# Flipped Classroom Activity

Developed by Martine Peters, professor at *Université du Québec en Outaouais*

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### **What is a Flipped Classroom?**

A flipped classroom is a pedagogical approach in which traditional learning activities are reversed: theoretical content is studied at home, often with videos or readings, while time in class is devoted to practical activities, discussions and knowledge application.

### **Flipped Classroom Benefits**

* Personalization of learning
* Active engagement
* Reinforcement of teacher-student interaction
* Better use of class time
* Stimulation of collaboration
* Encouragement of critical reflection
* Flexibility, because of different formats of pedagogical content are used
* Reinforcement of autonomy

### **General Flipped Classroom Objectives**

The following objectives are for the general pedagogical approach. It goes without saying that each learning activity in the flipped classroom format will have its own objectives.

* Increase active involvement by students
* Encourage autonomy and responsibility
* Stimulate in-depth examination of concepts in class
* Customize teaching
* Promote collaboration
* Improve usage of teaching time
* Develop critical thinking and problem-solving skills
* Integrate educational technologies
* Improve knowledge retention

### **Why Does a Flipped Classroom Encourage Academic Integrity?**

The structure and pedagogical method used by a flipped classroom foster academic integrity because they encourage:

* student empowerment and accountability, which requires them to actively engage in their learning;
* deep understanding and knowledge application in new contexts, which reduces temptations of plagiarism and cheating;
* collaboration, helping each other and sharing ideas to solve problems, which reduces unhealthy competition between students;
* regular and personalized teacher feedback, which creates a feeling of belonging to the group and encourages students to correct their errors and make honest progress;
* a creative process, due to practical and authentic activities that require in-depth personal work and make it difficult to resort to cheating or plagiarism.

Academic integrity is also promoted in the flipped classroom, due to varied formative assessments that have fewer issues than traditional exams. Finally, frequent discussions and active participation in class allow the professor to get to know students better, which makes it easier to identify work that does not match a student’s usual level or style.

### **Why is Artificial Intelligence Less Helpful in a Flipped Classroom?**

It can be more difficult to conduct workshops in a flipped classroom using artificial intelligence, for several reasons connected to the very nature of artificial intelligence and to the dynamics of a workshop.

1. Flipped classroom workshops are often designed to encourage critical thinking, creativity and human interaction, which all rely on the ability to fully understand the context and nuances of a question.
2. The goal of flipped classroom workshops is to develop student autonomy, to force them to apply their knowledge and collaborate to find solutions. This teamwork is not as suitable for the use of artificial intelligence.
3. Students must understand that the purpose of the flipped classroom is the development of practical skills. They must understand that if they delegate some of these tasks to IA, they run the risk of not fully developing these skills that are crucial for their future.

### **Generic Examples of a Flipped Classroom Workshop**

**Before Class (at home)**

Students must watch a video or read a text on a specific topic. They must take notes and answer a Moodle questionnaire (automated grading) which has been prepared by the professor (2%). Only a small percentage should be attributed to this questionnaire, because students may help each other; the goal is to ensure that all students prepare for the class.

The Moodle questionnaire will allow the professor to see if students have fully understood basic concepts, and whether there are elements that need to be clarified with them in class.

**During Class (in person)**

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| **Workshop** | **Explanation** | **Time** |
| Discussion and clarification | Question-answer period, possibly one team that questions other students or the professor | 15–30 minutes |
| Collaborative or individual activity | Various possible formats: case study, critical analysis, role play, simulation, or creation of a diagram or model | 45–60 minutes |
| Sharing and presentation (optional) | In a large group, share conclusions, analyses or solutions, so everyone benefits from different ideas and approaches | 30–45 minutes |
| Teacher feedback | Constructive feedback on elements successfully accomplished and areas of improvement;  Appropriate time to make connections between theoretical knowledge and practical applications observed during the activity;  Presentation of assignments for the following week | 30 minutes |

**Follow-up After Class (optional)**

Students can write a reflection on what they have learned, how they have applied concepts and what they have learned from them. This allows them to consolidate knowledge they have acquired.

### **How to Assess Student Performance During Workshops in a Flipped Classroom**

The flipped classroom approach works well when several workshops are scheduled during the session. Consequently, all workshops combined could be worth 40–45% of the final grade. For example, if each workshop is worth 5%, there could be 8 during the session. Another possibility is to have one or two workshops that are spread out over two or three classes and are each worth 10–15% of the final grade. Obviously, it is possible to have a mix of short and long workshops. Then, students accumulate points for each activity. In order to reduce grading time, there are different ways to assess activities, which vary depending on the workshop.

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| **Type of evaluation** | **How to conduct evaluation** | **Grading** |
| Observation | Walk around the class and take notes about groups or individuals who work well; ask questions. | Pass — Fail |
| Collaborative or individual activity | The document (mini-report, questionnaire, diagram, etc.) created during the activity must be submitted and is used to do a summative assessment of the workshop. | 3–5% for a short workshop  10–15% for a long workshop |
| Oral presentation | While students are presenting, they can be assessed for their presentation of the work they have done. | 3–5% |
| Peer evaluation | Students are assessed by a peer in the group. | 3–5% |
| Self-evaluation | Students must write a reflection on what they learned during the workshop. | 3–5% |
| Quiz | At the end of the workshop, students must complete a Moodle quiz individually or as a team (automated grading). | 3–5% |

### **List of Workshops That Could Be Conducted in a Flipped Classroom Approach**

| **Workshop** | **Description** | **Example** |
| --- | --- | --- |
| Case study | Students work on a real or fictitious case study in their field of study, analyze the issue, identify solutions and offer recommendations. | Analysis of a struggling business, an environmental problem, a technological incident or a complex historical situation |
| Problem solving | Students are presented with a practical problem and must use knowledge acquired at home to offer solutions. | Solve an advanced mathematical problem; create an engineering plan; or solve an ethical dilemma |
| Role play | Students play roles of different actors in a given situation (business leaders, politicians, stakeholders, etc.) to solve a conflict or make a decision. | Simulation of a commercial or diplomatic negotiation; or resolution of a crisis with a student in class |
| Collaborative projects | Students work in small groups to develop a project that can include creation of prototypes, writing reports or preparation of presentations. | Creation of a website; development of a marketing campaign; or design of a sustainable city plan |
| Debate in class | Students are divided into teams to debate a controversial topic. They must prepare their arguments from readings done at home. | Debate on regulation of artificial intelligence, pros and cons of renewal energy, or economic policies |
| Design workshop | Students use their knowledge to design something in class (architectural drawing, innovative product, awareness campaign, etc.). | Design of a scale model of an eco-friendly building, a new mobile app or a medical device |
| Data analysis | Students work on a set of data and must analyze it and draw conclusions. | Analysis of economic, climate or demographic data to interpret trends or develop strategies |
| Creation of multimedia content | Students create multimedia content in class (video, podcast, infographic) to explain or examine a topic. | Production of an explanatory video about a scientific concept; creation of a podcast about a hot topic; or development of an awareness campaign |
| Scientific or technical experiment | Students conduct an experiment or practical demonstration in class. | Chemistry or physics experiment; test of technological prototypes; or construction of an electronic circuit |

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| **Workshop** | **Description** | **Example** |
| Brainstorming activity | Students are directed to brainstorm as a group about an issue or opportunity, and to suggest innovative ideas to meet this challenge. | Reflect on solutions to improve urban life; break new ground in the educational field; or design products of the future |
| Critical analysis of documents | Students analyze texts, articles, artwork or videos in class, discussing implications, viewpoints and relevance of information. | Critical analysis of a political speech, a literary work, an advertising campaign or a documentary film |
| Simulation of a professional environment | Students simulate a work environment (business meeting, law firm, ethics committee, etc.) where they must make important decisions by applying acquired knowledge. | Simulation of a board meeting, business project meeting, or art contest judges panel |
| Collaborative writing | Students work together to draft a document (report, action plan, strategy, etc.), each contributing from skills and acquired knowledge. | Drafting of a business plan, scientific journal article or policy proposal. |
| Creative challenge | Students participate in a contest or challenge where they must develop ideas or innovation creations as a team. | Technological innovation challenge; artistic creation contest; or collaborative writing challenge |
| Educational games or gamification | Use of educational games or gamified simulations in class to reinforce learning through a fun and interactive approach. | Economics simulation game; escape room based on historical theme; or interactive quiz on a scientific topic |

### **Example of Evaluation Matrix for a Workshop**

This evaluation matrix could be used for observation of a workshop or for peer evaluation. The professor could choose some criteria and eliminate others, depending on the workshop.

| **Criteria** | **Level 1: Weak** | **Level 2: Fair** | **Level 3: Good** | **Level 4: Excellent** |
| --- | --- | --- | --- | --- |
| Active participation | Does not participate or appears disengaged | Little participation; limited intervention | Regular and active participation | Constant and proactive participation; takes initiative |
| Group Collaboration | Does not cooperate or causes tension in the group | Limited cooperation; difficulty listening or getting involved | Collaborates well with others; listens and shares tasks | Actively collaborates; encourages others’ participation and promotes good group dynamics |
| Understanding of concepts | Does not show any understanding | Partial understanding; frequent errors | Correct understanding with some inaccuracies | In-depth understanding; clear mastery of concepts |
| Knowledge application | Does not apply concepts in a relevant way | Applies concepts in a hesitant or incomplete way | Correctly applies concepts | Applies concepts with confidence and creativity; provides innovative solutions |
| Taking initiative | Never takes initiative | Rarely takes initiative; prefers to follow others | Occasionally takes initiative | Often takes initiative; suggest new ideas or helpful alternatives |
| Problem solving | Unable to solve problems or gives up quickly | Solves problems with help; has difficulty managing challenges | Solves problems with limited help; perseveres through challenges | Resolves problems independently; demonstrates creativity and adaptability |
| Respect of guidelines | Does not respect guidelines or deadlines | Partially respects guidelines; makes omissions or errors | Respects guidelines with few errors; finishes on time | Perfectly respects guidelines and deadlines; demonstrates organizational ability |

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| --- | --- | --- | --- | --- |
| **Criteria** | **Level 1: Weak** | **Level 2: Fair** | **Level 3: Good** | **Level 4: Excellent** |
| Communication | Ineffective communication; lack of clarity | Hesitant communication; lack of clarity or difficulty listening | Clear and effective communication; listens to others | Very clear communication; facilitates conversations within group |
| Attitude and behaviour | Negative attitude; lack of respect or frequent disruptions | Fluctuating attitude; some disruptive behaviours | Generally positive attitude; respects others and professor | Very positive attitude; encourages and respects others; contributes to pleasant working atmosphere |
| Critical reflection | Does no reflection or settles for superficial answers | Limited critical reflection; little self-evaluation | Demonstrates critical reflection; suggests relevant areas of improvement | In-depth critical reflection; suggests practical and relevant improvements |

### **Resources**

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