

Flipped classroom and active learning

9.1.2019



Aalto University
School of Engineering

Timo Ovaska / Oppimisen IT

Jukka Välimäki / LES ENG

Schedule for the workshop

1. **What is Flipped Classroom?**

Pre-assignment and expectations

Challenges and advantages of flipped classroom

2. **The model**

Flipped classroom -cycle

Pedagogical approach

Constructive alignment

3. **Groupwork**

4. **Active learning / Blended learning**

Presemo, MyCourses and other tools



What is flipped classroom?

Pre-assignment in MyCourses



Aalto University
School of Engineering

Picks from the pre-assignment

- **“It seems that the consensus is very positive towards FC. However, teacher confidence on using the method along with convincing the students on its relevance is essential.”**

Picks from the pre-assignment

(Wednesday)

“If successful, I believe this will improve learning on my course as it forces students to do hands-on work, and hopefully also enables them to visualize solutions to problems.”

“In the future if some parts of lectures are on videos and online learning is more encouraged I could discuss more advanced topics at the lectures or in general bring more substance into lecturers or tutorials. In this way the class could become a ‘Lab for Learning’”

“I always try to give some exercises during my lectures in order to push students to think and try to face the problem themselves and understand which are the difficulties.”

“Students are ready and prepared for deep learning.”

(Earlier workshops)

“Only a small percentage of students put really effort on pre-assignments and material before classroom.

The amount of questions or activity in the classroom has stayed very low.”

“Recently, in order to activate the students to read the theoretical fundamentals, not just completing weekly exercises, I have started to give reading exercises”

“Reading assignments are often ignored by students!”

Challenges

How to motivate students to read material in an active way

Mapping student expectations

Students' attitude: first homework, then lecture

Teacher's work is not seen

Challenges

Wednesday

- How much time is needed for students in class
- Takes time from teachers aspect (technology and content has to be in order)
- How to get the students motivated with pre-assignments.
That they do it well!
- Diversity of the students
- Informing the students about the (new) learning process

Earlier workshops

- Choosing or producing the self study material take a lot of time.
- Motivating students with the self study material (not really read/watched unless the students are somehow forced to do so).
- Connecting self study material with classroom activities.
- Classroom activities are challenging with large group of students
- The student reaction is hard to foresee. Feedback might be negative.
- Method is too much hyped.



Advantages

Help with knowledge gap between different students

Students can learn from everybody's mistakes and other findings (not just their own)

→ Shared activities

Pre-assignments → Students are forced to contact each other

You can check / get feedback, if students have understood the material

You can immediately iterate

More efficient contact teaching

Advantages

Wednesday

- Activating students gives better results
- Lecture room becomes a lab

Earlier workshops

- Students will get to know each other.
- When the connection between self study material and classroom activities is made the results are excellent.
- Teaches other skills too (work life skills) and not only the subject.
- More student-teacher time and opportunities for feedback in both directions – teacher becomes a coach.
- Supports innovative and creative work.
- Especially good in planning or designing something.
- Tailored teaching/learning for students on different levels.
- Internet is full of ready made self study material.

The model



Aalto University
School of Engineering

Flipped classroom -cycle

Reading or watching the pre-delivered material

Activities and engaging in concepts

Reflect
(with journal, discussion or portfolio)



SELF STUDY

- Student chooses place and time
- Collaboration with other students



CLASSROOM LEARNING

- Solo/groupwork
- Teacher as a mentor

A?

Key concepts

- Student centered
- Constructive alignment
- Active learning
- Collaborative and inclusive approach
- Blended learning
- Collaborative learning and support of online community

Flipped classroom and pedagogical models

- **Flipped classroom works especially well with certain pedagogical models.**
- **Participatory methods support motivation (going through the self study material).**
 - Problem based learning
 - Project learning
 - Groupwork based methods: Team based learning, collaborative methods, jigsaw-method

Constructive alignment

(in about 5 minutes)



Aalto University
School of Engineering

Constructive alignment

- **Learning outcomes**
Clear goals, defined beforehand
 - **Content and learning materials**
Hand picked, essential
 - **Activities and methods**
Support achieving the goals
 - **Assessments**
Measure if the goals were achieved
- <https://vimeo.com/54530841>
 - https://www.avoin.helsinki.fi/opettajille/Saar_a_Repo_konstruktivisesti_linjakas_opetus_17112014.pdf

Elements support one another and aim for the same goal.

Groupwork



Aalto University
School of Engineering

Flip a part of this course plan

- **What should be the pre-handed self study material? What is the aim of the material? What would be the format?**
- **Describe the details of material and activities.**
- **What pedagogical models would you use?**

Active learning in a Classroom



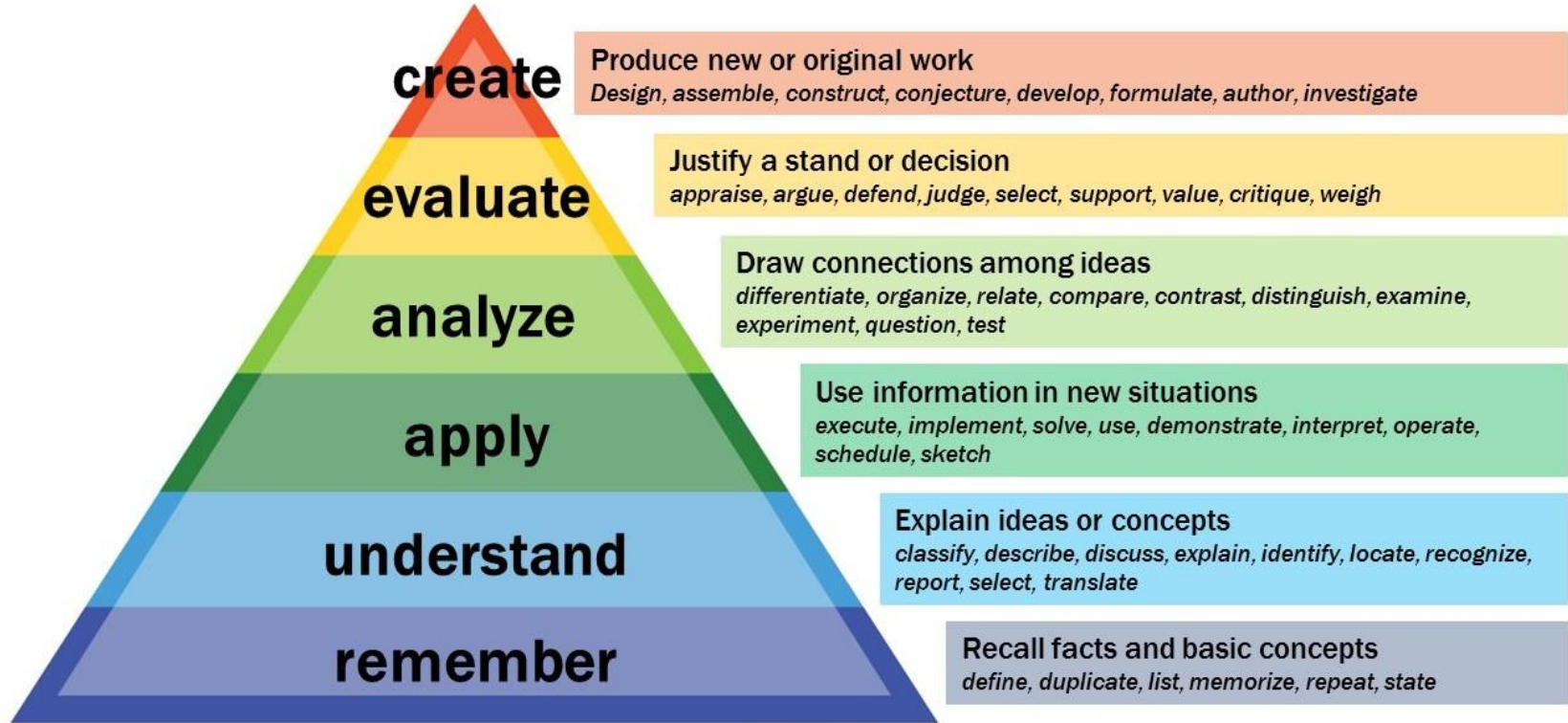
Aalto University
School of Engineering

Active learning (activating teaching)

- **History of lectures is in copying the knowledge – lecturer speaks and the listeners make notes.**
- **Copying and sharing the study material is very easy today**
- **Student has an active role**
 - More responsibility → more motivation.
- **More interaction**
 - Less misunderstanding
 - Opportunities for instant feedback
- **Collaborative learning and shared knowledge**

- <https://www.slideshare.net/aylitalo/aktivoivia-opetusmenetelmi>

Bloom's Taxonomy



Digital tools for active learning / activating teaching

PRESEMO

<http://presemo.aalto.fi>

MyCourses

Collaboration tools, wiki-pages, discussion forums

Panopto

Video ja media service

Active learning classrooms are coming to Otaniemi!

2. FC-workshop?

- In the Active Learning classroom
- To share thoughts / experiences about using Flipped Classroom
- Pre-assignment: Share an educational video (of any subject, of any length, Jukka Välimäki or Kalle Kataila can help) → examples for each other

Interested in visiting University of Eastern Finland?

- UEF has been applying Flipped learning & Flipped Classroom
- <https://www.uef.fi/web/ameba/flippedlearning>

Theoretical Framework



Aalto University
School of Engineering

Theoretical Framework

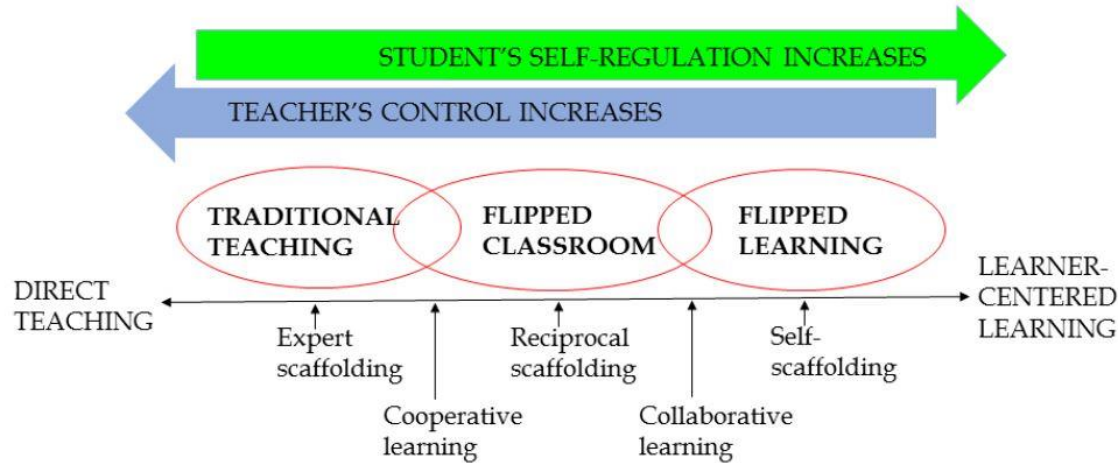


Figure 1. The dimensional view of the changes when switching from direct teaching to learner-centered learning.

“Tipped” classroom

Don't flip everything at once

- One lecture / subject / week of the course

