

1. Existing problem:

Problem as I see it, is that professors have all the control over the topics and areas covered in the course. In the later semesters, or Master study, I would suggest that students have a rather well overview of the topics that could be covered and good perception about what they want to learn about and why. I believe that present situation can also lead to **repetition** of topics from year to year and not following the recent research as closely as it would be necessary to keep the topics **up to date**. In addition many students lose **motivation** and interest over many topics as they do not learn what they imagined or hoped for.

2. Proposed solution:

My solution to all of the above mentioned problems is that students should take (and should be given) a **more active role in determining the topics covered** in the subject. I would organize subjects with more general title (for example: 'epigenetics', 'neurobiology', 'memory and cognition'...) but the topics covered would be mainly chosen by students not professor. I imagined several possible implementations which follow 3 basic different approaches (**picture 1** in the appendix).

Approach 1:

Each student can choose the topic for himself. Although it would be rather difficult for the professor to follow students every wish and to combine/arrange the topics so that they would fit in the schedule it is the most ideal representation. But it also brings some rather negative consequences; some may want to listen only to their topic. In large classes it would be very hard to make a selection which topics to present or how to combine them, consequently I imagine such implementation only in smaller courses (up to 20 people) with obligatory participation in all the lectures.

Approach 2:

Possible topics are chosen by professor and presented on the start of the semester. Number of presented topics must be larger of lectures for the course. Decision which topics are actually going to be lectured is based on decision from entire class (population based decision) – voting system (**picture 3**). It is a bit less 'free' decision making than in Approach 1 with one big disadvantage; topics that would students really like might not be on the list at all. On the beginning of the semester when student enrol into the subject, they are also presented with online list of possible topics that could be chosen and covered in the lectures. Then they have to choose which one they prefer till the end of the enrolment period (few lectures in the beginning would be general, chosen by professor in this case), or till specified date. Topics which got the most support would be lectured.

Approach 3:

Approach 3 is a compromise between first 2 approaches. As it eliminates the problem from Approach 2, is the most balanced and favourable approach. Students are first presented with the online list of the topics created by professor, than they have a week (or 2) to write additional topics on the list, afterwards there is a vote between all of the possible topics (from professor and student). If the students choose a student topic, professor have to prepare the lecture or invite a foreign lecturer better familiar with the topic to give the lecture.

3. Project steps and duration:

I believe the idea could be implemented within 1 semester as both steps that need some time (b and c) could be done in parallel (**picture 2**).

- a. In the beginning it would be necessary to decide if such an approach is indeed good and refreshing for both professors and students.
- b. When there would be a clear 'yes' from the board, online system for editing and selecting the topics would have to be integrated in already existing online platform (myStudies). Online system would be simple (picture 3); allowing students to select topics from the list made by professor and write their proposals, while allowing professors to see the result of the selection and student ideas. This step it might need some time to fully integrate and test the system (3 months).
- c. Then it would be necessary to identify possible courses where many topics could be covered or the field is quickly developing (epigenetics, neurobiology...). In such areas by my opinion students could benefit the most. It would be also necessary to discuss the structure of the course with professors. (3 months)
- d. After appropriate courses have been recognized it would be necessary to decide which approach of implementation we would take. Most balanced approach would be Approach 3, which I believe it would function best in most courses.
- e. Then it is up to professors to make a list of possible topics and later student to enrol and fill-in the topics they want to listen to the most.
- f. Online voting.
- g. Professors would then have to go over the voting results and students proposals and decide about the curriculum. They would coordinate the topics and either prepare the lecture themselves or invite a guest lecturer.

4. Potential partners:

Professors and students enrolled in the class will be in the front-line for sure. Professor might need to coordinate and invite other lectures if the topics chosen by students are a bit out their scope/profession.

5. Financial resources needed:

One positive thing definitely is that little financial resources will be needed to realize the idea. Online application or voting system (picture 3) needs to be incorporated in to the existing web-platform ('myStudies') and that might need some financial resources. Secondly some resources should be put aside for invited lecturers for the topics that professors are not so familiar with (guest lecturers). Those 2 areas are the only additional financial burden. This is another aspect why I feel confident that the idea could be implemented in reality.

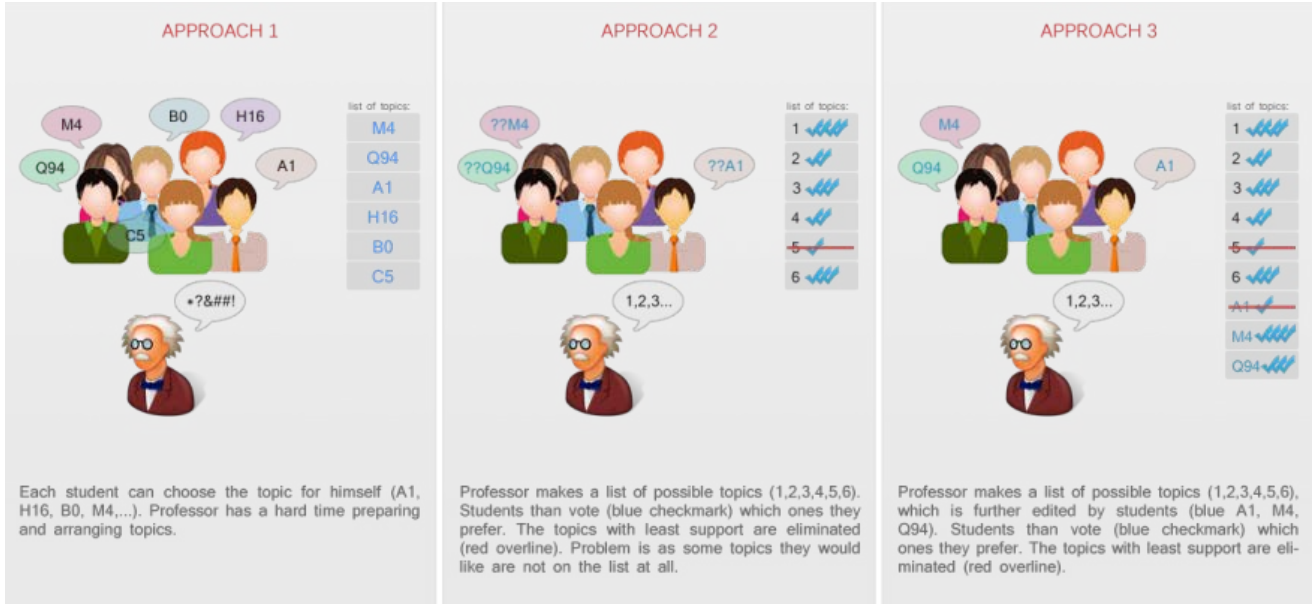
6. Success indicators:

There are quite some success indicators that could be used to evaluate the implementation and the idea itself. They are briefly described below:

- a. Diversity of the topics from year to year
 - i. Are demanded topics changing through year?
 - ii. What is the trend of topics?
 - iii. Do the topics correlates to recent scientific findings or rather number of people from specific field?
- b. Number of the enrolled students in such a class
 - i. Is the number of students increasing through the years or not?
 - ii. Is specific topic attracting more students than before?
- c. Evaluation provided by students at the end of the class
 - i. What are their evaluations of the course, complaining over same thing as before?
 - ii. How they see the structure of the subject after the implementation of the idea?

- d. Professors covering the topics
 - i. Do they feel students are more interested?
 - ii. How they feel about extra work and different type of organization of the subject?

Appendix



Picture 2: It represents 3 different approaches for implementation of the idea that students actively choose topics of the course. Further description is on the picture.



Picture 1: Project steps and duration of initiative steps. I put “?” next to the “ETH Board” as I have no clue how long such decisions take. After the clear decision to proceed with the idea, I believe the second step of implementation (identifying courses and building online voting system) could be done in 3 months. Next step; which approach to implement lies on the professors but most suitable for most courses would be “Approach 3”. After this short time of implementation the idea is ready to proceed into practise (“Semester start”), where professors and students should choose ideas and decide upon the topics...

Course title: **Neurobiology**

list of topics:

Obligatory	Neurobiology I
Obligatory	Neurobiology II
Topic 1:	Fundamental development
Topic 2:	Development of the brain
Topic 3:	Regulatory processes in the brain
Topic 4:	Developping brain through life
Topic 5:	Mechanisms of sensation
Topic 6:	Vision and visual perception
Topic 7:	Higher visual areas
Topic 8:	Hearing and balance
Topic 9:	Brain and music
Topic 10:	Pain and pain regulation
Topic 11:	Motor system
Topic 12:	Motor performance and training
Topic 13:	Learning and brain
Topic 14:	Brain plasticity
Topic 15:	Fundamental anatomy of the nervous system
Topic 16:	Learning in development
Topic 17:	Methods for brain reseach
Topic 18:	fMRI up close
Topic 19:	Perception and selfawareness
Topic 20:	Sleep

REMOVE

+ add topic

Course title: **Neurobiology**

chose 12 topics:

Obligatory	Neurobiology I	
Obligatory	Neurobiology II	
Topic 1:	Fundamental development	<input type="checkbox"/>
Topic 2:	Development of the brain	<input type="checkbox"/>
Topic 3:	Regulatory processes in the brain	<input type="checkbox"/>
Topic 4:	Developping brain through life	<input checked="" type="checkbox"/>
Topic 5:	Mechanisms of sensation	<input checked="" type="checkbox"/>
Topic 6:	Vision and visual perception	<input checked="" type="checkbox"/>
Topic 7:	Higher visual areas	<input checked="" type="checkbox"/>
Topic 8:	Hearing and balance	<input checked="" type="checkbox"/>
Topic 9:	Brain and music	<input checked="" type="checkbox"/>
Topic 10:	Pain and pain regulation	<input checked="" type="checkbox"/>
Topic 11:	Motor system	<input type="checkbox"/>
Topic 12:	Motor performance and training	<input type="checkbox"/>
Topic 13:	Learning and brain	<input checked="" type="checkbox"/>
Topic 14:	Brain plasticity	<input checked="" type="checkbox"/>
Topic 15:	Fundamental anatomy of the nervous system	<input type="checkbox"/>
Topic 16:	Learning in development	<input checked="" type="checkbox"/>
Topic 17:	Methods for brain reseach	<input type="checkbox"/>
Topic 18:	fMRI up close	<input type="checkbox"/>
Topic 19:	Perception and selfawareness	<input checked="" type="checkbox"/>
Topic 20:	Sleep	<input checked="" type="checkbox"/>

save

vote

In the beginning of the course every student is presented with online list of topics, selected by professor (dark color of topic titles). Than students have a week (or 2) to add additional topics ('add topic' button) which they would like to listen (blue color of the topic titles). They can as well remove their own suggestions (red 'remove' in the side of their own suggestions). Few (2 in this example) lectures are obligatory as an introduction to the course (top 2, with obligatory subtitle).

After the starting 2 weeks, when they have filled in the topics, they have a week to select topics they prefer for the lecture. There is still possible to distinguish between professors and student topics by the color of the topic title. After the selection you confirm by pressing 'save' button - to save and edit next time, or 'vote' - to send the results to voting system.

Picture 3: Example of online form for adding (left side) and later selecting (right side) of the topics in the particular course. The system would have to be integrated in the 'myStudies' under the 'Learning materials' for example. The result of the voting would than be presented to the students and professor who would be responsible for the lectures. Further description is provided on the pictures.