

# Flipped classroom as an empowering learning format

Henrik von Wehrden & Julius Rathgens

## Background

Teaching scientific methods in science is challenged by the diversity of methodological approaches and the necessity for students to gather practical experience with concrete methods. We present a Flipped Classroom lecture design for early bachelor students, building on the integration of an online Wiki on scientific methods in addition to classical teaching formats. Based on a survey- and feedback-based evaluation of the classes, we can confirm that a Flipped Classroom approach can support flexible learning conditions and increases student motivation. This teaching format can empower students towards a more immersive learning format, thereby providing a clear setting that utilizes the presence learning time together with flexible peer-to-peer learning experiences.



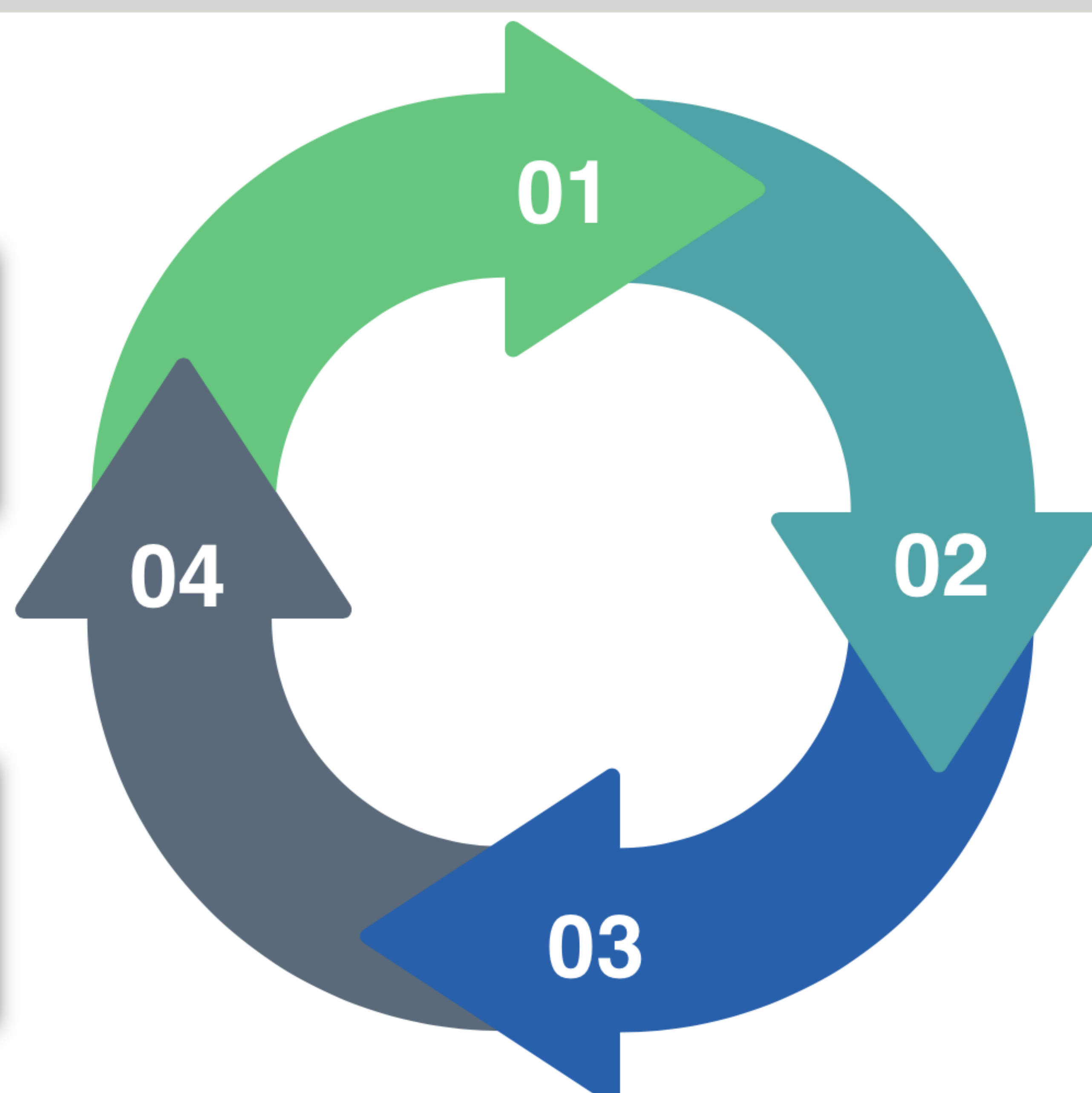
Live-Session in the Leuphana semester focussing on methods

### Online material

Students engage with online lectures and reading material created to frame each topic, allowing them to learn at their own pace, repeat material and research for additional information.

### Integration & application

Students integrate their individual learnings ideally within peer-to-peer exchanges and engage with active method applications either in tutorials or smaller group homeworks.



### Reflection & questions

Students revise their learning and can ask questions within an online repository. In addition students can directly ask questions in chat forums where a strong peer-to-peer spirit is fostered, and additional explanations are given.

### Lecture

Lectures are tailormade based on the respective questions from students and framed based on alternative learning material, hands on interactions and discussions within the lecture hall.

This approach has several advantages over a traditional lecture. Students reported an increase in:

- learning success
- motivation
- enjoyment of the course.
- Increase in flexibility and the option to work at the students own pace.

However, several challenges also surfaced:

- Collaboration and participation were fluctuating within group works
- Perceived increase of the workload

The special element of a Wiki as a supporting learning platform proved to be worthwhile, and helped students engage further with the teaching content.

## Conclusion

Opportunities	Challenges
<ul style="list-style-type: none"><li>▪ Students can study the respective material at their own pace.</li><li>▪ Students have the possibility to design the lecture based on their open questions</li><li>▪ The lecture starts on a higher level because students are expected to engage with the material before each lecture.</li><li>▪ The exams proves the overall high level that students gain by being continuously engaged.</li><li>▪ The diverse learning formats enable and support different learning profiles.</li></ul>	<ul style="list-style-type: none"><li>▪ Continous engagement with the learning material within each week.</li><li>▪ Active participation both before and during the lecture</li><li>▪ Group assignments may suffer due to free-riders</li><li>▪ Perceived higher working load by the students.</li><li>▪ Higher workload for the teacher.</li></ul>

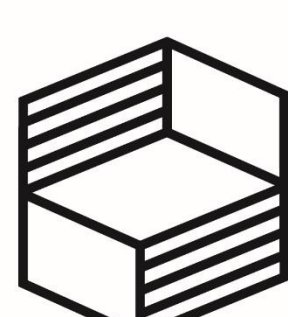
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Kontakt: [projekt-digital@leuphana.de](mailto:projekt-digital@leuphana.de)

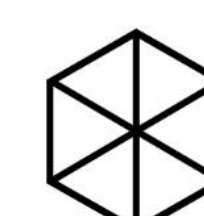


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Presented by: Prof. Henrik von Wehrden  
Dr. Julius Rathgens



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