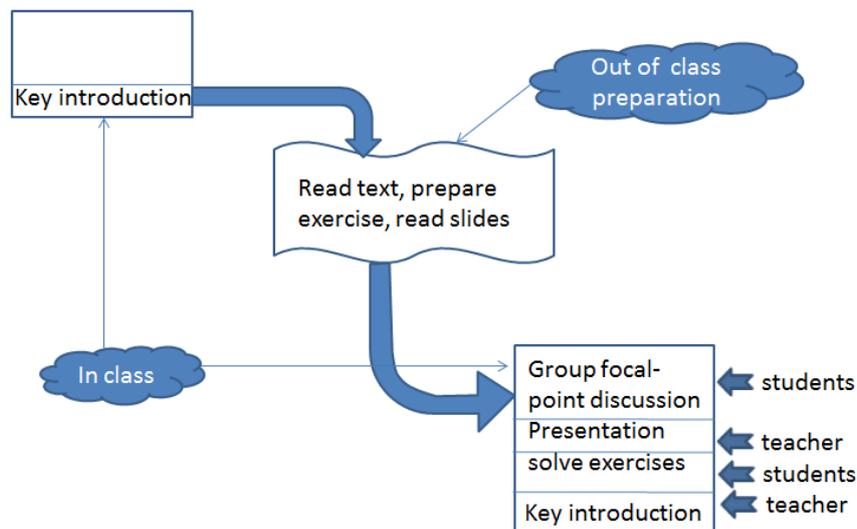


Fig. 2 The implementation of the Herskin synergy model

After the group focal-point discussion is completed by sending a mail to the lecturer, the students go for a break. It is in this break that the lecturer plans out how the presentation will actually be.

To ensure a common thread the focal point of the presentation will be based on the presentation from the original lecture, however only subjects that were deemed difficult by the students will have focus.

Following the presentation the students work on their exercises as in any traditional setting. This continues until 5-10 minutes before end of class, at which point the topic(s) for the next lecture is presented along with the main focal points, the key introduction.

### 3 RESEARCH DESIGN

To ascertain the student perception on the usefulness of the new course design, the following research design has been chosen:

- Questionnaire: General questions for the students on the sub-questions we want to investigate.
- Semi-structured interview with five students: In order to get a more detailed understanding of the students view. The researcher (second author), who was not involved in teaching this course or other courses that students have had or will participate in, performed the interviews. The students participating in the interviews were chosen by random (out of a total population of 21 students for the course). They were not given any credit for participating in the interview.

#### 3.1 Participants

The course investigated was a third semester course in ICT-engineering. It is a mandatory course. The students have had two semesters of courses together with electronic and power electronic students; this is their first ICT course where “they are on their own”.

#### 3.2 Questionnaire

The questionnaire comprises of 5 point likert scale questions and open ended questions. It was given to all 21 students attending the course, 18 filled it out. You can find the questionnaire at <http://goo.gl/O9UF1F>.

#### 3.3 Interviews

It is our opinion that we, by using qualitative interviews, can get supplementary empirical data. The qualitative interview is suitable for uncovering complex information structures. In contrast to the survey interviews, qualitative interview studies are open and not standardized. The qualitative interviews has an interactive nature that makes it ideal for getting the informants' individual view of reality ahead. Although the interviews were planned in advance with an interview guide, this interview method allows for development along the way so the relevant issues that arise can be followed. The interviews fall under the category Steinar Kvale [7] calls semi-structured interview.

Prior to the interviews we prepared an interview guide as a framework for the interviews. The guide worked well, and the order was almost followed. The interviews were recorded on audio files. Four of the five interviewed students were male.

As mentioned previously, the interviews were done by the second author who is not involved in the course. All of the interviews were analysed by both of the authors. The authors listened to the interviews and noted relevant views on the general topics.

There has been no transcription of the interviews in their entirety, only condensed views of relevance to our perspective in the study. By selecting this method we are aware of some errors that may affect the conclusions. First of all because we do not get the precise readings and secondly when we translate to English some meaning might get lost. This we considered acceptable as what we want to retrieve from the interviews are trends and status more than facts.

### 4 RESULTS OF THE QUESTIONNAIRE AND INTERVIEWS

In the following we present the results based on our analysis of the conducted questionnaire and interviews. Initially the students were asked if the new course design did affect them in how they participated in this course as opposed to courses in general; more than 2/3 acknowledged that it actually did.

#### 4.1 A change in preparation and associated effect

As pointed out the course design has an effect: more than 80% changed their attitude towards preparation in relation to studying before coming to class. Inspecting the associated comments it becomes evident that they felt obliged to make a greater effort if they wanted to get something out of the class. This means taking more notes, reading everything, considering possible questions etc.

Furthermore as many as 1/3 of the entire class who in “normal” courses come unprepared say that they now come prepared. This is exemplified in the following comment:

*“I am what you would call the “lazy student” so I read as little as I can get away with, but in this course you MUST read, otherwise you just cannot participate, it’s too hard to just “wing it”.”*

Their level of preparation is indirectly supported by the fact that the 5 interviewees on average state that 2/3 of the group participants did actually participate in the group discussions. As one of the students express it

*No - not all of the students have prepared, but the majority have*

The students find that they are taken more serious since they are in control of the content. In the interviews, all students expressed that they felt more responsible towards their own learning, thus being more active and focused in class.

## **4.2 Group discussion sessions**

We briefly touched the work in groups in connection with how well the students had studied at home. In this section we will examine in detail the part regarding group discussion in which the actual lecture content is determined.

### **4.2.1 Group focal-points, timeframe allocation and group size**

The results from the group discussion sessions are obviously very important since they are the basis for the actual presentation. As a consequence it is important to determine whether the chosen setup in terms of an understandable assignment, reasonable timeframe as well as group size was not considered a hindrance for producing a satisfactory result.

About a 3/4 of the students found that the group focal-points and the group size were ok. Regarding the timeframe only 11% did not find it ok meaning that 89% were indifferent or found it ok. One of the students expressed the time usage the following way:

*The fact that you can quickly get to spend a long time in a discussion. This seemed to me both a good and bad thing, but mostly a good thing, as this may provide a better understanding of the substance and put it together in context.*

From the interviews we see that students in the beginning of the course found the group focal-points more unclear, however as the course progressed they got increasingly more confident on what and how to deal with them.

In the interviews, many of the students suggested that the group size should be smaller thereby making it easier to have more in depth discussions.

Collectively we believe that the inherent improvements would not significantly impair evaluation of the course design.

### **4.2.2 The group working climate**

We have investigated the working climate to determine whether the students perceived it as being supportive or a hindrance towards completing the discussion. More than 2/3 agree or strongly agree to the following:

- We supported each other during the discussion
- All views were taken serious
- When one spoke, the others listened
- No one was left alone
- We were friendly towards each other
- We worked well together

### 4.2.3 Student satisfaction with the result of their group discussion

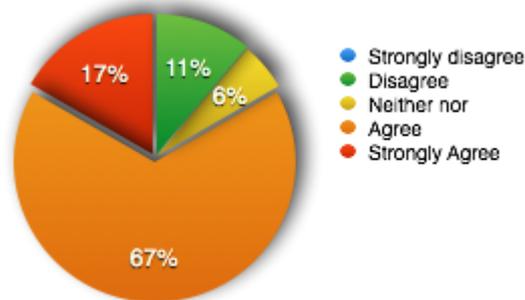


Fig. 3 How satisfied the students perceive the group discussion result to be

As pointed out in the previous sections the working climate and the framework put in place concerning group discussions were found to be good. This along with an improved level of preparation as well as approximately 2/3 of the students participated in the discussions leads to a significant (84% figure 3) improved level of satisfaction with the group discussion result.

### 4.3 An acceptance of the approach

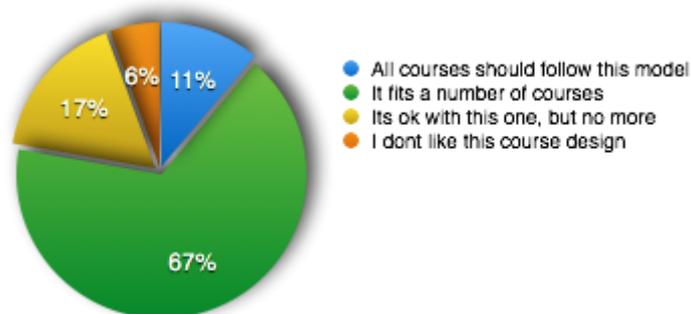


Fig. 4 Student acceptance of the approach

From figure 4 it is clear that the course form/design is acceptable and even noteworthy enough to be used in other courses. This is supported by the following statement:

*One gets motivated to do homework and to listen in a completely different way than in normal lessons, for instance I have often caught myself checking facebook rather than listening in those normal lessons.*

It is also interesting to note, in figure 4, that 11% believe that it should be used in all courses, whereas 67% believe it only useful for a number of courses. Analysing the comments made by these 67% there are two main reasons as to why they do not think it will work for all. The first is the size of the class, which in this particular semester is 21, they think that it would not work for larger classes say 100+. Here the predominant reasoning is that there would be less time to delve into details and the group part would not work. Their second point is that the course in question takes up a lot of time in itself, meaning that if all courses did this they would not be able to complete them.

## 5 DISCUSSION

The students were very sceptical of numerous different things

- Completely new approach, will it work? – No one else does this.
- That this would strain them even more.

- Were they capable of determining which topics they understood in the group discussion sessions - did they miss out on important topics?
- Using it in other courses, in particular in large classes (100+)?

### 5.1 New approach

One of the first things that had to be handled with care was the fact that this approach is only used in this course. No other courses the student know of utilises a similar design easily creating animosity towards the whole idea. A lot of effort was therefore put into explaining the reasoning behind uses this particular approach. There is no doubt that this part is vital, because if the students do not want to participate then this approach will fail. In this particular instance we succeeded in conveying the concept and attaining their acceptance.

### 5.2 Larger strain

The perceived load is somewhat higher in this course as opposed to other courses this semester and in part this has to do with the course design. For a deeper description and analysis of this, see [8].

There is no doubt that the course design overall results in more work especially in the preparation phase, however according to the questionnaire almost 90% feel that they are better prepared for completing the exercises. How much work this removes from the exercises phase is unknown, but the important part is that they find it has an effect to be better prepared in the first place

### 5.3 Presentation content and selection of it

By having them trying to convey what they understand and do not understand of a given curriculum gives them a sense of uncertainty. They collectively fear that they might miss something important that is not explained by the teacher. This is exemplified by these student statements:

*That I have not understood everything or that I have misunderstood something.*

*That one does not capture the importance of the topic in the preparation phase and therefore finds the lecture difficulty*

Students may fear that this empowerment may lead to loss of knowledge since the original presentation no longer is carried out. This is in fact a step, in the transition, from being a pupil to being a student.

In the beginning, ONLY the topics chosen by the students were used in the presentation. The students found it difficult to have the content out of context; therefore after a while a very quick context was given (even if this was not asked for by the students). By doing so, the students felt more secure in the sense that they did not feel that something had been left out. In the interviews the students pointed out that it is important to be able to ask questions during the presentation; another way to remove the uncertainty about missing important topics.

### 5.4 Large classes

In the interviews we focused upon the generalizability of design. Many of the students expressed a belief that it could not be used in especially larger classes. They were afraid that there would be a much larger number of more diverse questions, the consequence being a long and unstructured presentation; the presentation being held in its original entirety.

Furthermore the students were afraid of the student-engagement. The class in question is an ICT only course with few participants, whereas other settings where the number of participants exceeds 100 and the course is an obligatory and not in their sphere of interest, then their engagement might falter.

Most teachers of large classes experience students who attend their lectures but are not mentally present; the learning from a "normal" lecture might not be as optimal as hoped for. This is where the group discussions can enhance the learning outcome since the students are active and discussing their understanding of the topics.

The students' concern about the large number of diverse questions is valid. The challenge here is the stiff structure of lectures - we have a pre-planned timeframe to do the presentation. By letting the students choose, we as teachers might face either a lack of time or too much time. This requires that the teacher can prioritize appropriately and guide the students to handle the left-out topics. In the course in question this was done via adapting their time for exercises.

## 6 CONCLUSION

The goal of the redesign was twofold: 1) to have the students prepare better before class. 2) To have much more focused presentations with respect to the students' actual needs. This had to be done without changing much in the original course curriculum to achieve a feasible change. To do this, we found inspiration in the synergy model by Herskin.

Our study, based on a questionnaire as well as interviews, indicate that our goal was met quite convincingly. This was especially evident in the sense that nearly all students changed their preparation for the course in question, and a third who never studied for class actually commenced doing so.

By instigating this change we also experienced more actively engaged students which especially were seen in the group discussion sessions as well as in the discussions in class during the presentational part.

Another positive side effect for us as teachers is that the approach makes teaching challenging and fun again.

All in all the following quote from a student sums up the effect of the redesign:

*The main advantage of the course's form is probably that you yourself will be able to gain knowledge through literature, as opposed to the normal teaching, where everything is being "served". I'm sure that this property will be invaluable once we have completed our training.*

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