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# IMPROVED LEARNING OUTCOMES AND STUDENT ENGAGEMENT THROUGH FLIPPED LESSONS

**K. Heikkinen, A. Sivonen**  
*Haaga-Helia UAS (FINLAND)*

## Abstract

While using flipped learning the learning of the content is carried out outside the classroom, through individual tasks and assignments. The contact lessons are then used to apply this knowledge for problem solving and other such activities. Using flipped learning or flipped classroom teaching has been shown to have many benefits, such as an increase in student engagement and a positive attitude towards the learning in general. Flipped lessons taught by students are more interactive and fun, and students are more productive and enthusiastic about the class. For many, peer instruction is an effective way to learn a subject as one really needs to internalize the content to be able to explain it to others in a convincing and understandable way. In addition, it provides the teachers with the opportunity to focus on really demanding issues.

The purpose of this paper is to illustrate how a well-planned usage of flipped learning in one course creates synergy effects, benefits and engagement beyond that one course. This paper describes one example of how we have utilized flipped learning as teaching method in Haaga-Helia University of Applied Sciences Porvoo Campus in Finland when teaching students different service design tools. We explain how the four pillars of flipped learning (Flexible environment, Learning culture, Intentional content, and Professional educators) are shown in our implementation and evaluate how flipped learning can be used as a part of inquiry-based learning. We want to share our best practices and feedback that we have received while implementing flipped learning in our course.

The results of the students have been incredibly good, and they see the flipped learning as eye-opening and engaging in many ways. During the course they get to know new service design tools, which they can apply directly in their project running at the same time in another course. In addition, they get more understanding for teachers as they see the other side of the coin when acting as instructors in one session, as well as increased team working and problem-solving skills. This can also be seen in the course feedback, where students indicate this with high grades especially in the active participation in studies and the study method and environment supporting the learning.

Keywords: flipped learning, service design, student engagement, peer teaching, flipped classroom.

## 1 INTRODUCTION

Several studies have shown that flipped learning or flipped classroom teaching has many benefits such as an increase in student engagement and a positive attitude towards the learning in general. (e.g. [1], [2], [3]) Flipped lessons taught by students are more interactive and fun, and students are more productive and enthusiastic about the class. [4], [5]

One can find the roots of flipped learning in social constructivism. Especially concepts such as problem solving, active learning, inquiry learning, and interpersonal communications are closely related to flipped learning. [6] Flipped Learning is a “pedagogical approach in which direct instruction moves from the group learning space to the individual learning space, and the resulting group space is transformed into a dynamic, interactive learning environment where the educator guides students as they apply concepts and engage creatively in the subject matter” [7].

Usually, the learning of the content is done outside the classroom, through individual tasks and assignments. The contact lessons are then used to apply this knowledge for problem solving and other such activities. Bloom’s taxonomy is discussed a lot when talking about flipped learning. Compared to traditional learning the remembering and understanding takes place outside of the classroom in a flipped learning context. Then during the class there is the applying, analyzing, evaluation and creation phases with the help of peers and instructors. [8] This is illustrated in Fig. 1.

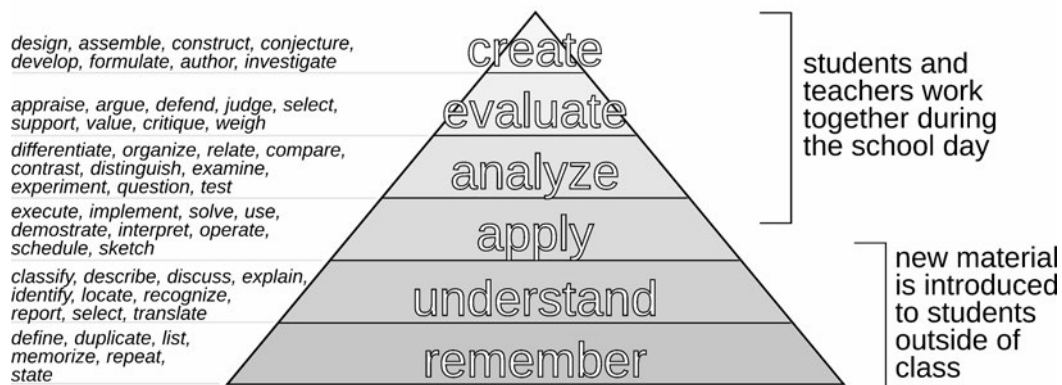


Figure 1. Bloom's taxonomy and flipped learning.

The book *Flip your Classroom* [9] made flipped learning widely known. In their book the pioneers of flipped learning, Bergmann and Sams, shared their experiences and explained among other issues how flipped learning works in practice and why it should be used. There one could already see the shift of the pedagogical paradigm. E.g., the role of the educator was now seen as a guide and facilitator instead of giver of knowledge. This reflected the role of the student as active learners instead of passive receivers of information. The new paradigm meant going beyond traditional arrangements and focusing more on the educational benefits. This change could be made through intentional transfer of certain parts of information delivery outside the classroom to have more time for face-to-face interaction in class. [9], [10]

To create improved, engaging, and effective learning in a flipped classroom there are several issues that the instructor needs to consider. Ouda and Ahmed [8] have presented the pedagogical framework for flipped learning. The framework is built on the following components: instructional foundations, learning theories, Bloom's taxonomy, and conceptual framework of the flipped education. The pedagogical framework for flipped learning can be seen in Fig. 2.

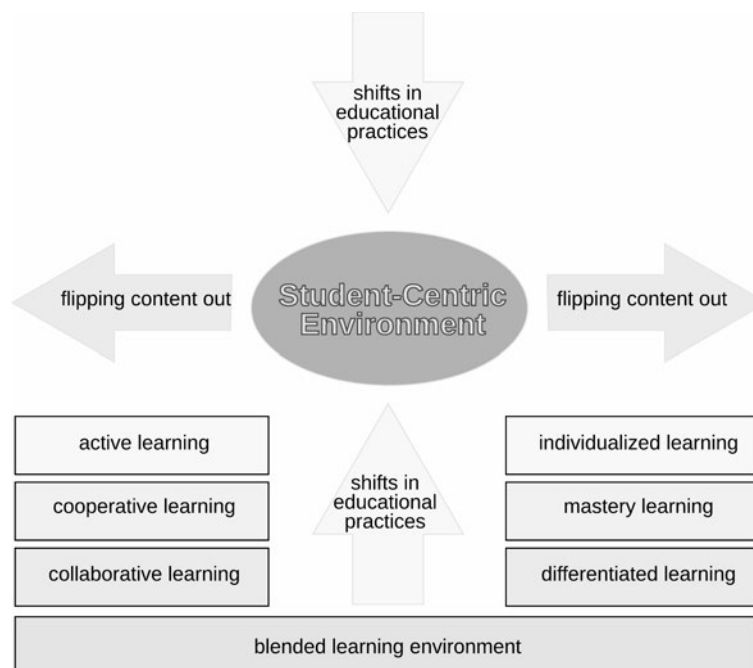


Figure 2. The pedagogical framework for flipped learning [8].

Students are in the center of learning and enabled by an active, blended learning environment providing individualized learning. Some parts of the content are covered during lectures, and others flipped out of the classroom. Instead of the instructor being in the center, the students have an active role regarding the content and collaboration with the classmates and they take control over their own learning. The flipped classroom setting itself is a blended environment, in which the traditional practices of teacher

centered content delivery are shifted towards technology enhanced instructional practices and implementations where students choose when and where they study. [8], [10]

The shift to student-centric learning environments also requires new pedagogical practices. The key learning theories referred to are: individualized learning, active learning, cooperative learning, collaborative learning, mastery learning and differentiated learning. Flipping out the content is the heart of flipped learning. Educators need to decide which parts of the content should be made available to students outside the classroom in their own time and what content is the most beneficial to study during the lectures. When there is no pressure to deliver all the content during the lectures, there is more time for student-teacher interaction and giving real-time feedback. This also allows teachers to integrate student-centric pedagogies in a more efficient way. [8], [10]

Overall, flipped learning can be an effective way to improve learning outcomes and student engagement by providing accessibility and personalized and active learning. Effective use of flipped learning requires the presence of certain elements of flipped learning. These four pillars of F-L-I-P™ (Flexible Environment, Learning Culture, Intentional Content, and Professional Educators) indicate which four components support student's engagement in flipped learning. [7] The main idea in the first pillar with the flexible environment is to provide a variety of learning modes. Students need to be able to choose where and when to learn and how (e.g., group work or independent), and the educator should adjust the teaching methods and assessment accordingly. [7], [8], [10]

The shift from an instructor-centred approach to a student-centred approach is the main content of the second pillar, the learning culture. This also includes a change in the classroom culture, so that the time in class is used for exploring the topic more in depth as well as creating richer learning opportunities. In the third pillar the focus is on the content. Instructors need to decide what learning content should be taught directly and what students investigate on their own. Besides the material, also teaching methods are included here in the intentional content. Therefore, a wide variety of instruction methods is encouraged to be used such as peer instruction or problem-based learning. [7], [8], [10]

The core meaning of the fourth pillar, professional educators, is that instructors are not replaced by flipped learning, rather the opposite. The role of the educator is even more important compared to traditional teaching. [7] There is also a proposal by Chen, Wang & Chen [11] to use the FLIPPED model in higher education with three additional components; Progressive networking learning activities, Engaging and effective learning experiences and Diversified and seamless learning platforms. The reasoning here is that in the traditional F-L-I-P™ model the learner experience is lacking; the importance of learning activities is underestimated and there is a lack in specifications about individual learning spaces and diverse learning platforms.

In conclusion, a lot is researched around flipped learning and there is undoubtedly many benefits with this approach. As mentioned, flipped learning combined with inquiry learning and peer teaching is a great match and suitable in higher education and development of 21st century skills. For many, peer instruction is an effective way to learn a subject as one really needs to internalize the content to be able to explain it to others in a convincing and understandable way. In addition, it provides the teachers with the opportunity to focus on really demanding issues. This is why we have been using this concept for several years in one course and now want to share our experiences. Therefore, the purpose of this paper is to illustrate how a well-planned usage of flipped learning in one course creates synergy effects, benefits and engagement beyond that one course.

## 2 METHODOLOGY

In Haaga-Helia UAS, we have successfully used flipped learning pedagogy in project-based courses. It has been found to be an effective approach when we want enhance students' ability to apply and combine their knowledge to solve problems, instead of just memorizing the content. The observations also suggest that this method allows the students to understand better the challenges in teaching and makes them appreciate the teacher's work more. This also has the effect that in the forthcoming classes the co-operation with the students works better.

This paper describes one example of how we have utilized flipped learning as teaching method in Haaga-Helia University of Applied Sciences Porvoo Campus in Finland when teaching students different service design tools. In this chosen case flipped learning and service design methods are used in one of the assignments in the course "Innovative entrepreneurship and financing".

The "Lab 8 Toolkit" assignment was designed to teach students innovative approaches and service design tools in both theory and in practice. Students were expected to apply their knowledge of innovative design methods in a project for a parallel course where they had to develop an original idea for an existing small business in the beauty industry.

There are three primary steps to the assignment: preparation, application, and evaluation. Some of the flipped learning theory's well-known principles are already apparent. Students familiarize themselves with various service design tools during the preparation phase. The students are instructed to choose their service design tool from the 42 tools available in Haaga-Helia's Lab 8 Tool Factory for creating services and experiences. The available tools cover all phases of service design, and with each tool the user can find detailed instructions for implementation. [12]

The flipped session design process used is shown in Fig. 3 and explained in more detail below.

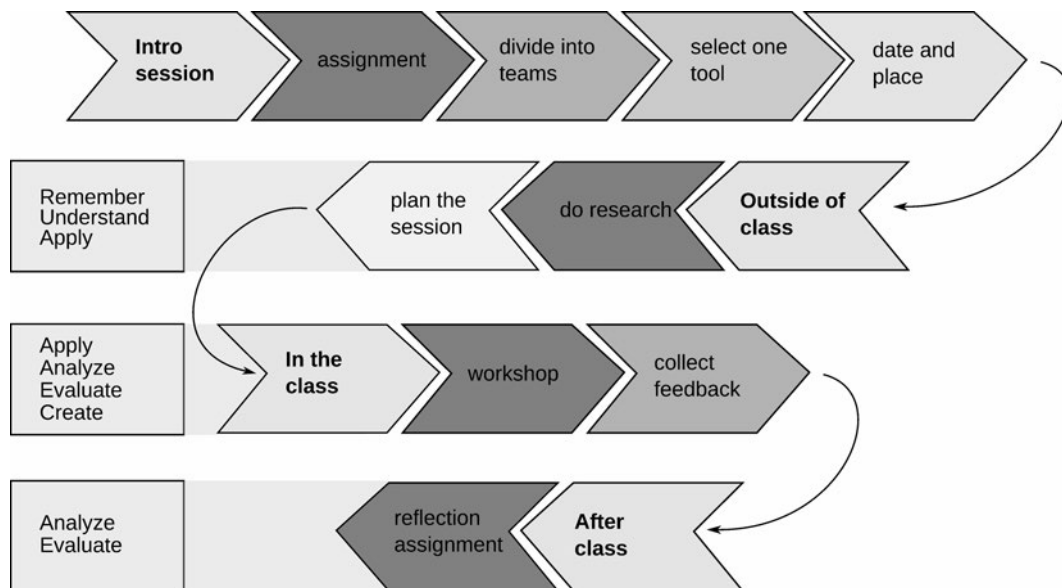


Figure 3. Flipped session design process.

The assignment is given during class, and the students are divided into small teams of three at the same time. Then, each team decides which service design tool they want to focus on for the task. Some general issues are discussed in the class in order for everyone to know where to find the information and also share examples of some tools that were not chosen.

One could say that the preparation phase happens outside the classroom. There, the team must search for information about the chosen tool, making sure they remember and understand what is essential about it. After having made the choice of tool the students start to plan the session, they will have for each other. At this stage they also get to apply the learning. During the 60-90 minutes long session they will present the chosen tool/method to the rest of the class, covering the theory and the examples of usage. In addition to the theoretical presentation, the students should plan and do a workshop using the tool/method in question, to give others an opportunity to experience the tool in action. After the workshop, the students are asked to collect feedback of their implementation.

These sessions that the teams have last for eight weeks. In these sessions it is all about applying, analyzing, creating and evaluating together with the team, other students and teachers. In the final stage, the evaluation phase, there is also some analyzing and evaluating taking place when the teams analyze the feedback received and evaluate how their session went and what they learnt. Here the teams need to reflect on the entire process and mention what they have learnt and if there is something they will do differently in the future. The format for the reflection is free, therefore many choose to make an informal video reflection.

In addition to this assignment presented, the students must apply tools of service design in parallel course while developing services in a real business case. In this course the students are assessed by how creative the solution for that project was. We are interested in how successfully the students applied the service design skills they had acquired in their practical project with a real-life small company.

There is a clear link to the four pillars of flipped learning. One can also recognize the FLIPPED model, with the three additional components.

- Flexible environment: something in class, something on their own, in teams and individual
- Learner-centred approach: students get to choose the team, tool, online or at Campus and the date. The element of peer teaching supports this approach.
- Intentional content: a clear idea behind what students do outside the classroom with good online materials provided, inclusion of service design method and tools
- Professional educators: knowledge of service design process through internal education, used to be in the role of facilitator
- Progressive networking learning activities: assignment well thought through, many parts, a lot of freedom for the students to choose what is motivating for them, aim for 21<sup>st</sup> century skills
- Engaging and effective learning experiences: different kinds of experiences – as a teacher and a student, peer instruction, in teams, practical assignment
- Diversified and seamless learning platforms: many alternatives are provided for the student

In the implementation, appropriate aspects of the flipped classroom, flipped learning, and flipped session are used, as well as service design and peer teaching. The four components of the flipped learning are included in the way the assignment is completed. The student is crucial to the learning process, and while some learning occurs outside the classroom, the majority occurs inside, particularly at the higher levels of Bloom's taxonomy. The service design method gets more familiar as the assignment is developed around the service design tools. And, in higher education, peer teaching is a natural option of concrete teaching method for the development of 21<sup>st</sup> century abilities.

Peer instruction, as previously said, is a successful method of learning because it forces students to internalize the material in order to convey it to others in a clear and compelling manner. Additionally, flipped learning instruction enhances group collaboration since students are more engaged in their classmates' performances. For many people, instructing others in a subject appears to be an effective approach to learn it. The 21<sup>st</sup> century competences are very essential in Haaga-Helia UAS, especially on the Porvoo Campus, and there are 10 worklife competences produced that, if possible, should be considered in each implementation. For example, in the provided course, teamwork, communication, digital literacy, diversity, and design thinking are prioritized. Sustainability, entrepreneurial attitude, leadership, emotional intelligence, and analytical thinking and problem solving are also cited as worklife competencies.

### **3 RESULTS**

In this part we present the key findings of our case and way of implementing flipped learning and suggest how we could develop the Lab 8 toolkit implementation in the future. This way of having one assignment implemented through a flipped session has been in use for five times now.

The results of the students have been incredibly good, and they see the flipped learning as eye-opening and engaging in many ways. During the course they get to know new service design tools, which they can apply directly in their project running at the same time. In addition, they develop the understanding and appreciation of what it takes to act as an instructor. Students are also able to gain important 21<sup>st</sup> century work-life skills, like teamwork skills and problem-solving skills. Even though the emphasis of the assignment might be in service design, when planned well, the ability to teach also so-called softer skills is noticeable.

This is also evident in the course feedback, as students signal this with high grades, particularly in active involvement in studies, as well as the study style and environment that supports learning. Also, in their reflection videos of the assignment one can see that the students really liked it. They describe it as a useful, interesting, engaging, fun, nice and positive learning experience that provides new knowledge of tools and other skills such as how to plan and keep a session (illustrated in Fig. 4).



Figure 4. Feedback/learning from “Lab 8 toolkit” implementations.

The project course demonstrates the synergistic effect. Previously, students only used the tools that their teachers instructed them to use, such as interviews and moodboards. One can clearly see that now empathy mapping, lotus blossom, wire framing, 5 why’s, persona mapping, customer journey, photo journey, journey mapping to mention a few that have had a significant impact on a more innovative solution. There is a definite link between the approach utilized and the outcome. The more you involve stakeholders in the planning phase by using several types of service design tools, the more one understands the scenario, and it becomes easier to come up with the proper kind of innovative solution.

More research would be needed to receive a more profound understanding of the effects of our implementation of flipped learning. There is a room for more systematic data collection and measurement. Based on previous literature and our experiences we can see the benefits of this kind of approach. Even though there might be room for more research, this case will serve as a practical example for those teaching in institutions of higher education.

#### 4 CONCLUSIONS

Based on our previous experience with flipped learning we can well claim that this kind of approach is suitable for context of higher education. However, one could note that using flipped learning requires that the preferred learning outcomes and the actions needed to achieve those goals are carefully planned. Teachers need to be able to step out, and let the students be the centre of the learning. This been said, it is important to notice that both the teachers and the students need to be active during the entire process: students must take responsibility of their own learning, whereas teachers provide support and feedback throughout the whole learning process.

This case should serve as an inspiration and guideline for how to quickly use flipped learning in a course or project. You have step-by-step instructions as well as links. This is just one example, but it demonstrates how adaptable flipped learning is and how well it integrates with inquiry learning and peer instruction. When done correctly, it also creates a synergy effect that extends beyond that one project or course.

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