

Unit 4_2

Today's goals

- **Analyze presentation skills**
- **Create a lesson for 'presentation'**
- **Perform a jigsaw session/group puzzle**

Steps of today's lesson

- **Presentation**
- **Jigsaw Method / Group puzzle**
- **Evaluation**

Presentation

*"In presentations, you are always judged by **how you present yourself**. What the audience remembers is **how you present yourself and your cause**. However, **what you have said will soon be forgotten**." (Maurer/Gurzeler)*

Presenting is essential in ACO didactic

1. In problem-based learning, students must not only solve problems but also **communicate** their results **clearly**.
2. Good presentation needs **guidance**.
3. Teachers play a key role.
4. Foundation for collaboration.

Task 1

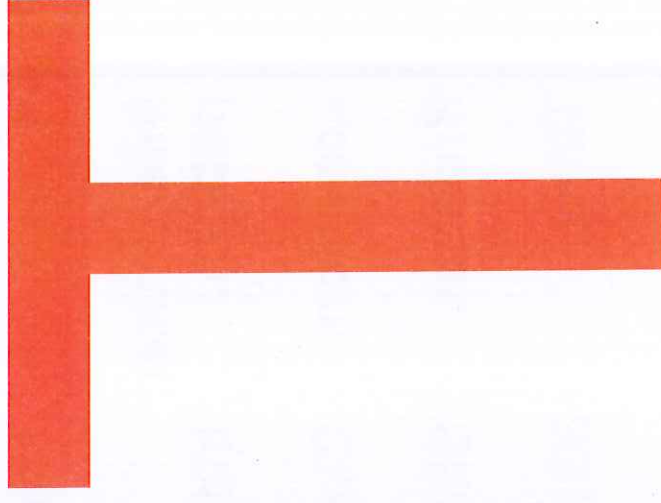
Task: In ACO learning and also in problem-based learning students need to present their solutions. How do you guide them in achieving this skill? How do students practice presenting in your lessons? How do you evaluate these presentations?

Interaction pattern: Partner work

Location: Classroom

Product: Keywords, short statement

Time: 10 Min.



Task 2

Task:

In Script U4_2, you find on page 2-5 '18 tips for the perfect presentation'. Which one of these are you practicing in your teaching? Which one of these would you recommend to your students? Create a 50' lesson for training them in the most necessary aspects of good presentation. According to AKIDE. On page 6 you see an evaluation for presentations of students. Which criterias will you use/adapt in your lesson?

Interaction

pattern: Individual / Partner work

Location: Classroom

Product: Short statement

Time: 30 Min.

Steps of today's lesson

- Presentation ✓
- Jigsaw Method
- Evaluation

Jigsaw Method

Principles for choosing a method

- Can the goal be achieved with the chosen method?
- Is it appropriate for the topic, for the content?
- Does it contribute to variety?
- Does it promote learning?
- Does it motivate?

Effect size: 1,20



Jigsaw Method

- Carried out by Elliot Aronson in 1971, USA.
- Jigsaw method has **great potential to promote motivation**.
- Students are dependent on each other to achieve a **common goal**.

Meta Level



Jigsaw Method

- Students can develop their **teamwork** skills.
- Students can develop the ability to acquire knowledge in a team through the necessary **communication** and **cooperation**.

Meta Level

**Jigsaw method can only be used
if the topic
can be divided into sub-areas!**

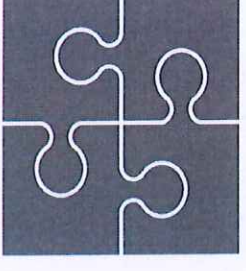
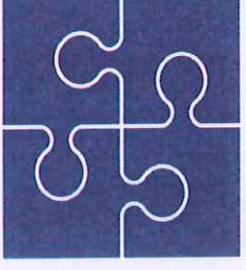
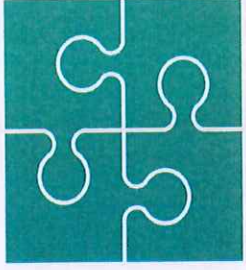
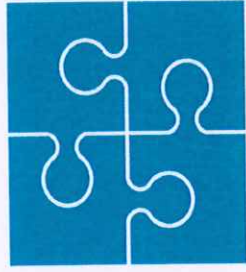
Jigsaw Method can be used in **all** phases of the lesson:

- to **introduce** new topics
- to **deepen** and apply basic knowledge
- for revision and preparation for **exams**



1. Phase:

- > Assignment of the home group (core group) and distribution of topics.
- > In preparation, the seating arrangement is changed so that the small groups of 3-4 (max.6) students can be seated at the tables.
- > **Four topics** have proven to be a good idea, meaning that there are **four members** in the core group and **four in the expert group (total 16 students)**.
- > Within the **core groups**, each student works **independently** on a sub-area of an overall topic and becomes an expert for this sub-area.



2. Phase:

> All students with **the same topic** meet in the **expert group**.

Mandate of the expert group:

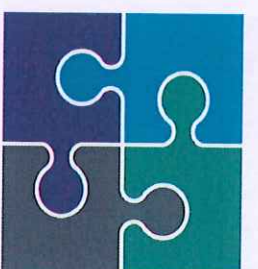
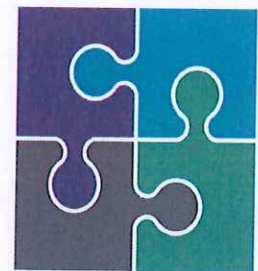
> **Exchange** knowledge and help each other to understand the topic.

> **Clarify** ambiguities, if necessary with support material or by asking questions.

> Thinking together: **What is the best way to explain our topic?**

> Possibly prepare a form of **presentation** or visualization.

Objective: All members of the expert group should **feel confident enough to explain the topic to others**.



3. Phase:

- > The experts return to their original **home groups (core groups)**.
- > They inform the other members of the findings from their sub-area.
- > They **teach** their group members.
- > The group can create exam questions at the end, which are taken up by the teachers in the subsequent exchange phase. This makes it possible to review learning progress.
- > After the third phase, every student must be informed **about all sub-areas**.

<https://www.youtube.com/watch?v=euhtXUgBEts>

Task 3

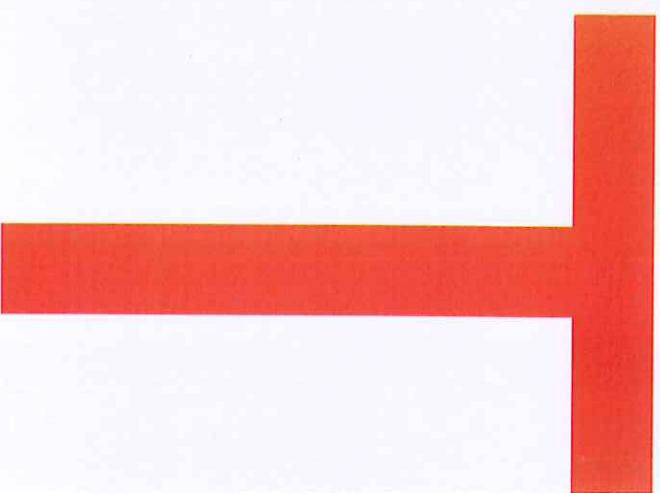
Task: Implement the jigsaw method

Interaction pattern: Individual / Group Work

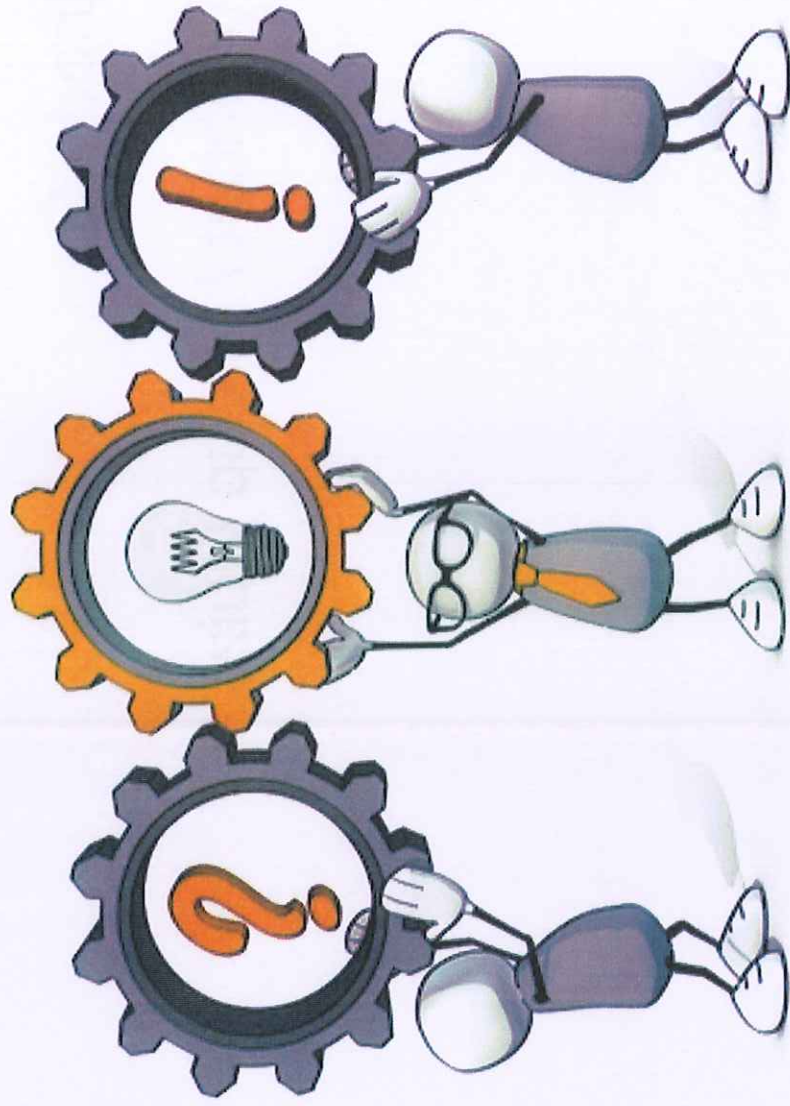
Location: Classroom

Product: Presentation of the method

Time: 60 Min.



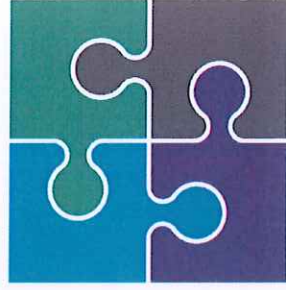
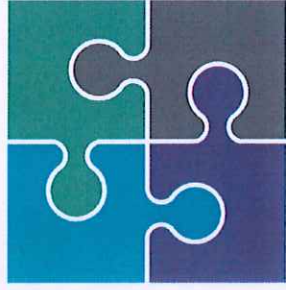
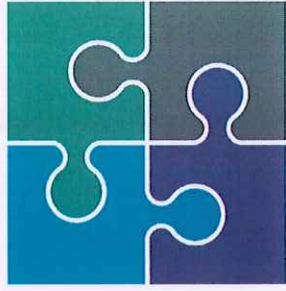
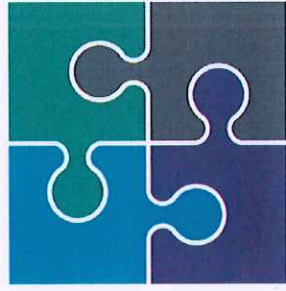
Time for statements, reflections, questions



Steps of today's lesson

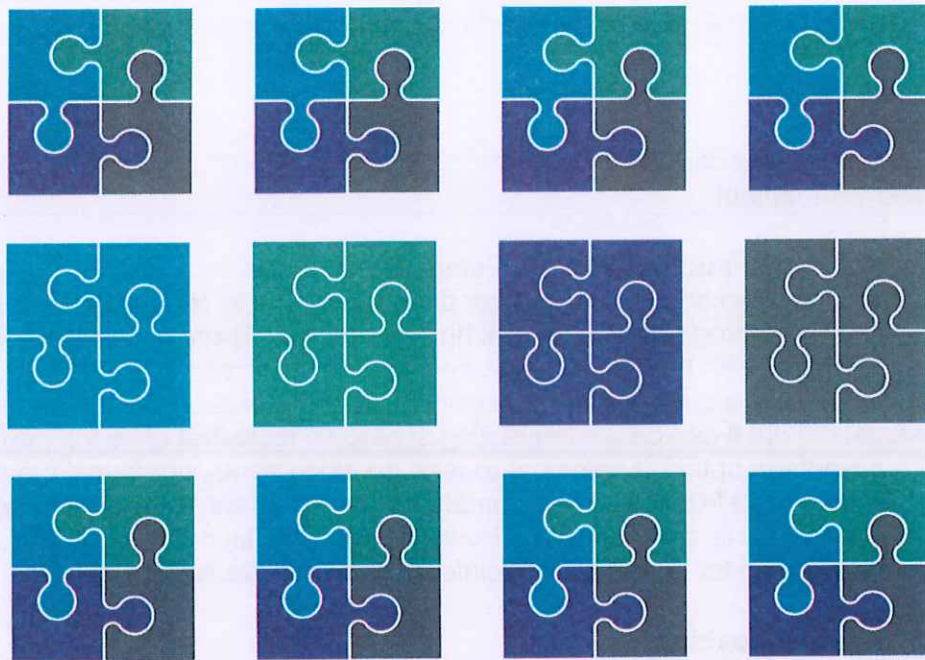
- Presentation ✓
- Jigsaw Method ✓
- Evaluation (Kahoot / Group Quiz)

Thank you for your attention!



Presentation

Jigsaw Method



18 tips for the perfect presentation

Tip 1: Maintain eye contact during the presentation

To make each of your listeners feel important and to make them feel personally addressed, it is particularly important to maintain eye contact with the audience during the presentation. This not only radiates self-confidence, but also encourages the audience to pay attention.

Easier said than done, you think? Here are two tips to help you:

- Find a person in the audience who you know will listen to you attentively and look at you with interest. Make eye contact with this person at the beginning of the presentation. When you have become more confident after a few sentences, you can let your gaze wander over the audience to address the other listeners as well. Keep returning your gaze to the person you started with so as not to become unsure.
- Another alternative is to find a fixed point in the room (preferably on the wall behind the audience), which you fixate on at the beginning of the presentation. Similar to the first example, once you have achieved confidence, you can let your gaze wander over the audience and keep returning to the previously chosen fixed point.

Don't look at the screen!

Don't look at the floor!

Don't just look at your index cards!

Don't just look at your laptop!

Tip 2: Keep an eye on the audience despite stage fright

The best projects have failed because a speaker did not succeed in convincing their audience. Resistance to something new is a normal human reaction. Therefore, a presenter must first and foremost engage with their personality, because the lion's share of information is conveyed with voice, facial expressions and gestures. Stage fright is one of the biggest enemies of a presentation, but it can create interesting synergy effects that drive top performance. To take advantage of this, it helps not to read the documents, but to make eye contact with the audience. Most listeners find a frontal position too direct. It is better to adopt a basic sideways position, as is the case with a PowerPoint presentation anyway. This posture helps you to remain flexible for gestures that reinforce what you are saying.

Tip 3: Choose the right position

One of the most common questions speakers ask themselves during a presentation is how best to introduce themselves to the audience.

You have a free stage without a lectern

In many cases, you will be facing your audience in an "open space", without a lectern. This situation gives you a lot of room to maneuver, but at the same time also creates uncertainty, as you don't know how to position yourself correctly.

Avoid standing in front of the audience! This frontal confrontation is unconsciously perceived negatively by the audience. It is perceived by the audience as a kind of frontal attack and causes stress in the audience.

Make sure you stand slightly to the side of the audience as often as possible. If you notice during the presentation that you are standing in front of your audience again, simply move 20 cm to the left or right.

You have a lectern at your disposal

A lectern makes it easier to decide how to position yourself in front of the audience. However, to prevent your presentation from being too monotonous, it is advisable to leave the "safe

position" behind the lectern from time to time, for example to walk to the other side of the screen or to show something on the flipchart. This brings movement into your presentation and grabs the attention of your audience.

Tip 4: Optimal use of gestures and facial expressions

To emphasize the content of your presentation, it is advisable to underline it with the help of suitable gestures. Avoid keeping your hands in your trouser pockets during the presentation. It is helpful if you use a presenter for your presentation.

Always stand up straight but try not to appear tense. You can achieve this by trying to emphasize what you are saying with your hands and arms. It is also helpful if you stand in front of your audience in the basic sideways position, as mentioned above. The arm facing away from the audience can simply hang down from your body and operate the presenter, for example, while the arm facing the audience emphasizes what you are saying.

Your facial expressions should always be **friendly** and open. **Smile** and show that you enjoy the topic and presenting your results.

Tip 5: Avoid distractions

You will often not be able to avoid using aids. For example, you may need to use a laser pointer to show something on the screen or use a pen to make notes on a flipchart.

To avoid distractions for you and the audience, get into the habit of putting away tools that you don't currently need! This way, you won't be tempted to deal with them in the first place. You will also have your hands free for supporting gestures.

Tip 6: Be prepared: Practice makes perfect

If you prepare well, you won't upset yourself or your audience. Because the right language is half the battle in a presentation. Many speakers start to speak too quickly out of excitement. It doesn't matter whether they are reading off the page or speaking freely. To slow down these machine-gun-like volleys, it helps to slow down your body language. You can practice speaking to the point in advance. Because at the end of the sentence, the voice must be lowered, otherwise everyone will be waiting for a continuation. The choice of words is very important. Listeners love to be addressed in images, as the brain immediately makes the corresponding connections. A piece of meat is not nearly as sensual as a tender steak. The language should be serious, but still suitable for everyday use. Lots of foreign words and pompous sentence structure are only required in an academic context. Your thoughts in the run-up to a presentation play a decisive role in your success. If you sabotage yourself and imagine scenes of failure, you deprive yourself of positive energy. To be able to present successfully, it is advisable to be sufficiently prepared. Find out about the topics you want to address in your presentation in order to be prepared for possible questions.

Practice your presentation in advance. But be careful: don't practice too often, otherwise the presentation will come across as memorized and boring!

Sufficient preparation also means that you know when which slide is coming and how many key points are on it. Avoid sentences like "Oh, that's right, I almost forgot...!".

Tip 7: Appear self-confident

A self-confident appearance conveys to the listener that you are confident in your topic and have prepared yourself sufficiently. I have already mentioned one tip for this: Tip 1: Maintain eye contact!

Try to relax and not appear agitated.

And another tip for advanced speakers: step out in front of the lectern and walk into the room of your audience. This also shows self-confidence and increases the attention of your audience.

Tip 8: Effective beginning and end

To captivate your audience right from the start, you should choose an effective opening. Use a quote, video or question. You should also start by giving an overview of the time and structure of your presentation. This outline should run like a common thread through your presentation so that you can always assign the individual content to a bullet point. It is also helpful for your audience to have the outline displayed in a simplified form during the presentation. The end of the presentation should also be effective so that the audience remembers it. Conclude the presentation with a punch line or an appeal, for example.

Tip 9: Speak freely

To make the presentation as lively as possible, you should avoid reading. Speak freely, slowly and clearly. If you are not yet confident in what you are presenting, you should use index cards. But note: **No** continuous text, just short, concise bullet points! If you use index cards as support, it is particularly advisable at this point to memorize at least the beginning and end of your presentation, as it is particularly important to look at the audience at these points.

Tip 10: Avoid filler words

To ensure that your presentation flows as smoothly and confidently as possible, you should avoid using filler words such as "um", "so", etc. For your audience, these convey uncertainty and insufficient preparation.

Tip 11: Bring in a souvenir

In addition to a handout, other small gifts can also significantly improve your presentation. For example, if you are giving a presentation about your hobby of fishing, show the audience your fishing equipment.

Tip 12: Use different media

A presentation can quickly become boring and monotonous. To avoid this, it is advisable to use different media. For example, combine a projector and flipchart, use the whiteboard or show something practical on a model. This will increase your audience's attention enormously.

Tip 13: Use pauses in action

When giving a presentation, you should bear in mind that you have already heard the content several times - but your audience probably hasn't! Therefore, give your audience enough time to read and understand the content of your slides.

Note: The PowerPoint slides support your presentation and do not replace it!

After the first few words you say, you can pause for effect to increase the audience's attention. You should also use pauses for effect during the presentation and give the audience time to think. Don't rush through your content. The golden rule also applies here - **less is more!**

Tip 14: Vary your speaking speed and volume

A monotonous and quiet way of speaking often leads to your audience "falling asleep". A tip for successful presentations: Vary your speaking speed, volume and modulation during your presentation. Emphasize facts by speaking in a particularly dramatic way (only where appropriate, of course) and thus attract the attention of your audience.

You can create tension in your audience by changing your voice. Ideally, combine this tip with "Tip 13 - Use pauses for effect".

Tip 15: Speak the language of the audience

You should already think about your target group when creating the presentation. This will also help you to present successfully later on. It is particularly important that you speak the language of the audience. Use appropriate and target group-relevant examples. Use "strong" and meaningful words in the shortest possible sentences so that you don't lose your audience.

Tip 16: Involve the audience

Always try to keep your audience's attention. To do this, it is advisable to regularly involve the audience. One way of doing this is to ask questions. Deliberately ask "easy" questions so that you can be sure that the audience will answer - and as correctly as possible. Another way in which you can involve the audience in your presentation is by interacting and dialoguing with them. To make a point clearer, you can use an example to explain it in more detail and use a person (whose name you should know) to do so. You can address participants directly and refer to their work.

Tip 17: Dress appropriately

It is important to dress appropriately in order to make a positive impression at a presentation. Pay attention to the dress code and the nature of your presentation. Choose neat and rather simple clothing, avoid excessive jewelry and flashy colors. A well-groomed appearance, including neat hair and a discreet choice of jewelry, contributes to a professional appearance.

Tip 18: Create something with the whiteboard during the lecture

PowerPoint is no longer the tool of choice for a successful presentation. This is because photo collages, company logos on every slide and flashing text boxes often distract from the essentials. A presentation convinces the audience above all when they witness how something is being created. In addition to the classic flipchart, the whiteboard is recommended for this purpose. This is because diagrams, key words and the results of a brainstorming session are written on a whiteboard in real time. Board markers allow a wide range of colors and the magnetic properties allow additional information to be pinned on. The result of the presentation produced in this way is remembered longer than prefabricated slides.

Source: University of Applied Sciences, Berlin
DeepL

Evaluation - Presentation

First name, last name /

Date:

Faculty:

Topic:

Time: (Min.)

		Missing 0 points	unsatisfactory 1 point	appropriate 2 points	very good 3 points
Introduction	arouses interest in the topic, introduction is creative, surprising				
Overview	provides an overview of the topic				
Main part	structure is logical, clear structure evident				
	information is understandable				
Conclusion	summarizes important points				
	asks if there are any questions				
	thanks for listening at the very end				
Professional competence	can answer questions on the topic presented				
Design	font size and type sensible, appropriate				
	recognizable design concept and color concept				
	graphics are legible and understandable, images are integrated				
	text to image ratio is appropriate				
Language and appearance	clear and understandable				
	speaks lively and not as if memorized				
	eye contact with all listeners is present from the beginning to the end				
	performed freely, with cheat sheet in hand, but not read out				
	cheat sheet has no sentences, only keywords				
Max. Score: 51	Total number of points achieved:				
	Note:				

Presentation leaflet

*"In presentations, you are always judged **by how** you present yourself. What the audience remembers is **how** you present yourself and your cause. However, what you have said will soon be forgotten."* (Maurer/ Gurzeler: Handbuch Kompetenzen, Bern 2010, page 74)

1. You prepare your presentation thoroughly and take notes. > Cheat sheet, with page numbers. **Do not** write down fully-formulated sentences, **only** keywords!
2. If necessary, you have organized aids (e.g. projector or visualizer) and have familiarized yourself with them.
3. Think of a good, interesting introduction, arouse interest in your topic! *"Win over the audience in the first 3 sentences, these must be convincing!"* (Maurer/Gurzeler, p. 75)
4. You stand casually in front of the class and hold the notes in your hands. Don't just read the text off the page! Maintain contact with the audience.
5. You speak loudly, slowly, clearly and pause when necessary. Always maintain eye contact!
6. You use short, correct main clauses and comprehensible words.
7. The presentation always consists of **introduction - main part - conclusion**.
8. **Introduction:** Welcome the class. Create attention with the first sentences, use a picture or a suitable quote.
9. **Main part:** Logical structure and clear outline; set priorities and emphasize core statements. Important points can also be repeated or emphasized visually. Don't lose the central theme!
10. **Conclusion:** Summarize the most important points again. Invite the audience to ask questions and give them time to think about them.
11. Thank you for listening.

Jigsaw Method - Effect size: 1.20!

The Jigsaw method (also known as the Jigsaw technique or group puzzle) was first carried out by Aronson Elliot in 1971 and published a few years later. It quickly became apparent that the Jigsaw method has **great potential to promote motivation**. This method can also develop discursive and dialogic learning and help to strengthen mutual responsibility for student learning. They are dependent on each other to achieve a common goal and can develop their teamwork skills and the ability to acquire knowledge in a team through the necessary communication, discussions and cooperation. Due to this potential, this method is now part of the standard repertoire of constructivist didactics, i.e. didactics that views learning as a process of self-organization of knowledge.

Brief description

The Jigsaw method is a variant of group work. The group puzzle (and other name for the Jigsaw method) is a collaborative learning method in which learners also act as teachers. The topic is divided into different (partial) contents and worked on and presented independently, first in home groups and then in expert groups.

> Jigsaw method can only be used if the topic can be divided into sub-areas!

Competencies

Students work independently on a section of a topic and present the content in such a way that it is understandable for the other group members. The focus is therefore on cooperative learning within the method.

Goals

- Making knowledge acquisition and transfer collaborative
- Promoting students' communication and creative skills

Jigsaw Method step by step

Jigsaw method can be used in all phases of the lesson:

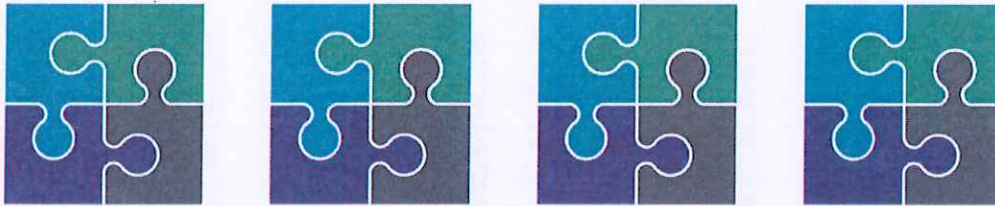
- to introduce new topics
- to deepen and apply basic knowledge
- for revision and preparation for exams

However, an important prerequisite is that the teaching topic can be broken down into different aspects that can initially be considered independently of each other, but which have an inner connection.

Procedure:

1. Phase: Assignment of the home group (core group) and distribution of topics. In preparation, the seating arrangement is changed so that the small groups of 3-4 (max.6) students can be seated at the tables. The materials for the (partial) content are placed on the table groups according to the group size.

The students are divided into core groups, whereby the group size is primarily determined by the number of topics in the later expert groups. **Four topics** have proven to be a good idea, meaning that there are **four members** in the core group and **four in the expert group**. Figure 1 assumes four core groups, home groups, with a total of 16 students. Within the **core groups**, each student works independently on a sub-area of an overall topic and becomes an expert for this sub-area.



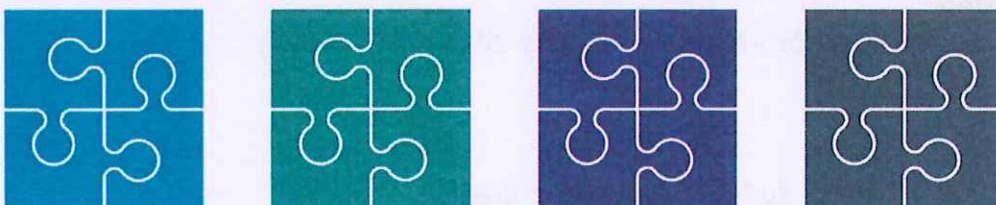
In order to cope with larger numbers of students, it is advisable to assign individual topics twice. For example, with a class size of 21 students, five core groups of four learners each can be formed, with two experts on a sub-topic being represented in one of these groups. Two expert groups then work on the same sub-topic.

2. Phase: All students with **the same topic** meet in the **expert group**.

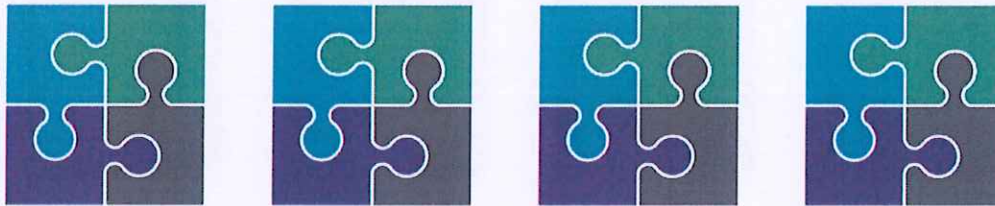
The students who have worked on the same sub-area (= experts) meet in the so-called **expert groups** and exchange ideas, clarify open questions and deepen their knowledge. They then work together to design a model solution for their sub-area.

Mandate of the expert group:

- **Exchange knowledge** and help each other to understand the topic well.
- **Clarify ambiguities**, if necessary with support material or by asking questions.
- Thinking together: **What is the best way to explain our topic?**
- Possibly prepare a **form of presentation or visualization**.
- Objective: All members of the expert group should **feel confident enough to explain the topic to others**.



3. Phase: The experts return to their original **home groups (core groups)** and inform the other members of the findings from their sub-area. They teach their group members. In the expert phase, exam questions can be created at the end, which are taken up by the teachers in the subsequent exchange phase. This makes it possible to review learning progress.



Tips

After the third phase, every student must be informed about all sub-areas. To this end, the results of all sub-areas should be recorded centrally at the end of the group work.

Group Quiz after the Jigsaw Method

Goal: To review and consolidate the content learned in a fun and interactive way.

Preparation:

- Each **home group** prepares **2–3 quiz questions** based on the topic they studied in their expert group.
- Questions can be **multiple choice, true/false, fill-in-the-blank, or open-ended**.
- Make sure the correct answers are written down clearly.

Game Instructions for Group Quiz Battle:

1. **Start the Quiz Round:**
 - One group reads out a question and selects **another group to answer**
2. **Answering:**
 - The chosen group has about **30 seconds** to discuss and give an answer.
 - If they answer **correctly**, they get **1 point**.

- If they are **wrong**, the asking group may try to answer and get the point (optional rule).
3. **Taking Turns:**
- Continue in rounds so that every group asks and answers several times.
4. **Moderation:**
- The teacher (or a student moderator) keeps track of the **score**, makes sure the time is fair, and clarifies answers if needed.



Some Methods

Learning Pace Duet Method

Gallery Walk Method

Four Corners Method

Role Play Method

Learning Poster Method

Learning Stations Method

Learning Pace Duet

Brief description

In the learning pace duet, the students work on the tasks set for them at their individual learning pace. They then compare and discuss their solution with their classmates who have completed their solution at the same time as them. Alternatively, they can also present their results to each other during the exchange phase.

Competencies

Students' independence is promoted during the individual work phases and their social and communication skills during the later exchange phases. At the same time, this method enables them to classify and reflect on their own learning status and working pace in the context of the class.

Preparation

Before starting the method, the exact procedure of this method should be presented to the students and visualized if necessary. No further preparation is necessary.

Procedure

1. Individual work: The students work independently on the task set. By standing up, they signal that they have completed the task and are now available for the exchange phase



2. Partner work: Following the individual work, the students who have finished working on the task at the same time discuss the solution. This phase can also be used, depending on the design of the learning speed duet, for the students to present solutions that are not on the same topic to each other and thus explain them to the other person.



3. Repetition: If the students are to work on several tasks, steps one and two are now repeated. Since the start of the second exchange phase depends on which two

students are finished with the processing time at the same time, different pairings can now arise for the discussion/presentation of the solution.



4. Class discussion: The students present their solutions to the whole class. This can be done, for example, in a short presentation to the class.

Tips

To make the transition to the partner work phase easier for the students, the teacher can hand out colored cards (e.g. red and green) in advance. By holding up the green card, it can be clearly visible to everyone that the student in question has solved the task set and is now looking for an exchange partner. The red card can be used to signal a problem to the teacher and consequently ask for help without saying a word.

To ensure that the method runs smoothly, it is advisable to provide students with a separate area in the classroom for the exchange phase. This way, those who are in the individual work phase are not disturbed by the discussions.

To take account of the heterogeneous performance of the students, sufficient additional tasks should be made available. This allows higher-achieving students to focus on these tasks while the other students still need time to complete the compulsory tasks.

Gallery Walk

Brief description

The gallery walk is a varied method for presenting and explaining visualized group results. Elements of the moving school are used. By presenting the student results in poster form, all results can be presented and explained at the same time.

Competencies

The students independently develop, structure and visualize given learning content. As each student has to present at least once in front of a small group, presentation skills are developed at the same time.

Preparation

It makes sense to define criteria for the design of the posters in advance (see learning poster method). In addition, materials (pens, posters, etc.) must be provided or brought along by the students.

Procedure

1. The students work on the content in small groups and visualize their results on a poster.
2. New groups are then formed, in which one pupil from each poster group is represented.
3. The students present their posters in their assigned groups and switch from poster to poster, similar to an exhibition. This gives each student the opportunity to present. At the same time, the audience takes notes or asks questions about the presentation. If enough time is available, the class should be given the opportunity to look at the posters on their own before the presentation to get a first impression.
- 4 Finally, the individual posters can be discussed and compared in plenary.

Tips

If possible, the gallery walk should not take place in the classroom, as there can be considerable problems with the volume if several students present their posters at the same time. The size of the respective presentation groups can be varied and depends on the size of the class, the available topics and the time available.

Four Corners

Brief description

In the four-corner positioning game, the classroom is divided into four positions - corners A, B, C and D - each representing a specific statement, opinion, solution or perspective. The students position themselves in one of the corners according to their own opinion or assessment. The aim is to take an active stance, formulate reasons and make different points of view visible in the room.

Competencies

The learners should:

- formulate and defend their own points of view
- develop the ability to justify and argue
- respectfully perceive and reflect on the opinions of others
- understand and evaluate contextual relationships

Preparation

- Selection of a suitable question or problem with several (at least four) answer options
- Preparation of the four positions (e.g. attaching signs with A, B, C, D in the corners)
- Definition of the statements assigned to the corners
- Optional: Reflection questions or worksheet for follow-up

Procedure:

1. Introduction to the topic - short briefing on the topic or question
2. Explanation of the four-corner method - each corner stands for a specific position
3. Presentation of the question + statements of the four corners
4. Learners read or listen to the statements and spontaneously decide on a corner
5. Justification of the chosen position - voluntarily or in turn (depending on group dynamics)
6. Discussion between the corners: Why did you choose this position? Are there any doubts?
7. Change option after discussion (who has changed their mind?)
8. Final reflection in plenary or in writing

Tips:

- Deputy positions: If you are not sure, you can stand in the middle and listen
- Role assignment: learners consciously represent a predetermined opinion (e.g. for a change of perspective)
- Follow-up with a writing task: "Why did I choose this corner?"

Four Corners - Sample questions with corner statements / Computing Faculty

Question: What is most important when developing new software?

- A: Clean, maintainable code
- B: User-friendly design
- C: Fast time-to-market
- D: Security and data protection

Question: Which programming language should I learn first - and why?

- A: Python - versatile & beginner-friendly
- B: Java - widespread & industry-oriented
- C: C - good understanding of hardware proximity
- D: JavaScript - ideal for the web and flexible

Question: What is the most common reason why IT projects fail?

- A: Poor communication within the team
- B: Unclear requirements
- C: Unrealistic schedules
- D: Technical complexity is underestimated

Question: What is most important for a good programmer?

- A: Technical knowledge
- B: Problem-solving ability
- C: Ability to work in a team
- D: Creativity

Question: Which career option in IT do you find most exciting?

- A: Data Science / AI
- B: Cybersecurity
- C: Web and app development
- D: IT project management

In-depth reflection questions

The following reflection questions help students to justify their opinions and to deal with other perspectives:

- Why did you choose this corner?
- What do you find particularly convincing about this position?
- Which arguments from the other corners do you find understandable?
- Has anyone made you think or changed your mind?
- How would you explain your position to someone who doesn't understand it?

Role Play

Brief description

With the help of a role play, reality is simulated, and other people's positions are argued. To do this, the individual students put themselves in a (social) role they have chosen or been given and playfully think/feel their way into the shoes of another person and their actions. Through this change of perspective, the students deal with the actions and ways of thinking of another person.

Competencies

The students playfully adopt real-life situations or procedures, deal with the positions of others and thus develop a better understanding of others (empathy skills). Role-playing also enables students to develop and try out strategies for action.

Preparation

The role play requires role cards that are either created by the pupils themselves or provided by the teacher (differentiation possible depending on the performance level of the learners). The roles are distributed, and each pupil prepares their role. This is also possible in small groups. Props (clothing, objects) can also be used to ensure that the learners identify better with their role. The players should also give themselves a different name (fictitious or real). In large classes, there can be an observation group that first formulates its expectations of the game in preparation for the role play. The observation tasks during the game can either be formulated by the learners themselves or given by the teacher. It is important that there is enough space in the classroom to carry out the role play.

Procedure

1. The teacher introduces the situation/problem/conflict.
2. The role play is first played without interruption. If necessary, the players introduce themselves at the beginning. It is important that the players behave according to their (given) role.
3. The observers note down what they notice during the game (e.g.: Did the players play their role credibly? Did they behave according to their role description?)
4. At the end of the role play, the players actively step out of their role (e.g. by putting down the props) and describe their impressions and feelings during the game. In doing so, they analyze their behavior and the reasons for it. The observation assignments are then evaluated.
5. The observation assignments are then evaluated.

6. At the end, the whole class discusses their impressions and experiences during the role play (generalization):

- Can the specific situation described here be generalized?
- Which behaviors or solutions presented in the game can be applied in comparable situations?
- What was the aim and outcome of this role play?
- What could be done better next time?

Tips

In large classes, roles can also be assigned twice, and the role play can be performed several times. In this case, the individual role plays can be compared with each other during the evaluation and the different presentation/solution of the problem/conflict can be discussed.

Learning Poster

Brief description

The students present and visualize the central content of a topic on a learning poster - usually in small groups. The learning poster is then hung up in the classroom.

Competencies

The students **independently** develop, structure and visualize given learning content.

Preparation

In order to ensure that the design of the learning posters is effective, it should be discussed with the class in advance which components belong on a learning poster and which things should be considered when designing it (see the following components in the process).

In addition, materials (posters, pens, glue sticks, etc.) must be brought by the teacher or students and the seating arrangements (group tables) may need to be changed.

Procedure

1. In collaboration with the class, the teacher summarizes the criteria for the design of a learning poster.

Design

- Eye-catcher in the middle of the learning poster
- Clear and structured arrangement of content
- Creativity: Does the poster arouse interest quickly? Can the central information be grasped quickly?

Contents

- Focus on the essentials
 - Emphasize important points
 - Incorporate symbols and images and work with colors (not too much text)
 - Observe spelling and grammar
 - Pay attention to legibility
2. The students then work on their content in small groups and create the learning poster.
3. After the learning posters have been completed, they are hung up in the classroom and viewed by the students together.

4. At the end, the learning posters are discussed and evaluated in plenary. The criteria developed at the beginning for the design of a successful learning poster can serve as orientation for the assessment.

Tips

If all learning posters deal with the same topic, a discussion and evaluation of the individual posters is recommended. If the learning posters deal with different topics, they should not only be hung up, but also presented by the respective group. The gallery walk method can be used to view and discuss the posters.

Learning Stations

Brief description

Station-based learning is a form of open lesson in which students work independently at different stations (usually in the form of table islands) to learn various aspects of a general topic. This involves working on one aspect at each station using **different and varied** work assignments and comparing the solution developed in the process using the sample solution provided. The order in which the stations are to be completed is not always specified.

Competencies

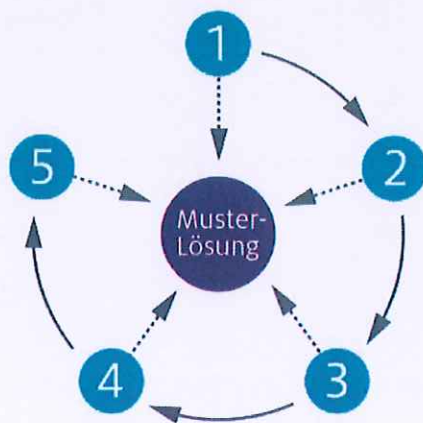
The students independently acquire new subject content on the given main topic, which trains **independent** learning. They learn to use the materials provided independently and to dutifully compare their solutions with the sample solutions provided.

Preparation

Before the lesson begins, the individual stations should be prepared in the form of table islands and given a **number** for orientation. The work assignments to be completed at the stations and the materials required for them should also be prepared in advance on the table islands.

Procedure

1. The students work on the first station. This can be done either individually or in pairs.
2. Once all the tasks at the first station have been completed, the students compare their results with the sample solution and check their correctness. In doing so, they independently correct their own solution and add any missing information.
3. The students now work on the tasks of the next/second station in order to compare the solution worked out there with the respective model solution.



(Musterlösung=Sample solution)

The procedure described in step 3 is repeated until all stations have been visited, the tasks have been completed and the solutions have been compared with the model/sample solution.

Tip

In order to increase student **motivation** and keep it at a consistently high level, the tasks to be completed at the individual stations should be **as varied as possible**.

In order to structure the learning stations in terms of time, the teacher should set a specific working time for each station during which the students have to complete the tasks set and compare the solution with the sample solution provided. After the previously communicated time has elapsed, the teacher finally gives an acoustic signal which heralds the change to the next station.

If the station learning extends over several, non-contiguous lessons, students can be asked by the teacher to form the predetermined table islands independently before the start of the lesson.



Some Methods

Learning Pace Duet Method

Gallery Walk Method

Four Corners Method

Role Play Method

Learning Poster Method

Learning Stations Method

Learning Pace Duet

Brief description

In the learning pace duet, the students work on the tasks set for them at their individual learning pace. They then compare and discuss their solution with their classmates who have completed their solution at the same time as them. Alternatively, they can also present their results to each other during the exchange phase.

Competencies

Students' independence is promoted during the individual work phases and their social and communication skills during the later exchange phases. At the same time, this method enables them to classify and reflect on their own learning status and working pace in the context of the class.

Preparation

Before starting the method, the exact procedure of this method should be presented to the students and visualized if necessary. No further preparation is necessary.

Procedure

1. Individual work: The students work independently on the task set. By standing up, they signal that they have completed the task and are now available for the exchange phase

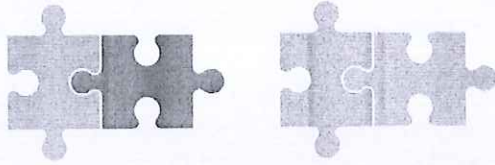


2. Partner work: Following the individual work, the students who have finished working on the task at the same time discuss the solution. This phase can also be used, depending on the design of the learning speed duet, for the students to present solutions that are not on the same topic to each other and thus explain them to the other person.



3. Repetition: If the students are to work on several tasks, steps one and two are now repeated. Since the start of the second exchange phase depends on which two

students are finished with the processing time at the same time, different pairings can now arise for the discussion/presentation of the solution.



4. Class discussion: The students present their solutions to the whole class. This can be done, for example, in a short presentation to the class.

Tips

To make the transition to the partner work phase easier for the students, the teacher can hand out colored cards (e.g. red and green) in advance. By holding up the green card, it can be clearly visible to everyone that the student in question has solved the task set and is now looking for an exchange partner. The red card can be used to signal a problem to the teacher and consequently ask for help without saying a word.

To ensure that the method runs smoothly, it is advisable to provide students with a separate area in the classroom for the exchange phase. This way, those who are in the individual work phase are not disturbed by the discussions.

To take account of the heterogeneous performance of the students, sufficient additional tasks should be made available. This allows higher-achieving students to focus on these tasks while the other students still need time to complete the compulsory tasks.

Gallery Walk

Brief description

The gallery walk is a varied method for presenting and explaining visualized group results. Elements of the moving school are used. By presenting the student results in poster form, all results can be presented and explained at the same time.

Competencies

The students independently develop, structure and visualize given learning content. As each student has to present at least once in front of a small group, presentation skills are developed at the same time.

Preparation

It makes sense to define criteria for the design of the posters in advance (see learning poster method). In addition, materials (pens, posters, etc.) must be provided or brought along by the students.

Procedure

1. The students work on the content in small groups and visualize their results on a poster.
2. New groups are then formed, in which one pupil from each poster group is represented.
3. The students present their posters in their assigned groups and switch from poster to poster, similar to an exhibition. This gives each student the opportunity to present. At the same time, the audience takes notes or asks questions about the presentation. If enough time is available, the class should be given the opportunity to look at the posters on their own before the presentation to get a first impression.
- 4 Finally, the individual posters can be discussed and compared in plenary.

Tips

If possible, the gallery walk should not take place in the classroom, as there can be considerable problems with the volume if several students present their posters at the same time. The size of the respective presentation groups can be varied and depends on the size of the class, the available topics and the time available.

Four Corners

Brief description

In the four-corner positioning game, the classroom is divided into four positions - corners A, B, C and D - each representing a specific statement, opinion, solution or perspective. The students position themselves in one of the corners according to their own opinion or assessment. The aim is to take an active stance, formulate reasons and make different points of view visible in the room.

Competencies

The learners should:

- formulate and defend their own points of view
- develop the ability to justify and argue
- respectfully perceive and reflect on the opinions of others
- understand and evaluate contextual relationships

Preparation

- Selection of a suitable question or problem with several (at least four) answer options
- Preparation of the four positions (e.g. attaching signs with A, B, C, D in the corners)
- Definition of the statements assigned to the corners
- Optional: Reflection questions or worksheet for follow-up

Procedure:

1. Introduction to the topic - short briefing on the topic or question
2. Explanation of the four-corner method - each corner stands for a specific position
3. Presentation of the question + statements of the four corners
4. Learners read or listen to the statements and spontaneously decide on a corner
5. Justification of the chosen position - voluntarily or in turn (depending on group dynamics)
6. Discussion between the corners: Why did you choose this position? Are there any doubts?
7. Change option after discussion (who has changed their mind?)
8. Final reflection in plenary or in writing

Tips:

- Deputy positions: If you are not sure, you can stand in the middle and listen
- Role assignment: learners consciously represent a predetermined opinion (e.g. for a change of perspective)
- Follow-up with a writing task: "Why did I choose this corner?"

Four Corners - Sample questions with corner statements / Computing Faculty

Question: What is most important when developing new software?

- A: Clean, maintainable code
- B: User-friendly design
- C: Fast time-to-market
- D: Security and data protection

Question: Which programming language should I learn first - and why?

- A: Python - versatile & beginner-friendly
- B: Java - widespread & industry-oriented
- C: C - good understanding of hardware proximity
- D: JavaScript - ideal for the web and flexible

Question: What is the most common reason why IT projects fail?

- A: Poor communication within the team
- B: Unclear requirements
- C: Unrealistic schedules
- D: Technical complexity is underestimated

Question: What is most important for a good programmer?

- A: Technical knowledge
- B: Problem-solving ability
- C: Ability to work in a team
- D: Creativity

Question: Which career option in IT do you find most exciting?

- A: Data Science / AI
- B: Cybersecurity
- C: Web and app development
- D: IT project management

In-depth reflection questions

The following reflection questions help students to justify their opinions and to deal with other perspectives:

- Why did you choose this corner?
- What do you find particularly convincing about this position?
- Which arguments from the other corners do you find understandable?
- Has anyone made you think or changed your mind?
- How would you explain your position to someone who doesn't understand it?

Role Play

Brief description

With the help of a role play, reality is simulated, and other people's positions are argued. To do this, the individual students put themselves in a (social) role they have chosen or been given and playfully think/feel their way into the shoes of another person and their actions. Through this change of perspective, the students deal with the actions and ways of thinking of another person.

Competencies

The students playfully adopt real-life situations or procedures, deal with the positions of others and thus develop a better understanding of others (empathy skills). Role-playing also enables students to develop and try out strategies for action.

Preparation

The role play requires role cards that are either created by the pupils themselves or provided by the teacher (differentiation possible depending on the performance level of the learners). The roles are distributed, and each pupil prepares their role. This is also possible in small groups. Props (clothing, objects) can also be used to ensure that the learners identify better with their role. The players should also give themselves a different name (fictitious or real). In large classes, there can be an observation group that first formulates its expectations of the game in preparation for the role play. The observation tasks during the game can either be formulated by the learners themselves or given by the teacher. It is important that there is enough space in the classroom to carry out the role play.

Procedure

1. The teacher introduces the situation/problem/conflict.
2. The role play is first played without interruption. If necessary, the players introduce themselves at the beginning. It is important that the players behave according to their (given) role.
3. The observers note down what they notice during the game (e.g.: Did the players play their role credibly? Did they behave according to their role description?)
4. At the end of the role play, the players actively step out of their role (e.g. by putting down the props) and describe their impressions and feelings during the game. In doing so, they analyze their behavior and the reasons for it. The observation assignments are then evaluated.
5. The observation assignments are then evaluated.

6. At the end, the whole class discusses their impressions and experiences during the role play (generalization):

- Can the specific situation described here be generalized?
- Which behaviors or solutions presented in the game can be applied in comparable situations?
- What was the aim and outcome of this role play?
- What could be done better next time?

Tips

In large classes, roles can also be assigned twice, and the role play can be performed several times. In this case, the individual role plays can be compared with each other during the evaluation and the different presentation/solution of the problem/conflict can be discussed.

Learning Poster

Brief description

The students present and visualize the central content of a topic on a learning poster - usually in small groups. The learning poster is then hung up in the classroom.

Competencies

The students **independently** develop, structure and visualize given learning content.

Preparation

In order to ensure that the design of the learning posters is effective, it should be discussed with the class in advance which components belong on a learning poster and which things should be considered when designing it (see the following components in the process).

In addition, materials (posters, pens, glue sticks, etc.) must be brought by the teacher or students and the seating arrangements (group tables) may need to be changed.

Procedure

1. In collaboration with the class, the teacher summarizes the criteria for the design of a learning poster.

Design

- Eye-catcher in the middle of the learning poster
- Clear and structured arrangement of content
- Creativity: Does the poster arouse interest quickly? Can the central information be grasped quickly?

Contents

- Focus on the essentials
 - Emphasize important points
 - Incorporate symbols and images and work with colors (not too much text)
 - Observe spelling and grammar
 - Pay attention to legibility
2. The students then work on their content in small groups and create the learning poster.
3. After the learning posters have been completed, they are hung up in the classroom and viewed by the students together.

4. At the end, the learning posters are discussed and evaluated in plenary. The criteria developed at the beginning for the design of a successful learning poster can serve as orientation for the assessment.

Tips

If all learning posters deal with the same topic, a discussion and evaluation of the individual posters is recommended. If the learning posters deal with different topics, they should not only be hung up, but also presented by the respective group. The gallery walk method can be used to view and discuss the posters.

Learning Stations

Brief description

Station-based learning is a form of open lesson in which students work independently at different stations (usually in the form of table islands) to learn various aspects of a general topic. This involves working on one aspect at each station using **different and varied** work assignments and comparing the solution developed in the process using the sample solution provided. The order in which the stations are to be completed is not always specified.

Competencies

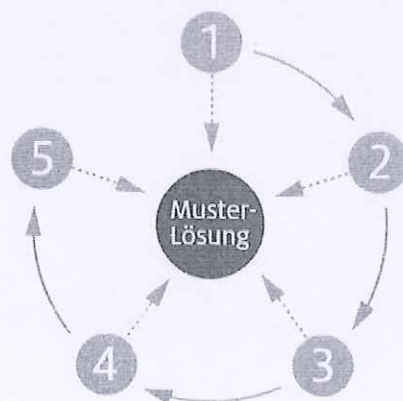
The students independently acquire new subject content on the given main topic, which trains **independent** learning. They learn to use the materials provided independently and to dutifully compare their solutions with the sample solutions provided.

Preparation

Before the lesson begins, the individual stations should be prepared in the form of table islands and given a **number** for orientation. The work assignments to be completed at the stations and the materials required for them should also be prepared in advance on the table islands.

Procedure

1. The students work on the first station. This can be done either individually or in pairs.
2. Once all the tasks at the first station have been completed, the students compare their results with the sample solution and check their correctness. In doing so, they independently correct their own solution and add any missing information.
3. The students now work on the tasks of the next/second station in order to compare the solution worked out there with the respective model solution.



(Musterlösung=Sample solution)

The procedure described in step 3 is repeated until all stations have been visited, the tasks have been completed and the solutions have been compared with the model/sample solution.

Tip

In order to increase student **motivation** and keep it at a consistently high level, the tasks to be completed at the individual stations should be **as varied as possible**.

In order to structure the learning stations in terms of time, the teacher should set a specific working time for each station during which the students have to complete the tasks set and compare the solution with the sample solution provided. After the previously communicated time has elapsed, the teacher finally gives an acoustic signal which heralds the change to the next station.

If the station learning extends over several, non-contiguous lessons, students can be asked by the teacher to form the predetermined table islands independently before the start of the lesson.

