

Set of innovative pedagogies for online living case study-based
teaching and learning in VET in logistics and transport



Erasmus+

Selected Methods

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Introduction

In this guide you can find pedagogies that support the living case study-based teaching and learning in a collaborative online environment. Methods are suitable for teaching VET students.

Methods were selected based on the following criteria:

Enable collaborative learning

Teaching and learning involve groups of students working together to solve a problem, complete a task, or create a product

Should include:

- Clearly perceived positive interdependence
- Considerable interaction
- Individual accountability and personal responsibility
- Social skills
- Group self-evaluating

Must be suitable for VET students

Diverse levels of students

Must be suitable for distance learning

Not too demanding level of technique

Must be adaptable for various kinds of situations

- Varying number of students
- Varying schedules
- Students
- Resources (for example digital)
- Stage/phase in learning process

Methods are divided and presented according to the learning phases. In this guide the learning process is divided into four parts.

- Orientation and motivation
- Building understanding
- Active experimentation
- Assessment and feedback

At the start of the guide you can find the summary tables of the methods. In each table the selected methods are presented based on the learning phase. In the table you can find titles of the methods, a short description, and main advantages and disadvantages.

Further on the methods are described in more detail with practical explanations on how to organise each method. Most of the methods are suitable for the different learning phases, even though they are presented under one phase.

Summary table of the methods for orientation and motivation

Title of the method	Description	Main advantage	Main disadvantage	Page no.
360° picture and interactions	An interactive image of the real working environment is described for educational use.	This method is appropriate for developing professional and motoric skills.	It may be difficult to get permission from the company to take photos of their working process.	10
Small group chats	This method is to stimulate interaction and can be used as an ice-breaker or to discuss a given problem or a solution to a problem.	Small group chats allow students to feel at team bonding.	If not prepared and organised, this method can take a lot of time and become informal. It can be considered boring by learners.	12
Choice Board	Choice boards are graphic organisers that are comprised of different squares. Each square represents one activity.	Can help to simplify lesson planning and address learning requirements. Enables trainers to identify and incorporate student interests and preferences to stimulate active learning and student engagement.	It requires a significant amount of planning and preparation time.	14
Creation of an audio podcast for training	Good tool for training and evaluating the active listening skills of students as well as their ability to take notes.	It diversifies the learning methods offered to the students and facilitates teaching complex content.	Takes a lot of time to create and the trainer will need quality equipment to prepare qualitative podcasts.	16
Explorer, Shopper, Vacationer, Prisoner	Short activity to measure participants' engagement during a workshop/group Work, start-up/training session.	This method facilitates participation and requires low level of effort in preparation.	ESVP method tends to lock students into a role.	18
Index Cards	Quick and easy way to gain feedback from students about how well they understand a subject, test their knowledge before starting an activity...	This method is easy to prepare and implement.	Not all index cards versions of implementation are useful for a large group	20
Storytelling	Storytelling is used to pass on information from person to person.	Two main advantages: passing on knowledge to students and at the same time arousing their attention and interest.	Requires a high level of effort in preparation, especially the first time.	22
The use of audio podcasts	Good tool for training and evaluating the active listening	It diversifies the learning methods offered to the	Need an attentively listen to the students.	24

for training	skills of the students as well as their ability to take notes.	students and facilitates teaching complex content.		
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Summary table of the methods for building students' understanding

Title of the method	Description	Main advantage	Main disadvantage	Page no.
Assertion	Assertion develops thinking, verbal, and action skills.	Develops understanding of a topic that a student might not favour personally, but is required to defend.	Not all students are in their comfort-zone in assertion.	26
Blind zone	Blind Zone is a tool for reflective self-assessment.	Self-assessment skills are essential for learning.	Self-assessment is not always easy.	28
Brain-Sketching	An interactive image of the real working environment is described for educational use.	Empower students to actively learn and create together.	May need to encourage students who are not used to creative working.	30
Concept mapping/ Mind mapping	Create a visual presentation from a topic or problem	Enables students to collaborate, create, and share ideas and find a Common understanding.	More active students may take space from others.	32
Crowdstorming	Collaborative brainstorming where a large community of people work on the same task.	Enables students to collaborate, create, and share ideas and find a common understanding.	More active students may take space from others.	34
Entry tickets	Plan or form a vision of the future, and define and identify problems.	Learn a modern and forward-thinking way to sort out a challenge.	Quite demanding and time consuming.	36
Future workshop	Plan or form a vision of the future, and define and identify problems.	Learn a modern and forward-thinking way to sort out a challenge.	Quite demanding and time consuming.	38
Jigsaw	Build a collective and deeper understanding.	Develops collaboration skills.	Requires engagement and time.	40
Just in time teaching and learning	Promote the use of class time for more active learning.	Emphasises active learning and cooperative problem solving.	Requires a lot of work from the teacher.	42
Lightning talk	Provide a broad overview about a topic.	Suitable for any size of groups.	Demanding for the teacher to organise.	44

Summary table of the methods for building students' understanding

Title of the method	Description	Main advantage	Main disadvantage	Page no.
Microlearning	The teacher may use this method to step-by-step build up a whole picture using short teaching modules.	Learners get relevant information/content in small packages, which makes it easier to remember	Microlearning requires from the teacher a very good command of the whole content and how to divide it into essential smaller parts.	46
Peer teaching	In peer teaching students teach other students.	Interactions between students promote active learning. Peer teachers gain greater understanding by instructing others.	Due to a possible lack of experience or knowledge of the students, the teacher may have to intervene/provide additional explanations to ensure high quality teaching.	48
Reversal method	The method fosters collective intelligence and increases creativity. The reversal method is used to change your perspective.	Enables and fosters collective intelligence and empowers students to learn in an active way together.	Demanding for teacher to create problem situations.	50
Starbursting	Starbursting is a form of brainstorming that focuses on generating questions instead of answers.	Fosters interaction, communication and collaboration.	Demanding for teacher to create problem situations.	52
Stump your partner/ Catch-up	In the stump your partner method students take a minute to create a challenging question based on the lecture content up to that point. In the catch-up method, the teacher stops the lecture at a transition point. Students then work together in pairs or in small groups to compare notes and ask clarifying questions. After a few minutes, the teacher opens the floor to a few questions.	These methods are useful for testing understanding, increasing and evaluating involvement.		54

Summary table of the methods for active experimentation

Title of the method	Description	Main advantage	Main disadvantage	Page no.
Snowballing	An active learning strategy used to start discussions, develop new ideas and map out students' current understanding of a topic in groups.	This method promotes communication, critical thinking, analysis, and evaluative skills through arguments and counter arguments.	This technique needs a lot of time to finish dealing with the entire question because if the student cannot answer the teacher must continue on to another student.	56
Six thinking hats	Teachers use the six thinking hats exercise to teach critical thinking.	This method can be used to enhance critical thinking skills and increase productivity as well as spark innovation and creative problem solving.	People can disagree strongly and there could be Conflicts.	58
Interview with an expert	Students interview an expert, either in the classroom or at a place outside school.	Brief interviews can provide students an opportunity to demonstrate Proficiency. The student has the responsibility to approach the person and bring back information in a form that can be used for class discussions.	The responders may hide some important information due to lack of confidence in the interviewer. The success of this method depends on the responders ability to remember.	60
Role Play	Role play engages students in real-life situations or scenarios that can be "stressful, unfamiliar, complex, or controversial"	Role play gives students the opportunity to assume the role of a person or act out a given situation.	Strongly depends on the student's imagination and it becomes difficult for teachers to evaluate the student individually.	62
Crossover teaching	Method that combines curriculum with learning in an informal setting –after-school clubs and museums, online learning platforms, or in the outdoors.	Learning outside school supports the development of skills and dispositions that help students do better within school.	Keeping students' attention over time can be challenging.	64
The Muddiest Point Technique	Muddiest Point is a type of classroom assessment technique (CAT) that asks students to quickly identify what they	Promotes metacognitive skills as students reflect on their own learning.	Students may not be interested in participating in big groups. Less motivating than other methods for students.	66

	find the “muddiest”—the most confusing or least clear—part of a lecture, class, or assignment.			
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Summary table of the methods for the formative and summative assessment

Title of the method	Description	Main advantage	Main disadvantage	Page no.
Assumption busting	Technique can be used to potentially transform students' thinking so that they develop new and creative ideas.	When students challenge their assumptions, they force themselves to think about other student's perspectives — which can help improve communication and understanding between students.	Limited group size.	68
Peer to peer assessment	Peer assessment is a type of performance evaluation that is done by individuals who are of equal status to the person who is being assessed.	Encourages students to take greater responsibility for their learning,	Subjective feedback due to the familiarity that exists between the students.	70
Poster	The Poster method takes a conceptual approach to teaching and learning, and helps students visualise a subject.	Works as a tool for revision or preparing for future tests.	Posters generally require reduced content and must be concise.	72
SWOT	A SWOT analysis is a technique used to help students identify Strengths, Weaknesses, Opportunities, and Threats.	It encourages students to take greater responsibility for their learning.	Subjectivity may cause a SWOT analysis to be misleading	74
The last idea game	Everyone must answer with a word or a short sentence to a question. The winner is the last one to find an answer.	Helps students stay focused and arouses their curiosity.	Not very suitable for a large group.	76
The starfish	The starfish method enables quick retrospectives in an easy way, with focus on a subject, gives voice to every member, and provides clear outputs and decisions.	This method enables the introduction of new ideas through constructive feedback.	Limited number of students	78

Methods for orientation and motivation



360° picture and interactions

Overview of method

The goal is to **combine** the study of real images and **theory with** the right **work environment**.

An interactive image (360° image or still image) of the real working environment (for example a transport company office/the fleet/a warehouse/a production process) is described for educational use.



Each hotspot in the 360° image is accompanied by additional information that explains the functionality and purpose using text or an additional image or video.



Learner experience

Applicable to learners with a low level of learning competence

Appropriate for professional skills development

Appropriate for motoric skills

Applicability to different phases of the learning process

360° picture can be used at the beginning of the case study to present a real work environment. This method can also be used during the active part for better immersion in practical exercises.

The goal for the students is to connect the the picture and the theory with the real working environment.

Suitable as part of the Flipped classroom method, where the students get acquainted with parts of the theory and get more information during the lesson.

Pros and cons

Advantages

- + Everyone can practice in peace
Does not require much technical expertise
- + There is no place or time limit

Disadvantages

- Many companies do not allow taking pictures of their working process for several reasons
- In different vehicles, the buttons are located at different points

How to organise

Preparations



This requires a 360° camera (or a regular camera) and a program to process the image and embed the necessary information (see information about the tools below).

The image can then be embedded in a learning environment, for example Moodle, making it very easy to use when studying alone or with a group, in the classroom or online.

Implementation



A 360° image is a good start to a lesson that introduces students to the features and functionalities of a vehicle.

The image can be implemented in many ways in both the classroom and online. The image allows the student to study independently (e.g. in Moodle) and to practice.

Different pieces and functionalities can be clearly and visibly explained to a group at the same time, and there are no obstacles to visibility.

More suitable for individual training.



Tips

Set points on a 360° image to find more text, images, videos, or other content shared on the web.

Trainer can use an image of a real work environment and embed additional information about the topic that is being taught to the students.

Tools that can be used

www.thinglink.com (Fee required, but can be tried for free)

www.h5p.org (Free under certain conditions)

Small group chats

Overview of method

interaction”

”stimulate

-breaker”

”ice

The goal is to combine the study of real images and this method to **stimulate interaction**. It can be used very well as **an ice-breaker** or to discuss a problem given by the trainer or a solution to a problem presented by a group of students

Small groups chats allow students to feel at ease working with others.



Learner experience



Applicable to inclusive learning settings (e.g. learners with low levels of target language skills).

Creates a more comfortable and less isolated education environment in remote learning.

Appropriate for social-communicative competences.

Applicability to different phases of the learning process



Can be used very well as an ice-breaker or to discuss a problem given by the trainer in the active part of the case study.

Can also be used during assessment, and in the feedback section for peer-to-peer assessment.

Pros and cons

Advantages

Creates a certain level of comfort and intimacy between students even in remote learning.

Initiates social and content-related exchange, particularly in more quiet groups.

Disadvantages

Can take a lot of time if it is not well prepared.

Can be considered boring.

How to organise

Preparations



The trainer must prepare the group in advance and combine shy students with students who are more at ease.

The trainer needs to prepare a theme on which students can exchange. Linking a small group chat with the actual content is a good way to meet two objectives with one activity.

Implementation

Allow students time to discuss in groups the given topic.

Afterwards teacher can ask students to present some thoughts or ideas from their discussion to all.



Tips

Small groups of 4/5 students max.

Short duration of implementation is more effective.

Tools that can be used

Use breakout rooms if distance learning.



Choice Board

Overview of method

"simplify lesson planning"
"address learning requirements"

- Use of Choice Boards is a strategy that can help **simplify lesson planning** and **address learning requirements**.
- Choice boards are graphic organisers that are comprised of different number of squares. Each square represents one activity (e.g. to answer a question, complete an activity etc.). Activities help students learn or practice skills they learned during the school day, while allowing them a choice.
- Students can be instructed to choose one or more of these activities to complete. They can progress from one activity to another either in an organised or random order.

Learner experience



It enhances student motivation and engagement in the classroom while using differentiated instruction to promote learning.

It provides students with the power to choose "how" to learn a particular subject or concept.

It encourages students to be more responsible, accountable, and independent in their learning.

It allows students to work on the activities at their own pace.

It helps students feel more comfortable and less isolated in the distance-learning education environment.

Appropriate for social-communicative competences.



Applicability to different phases of the learning process

Boards can be created for weekly tasks, homework, case studies, and even assessments. Boards give students the opportunity to practice and master the concepts taught in class at their own pace.



Before starting a case study, the entire activity can be presented to the students by the teacher/trainer using a choice board. It will allow students to visualise the tasks to be completed and their progress throughout the case study.

The boards are useful for teachers as it enables them to identify and use student interests and preferences to stimulate active learning and student engagement.

Pros and cons

Advantages

It is easy and simple to implement.

The possibilities for what choices to include are endless and adaptable no matter what grade level or subject.

It provides options that target students' multiple intelligences.

Teachers are freed from orchestrating a lesson and able to conference with learners about their progress, provide feedback on work in progress, or conduct side-by-side assessments.

Disadvantages

Can be time consuming.

Requires a significant amount of planning and preparation time.

Too many objectives may lead to students focusing on what needs to be learned and not on the incidental peripheral learning.

How to organise

Preparations



Structuring such activities is no easy task, as teachers need to take into consideration the need for differentiated instruction and varied learning styles; all while ensuring that it is both interesting and challenging for the students.

The teacher identifies the core concept or academic goal that the students need to complete. The board should revolve around a particular concept or learning goal and each activity is structured to stimulate learning, practice, or mastery of that subject.

The teacher plans the activities so that it provides students with a variety of mediums or methods for learning the concept. To do this, a teacher first identifies student interests, preferences, and level of readiness. The activities can be at different levels of complexity and can be arranged on the board in an increasing order of difficulty.

Examples of activities: solve one real-life problem, write an essay, watch a video etc.

Additional instructions for each task must be included.

Implementation

Students are instructed to perform the tasks either as individual activities or in groups. One square can be a “FREE CHOICE” allowing students to create and perform an activity of their own choice.



The easiest way to implement this method is by creating a 9-square grid and putting an activity in each square. A teacher can then ask students to complete three choices in a row, column, or diagonally.

However, a choice board can be of any size and require students to complete any number of choices. If there's an activity that a teacher wants all students to do, then this must be written in instructions.

Tips

When creating boards, the teacher must be sure to have activities that cater to every learning style such as visual, auditory, read-write, and kinaesthetic.

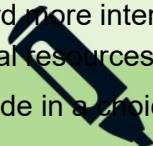
Detailed instructions and requirements can be given for each task.

An extra credit slot can be included to encourage students to better their learning.

If the teacher wants to make a choice board more interactive and accessible, it can be put online with embedded images or links to additional resources or edtech tools.

Watching a video is a great activity to include in a choice board.

Quizzes can also be used in a choice board.



Creating an audio podcast for training

Overview of method

It is a good tool for training and evaluating the active listening skills of students and their ability to take notes.

To know how to use a podcast in your training, please refer to the method “The use of audio podcasts in training”.



Learner experience



The podcast makes it possible to diversify the learning methods offered to the learners.

Applicability to different phases of the learning process



Creating a podcast can be asked of students during the active part of the case study or as an expected output for evaluation.

The teacher/trainer can also create a podcast to **transmit knowledge** to the students and use it as an introduction before starting the case study or during the theoretical part to vary the materials for transmitting knowledge.

Pros and cons

Advantages

- + Creates a certain level of comfort and intimacy between students even in remote learning.
- + Initiates social and content-related exchange, particularly in more quiet groups.

Disadvantages

- Can take a lot of time if it is not well prepared.
- Can be considered boring.

How to organise

Preparations



It is very important to choose a quiet environment to record a podcast so as to avoid any disturbing noises.

To create a podcast, the trainer or student will need recording equipment and a good microphone.

It is necessary to draft the script of the podcast before recording the voice.

The time required for creating a podcast is variable. It will depend on the content, the number of speakers and also on your technical knowledge of the editing platform.

Implementation

Use short and simple sentences to ensure oral comprehension.

Organise the content in a clear way, in several logical chapters, for example,



Announce the contents of the podcast in the beginning (for example, I will first give an introduction on this, and then explain point A, B, C, ...).

Reflect on the way you want to present the content: an interview with an expert or another trainer is easier to listen to than a monologue, for example, etc.

Caution: if you involve an expert/professional, you need to prepare their text with them as well to ensure that the answers are clear and concise.

Tips

To see if your podcast has the expected pedagogical value, define the learning objectives. If the students achieve these objectives, then you may assume your podcast was good. You can also test them through a short quiz or MCQs.

You can have colleagues listen to your podcast and ask for critical feedback.

Choosing a microphone. The type of microphone, for example, a tie microphone or an omnidirectional microphone, will depend on the means and equipment available in your school. Using headphones with a microphone (like on smartphones) may be sufficient, as long as the trainer/student is in a quiet place.

Tools that can be used

To create a podcast, trainers/students can use the Anchor platform, which is easy to use and free: <https://anchor.fm/>

The 4 different types of podcasts: <https://www.voices.com/blog/4-different-types-podcasts/>



Explorer, Shopper, Vacationer, Prisoner

Overview of method

Short activity to **measure student engagement** during a workshop/group work start-up/training session.

- Helps the trainer determine whether the learners are motivated and interested in the topic, or reserved, and enables them to react if necessary.



Learner experience

Applicable to learners with a low level of learning motivation.

Applicable to inclusive learning settings (e.g. learners with low levels of target language skills).

Appropriate for social-communicative competences.



Applicability to different phases of the learning process



Appropriate for receiving feedback from learners before beginning the case study or as an exercise during the active part.

Pros and cons

Advantages

+ Activating

Allows the teacher to know who to motivate more

Requires low level of effort in preparation

Disadvantages

- Locks the learner into a role.

How to organise

Preparations



On a large cardboard, the trainer draws four sections (fields) and writes the following terms: Explorer, Shopper, Vacationer, Prisoner (one term per section).

Remote preparations: prepare four sections (fields) on the digital whiteboard or make a survey that is based on questions that are linked to each role.

Implementation



The trainer can distribute a sticker/post-it to each student and explain the meaning of each field that is drawn on a cardboard (see explanations below).

Students place their sticker/post-it in the appropriate field.

Debriefing: The question to ask is “Why do they feel like a prisoner/shopper/explorer/vacationer?”

Explanations on the meaning of the 4 fields

Researcher: they are eager to discover new ideas and perspectives. They want to learn as much as possible about the project.

Buyer: is interested in all available information and is happy to have a break from everyday life.

Vacationer: is not interested in the work group but is happy to have a break from everyday life.

Prisoner: feels forced to participate in the working group and would rather do something else.

Tools that can be used

For whiteboards (free under certain conditions):

<https://miro.com/>

<https://flinga.fi/>

Whiteboards in Teams or Zoom

For surveys (free under certain conditions):

<https://kahoot.it/>

<https://www.mentimeter.com/>

Zoom polls



Index cards

Overview of method

engagement
and
group”
”foster within
cohesion

- Index cards can be used in a number of ways to **foster engagement and cohesion within a group.**
- Using index cards during the teaching process can be a quick and easy way to gain feedback from students about how well they feel they understand a subject, to test their knowledge before starting a case study, obtain their agreement on any issue during the active phase of a case study.



Learner experience



Students have more control over their learning (they can influence the pace of teaching and the direction of learning).

It ensures that all students are heard and have the possibility to raise questions or concerns about teaching, discussion, the pace of teaching, and other content.

This technique can help shy learners to ask questions they might not ask in a group.

It fosters engagement and cohesion within a group of students.

Enables students to help with the pace of teaching and learning.

Students responses determine the direction of discussion and learning.

Applicability to different phases of the learning process



This method can be used:
to check the knowledge of the students before starting with the theory.

to check their understanding or obtain feedback on some issues during class.

at the end of a class to check whether the learning objectives have been achieved.

in the assessment phase, when an individual student or a group of students have to present a solution; index cards can be used to obtain feedback on the presented solution.

Pros and cons

Advantages

Index cards are light to carry, small to store, not expensive, and versatile.

This method is easy to prepare and implement (requires only a few minutes).

Index cards can be used in a variety of manners to foster engagement.

Can be used face to face, online (Polls in Zoom, Mentimeter, Kahoot etc.), and for hybrid teaching.

This activity might also help students develop friendships with fellow students with similar interests.

Disadvantages

Not all versions of implementing index cards are useful for large groups.

The wrong placement of the card may create problems and take additional time to repeat the explanation on a topic.

How to organise

Preparations



A teacher needs to think about colour coding the index cards. Red, yellow, green can be used or any other combination of colours can be used.

Implementation



A teacher receives instructions on how to use index cards. Then a teacher provides students with these three coloured index cards (or post-its) and insists that they bring them to each class. For example, students should show the red card if they don't understand, the green if they do understand, or yellow if they are unsure of the content.

During class the teacher asks a question to gain feedback or to check understanding and students have to show a card to indicate their understanding.

Example 1: A teachers stops during lecturers and asks the students to hold up a green card if they understand the Incoterms EXW 2020, yellow card if they sort of understand the material, and a red card if they don't understand it at all.

Example 2: A teacher ask students to write down topics that they do not understand on a red post-its and place it on the table. The same applies for green and yellow cards. After that a teacher answers questions or additionally explains the content which was not well understood.



Tips

Teachers can use index cards to get an opinion. They might ask do you agree (green), disagree (red), or are unsure (yellow) about a statement.

A teacher can ask rapid fire yes (green)/no (red) questions to find commonality among a group.

If the teacher's aim is to have a group discussion, then index cards can be used to pose a question/concern or comment about the previous teaching session.

The teacher needs to be mindful of having a diverse set of questions so as to include all participants and encourage engagement but must make sure they don't let the task run past a few minutes in length. This can be used frequently.

In a hybrid teaching scenario the whole activity takes more than just few minutes.

The teacher must make sure to assign a time limit to keep every student on task.

The teacher can assess the groups level of understanding by a show of cards to know whether they need to spend more time on a particular topic or if it's safe to move on to the next topic.

Storytelling

Overview of method

The art of storytelling is centuries old and was originally used to pass on information from person to person. The two advantages of using this technique in education are: passing on knowledge to students and at the same time arousing their attention and interest.



Learner experience

By transforming facts, processes, and procedures into a narrative, teachers will be able to hold the attention of students longer and help them retain information more easily.

It will be easier for the students to retain the information provided, to use it for further training, and to apply it while at the company.

Increases the pleasure of learning and allows students to enjoy their training experience.

Applicable to learners with a low level of learning competence.

Applicable to learners with a low level of learning motivation.

Accessible (e.g. learners without the necessary means such as computers, etc.)

Applicability to different phases of the learning process



Storytelling can be used as an introduction before starting the case study to motivate students and give them the feeling that the problem they are going to solve is an important in a real environment.

This method can also be used during the case study for building understanding where the teacher/trainer passes on knowledge and varies the way the information is passed on to the students.

This method can also be used by students to present a solution to a problem.

Pros and cons

Advantages

- + Efficient
- + Helps students retain the information more easily.
- Increases the attractiveness of lessons and the interest of the students.
- Increases the attractiveness of the solution presented by a group of students.

Disadvantages

- Requires a high level of effort in preparation, especially when the teacher is not used to working with this method.

How to organise

Preparations



Follow the classic story arc: It is important to start with a clear beginning to set the stage for the narrative to come and to introduce concepts and characters on which the rest of the story builds. You then create tension or conflict in the middle of the story that is resolved at the end and reinforces the lesson.

Be creative: Use relatable characters and likely scenarios to illustrate the concepts and/or processes the students experience in the workplace and look for ways to create an engaging, parallel experience with your content.

Use descriptive language: Choose words and phrases that appeal to the senses and describe experiences in terms of how they look, feel, smell, sound, or taste.

Include supporting images: Nothing brings stories to life like captivating images. Whenever possible, incorporate graphics, animation, or live-action visuals to better illustrate concepts and visually support what is happening in your narrative.

Implementation

Storytelling can be used for lectures or presentations and can also be perfectly combined with other methods such as simulations or case studies. Students place their sticker/post-it in the appropriate field.



Tips

Duration of implementation:

The duration depends on the content and the associated methods.

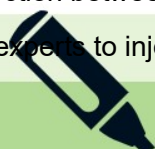
In remote settings, it is important to have short sessions and regular breaks, especially when there is no interaction with the students (30 min max. of uninterrupted speech by the teacher).

Using storytelling:

Creates an emotional connection between students and lessons.

Allows teachers as content experts to inject creativity and levity into complex, dry topics.

Makes content memorable.



The use of audio podcasts in training

Overview of method

A podcast is an audio recording published on the Internet, which can be listened to online or downloaded on a device and played 24 hours a day from the moment it is published.

It is a good tool for training and evaluating the active listening (listening comprehension) skills of students and their ability to take notes.

If you want to know how to create a pedagogical audio podcast, please refer to the sheet "Creating an audio podcast for training".



Applicability to different phases of the learning process

Podcasts can be integrated at different stages of training:



At the beginning, when presented a-synchronously, it can be used as a teaser, to bring out the desire to learn more. It can also allow everyone to acquire, consolidate, or correct their prior knowledge (pretraining) before a synchronised session.

During the active part, the podcast can be a testimony from a logistician or the practical case of a truck driver receiving instructions from their supervisor for their next delivery while driving. The background noise of the truck then requires the student to concentrate more and allows them to be immersed in the daily life of a truck driver. It can also enrich and deepen certain contents.

At the end of the training session, it can be an opportunity to share testimonies, to give feedback, or to anchor the learning in time. Re-listening to a podcast allows learners to review the material presented in class.

Learner experience



Introduce an actual subject/ topic.

For deepening course content.

For anchoring and to avoid learning gaps between students.

The podcast makes it possible to diversify the learning methods offered to students.

Pros and cons

Advantages

- Diversifies the mode of exposure of a concept.
- Can create a link with the "real world" of T&L companies.
- Encourages multimodality.
- Adapted to all formats.
- Trains students in taking notes.
- Advance knowledge of the content to be covered.
- For visually impaired learners or those with learning disabilities such as dyslexia, dyspraxia, etc. the podcast is easier than a text.

Disadvantages

- The students need to listen attentively.
- May be too long for students to concentrate.
- Finding a podcast relevant to the targeted subject.

How to organise

Preparations



Here are some best practices to help you to select a podcast:

Choose the theme of the podcast.

Target the podcast to your audience: Who is the podcast for?

Formalise learning objectives.

Choose a short podcast or target a part of the podcast: Be careful to select a podcast that is not too long so as not to lose the attention and concentration of students.

Implementation



Allocate a specific time to listen to the podcast.

Setting goals: set up an active listening of the podcast by combining it with note taking or by asking for a recitation.

Beware of distractions!

At the end of the listening session, set up a time to discuss the podcast.

Evaluation:

The podcast can be used as a support tool to assess the active listening (listening comprehension) skills of students and their ability to take notes. It can be combined with a quick comprehension test in the form of questions or MCQs.

Duration of implementation:

A short listening session of approx. 2-3 minutes followed by 5 minutes to organise the notes and 20-30 minutes of exchange in synchronised format (e.g. virtual class).

Tools that can be used

Podcasts can be found online via multiple free platforms (Spotify, Anchor, Applestore podcasts, Pocketcasts...)

<https://www.pocketcasts.com/>

Trends and challenges in logistics:

<https://anchor.fm/compassiot/episodes/Trends-and-challenges-in-logistics--Interview-with-Jackson-Meyer-e13of5b>.

Tips

Students should have a smartphone, USB stick, or other audio devices to listen to it.

Create a library offering podcasts.

Podcast lists.



Methods for the building understanding

Assertion

Overview of method

Assertion is one of the oldest methods in learning and teaching. Assertion **develops thinking, verbal, and action skills**. Critical thinking is an essential skill in every profession.

With assertion, students learn different aspects of various phenomenon when they defend or challenge the assertion/claim/statement.



Learner experience

Students' understanding in different topics widens and deepens.

Students develop argumentative skills and learn to express themselves more clearly.



Applicability to different phases of the learning process



Assertion is preferably applied to learning phases where students already know each other, group dynamics are in productive phase, and there is a trustworthy atmosphere.

Can be applied in subject areas that require learner's own critical thinking skills.

Pros and cons

Advantages

Develops understanding of a topic that a student might not actually favour personally but is required to defend.

Disadvantages

Atmosphere might heat up.

Not all students are in their comfort zone when required to be assertive.

Cannot be used in early phase of studies or when students do not know each other.

Requires a very good learning culture.

How to organise

Preparations



Instruct students individually to study the topic, subject, idea, or phenomenon.

Provide them orientation materials in any digital format (text, figures, videos, podcasts etc.).

Define clear assertions.

Implementation



In a live or on-line situation divide students in small groups to discuss the materials that were provided to be studied individually. Present some views for discussion. Required time is around 15 minutes.

Divide students into new groups (teams) of 4 students who are going to propose or challenge the claim/assertion/statement. Tell students the roles in a group: they are either defending or challenging the assertion.

Give students 5 minutes time to prepare for assertion.

Once teams and audience are present, tell students the rules of assertion.

Start the assertion process and act as a chairman who gives turns for speech in a defined timetable: defending speech -> challenging speech -> team 1 -> team 2 -> team 1 -> team 2 -> general assertion phase -> voting phase (audience) -> feedback and reflection.

Tips

Rules and a trustworthy atmosphere are essential.

It is important that the teacher can create groups that can work together and that there is a balance between teams regarding skills, temperament, etc.

Assertion should be followed by a feedback discussion on the topic itself and on the method, and what kind of emotions or feelings it raised (also see chapter 5 of this guide with suggestions for methods to collect student feedback).



Blind Zone

Overview of method

Blind Zone is a method for **reflective self-assessment**.

Blind Zone enables the teacher and the student to review the level of knowledge (or competences) and gaps in knowledge through a reflective exercise.

Students understand where they are in a learning process and what they still have to learn in order to fulfil the learning aim/required competences.

Helps students develop self-assessment skills.



Learner experience

Students know their standing with regard to learning goals.

Students can adjust and update their personal study plan based on self-assessment.

Students can also become aware of strengths and challenges in learning in general.

Students can become aware of achievements and what is still missing from achieving their learning aims.



Applicability to different phases of the learning process

Blind Zone can be applied to any phase of the learning process when there is the need for self-assessment.



Pros and cons

Advantages

A great possibility to update the study plan.

Self-assessment skills are essential for learning.

Can be applied with easy digital tools.

Better results in competence development.

Disadvantages

Self-assessment is not always easy.

In small groups, time might be needed to build a trust and connection between members of the group.

Insists teachers are aware of their own view on learning and teaching.

How to organise

Preparations

Illustrate, describe, or define and communicate learning/competence aims and make sure students understand them in the same practical way.

Previous learning activities are not required, if Blind Zone is carried out at the beginning of the learning process.

Implementation



Organise small groups (4-5 participants). Method can also be applied individually.

Students are asked to place themselves in the knowledge spectrum. They are required to review their level of knowledge (or competences) and their gaps in knowledge.

Students should understand where they are in the learning process and what they still have to learn in order to fulfil the learning aims/required competences.

Tips

Instruction is very important.

Pay attention to group dynamics and atmosphere.

Make connections to the next phases in the learning process visible.

Approx. 1 hour is needed.

Individually or in a small group 4-of 5 participants.

The method requires from teachers a holistic and competence based orientation to their teacher identity.

Tools that can be used

Use a large flip chart or an online whiteboard on Scrumbler or Klaxoon, or MsOffice whiteboard.

Brain-sketching

Overview of method

"solve a problem" and
"foster collective intelligence and increase creativity"

- The main idea behind Brain-sketching is to **solve a problem**.
- Students will make sketches from a topic and then pass their sketches to other students, either when they are finished or when a set time has passed. Next, students will develop or annotate the sketches received, make a new sketch either inspired by another student's sketch or an entirely new one, which are also passed around.
- The method will **foster collective intelligence and increase creativity**. Brain-sketching is an idea generation technique. It uses sketching as a means of recording ideas.



Learner experience

By using the method, students learn to generate connections between different ideas.

Strengthens the ability to draw reasonable inferences from observations.

Develops students' ability to synthesise and integrate information and ideas.



Applicability to different phases of the learning process

Appropriate for orientation and motivation, building understanding and activating in different phases of the learning process.



Pros and cons

Advantages

- + Empower students to learn and create together in an active way.
- + A modern and forward-thinking way to tackle a challenging situation.
- + Suitable for online learning and different platforms and applications. No special equipment needed.
- + Suitable for any size of groups.

Disadvantages

- Using the brain-sketching technique with groups of non-designers, they may need encouragement to participate.

How to organise

Preparations



There are NO previous learning activities expected from students.

The teacher needs to prepare instructions for students.

The teacher needs to plan what is/are the problem(s) or challenge(s), or ask the students to figure out the problems or challenges.

If needed, figure out what is the platform or application you want to use for sketching (if you don't want the students to figure it out themselves).

Implementation



First, the problem or challenge is explained, and the teacher needs to make sure that it is understood.

The students are split in groups (4-6 students/group).

Each student privately draws one or more sketches of how the problem or challenge might be solved. The teacher can suggest that sketches should not take more than 5 minutes to draw.

After that students pass/send/make each sketch available to other students in the group.

Students take the sketches given to them and either develop or annotate them or use them as inspiration for new sketches of their own.

After 5 minutes, students pass the amended and/or new sketches on to the next student.

After the process has been running for a suitable period, the sketches are collected.

It might be a good idea to display all the sketches and to discuss them in turn for clarification and comment.

Afterwards, if wanted, the teacher can facilitate any appropriate categorisation, evaluation, or selection process.

Tips

If students are not used to drawing sketches, it might be easier to use platforms which have some objects and pictures ready (like Canva).

Also, if students are not used to this method, the teacher should choose the platform or application to be used.

You may need to give students more time to do sketches when working online.

Competence based orientation to their teacher identity.

Tools that can be used

<https://www.canva.com/>

<https://miro.com/>



Concept mapping/Mind mapping

Overview of method

Students **create a visual representation** (similar to a flow chart) that identifies and shows the interconnections among various ideas and subjects related to a specific topic or problem.

Concept maps also provide immediate visual data to teachers on students' misconceptions and their level of understanding, and helps teachers give feedback and guide the learning process.



Learner experience



Develops students' abilities to analyse different aspects related to the topic and their relation to each other.

Helps students in critical reasoning on a given context or subject.

Strengthens the ability to draw reasonable inferences from observations.

Develops students' ability to synthesise and integrate information and ideas.

Also develops students' ability to learn concepts and theories in the subject area.

Applicability to different phases of the learning process



The method can be used in any phase of the learning process, regardless of the stage of studies and progress of the contents or subjects.

The method can be applied in small groups at every phase of the learning process, with basic and more difficult subjects/contents.

Sharing participants' views and premises is an essential aspect of the method, but none the less, Concept Mapping can be used individually at least at the beginning of the assignment.

Pros and cons

Advantages

- + Enables students to collaborate, create, and share ideas and views and find common understanding.
- + Teacher can quite easily and in short time organise concept mapping.

Disadvantages

- More active students in a group may take space from students that need more time for orientation.

How to organise

Preparations



Physical flip charts, pens, or sticky notes are needed. Digital tools are possible, Miro board could be a very good solution.

Instruct students on concept mapping as a method and for the assignment itself.

Reserve a quiet space/room for collaboration.

Implementation



Instructions on the assignment and the method plus dividing students into groups might require 10-15 minutes.

The teacher visits the groups' collaboration room, comments and answers students' questions.

Students put their work on the walls in class or on virtual walls.

All students can individually look at the other groups' concept maps.

Presentations can be held, followed by discussions and feedback from the teacher.

Afterwards, if wanted, the teacher can facilitate any appropriate categorisation, evaluation, or selection process.

Tips

Outcomes from concept mapping can be utilised for the next phase of the learning process, for instance to deepen the understanding of the topic.

Group size might be between 3-6 students.

For subject teachers the method is not very demanding.

Attention should be paid to creating a good atmosphere and foster the will for collaboration.

Required time is 1-1.5 hours. It can vary with the level of the class and the difficulty of the question.

Documenting the work is essential (either physically or virtually) as well as sharing the outcomes.



Crowdstorming

Overview of method

"collect ideas"
"solve a specific problem"

Crowdstorming is a collaborative brainstorming session where a large community/group of people work on the same task. The aim of crowdstorming is to **collect ideas** from the group and/or **solve a specific problem**.

This method is useful in fostering collective intelligence and empowering students to actively learn together.

Crowdstorming combines brainstorming and crowdsourcing. That is a modern and forward-thinking way to sort out a challenging situation.



Learner experience



Brainstorming is the basis for crowdstorming and an important skill that all students should learn.

Crowdstorming is a good method to learn for solving problems. In addition, it can be used as a collaborative method for fixing an issue or preparing a new product or service.

Applicability to different phases of the learning process



Appropriate for orientation and motivation, building understanding and active phases of the learning process.

Pros and cons

Advantages

- + Enables students to collaborate, create, and share ideas and views and find common understanding.
- + Teacher can quite easily and in short time organise concept mapping.

Disadvantages

- More active participants in a group may take space from learners that need more time for orientation.

How to organise

Preparations



There are ~~no~~ previous learning activities expected from students.

Prepare instructions:

Crowdstorming can be conducted externally or internally. In external crowdstorming, the public is asked to submit ideas or useful information. In internal crowdstorming, ideas or information are asked from inside the organisation.

Familiarity with a task or problem can be a blessing or a curse when it comes to crowdstorming, which is why the most effective method for receiving ideas and information from a crowd is to take both an internal and an external approach.

If needed, plan what is the end goal for crowdstorming, what is the task that you will ask the crowd to participate in (if you don't want students to have to figure out the goals and problems).

If needed, figure out which platform or application you want to use for crowdstorming (if you don't want students to have to figure out the application or platform).

Implementation

Split the students into groups.

A good way to approach crowdstorming is to look at the end goal. At the beginning, students should figure out the task that they will ask the crowd to participate in (or the teacher may have already defined this during the preparation phase).

Students will choose who they will ask for opinions or ideas. It can be accomplished with a specific community or the general public. Targeting isn't necessarily "better" than collecting ideas from the general public.

Students will figure out which platform or application they want to use for collecting ideas or opinions (or the teacher may have already decided on this during the preparation phase).

The next step is to put the information gathering into practice. How will the students inform the target group and make sure that the campaign is launched and that they get enough responses?

At the end of the process, the students (with or without the teacher) will go through the collected ideas and use them to answer the original problem. This step of the process may be sufficient for developing and getting new ideas for solving the original task.

If you want to introduce a more complex level, you can add an additional stage to the crowdstorming. After the first round of information gathering, it is possible to ask a different community or target group to evaluate the set of ideas collected at the first round.

Tips

This method can be implemented by either the teacher or the students.

It is a good way to give more responsibility to students.

Attention should be paid to giving clear instructions to the students.



Entry tickets

Overview of method

Entry tickets are short prompts that can provide a teacher with a quick student diagnostic. These exercises can be collected on 3"x5" cards or small pieces of paper, or online through a survey or course learning platform.

Entry tickets focus on students' attention to the topic of the day or ask students to recall background knowledge relevant to the lesson of the day. The main idea is to **test knowledge or understanding**.



Learner experience



Students experience for themselves how well they are moving towards their learning goals.

Applicability to different phases of the learning process



Method can be applied in any phase of the learning process.

Pros and cons

Advantages

Extremely easy for learners and for the teacher, does not require a lot of time.

Disadvantages

How to organise

Preparations



In entry tickets, preparatory steps relate to previous content, topic, or specific information.

Small cards or pieces of paper are needed or relevant online tools.

Decide what you'd like the students to review or learn based on the current content or topic.

Write the question or statement on the Entry Ticket.

Implementation

Teacher gives cards to students when they enter the classroom. Can also be applied in virtual interaction spaces.



Set a specific amount of time for students to answer the Entry Ticket question.

Teacher collects the cards and draws conclusions and adjusts learning activities accordingly.

It is necessary to open the correct answers together.

Tips

This method is preferably used individually.

Required time is approximately 5-10 minutes.

Ask for specific and well-defined information and facts.



Future workshop

Overview of method

and forming
"planning
future"
"define
aims and identify
a vision of the
problems"

- Future workshop is a method for a **vision of the future**. The workshop helps to **define aims and identify problems**. It consists of three different phases: critical, fantasy, and implementation.
- The **future workshop** can last from a few hours to a few days.



Learner experience



Students will learn how to formulate solutions and proposals in a group based on their own experiences.

Applicability to different phases of the learning process



The method is appropriate for orientation and motivation, building understanding and active phases of the learning process.



Tips

Attention should be paid to clear and precise instructions.

Encouragement may be needed in the fantasy phase, to get students to work creatively. Also, a good atmosphere for collaboration helps.

The teacher should guide group work intensively to ensure progression.

Pros and cons

Advantages

Empower students to learn and create in an active way together.

A modern and forward-thinking way to sort out a challenge.

Suitable for online learning and different platforms and applications. No special equipment needed.

Disadvantages

Suitable for 15-25 students/teacher

Method is quite demanding and time consuming.

How to organise



Preparations

Teacher needs to determine the goals of the future workshop.

There can be one or several goals.

The goal can be to assess current activities or seek new directions.

Also, it is important to consider the target year, because it has an impact on the group work. As creative thinking is wanted during the workshop, the teacher should consider a long timeframe, like 20-30 years. If a shorter timeframe is used, creativity may be limited. Of course, the timeframe is related to the topic area, for example, in ICT even 5 years may be a long time.

The teacher needs to define the duration of the workshop. The most common model is a one-day workshop, where the critical phase takes place in the morning, the fantasy phase takes place in the early afternoon, and the implementation takes place in the second half of the afternoon. Half a day is the minimum duration to proceed with the future workshop.

If the students don't have the same knowledge and it is needed, the teacher can provide background information for the students to get familiar with in advance.

Implementation

At the beginning, the teacher needs to explain the workshop method, rules, and the schedule to students.

The critical analysis phase includes a detailed analysis of the situation, and the problem is critically and thoroughly examined. The aim is to gain a critical understanding of the problem.



- Collection of critique points (written cards/brainstorming)
- Clustering on an online board
- Evaluation, intensification, and determination of priorities

In the fantasy phase, future visions are built upon the analysis of the first phase.

- Imaginative introduction (meditation, work, walks ...)
- Turn critique points into the opposite (bad to good) as starting points
- Collect ideas (brain writing)
- Prepare and perform a role play, fable, report, painting, fairy tale to a fantastic story (as group work)
- Analyse based on the above actions to find good solutions/ideas
- Write down ideas on the online board

In the implementation phase, the fantasy visions are turned into actions.

- Assess the ideas on the online board keeping in mind the realistic conditions and best fit
- Use concrete terms
- Choose the best one
- Build an action plan: Who does what, where, when, and how?

Jigsaw

Overview of method

understanding”
collective
”build understanding”
deeper
”promote

Jigsaw is a method to **build collective understanding** of a topic and to **promote a deeper understanding** of it.

Jigsaw is a cooperative learning strategy, and it allows individuals or small groups to become responsible for a subcategory of a larger topic.

The jigsaw method is a collection of topics, which will be fully developed by students before coming together to finalise a complete idea. Input from each student or group is essential to understand the larger topic.



Learner experience

Students have a better understanding of the larger topic by diving into sub-topics.

Close collaboration potentially affects the atmosphere positively and fosters connection between students.



Applicability to different phases of the learning process



Jigsaw may be utilised when there is a new larger topic and students know each other.

Pros and cons

Advantages

- + Develops collaboration skills.
- + Develops deeper understanding of the wider topic.

Disadvantages

- Complexity regarding the topic (and sub-topics) itself, and pedagogical method.
- Requires a lot of time from the teacher.
- Requires a lot of engagement and time from students.

How to organise

Preparations



→ Teacher defines a larger topic or problem which is divided into sub-topics.

Implementation



The teacher assigns students to small groups (can be individual in the first phase).

Each small group is given an assignment that is based on one of the narrow sub-topics or problems that the teacher has defined earlier. Different topics together form a larger topic.

Students in the small groups work together on the assignment and prepare a presentation about the sub-topic.

After researching and developing their idea, each individual or small group then has the responsibility to teach it to the rest of the group or class.

Tips

The topic itself and its division into sub-topics must be carefully planned to avoid chaos.

Students need to have a trustworthy atmosphere where ideas can be developed.

Instructing students in live situation, and with text, pictures and video might be necessary.

Minimum 3 hours, possibly the whole day.



Just in time teaching and learning

more
time
for
class
use
of
the
learning
"promote
active

Overview of method

Just in time teaching and learning is designed to **promote the use of class time for more active learning.**

- Students prepare for class by reading from the textbook or using other resources posted to the web and by completing assignments online. Assignments may deal with complex cases or subjects.

The method can be seen as a variant of flipped classroom teaching.



Learner experience



Applicability to different phases of learning process

→ Method can be applied in any phase of the learning process.



Pros and cons

Advantages

This method allows the teacher to create an interactive classroom environment that emphasises active learning and cooperative problem solving.

Teacher gets an overview of the phase the student is in and their level of learning.

Very easy for students.

Disadvantages

Open questions and answers from students require a lot of work from the teacher.

Teacher's control of learning does not necessarily lead to positive development of students' self-direction and self-assessment skills.

How to organise



Preparations

The teacher prepares materials and links and designs questions for a learning platform (Moodle for instance).

The students' answers are delivered to the instructor a few hours before class starts, allowing the instructor to adapt the lesson as needed.

Information, materials, and questionnaire can be delivered in advance in different formats and via different ICT channels / tools / solutions. The questionnaire can be opened with a timer.

Implementation



Students prepare and study materials individually or within small groups.

Students answer questions individually or in small groups.

Students receive feedback on their answers.

The teacher gets an overview of the results.

Students attend classroom teaching.

Classroom teaching is adjusted based on the results of the questionnaire.

Tips

Digital solutions and multiple-choice questions should be used instead of open questions.

The teacher can copy or make minor adjustments to the questionnaire.

Feedback should be included in the questionnaire. It could be delivered after answering each question.

Always keep in mind that learning is the students' responsibility – the students are in charge of their learning.

Also remember that inner motivation does not build upon outside sanctions or rewards.



Lightning talk

Overview of method

Lightning talk is a good way to share internal and external expertise. It is a short, 5 to 15 minutes presentation. The aim is to **provide** students **a broad overview about a topic**. Unlike a traditional presentation, it's not about depth or comprehensiveness.

Idea is to use several different speakers, each of whom will cover a different topic. So, they will give an overview of relevant perspectives, opinions, and insights from a topic.



Learner experience

The method can inspire brainstorming sessions, and help energise and inspire the students.

Students will get an external expert to provide information on the topic.

Also, the method can introduce and confirm internal knowledge, expertise, and insights.



Applicability to different phases of the learning process

The method is appropriate for orientation and motivation, and active phases of the learning process.



Pros and cons

Advantages

Suitable for online learning and different platforms and applications.

Suitable for any size of group.

Disadvantages

Demanding for the teacher to get the experts to hold lightning talks.

Low level of demand for students.

No collaborative learning.

How to organise



Preparations

You will need a bit of time to plan lightning talks. The time invested in the preparation phase is worth the effort, as the benefits can be huge.

Think what the objective and outcomes are for a sprint. Then think about a list of topics on which students should get shared understanding, or topics they may not be familiar with and/or require a fresh perspective on.

After having short-listed the topics, you will need to find speakers. Try to contact people as early as possible. It is important to give speakers as much notice as possible. It will result in a higher acceptance rate and better lightning talks!

Provide information on the purpose of the lightning talk and explain why their input is important.

Explain the format and who are the participants.

Give an overview about the topic.

Emphasise the expected outcome.

Inform them about the schedule and ask them to attend the event itself.

Let them know who else is invited to speak.

Provide time/date options to discuss things further.

Implementation

Organise and schedule all the lightning talks.

During the lightning talks, students should take notes. They should especially write down the points of interest and capture the key points.



Tips

The lightning talks are deliberately fast paced as their aim is to be as informative and engaging as possible.

A lightning talk is more about providing a rapid overview of a relevant purpose, objective, and goals of a topic.

Might be useful to try and have students who give the lightning talks.



Microlearning

Overview of method

In microlearning the focus is on a specific information or knowledge that is usually a quite small part of the whole subject or content. Learning activities are short-term and information is provided in small parts (bite-size).

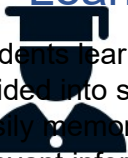
The teacher may use this method to **build up a picture of the whole**, step-by-step with small pieces of the whole.

The method also enables creating a link between the theoretical aspects of the content and the reality in the field. Learning is teacher driven, the teacher has a central and active role.



Applicability to different phases of the learning process

Learner experience



Students learn that when the content is divided into small parts, it helps them more easily memorise important, basic, and relevant information related to the subject. Together these smaller pieces come together to form the most relevant and important content related to the whole subject.

Helps students recall important information.



Microlearning can be applied in any phase of the learning process.

It is very useful when applied during the whole learning process with new content, competences, skills, or subjects.

Microlearning builds a map for students who can navigate it.

Students learn and interact individually or in small groups. Microlearning can also be used to stimulate debate.

Pros and cons

Advantages

Very easy for students.

Does not require a lot of time.

Students get relevant information/content in small packages, which makes it easier to remember.

Can be applied both to individual and small group learning.

Does not require many documented outcomes.

Disadvantages

Microlearning requires from the teacher a very good command of the whole content and how it can be divided into essential smaller parts.

Teachers must be able to define content in very limited time and scope.

How to organise

Preparations



Previous learning activities are not necessary.

Present and communicate the aims and goals of learning.

Make visible the connection of content to other content/information.

Information delivery in advance is not necessary: if applied, any format or e-learning tool is suitable for that purpose.

Any on-line tool can be applied.

Implementation

Teacher prepares the material in advance.

Learning may be individual during students' own time or shared time in class.

Learning may happen in groups when students are present as a group.



Tips

The information on the subject or content should be described briefly and provide added value for the next steps of the learning process.

The teacher should use enough time for describing the subject/content.

The time needed for learning depends on the content and level of difficulty.

Do not define learning activities in too detailed or in microlevel in a given competence development goal, content or theme.



Peer teaching

Overview of method

”popular and efficient”

In peer teaching students teach other students. Peer teaching is a **popular and efficient** method of teaching.

Peer teaching is commonly understood as a method in which one student instructs another student, the first being an expert and the second a novice.

However, in the perspective of cooperative learning, it can be understood in another way. The teacher can divide the class into small groups, with a student in the group responsible for teaching others, and each making a unique contribution to the group performance for a given task.



Learner experience

Interaction between students promotes active learning.

Students feel more comfortable when interacting with a peer.

Peer teachers gain greater understanding by instructing others.



Applicability to different phases of the learning process

The method is appropriate for all phases of the learning process, including motivation, building understanding, active and assessment phases of the learning process.



Pros and cons

Advantages

- + Suitable for online learning and different platforms and applications. No special equipment needed.
- + Suitable for any size of groups.

Disadvantages

- Due to a possible lack of experience or knowledge of the students, the teacher may have to intervene/provide additional explanations to ensure high quality teaching.

How to organise

Preparations



Prepare the topics that students will teach to each other. Think how many topics you have, or you want? How many students you have or how many groups of students you want to create? How much time do they have to practice and prepare their teaching and then to teach?

Do you need to prepare or collect material or information in advance?

Prepare instruction for students.

Implementation



Explain the task to students, and deliver students instructions to the task.

Divide students into groups.

Give them time to prepare their teaching session. It can be done in a synchronous or asynchronous way.

Schedule the teaching sessions and implement them. Be prepared to fulfill or correct information if needed.

Tips

Think thoroughly which subjects students can teach each other.

Give students enough time and guidance while they are preparing their teaching.

Take your time and be prepared to correct or supplement the lessons if needed.



Reversal method

and

Overview of method

collective intelligence
"fosters creativity"
increases

- The reversal method turns a given situation around or backwards. If students look at a familiar problem or situation in a fresh way, they can suggest new solutions or approaches. It doesn't matter whether the reversal makes sense or not.
- The method **fosters collective intelligence and increases creativity**. The Reversal method is used to change your perspective. This can be achieved by changing the order of the words in your problem definition. A reversed question/challenge may sound strange or illogical, but it can help you see the situation differently and produce creative solutions.
- Utilising the reversal technique can lead to a change in the direction or location of your perspective.



Learner experience

Interaction between students promotes active learning.

By using the method students learn to generate connections between phenomena.

Develops students' ability to synthesise and integrate information and ideas.



Applicability to different phases of the learning process



Appropriate for orientation and motivation, building understanding and active phases of the learning process.

Pros and cons

Advantages

Enables fostering collective intelligence and empowering students to learn in an active way together.

A modern and forward-thinking way to sort out a challenge.

Suitable for online learning and different platforms and applications.

Suitable for any size of groups.

Disadvantages

Demanding for teacher to create problems. All problem statements are not suitable for a reversal method.

Using this method will require a very flexible way of thinking and not everyone will be able to move from a ridiculous statement to an useful solution.

How to organise

Preparations



Identify the problem or challenge you need to solve.

The teacher should prepare reversal problems or challenges in advance. The placement of essential words (see examples below) can be changed or a positive statement can be changed into a negative one or a negative problem is given a positive outcome. The reversed problem can be strange and sometimes you may need to add a key word to make it possible to form reversed problem. The ideas that are created from this reversal technique can lead to surprising results.

Example 1: Your aim is to limit the traffic congestion in your area. Your challenge is 'How can we make fewer people take the car to their work?'. Swap the key words and the reversal challenge is 'How can we make fewer cars take people to their work?'.

Example 2: Your aim is to increase the sale of family wagons. Challenge is 'How to sell more family wagons?'. In this phrase you don't have key words to swap places. So, you need to form phrase in a new way. For example, 'How to sell more family wagons to small families?'. Then change it to 'How to sell more smaller families to family wagons?'. As you can see, reversed problem may sound ridiculous, but it can spark a creative thought.

Implementation

Explain the original problem or challenge to the students. For example, 'Your aim is to limit the traffic congestion in your area' and the reversal challenge is 'How can we make fewer cars take people to their work?'.



Students can brainstorm together in small groups about the reversal problems or challenges. They can try to figure out what can cause the situation or what can be achieved from it or what they could do, or how to solve the challenge. For example, for a reversal challenge on 'How can we make fewer cars take people to their work?' the solution could be innovative carpooling.

Review together with the whole group the new information and reflect if there is a new perspective to the original problem or challenge. Is there any new idea to solve the reversed problem or challenge? For example, review innovative carpooling (or other suggestions), and reflect and combine different suggestions to form a solution.

Afterwards you can flip the results if, for example you changed the positive statement to a negative one.

Evaluate solutions and decide if there is an added perspective or answer to the original problem or challenge.



Tips

Think creatively to figure out good reversal challenges.

Also, students can figure out the reversal challenges.

May require the teacher to motivate the students to engage in this method.

Give students enough time to solve challenges.

Documenting the results and sharing the outcomes is an important part of the method.

Starbursting

"explore ideas"

Overview of method



Starbursting is a form of brainstorming that focuses on generating questions instead of answers.

The method is essential for defining and collecting ideas.

Starbursting can be utilised in problem solving or in decision making.

It helps individual students or groups to **explore ideas** by asking specific questions about the topics that need ideas and solutions.

Learner experience

Starbursting fosters collaboration and collective intelligence.

Empower students to learn in an active way.

Connection to other students is strengthened.



Applicability to different phases of the learning process

The method can be applied in any phase of the learning process.



Pros and cons

Advantages

- + Fosters interaction, communication and collaboration.
 - + Very good way to get started in planning projects, initiatives, and cases.
- Easy access, step-by-step method for planning wider and even complex initiatives, projects, or cases.
- Does not require extensive information or knowledge about the topic.
- It is very easy to share outcomes and utilise them in the upcoming phases of the learning process.

Disadvantages

- Demanding for the teacher to create problems.

How to organise

Preparations

Think in advance of a product, challenge, or issue to work on

Or you can ask students to think up ideas in advance, but then it is necessary to deliver information and materials in advance, in different formats and via different ICT, channels/tools/solutions.

Implementation

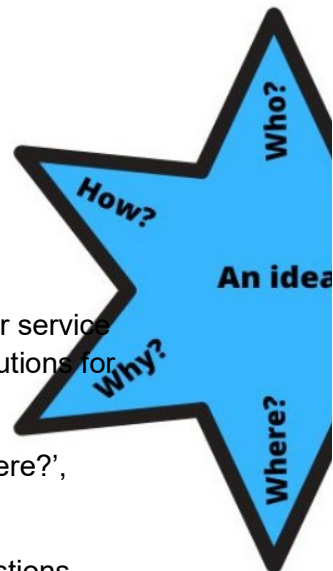
To get started, students draw a six-pointed star. They write an idea, product, or service name in the center. A challenge or question they are trying to brainstorm solutions for can also be written in the center.



Then, students label each point of the star with 'Who?', 'When?', 'Where?', 'Why?', and 'How?'.

Now, each group member asks questions related to each question class. Questions are written down.

In the final phase, students generate answers to the questions presented.



Tips

Clear and precise instructing is needed.

Teacher needs to supervise group work.

Can be done in the classroom or in a virtual environment.



Stump your partner/Catch-Up

Overview of method

In the Stump Your Partner method students take a minute to create a challenging question based on the lecture content up to that point. Students pose the question to another student.

In the Catch-up method, the teacher stops the lecture at a transition point. Students then work together in pairs or in small groups to compare notes and ask clarifying questions. After a few minutes, the teacher opens the floor to a few questions.

These methods are useful for **testing understanding** and **increasing and evaluating involvement**.



Learner experience

With these methods, students can evaluate and reflect on their understanding about the topic.

Helps students to identify gaps in their knowledge and to understand what they must learn to achieve the learning goals.

It can increase their motivation to learn.



Applicability to different phases of the learning process

These methods can be applied in all phases of the learning process where students' evaluation and reflection of their own understanding is desired.



Pros and cons

Advantages

Empower students to learn in an active way together.
Students can evaluate and reflect their understanding about the topic.

It can increase their motivation to learn.

Suitable for online learning, and different platforms and applications.

No special equipment is needed.

Suitable for any size of groups.

Disadvantages

How to organise

Preparations



To use these methods, the teacher should plan in advance when to stop the lecture and give the students time to discuss together. Also, in the case of online teaching, the teacher needs to think of how to make pairs or groups (breakout rooms).

If any questions posed by the students should be discussed together, the teacher should plan on how to collect the questions. It is possible to use, for example, the chat function or some other online boards (Miro, Padlet, Flinga). If the teacher wants to use an online board, it is necessary to prepare it before the lecture.

Implementation

Stump your partner:

Students take a few minutes to create a challenging question based on the lecture content up to that point.

Divide students to the breakout rooms in pairs.

Students pose the question to another student (or the person sitting next to them) who tries to answer it. 5-10 minutes.

When students are back in the main room, the teacher can ask if there are any questions on which they would like to get more clarification.

Also, it is possible to take this activity a step further; ask students to write down their questions and hand them in. These questions can be used to create tests or exams.

Catch-up:

In the catch-up method, the teacher stops lecturing occasionally.

The teacher divides students into small groups (2-4) to the breakout rooms.

Students work in small groups for a few minutes to compare notes and ask clarifying questions.

When they are back in the main room, the teacher allows the students to ask a few questions.



Tips

Suitable for pair or small group (3-4) working.

Time needed from a couple of minutes to half an hour.

These methods can be used with minor preparation.

Tools that can be used

For whiteboards (free under certain conditions):

<https://miro.com/>

<https://flinga.fi/>

<https://padlet.com/>

Methods for the active experimentation

Snowballing

Overview of method

knowledge”

”producing
thoughts

”developing
collectively”

- Snowballing is an active learning strategy that helps students share and teach each other concepts and topics. It allows the students to work in groups and to build their knowledge gradually.

- Students begin this activity individually, then create progressively larger conversational groups by doubling their group size every five minutes until everybody in the large group has reconvened by the end of the activity.

This method guides students towards **producing knowledge** and **developing thoughts collectively**. The essential thing is not who wrote what, but what new perspectives are gained by what was written.



Learner experience

Actively engages students and they become teachers by developing the analytical and critical thinking skills of their peers.

Promotes communication, critical thinking, analysis, and evaluative skills through discussions in groups producing arguments and counter arguments.

Fosters strategic thinking, problem solving but also helps learners refine prior learning and construct new learning through discussions.

It helps students share their thinking and problem-solving processes, justify and formulate conjectures publicly, and evaluate multiple solution strategies.

Applicability to different phases of the learning process



The method can be used to start discussions, develop new ideas, and map out students' current understanding of a topic.

It can also be used to assess and test plans as well as function as an icebreaker or a development exercise. It can be carried out over a longer period. People can read other people's work when it best suits their schedules, remotely or face-to-face.

Pros and cons

Advantages

This method encourages/provokes discussion. It helps students articulate opinions. It helps students to further develop, refine, and generate ideas and/or solutions.

The class constructs the knowledge by working through a challenging problem, rather than having the teacher explain through direct teaching without interaction.

Disadvantages

This technique needs up to 30 minutes for finishing the entire question because if the student cannot answer the teacher should continue on to another student.

The teacher should control the situation of the classroom so that exchanges between students will not deviate from the main objective. This technique will make the situation more crowded.

How to organise

Preparations



→ Plan a complex, or difficult problem that students are going to solve.

Implementation



Introduce the topic and provide any required information to the students.

Allow the students to go over the information provided (say for 10-15 min) and distinguish the key facts or ideas or answers to the questions.

Get the students to share the facts, ideas, or answers with one other student and discuss for another 5 minutes or so.

Once the pair has discussed and consolidated their thoughts, ask them to move to another pair and share their thoughts again to form a group of four students.

Get the group of four students to continue the process leading to the formation of a group with 8 students.

You can continue this to the point that is comfortable for you and your class.

Follow it up by a class discussion at the end.

Tips

Student moderator is responsible for their group members. Every group member has to make sure that everyone in their group understands what was discussed and is confident in defending their answer during the whole class discussions.

Teachers should avoid providing solutions to the students. Let students discover it for themselves. Appropriate facilitation and assistance are required to make sure students are on the right track.

Can be used with large groups as well, for example in a lecture. In this situation, groups of 4-6 can be formed from people sitting close to each other. Preparation.

Tools that can be used

For whiteboards (free under certain conditions):

<https://miro.com/>

<https://flinga.fi/>

<https://padlet.com/>



Six thinking hats

Overview of method

critical
thinking
brainstorm"
"teach or
debate

- In classroom or remotely, a teacher can use the six thinking hats exercise to **teach critical thinking and debate or brainstorm** about a concept or an idea. This can be used as an opening method/ice-breaker.

The different hats represent different cognitive functions of the human brain that will be intentionally switched on during meetings or exercises by the teacher or facilitator.



Learner experience



Stimulate outside-the-box thinking

Stimulate "parallel thinking".

Create a productive group dynamic.

Teach your students to think more holistically.

Ensure that all members of the classroom participate in discussions.

Enhance group decision-making abilities.

Support a respectful decision-making environment.

Come up with innovative ideas and alternatives

Applicability to different phases of the learning process



The method can be applied in any phase of the learning process.

Pros and cons

Advantages

- + Stimulates parallel thinking and motivates a clear thought process
- + Inspires creative and effective thinking
- + Provides a variety of possible solutions to a problem

Stimulates team engagement and performance

Disadvantages

- Applying the method in a team is time-consuming
- People can still disagree strongly and there can even be conflicts about different perspectives
- Difficult to monitor the quality of all the questions depending on the group size

How to organise

Implementation



Decide on the topic or problem for the group activity

Form groups of 6 students or 6 groups

Clearly explain each thinking hat role to the class

Instruction on the sequence of thinking hat

Students, depending on the hat they have chosen, can start off by asking the following questions and prompts to sustain the conversation and give feedback based on their hat's perspective.

Each student should be free to improvise as long as they stay in character! In case they divert, the Blue Hat (teacher or trainer) can always remind them of their place in the thinking process.

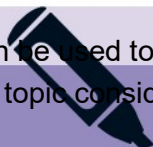
Monitor and facilitate the group activity progress.

Tips

If fewer than six students attend your class, pick the hats that you think would make up for the most valuable contributions.

The group of students can also wear all the hats: first the white, then the red, and so on. In this way, all students discuss all the different perspectives.

This method can be used to elaborate a conclusion about a specific topic considering all relevant elements.



The six hats



White Hat - Discuss the facts and other objective information about the problem. Gives objective data.

Red Hat - Share feelings and emotions about the issue. Passionate, not objective ideas.

Black Hat - Suggests solutions in the event that the worst situation occurs (pessimistic point of view).

Yellow Hat - Consider positives, or advantages, of the situation. Benefits obtained after putting into practice the agreed solution (optimistic point of view).

Green Hat - Consider creative ideas that come from looking at the problem in a new way.

Blue Hat - Sum up all that is learned. Usually the one worn by the teacher.



Duration of implementation

Form group of students per colour - 30 min

Explain each thinking hat role to the class – 30 min

Student presentations – 1h

Discussion: 1h

Interview with an expert

by
information

Overview of method

"acquire interviewing"

There are many situations when students need to **acquire information by interviewing** people who come from outside the school.

The interview partners may be experts such as a member of national or local parliament, a representative of a logistics company, an administrative board, or a scientist.



The use of interviews in class is inseparably linked to a discussion methodology. The objective of the interview is to solicit information about a specific topic so that the class may have the opportunity to respond to this information.

Learner experience

Interviews can quickly identify what students have done, as well as what they know. In some courses, it may be appropriate to conduct small group interviews which requires a smaller time commitment than individual interviews.

Interviews provide an opportunity for students to complement, assist, correct, address problems and opportunities, and demonstrate interest.

Raise awareness and reflect on one's own learning.

Share and exchange knowledge.

Clarify their questions and get an impression of the field/practical application.

Applicability to different phases of the learning process



There is an added dimension in using the interview: the student has the responsibility for approaching their contact for information that can be used for class discussion. This removes the passive element from student involvement and has them actively confront the subject matter, and the personalities who are connected with the subject matter.

Pros and cons

Advantages

More accurately assess student learning and performance.

Students can get insights from an experienced person (serves as a role model).

Practice-oriented; possibility for real insights.

Disadvantages

This method is time consuming.

Method is affected by language barrier: the expert will have to adapt to the level of the students and not use terms that are too complicated.

How to organise

Implementation



Explain to students that in this lesson they will learn techniques for using an interview as a method of gathering information.

Discuss with students what makes an interview unique compared to other sources of research information.

Inform students about the responsive nature of an interview.

Point out that an interview enables a researcher to dig deeper by asking additional questions. Invite students to brainstorm the qualities of an effective interview.

After students have listened to several interviews, invite them to select one they thought was particularly effective and listen to it again.

Instruct students to keep a tally of how many questions build on answers already given and how many questions were “fresh” or pre-planned. Discuss with students what makes these interviews effective.

Present to the students an expert who will be interviewed

The expert interview should be planned structurally, questions should be collected in advance, and if necessary, a list of questions should be prepared by the students.

Delegate one student who will be responsible for leading the interview if several students are taking part in interview.

Instruct students to provide the interviewee with a copy of the interview questions to allow the interviewee an opportunity to prepare interesting answers.

Explain to students that if they are asked a question they are unable to answer they should make up a reasonable response, consistent with what they know about the character.

If the interview is conducted remotely, it is important to follow instructions. The expert is invited to the virtual classroom. The teacher moderates only at the beginning in an introductory organisational way and then fades into the background. The students interview the expert based on the pre-prepared questions agreed upon in class.

Tips

The reports from the interviews are valuable documents. If they are shared with the group, it keeps the discussion going. It allows participants to continue talking with people who were not in their small group. Later in the process, the interviews can be taken up again to see how perspectives have changed.

To ensure that the learning is a success, the expert interview should be reflected in a follow-up session and the collected information should be recorded, corrected, and consolidated.

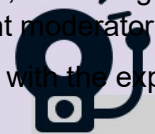
It will be difficult for students to coordinate the interview and give it flow while focusing on the expert's answers, so it is interesting to have several students interviewing the expert, with one or two asking the questions, and one or two taking down the answers.

Duration of implementation

Preparation of topic and questions for the interview, and delegating a student moderator: 1h

Interview with the expert – 30 min

Discussion: 1h



Role Play

Overview of method



Role play is a form of experiential learning, in-class or remotely. Students take on assigned roles and act out those roles through a scripted play.

Role play exercises give students the opportunity to assume the role of a person or act out a given situation. The role play can be carried out one-to-one (individual role play) or as a group role play with each member in the group taking on a role/character.

Roles and rules for a role play are clearly defined in the script. Role play **engages students** in real-life situations or scenarios that can be “stressful, unfamiliar, complex, or controversial” which requires them to examine personal feelings toward others and their circumstances.

Learner experience



Motivate and engage students.

Enhance current teaching strategies.

Provide real-world scenarios to help students learn.

Learn skills used in real-world situations/understand the various roles of stakeholders in a given context (negotiation, debate, teamwork, cooperation, persuasion).

Acquire contextual understanding of a given issue in a professional environment

Provide opportunities for critical observation of peers

Applicability to different phases of the learning process



By making students take on the role of another person, they practice empathy and perspective thinking.

This can lead to more self-reflection and awareness. Method can be applied to all parts of the learning process.

Pros and cons

Advantages

Allows students to use their knowledge and skills in practice.
Breaks the ice both between teacher and students, and among the students themselves.
Students take on decision making that might let them diverge from the confines of their normal self-imposed limitations or boundaries.
The teacher and students receive immediate feedback with regard to student comprehension of the content.
Learn skills used in real-world situations.

Disadvantages

Students may find the whole experience fun and turn the session into pure entertainment.
If you teach several groups you will have to consider the difference in dynamics.
In larger classes, role playing cannot be done effectively because not all of the students have the option to participate; requires expert guidance and leadership.
Some students may be afraid of the training if they know it will involve role-playing. This can affect an individual's confidence and contributions in such a session.

How to organise Preparations

The teacher needs to prepare the assignment description, including background reading for each role, and a division of roles for each student, including expectations for each role.

This scenario should include the role the student must play, the informational details relevant for decision making in this role, and a task to complete based on the information.

Implementation



Divide students into small groups.

Determine number of participants in a role accordingly.

Give students a scenario card with a written description of the situation.

Students read, view, or listen to background materials of the given situation.

Students are given five to ten minutes to complete the task. The instructor might have students do this alone or in small groups or follow the think-pair-share format in which students work individually and then discuss their results with their partner.

Find a way to process student deliberations. The instructor might ask students to submit their written replies or use it as a lead-in to a larger class discussion where students can justify their differing outcomes or opposing views.

The lesson is then conducted, assessing the students' ability to stick to their roles, to carry out the relevant tasks or react in the right way, and to learn from the experience.



Tips

Catering to student needs - Using a ball and throwing it between the students as they take turns energises the dialogue, and everyone has a chance to say something based on their interpretation during the second lesson. Pre-prepared white board or a projected slide with a session outline can welcome the students and act as a compass for each session.

Active learning approaches - Asking students to do pair discussions every now and then is effective in keeping students active within the classroom and associating with each other as learners.

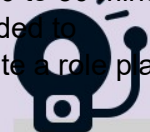
Synchronous: The roles can be assigned in advance, when the students have to research the respective role, or they can be played impromptu. Students have a set amount of time to play their roles.

Asynchronous: Students are given a set amount of time to write about their role in the discussion in an asynchronous discussion forum

Duration of implementation

Synchronous session:

Generally, 20 to 30 minutes may be needed to accommodate a role playing activity.



Asynchronous discussion forum: 3 days would be necessary. An additional day can be expected for follow up discussion and questions/answers.

Crossover teaching

Overview of method

Crossover teaching is an attempt to combine curriculum with learning in an informal setting –after-school clubs and museums, online learning platforms, or the outdoors. The concept of crossover learning refers to a comprehensive understanding of learning that bridges formal and informal learning settings.

Supports the development of skills and disposition that help students do better within school. By creating space in the formal curriculum for students to pursue individual themes based on their interests, a school can allow informal experiences to influence curriculum topics and tasks.



Learner experience

These crossover learning experiences exploit the strengths of the environment and provides students with authentic and engaging opportunities for learning.

Assessing the performance of others improves cognitive abilities and equips the evaluator with other life skills.

It helps develop critical thinking and assessment skills.

It can improve students learning, group working, and specific knowledge.



Applicability to different phases of the learning process

The term "crossover learning" refers to a broad understanding of learning that spans formal and informal learning environments.



Students' participation in the learning process will result in a high level of interaction between teachers and students or between students themselves.

This will result in a new and welcoming classroom environment in which every student can participate as much as possible. Students' activities will result in the formation of knowledge and skills that will lead to increased achievement.

Pros and cons

Advantages

+ Students construct their own knowledge on certain topic.

There is high level of interaction between teacher and students or between students themselves.

New and welcoming classroom environment in which every student can participate as much as possible.

Formation of knowledge and skills that will lead to increased achievement.

Disadvantages

- Keeping students' attention over time can be challenging.

- Time consuming.

How to organise



Preparations

The basic idea behind the crossover learning approach is to combine formal learning in the classroom with informal learning outside the classroom.

Implementation



Propose and discuss a question in the classroom.

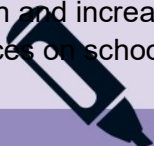
Explore that question on a museum visit or field trip, collecting photos or notes as evidence.

Share their findings back in the class to produce individual or group answers.

Tips

Finding space to bring informal learning into formal education has the potential to enrich knowledge with experience.

Adding formal direction to informal activities can enhance motivation and increase the impact of informal experiences on school learning and in the workplace.



Duration of implementation

Preparation of theme and questions in the classroom, dividing students in groups with group moderators: 1h

Exploration of the theme question during a field trip – 1 day

Discussion in classroom: 1h



The Muddiest Point Technique

Overview of method

Muddiest Point is a type of classroom or remote assessment technique (CAT) that asks students to quickly identify what they find the “muddiest”—the most confusing or least clear—part of a lecture, class, or assignment.



This activity provides teachers with **immediate feedback** regarding **student comprehension**. Roles and rules for a role play are clearly defined in the script.

Learner experience



Promotes higher order thinking skills as it requires the students to identify, understand, and articulate the key ‘muddy’ or difficult points.

Promotes metacognitive skills as students reflect on their own learning.

Provides just-in-time feedback about the teaching-learning process.

It fosters strategic thinking, problem solving.

Assessing the performance of others improves cognitive abilities and equips the evaluator with other life skills.

It helps develop critical thinking and assessment skills.

It can improve student learning, group working, and specific knowledge.

Applicability to different phases of the learning process



Transforming students from passive listeners into actively engaged learners. Need not be a great task that requires extensive planning.

It can start with a simple decision to reserve a short period of class to review and clarify the lessons of the day.

Taking teachers beyond the relative uselessness of just asking whether anyone has any questions, and seeing none, moving on, the ‘Muddiest Point’ technique requires students to actually think through what they do and do not understand, and also forces teachers to ensure that comprehension is universal.

Pros and cons

Advantages

+ Helps in planning revisions for future courses.

-

Provides useful information about students in a short time compared to traditional assessment tools

+ Simple and quick

Disadvantages

Students lacking interest to take part in big groups. Less motivating than other methods for students.

Only focuses on the bad sides of teaching/delivery

How to organise

Preparations



Create a prompt starting with “What is the muddiest point in _____?” and fill in the blank for the specific topic or idea you want students to explain.

Prepare prompt questions – these can also be associated with groups.

Design the questions to gain insight into areas that students value or find relevant, and areas that represent ‘troublesome knowledge’.

Implementation



Set aside 5-10 minutes to facilitate.

Setting up small groups (3-4) in breakout rooms to provide students with opportunities to provide feedback to their peers.

Ensure that you leave enough time at the end of the class to allow students time to reflect and respond.

Collect the answers and follow up as soon as possible with feedback from students.

Ensure that the students are aware of the process and answer the questions in the timeframe provided.

Duration of implementation

Setting up small groups: 20-30 min

Prepare – prompt questions (questions can be associated with groups) – 30 min

Students provide feedback (in a form or a quiz or poll or orally) – 1h

Discussion in classroom: 1h

Tips

Use post-its

Build a small store of muddy points to consider in future Seminars.

♦ In large classes, break students into small groups and ask each group to create a card.



Methods for the formative and summative assessment

Assumption busting

Overview of method

students'

"transform
thinking"

An assumption is an assumed truth that is not questioned, or a belief that we have without evidence.

The assumption busting technique can be used to potentially **transform students' thinking** so that they develop new and creative ideas, which can later be added to their solutions.

Assumption busting aims to support exploratory creativity – finding new ideas in the same solution space, and transformational creativity – transforming the solution space, e.g. new elements, new problems, new solutions.



Learner experience

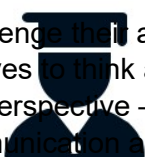
When students challenge their assumptions, they force themselves to think about another student's perspective — which can help improve communication and understanding between students.

It enables students to work collaboratively to generate new ideas.

It enables greater creativity and innovation.

It promotes better decision making.

It helps to develop critical thinking.



Applicability to different phases of the learning process



This method is particularly effective in the active part of a learning process when students are searching for a solution but are stuck in current thinking paradigms or have run out of ideas.

It can also be used in the assessment phase, when the student is given a chance to upgrade or modify their answer.

Pros and cons

Advantages

It can be performed online or in class.

Disadvantages

Quite demanding for a teacher and students.
Limited group size.



How to organise Implementation

Assumption busting involves three steps: (1) listing assumptions, (2) challenging assumptions (3) finding ways of making the challenge a reality.

Students need to identify and list all the assumptions associated with their tasks or problems (5-10 assumptions about the domain) within the 1st step. To identify the assumption, students should think about elements that are so obvious that they would normally not think about challenging them.

Typical assumptions include the following statements:

It is impossible to do something within constraints such as time and cost.

Something works because of certain rules or conditions.

People believe, think, or need certain things.

For example, the task could be to figure out how to improve the company's delivery system. Students start to list different kind of assumptions which are related to the delivery system. For example, we don't have the needed technology to improve delivery system, the delivery system can't be improved, it is already working perfectly, deliveries take a minimum of three days, customers don't mind that delivery takes at least three days, there are vehicles needed for delivery, delivers always consume fuel and so on.

In the 2nd step students need to challenge assumptions. Students are asked to assume that they can overcome and challenge all assumptions. To help working in second phase it is possible to use the question: How could this not be true?

For each assumption that students discover might not be true, they need to brainstorm new ways in which it might be true, or could be forced to be true, and write down the resulting new ideas and opportunities. While challenging assumptions, it is normal to make new assumptions about the challenge, so keep responding with new challenges to these assumptions too.

For example:

Assumption: we don't have the needed technology to improve delivery system

Busting: we can buy new technology

Assumption: buying it in would be expensive

Busting: we could ask students to develop new technology

Assumption: students would not do it professionally

Busting: they could do the trial version

...

In the 3rd step students try to find ways of making the challenge a reality. It is challenging to make it happen in reality. So use the same assumption busting principle again. For example, students can continue our example case.

...

Assumption: probably it won't work

Busting: A trial version could prove otherwise. Is it possible to try in real life?

In the end write down the new ideas and opportunities.

Tips

To be effective the teacher needs to make students aware of the assumptions and encourage an atmosphere where challenge is positive and welcomed.

Questions in the 2nd step may sound silly and many of the assumption busters students may come up with may indeed be silly, until they come up with something that really makes sense and is useful.

Peer to peer assessment

Overview of method

with
familiar criticism”
individuals
constructive
”get

Peer assessment is a type of performance evaluation that is done by individuals who are of equal status as the person who is being assessed. During this process, peers can reflect on each other's works, identify strengths, and also highlight areas needing improvement.

- Peer assessment is a good way for students to **get familiar with constructive criticism**. It is easier for students to deal with feedback and criticism when it comes from someone, they are familiar with. Due to the familiarity that exists between peers, they can provide meaningful insight into each other's behaviours, competencies, and experiences.

Learner experience

Serves as a bridge between the teaching and learning process.

Favours knowledge exchange and knowledge diffusion in the classroom.

Encourages students to take greater responsibility for their learning, for example by encouraging engagement with assessment criteria and reflecting on their own performance and that of their peers.

Students become more open to evaluation and can see the justification for their grades when they are involved through peer assessment.

Assessing the performance of others improves cognitive abilities and equips the evaluator with other life skills.

Helps to develop critical thinking and assessment skills (e.g. how to provide constructive feedback on performance, how to shift through information and identify valid data, etc.)

Applicability to different phases of the learning process

This method can be used for assessing any kind of activity performed by students (a seminar work, PowerPoint presentation, solution of a problem etc.) solution.

Pros and cons

Advantages

Not time consuming for any involved partner.
Not demanding for any involved partner.
It can be done anonymously if needed.
Adaptable to any group size.
Can improve team bonding.
Promotes deep learning (in case of complex solutions).

Disadvantages

Subjective feedback due to the familiarity that exists between the students.
Can negatively affect the relationship between students; especially when negative feedback is given.
Not-well defined assessment criteria lead to biases.

How to organise

Preparations



Ensure that the student (evaluator) has knowledge of the research subject/topic/problem.

Provide criteria for the evaluation so students can critique each other in line with the criteria.

Share the form with students well ahead of time by using e-mail or upload a form on a teaching/learning platform (e.g. Moodle).

Ensure that all students involved are familiar with the assessment parameters. This keeps the process transparent and impartial. If needed, the teacher should organise peer assessment training sessions to keep everyone updated on the evaluation criteria and the need for friendly, respectful, and constructive behaviour during assessment.

Allocate enough time for the assessment and communicate this to all involved students. This keeps the process transparent and impartial.

Choose the right peer assessment tool that can help students gather and process the data they need.

Implementation

Make sure they understand criteria for the evaluation and the evaluation process.

Become familiar with the research topic/problem/solution they would be assessing.

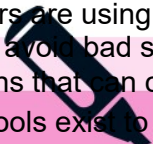
Critically evaluate other student's presentation, solution, seminar paper by using evaluation criteria.

Outline the strengths and weaknesses and give recommendations for improvement.



Tips

- Can be used as a one-person thinking tool or as the basis for a brainstorming session.
- Due to a lack of experience in assessment and evaluation, the feedback provided by students during peer assessment cannot be relied on solely.
- If teachers are using a survey for the assessment, they need to avoid bad survey questions like leading and loaded questions that can communicate huge biases. → Many online tools exist to create forms and surveys for peer assessment (e.g. SurveyMonkey, Forms MSOffice, etc.).



Examples

- Examples of peer assessment templates are available on the following link: <https://templatelab.com/peer-evaluation-form/>.



Poster

Overview of method

The poster can be used as a **structuring method**, which shows the (hierarchical) relationship between ideas.

As ideas are fleshed out and connected to each other, one can see how concepts tie together to get a better understanding of the subjects that are under study.

The Poster method takes a conceptual approach to teaching and learning, and helps students visualise a subject and understand how various ideas are interconnected in both the theoretical and practical senses.



Learner experience

→ It facilitates teaching a complex content with a visual aid.

Teachers are able to test the students' knowledge and determine if there is anything that they don't understand.

It's an effective way to catch and hold the attention of students.

It helps to maintain student interest in a particular area.

It facilitates teamwork, creative thinking, extensive research and reading, and creates opportunities for active discussion.

It helps students focus and motivates them.

Abstract topics help to stimulate the flow of ideas and encourage students to think out of the box.

Presenting the posters in front of the class also opens up a forum of discussion for the students. • It provides students with an opportunity to learn by action.

It actively engages students in their learning process.

Pros and cons

Advantages

Works as a tool for revision or preparing future tests.

A poster speaks for itself; the author(s) is not necessarily required to be present.

A poster is suited for people suffering from stage fright, for those who have difficulty speaking in front of large groups. Standing next to their poster for some time in order to answer just a few questions is less stressful.

Disadvantages

- Lack of interaction between learners in the creation process.

Once a poster is printed it will be difficult to make corrections or include new material (only in case of printed posters).

Posters generally require reduced content that has to be to the point. Selecting what has to be included or omitted is not always easy.

Applicability to different phases of the learning process



Can be used to present the theory by a teacher or a student.

Show the links and relationships between the main ideas of the subject.

Visually outline information.

Organise ideas and information by making it accessible on a single page.

Educate others about a particular issue.

This method can be used to present a solution to a problem. → This method can be used to review content in preparation for a test or examination.

How to organise

Preparations

The teacher first explains how to make a good poster.

The students are then asked to design a poster related to the subject of the lesson, either on a poster board or using an appropriate software (like Canvas).



Implementation

Posters can be worked on in pairs or groups with students working on a common topic or separate topics.

In e-learning, this method can be implemented through two formats:

Synchronous: Virtual classroom in which the instructor shows how an application like Canvas is used and allows students to take control of the application to practice it.

Asynchronous: Interactive e-learning using a combination of animations and operational simulations that allow students to interact with the system and receive feedback.



Tips

Create classroom posters on essential learning content to decorate the classroom.

Posters must be simple, attractive, contain as few words as possible and have a clear and concise font. The topic and images should correspond to the subject matter.



Duration of implementation

For a synchronous session: at least 15 to 20 minutes to develop the concept map.

For an asynchronous setting: 1 to 2 days once the topic has been revealed.

SWOT

Overview of method

- can and analyze
- "students identify"
- A SWOT analysis is a technique used to help students identify Strengths, Weaknesses, Opportunities, and Threats.
 - By using a SWOT analysis, **students can analyse and identify** the positive and negative internal (strengths and weaknesses) and external (opportunities and threats) factors relevant to a situation to achieve objectives or purposes.

Learner experience

It favours knowledge exchange and knowledge retention in the classroom.

It can provide students with information that they previously had no idea about.

It covers internal and external factors.

It encourages students to take greater responsibility for their learning.

It fosters strategic thinking, problem solving.

Assesses the performance of others, improves cognitive abilities, and equips the evaluator with other life skills.

It helps develop critical thinking and assessment skills.

It can improve learning and group working capacities as well as specific knowledge.

Applicability to different phases of the learning process

The SWOT analysis can be used in the active part of a case study to evaluate solutions.

The SWOT can also be used as a feedback mechanism. Students can use the SWOT tool to give the teacher feedback regarding teaching techniques, the effectiveness of various strategies and technology used in the classroom.

A SWOT enables the teacher to give feedback on results. Also, students can use a SWOT to give feedback on another student's solutions.

Pros and cons

Advantages

It focuses on strengths and building opportunities.

It enables students to work collaboratively to generate new ideas and working strategies.

Not demanding for any involved partner.

It can be performed online or in class.

Any group size.

Not time consuming.

Disadvantages

Doesn't prioritise issues.

Can generate many ideas but not help you choose the best one.

Can produce a lot of information, but not all of it is useful.

Criticism may create negative atmosphere in the classroom.

Subjectivity may cause a SWOT analysis to be misleading.

Due to lack of experience, the feedback provided by students cannot be relied on.

How to organise

First explain the purpose and goal of the activity.

Then draw a large square on a white board, chart or paper. Divide the square into quadrants. Label

the upper left quadrant “Strengths”, the lower left “Weaknesses”, the upper right “Opportunities”, and the lower right “Threats”.

Strengths:

The areas where a student or a team of students do well.

The areas or the aspects in which similar students or team of students are doing well. Examples of questions: What do you do better than anyone else? Where do you excel? How do you use your strengths? When to use your strengths? Where can you use your strengths?

Weaknesses:

Consider what others are likely to see in you or your work as weaknesses.

Questions to be addressed here are: What could you improve? What should you avoid? What are people in your area likely to see as weaknesses? What areas of your approach did you struggle with? Which topics do you feel needed more work?

Opportunities:

The trends/behaviours that students could take advantage of.

Outside factors or situations that may affect a student or the solutions to problems in a positive way.

New trends and innovations that may be helpful in identifying opportunities.

Questions to ask: What could we do to build upon our results?

Threats:

Outside sources that affect the working or their results in a negative manner.

The existent threats which act as barriers to accomplishing tasks.

The following questions could be asked to determine the cause(s) of shortcomings: What obstacles do we face in our solution/teaching method? What are others doing better in other fields? Are there other individuals in the group that make work difficult? What stops us or our solutions from achieving higher efficiency?

The students should become familiar with the criteria, the process, and the topic for assessment.

Write down ideas - Each student has to identify strengths and note them down on the sheet or the paper provided. Separate sheets of paper will be used for tracking the strengths, weaknesses, opportunities, and threats.

Brainstorm and rank ideas according to their importance - with the list of ideas for each category, it is now time to clean-up the ideas. By refining the thoughts, teacher and students can focus on the best ideas or the largest risks. This stage may require substantial debate among participants.

All identified ideas are then placed in the proper category.

Armed with the ranked list of strengths, weaknesses, opportunities, and threats, it is time to convert the SWOT analysis into a strategic plan. Members of the SWOT analysis team take the list of items within each category and create a plan to improve their solution/teaching method etc.

Evaluation:

Peer-to-peer assessment of each other's posters could be implemented.

How could we utilise our strenghts and deal with the weaknesses? What could we do differently in our next approach?

What could we change that would make the biggest difference to us or our project results?

Tips

Make sure students understand the criteria/questions for each of the four elements (Strengths, Weaknesses, Opportunities, Threats) and the whole evaluation process.

Many online collaborative tools exist for SWOT (e.g. Miro), and peer assessment (e.g. SurveyMonkey, Forms MSOffice, etc.) preparation.

The last idea game

Overview of method

and
analyze
can
"students
identify"

- The trainer asks students a question. Everyone must answer with a word or a short sentence. For example, "Which information do you need from your client to check the feasibility of the requested transport mission?" Each student will then take turns giving an answer until they have no more ideas. The winner is the last one to find an answer.
- This method allows the teacher to come back to a central element of the day to see what the students have learned. The game can also be used to open a new chapter and check previous knowledge of the students.



Learner experience

The last idea game helps students to stay focused at the end of the day but also arouse their curiosity on a new theme. It encourages and motivates students.

It helps check knowledge and comprehension.

Target group-specific criteria:

Applicable to learners with a low level of learning motivation.

Accessible (e.g. students without the necessary means such as computers, etc.)



Applicability to different phases of the learning process

At the beginning of a lesson to check their knowledge on a specific topic.

Can also be used to conclude a session (for example at the end of the day).

As this method is easy to understand for students, it can be used from the beginning of the training year and during the whole course on solutions presented by other students.



Pros and cons

Advantages

- + Gamification
Competitive setting encourages student participation.
Easy to set up.
Create a playful exchange at the end of a very theoretical day.
Allows the teacher to verify comprehension of the topics covered

Disadvantages

- Not very suitable for a large group.

How to organise

Preparations



It is important to word the question well.

Implementation



The teacher's memory will be challenged because there will be repetitions in the answers of the students. The teacher must be vigilant, and accept them or not.

In remote mode, the game can be set up using video conferencing tools. Teachers can then take control of the microphone and decide to whom they wish to give the floor. The teacher takes turns to question all the students.

The animation of the game must be dynamic. Not too much time for reflection, no dead time.

Evaluation:

No evaluation; this game allows teachers to check the knowledge and the information that is retained from a session.

Allow the teacher to revisit the points that the students may not have understood.

Tips

Teachers can prepare a prize for the winner.

The teacher's memory will be challenged because there may be repetitions in the answers of the students.

The game must be dynamic: do not allow too much dead time or time for reflection.

As this method is easy to understand for the students, it can be used from the beginning of the training year and during the whole course.

The Last idea game helps students stay focused at the end of the day but also arouses their curiosity on a new theme.

Allows the teacher to verify comprehension of the topics covered.

Duration of implementation

Depends on the size of the group, topic(s) covered, and answers.
Approx. 20 minutes.

The starfish

Overview of method

the
"enable to obtain
trainer on
feedback
teaching"

feedback
teaching"

- The Starfish method **enables the teacher to obtain feedback on the teaching** method/ training session. It develops analytical and reflective skills by giving students a voice.
- Team members write their ideas on post-its and stick them on the starfish on the board. Once members are done with this process, a discussion can be initiated on each of the areas and the output is decided by consensus.

Learner experience

It informs ~~students~~ team of students/teachers in meaningful ways on what working and what does not.

It enables the introduction of new ideas/practices that regenerate ~~value~~ through constructive feedback.

It prevents ideas from being lost.

It fosters problem solving, critical, and positive thinking.

This method anchors analytical skills and improves decision-making during retrospective meetings.



Applicability to different phases of the learning process

The Starfish method can be used to assess or review any kind of process, activity, product (e.g. teaching method).

This method can be used when assessing or reviewing any form of process, activity, product (e.g. student solutions, teaching method, etc.).

It informs teams in a meaningful way about what works and what does not, enables the introduction of new ideas through constructive feedback.



Pros and cons

Advantages

This method enables the introduction of new ideas through constructive feedback.

Students are motivated and they are encouraged to look forward to something great that might come their way because of the new strategies that are implemented.

This method keeps students interested in the topic/teaching methods and makes them feel valued.

This method boosts visualisation.

Disadvantages

Limited number of students (up to 10 people).

Lack of interest and motivation. A successful retrospective is the whole team's responsibility, and each member must contribute.

This method can easily become a soul sucking ritual that the entire team feels is a waste of time if it is not well planned and managed.

How to organise



Draw a star-shaped diagram on a flipchart or any collaborative platform. Write the following headings on each part of the diagram:

- We continue...
- We stop...
- We do less...
- We do more...
- We try/start...

The teacher gives each student 5 post-its and explains what each part of the chart means:

We continue: everything we liked about the session, everything that helped us in our work, and the results we achieved.

We stop: everything that does not benefit us or hinders our work.

We do less: the practices that need refinement in the current context.

We do more: the practices that do not bring us enough benefit and that should be improved.

We try/start: any ideas for new practices that we should introduce.

All students write down their ideas on the post-its to complete the diagram.

One post-it per idea and per area.

Students then take turns presenting their ideas.

The teacher asks students to vote on which ideas they think are most important in each branch.

The Starfish Model by @bryanMMathers is licenced under CC-BY-ND

Tips

Groups involving up to 10 people.

While the ideal scenario is to do each topic one by one, you can also open it up so that people can add ideas under any of the sections when they are ready. You can then discuss them in the above order.

There may be ideas where there are differences in perception. For example, one person might decide that they want more meetings, and another might want less. Dot voting by the team will allow the team to build consensus. It will also be important to further discuss and to resolve any conflict so that a clear action item can be carried forward. Getting the team to buy in to the changes is important. Allowing them to brainstorm, vote, and discuss is a great start. A good technique to help crystallise the change is to ask the team what would stop them from putting these changes into place.

An interesting way to open a discussion is to start with the negative aspects, and progressively cover the positive ones, as it fosters problem solving and positive thinking, in the following order: Stop Doing, Do Less Of, Keep Doing, Do More Of, Start Doing.

Some people are very outspoken, while others are quiet and observe more. Keep mental notes on who hasn't said much and make it a point to include them in the conversation, to the extent they're comfortable.



Duration of implementation

This method brings solutions in a very short time (10 minutes to write down ideas, 10 minutes to discuss each area; 30 min – 1 hour) with a very focused conversation.