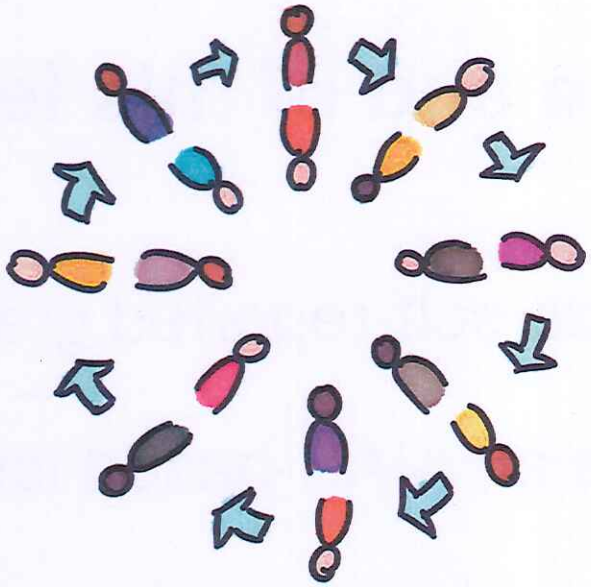

5. AI Exploration
1. No AI
AIAS
4. Full AI
2. AI Planning
3. AI Collaboration



Unit 5_3

At the end of this lesson you can…

analyze self-reported grades.

create an AIAS-based lesson.

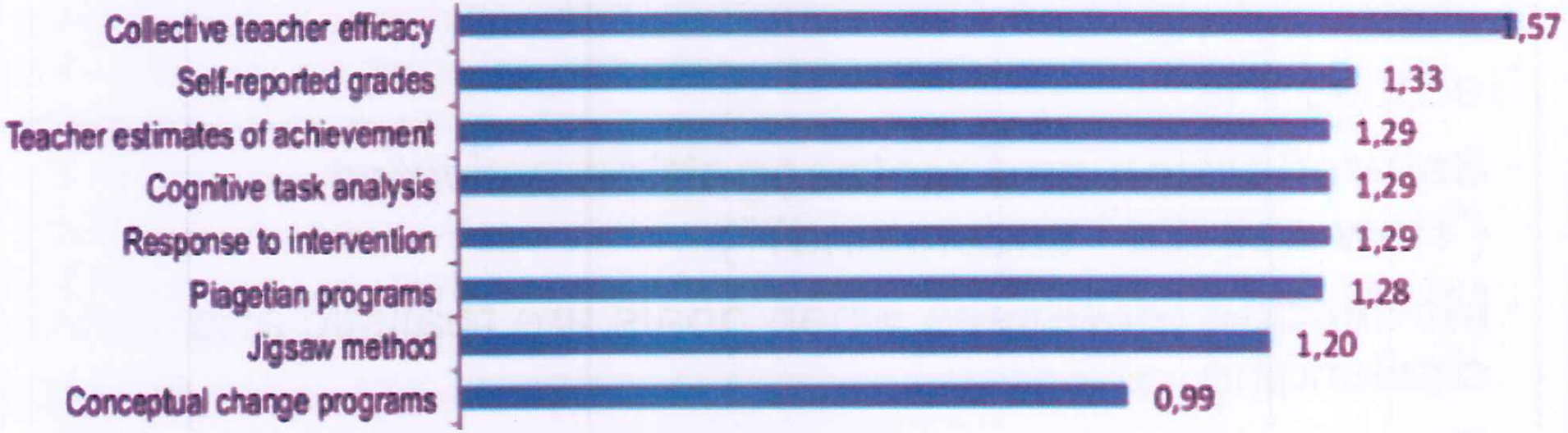
perform Speaking Chain.

Steps of today's lesson

- Self-reported grades
- AIAS-based lesson
- Speaking chain
- Evaluatuion

Self-reported Grades

Effect size: 1,33



Self-reported Grades

Why is this so effective?

Because it is:

- **Self-reflection and metacognition** activated ("How well did I understand?")
- **Motivation increases** when goals are realistic and challenging
- Promotes **personal responsibility** ("I have an influence on my learning")

Effect According to Hattie

- ✅ Very effective, promotes realistic self-assessment
- ✅ Promotes motivation and clarity of purpose
- ✅ Supports metacognition and self-regulation
- ✅ Strengthens personal responsibility and reflective learning

Task 1

Task: On page 2 in the script 5_3 you find a template for a students self-reflection. Analyze it. Plan the time, date, when you will use it in your classes.

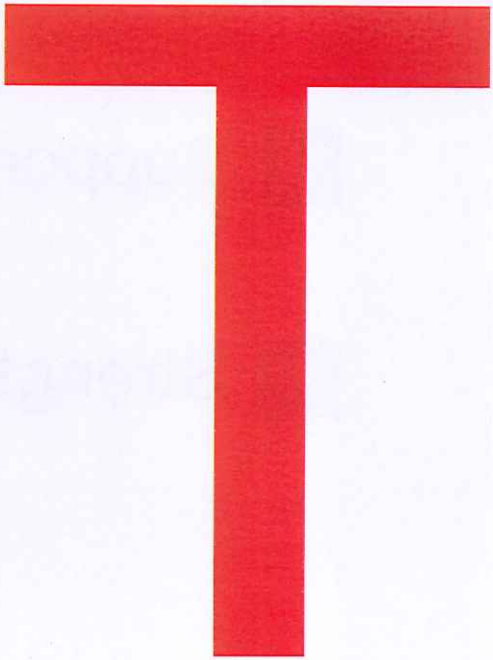
Interaction pattern: Individual/Partner work

Location: Classroom

Resources: Script

Product: -

Time: 10 Min.



Steps of today's lesson

- Self-reported grades ✔
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AIAS-Based Lesson

Brief comparison: Human vs. AI

Aspect	Human	Language model (like ChatGPT)
Thinks consciously	Yes	No
Has a memory	Yes	Only in the course of the conversation
Knows truth	Can check truth	Calculates probabilities
Learns contextually	Yes, with meaning	Yes, with patterns
Understands meaning	Yes	No - only form & context

AIAS – AI Assessment / Task Scale

1. **No AI** – Assessment **without** AI assistance
2. **AI Planning** – Used for pre-task activities
3. **AI Collaboration** – To help complete task
4. **Full AI** – To complete any elements of the task
5. **AI Exploration** – Used creativly to enhance problem-solving

AIAS – AI Assessment / Task Scale

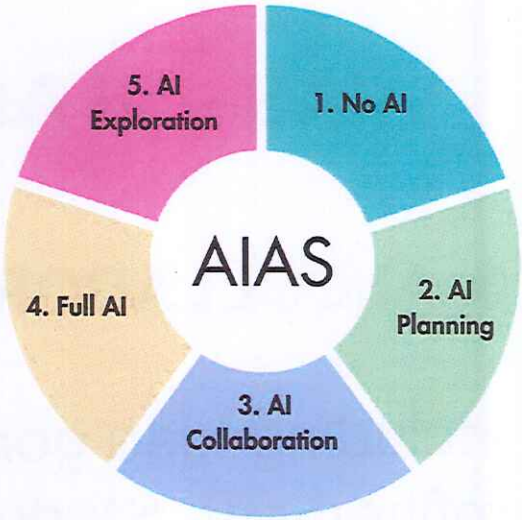
1. **NO AI** – Assessment **without** AI assistance

Assesment/Task is completed entirely without AI, ir controlled environment, ensuring that students rely solely on their knowledge and skills.

> «You must not use AI at any point during the task.»

> «You must demonstrate your skills and knowledge.»

AIAS – AI Assessment / Task Scale



2. AI PLANNING – For pre-task activities

Such as brainstorming, outlining an initial research.
This level focuses on the effective use of
AI for planning and refine ideas **independently**.

> «You may use AI for planning, idea development and research.»

> «Your final submission should show how you have developed and refinded these ideas.»

AIAS – AI Assessment / Task Scale

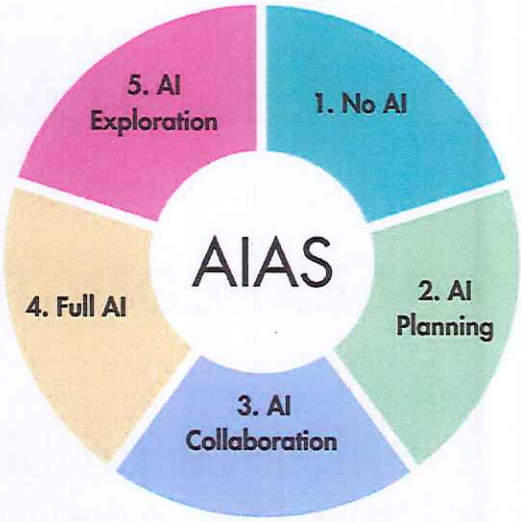
3. AI COLLABORATION – To help complete the task

Including idea generation, drafting, feedback and refinement. Students should **critically** evaluate and modify the AI suggested outputs.

> «You may use AI to assist with specific tasks such as drafting text, refining and evaluating your work.»

> «You must critically evaluate and modify any AI-generated content you use.»

AIAS – AI Assessment / Task Scale



4. FULL AI – To complete any elements of the task

Assessments at this level may also require engagement with AI to achieve goals and solve problems.

> «You may use AI extensively throughout your work either as you wish, or as specifically directed in your task.»

> «Focus on directing AI to achieve your goals while demonstrating your critical thinking.»

AIAS – AI Assessment / Task Scale

5. AI EXPLORATION AI is used **creatively**

To enhance problem-solving, generate novel insight or develop innovative solutions to solve problems. Students and teachers co-design tasks to explore unique AI applications within the field of study.

> «You should use AI creatively to solve the task, potentially co-designing new approaches with your teacher.»

Prompting

Task 2

Task: In the script 5_3, page 3-12, you will find AIAS-based 5-lesson model for all BSDU faculties. Find your faculty. Analyze the steps for a 5-lesson model. Create (without ChatGPT!) according to this example a lesson plan for a topic of your modul for this semester. Guide your students in useful and correct prompting (page 15-17).

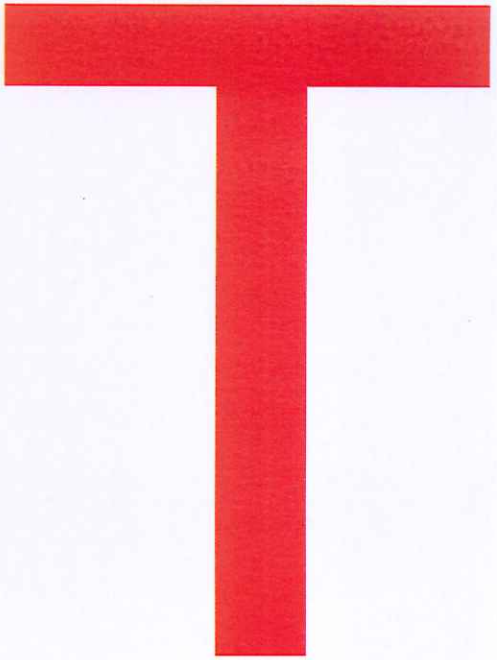
Interaction pattern: Individual/Partner work

Location: Classroom

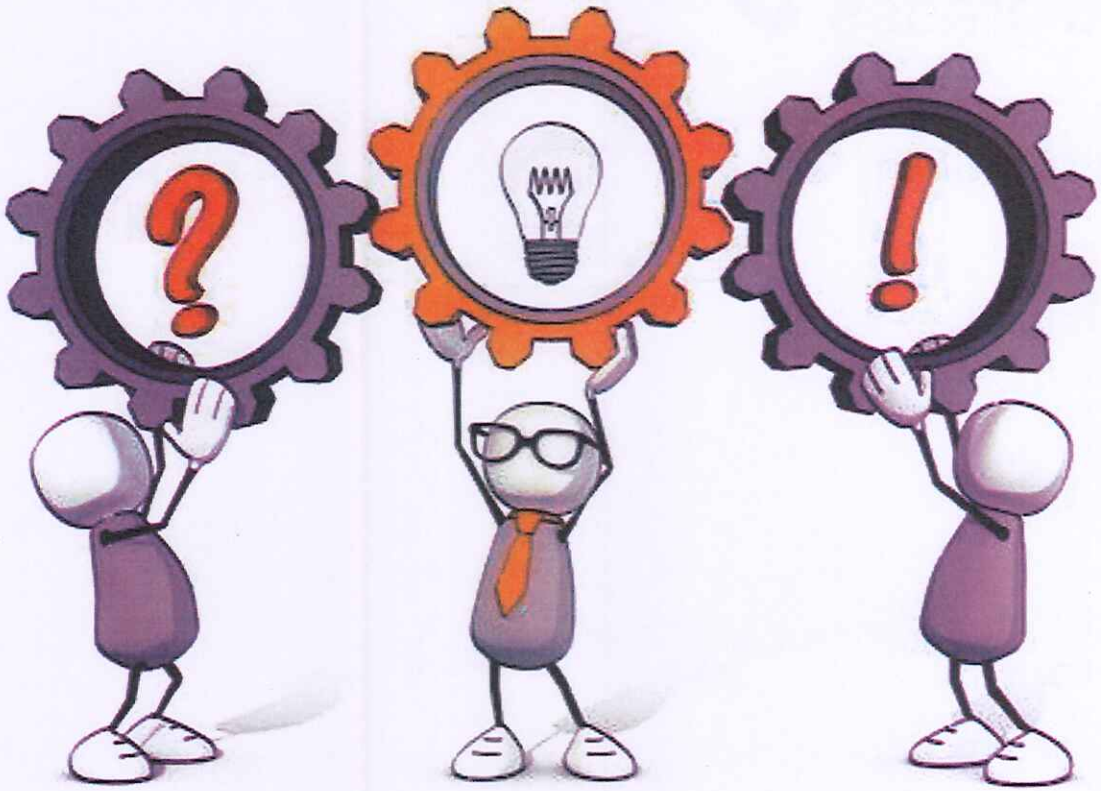
Resources: Script

Product: AIAS-based lesson plan

Time: 60 min.



Time for statements, reflections, questions



Steps of today's lesson

- Self-reported grades ✔
- AIAS-based lesson ✔
- Speaking chain
- Evaluatuion

Speaking Chain

Action-oriented means that learners develop their competences through their own actions.

Speaking Chain Method at BSDU

Purpose of the Method

'Speaking Chain' method promotes:

structured, respectful, and equal participation in classroom discussions. It strengthens speaking skills, active listening, and mutual respect —

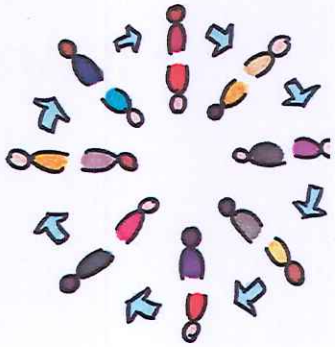
> key competencies in action-oriented teaching!

Preparation

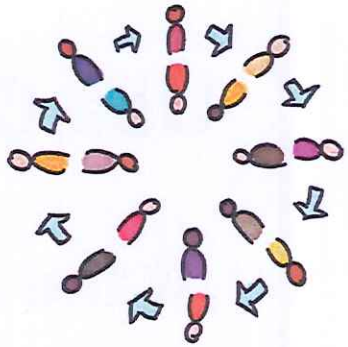
1. Choose a Speaking Object:
Small ball, stick, or any item that clearly shows who has the right to speak.

2. Arrange the Seating:
Ideally a **circle** or **semi-circle** for up to 15 participants.

3. Prepare a Simple Question:
Example: 'What was challenging during your internship?'



Implementation in Class



Step-by-step Guide:

- Start calmly and explain the method: **Only** the person holding the object may speak.
- Clarify the rules: **no** interruptions, but respectful **listening**.
- Give an example yourself to model the process.
- Let the object move around — everyone gets a turn.
- Optional: short reflection at the end.

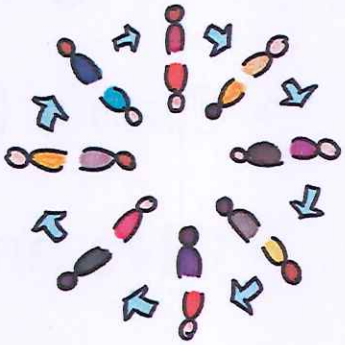
Use Cases

At the beginning of a session/lesson:

'What do you already know about this topic?'

Midway:

'What has been clear or confusing so far?'



At the end:

'What is one thing you are taking away from today?'

Important!

During the Speaking Chain, step back deliberately.

Your job is to hold the space, **not** to fill it. You are **not** the central speaker!

Trust your students — they can speak **without** your evaluation.

That's where real learning begins!

Task 3

Task: In the script 5_3, page 18-20, you will find details about the 'Speaking Method'. Please read. Share your opinion about the two variants (**classic and flexible**) with your partner. Which one makes when sence?

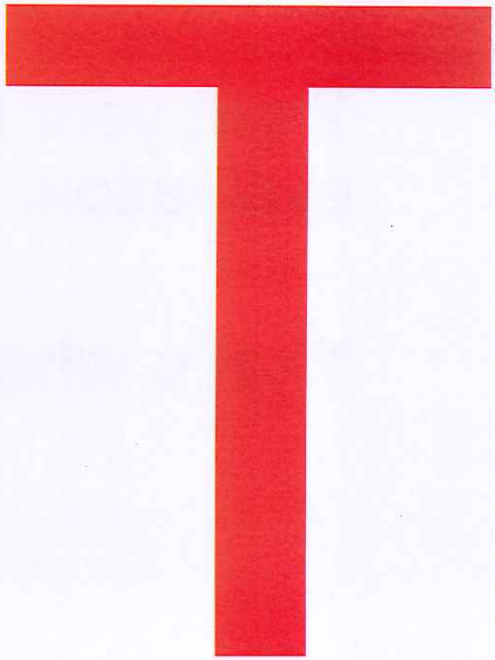
Interaction pattern: Individual/Partner work

Location: Classroom

Resources: Script

Product: -

Time: 15 min.



Task 4

Task: Let's perform it!

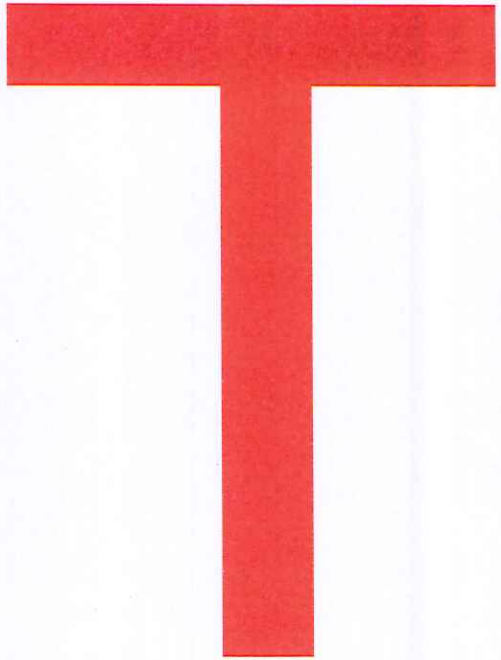
Interaction pattern: Individual/Plenary work

Location: Classroom

Resources:

Product:

Time: 20 min.

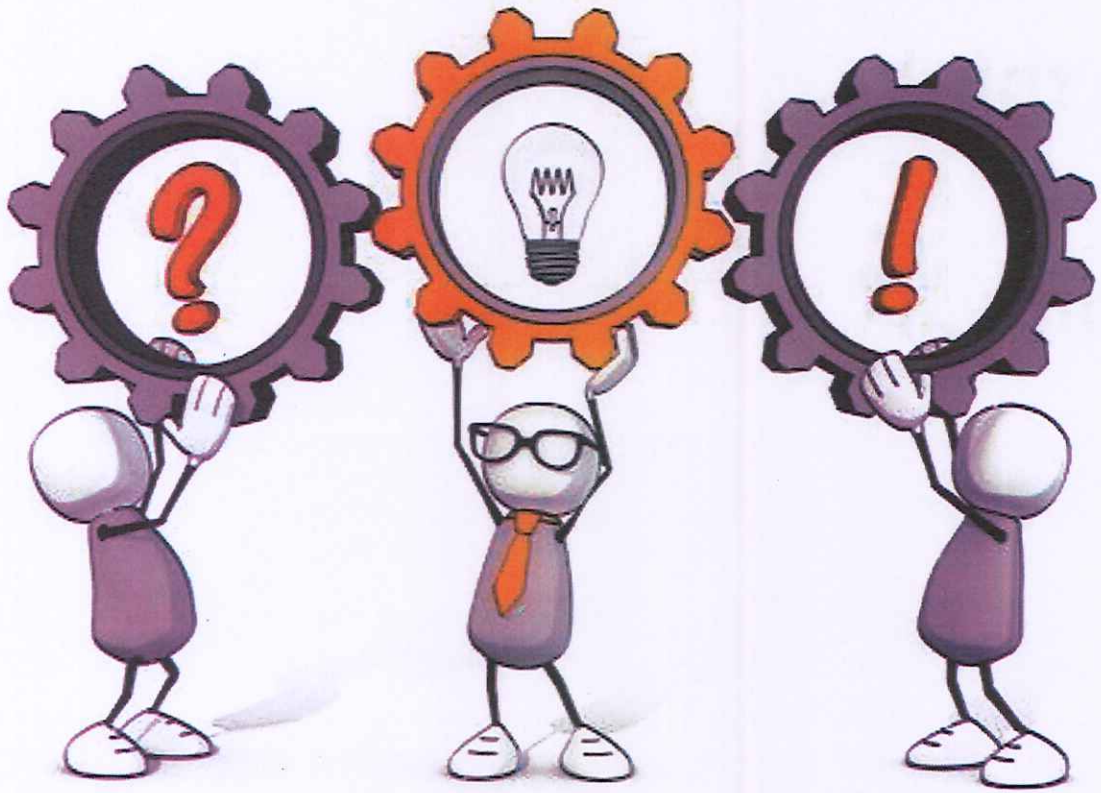


"Can you describe one small change in your teaching that had a big impact, and why it worked so well?"

"I used to think …

Now I think …”

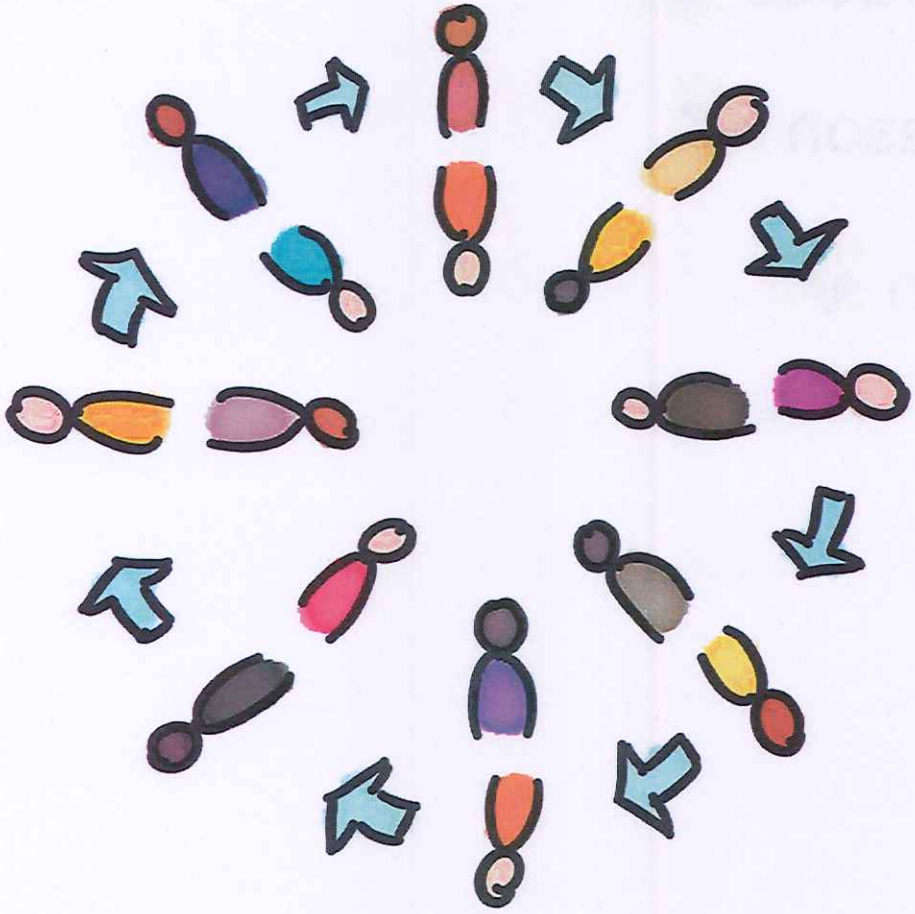
Time for statements, reflections, questions



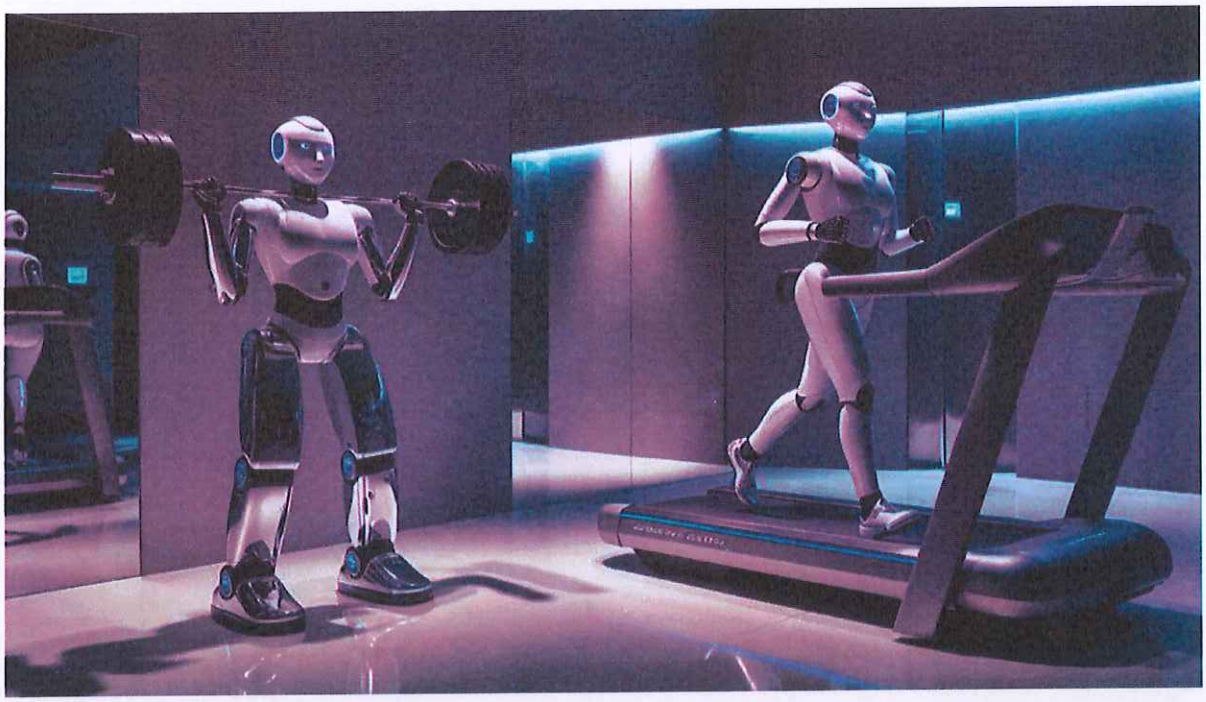
Steps of today's lesson

- Self-reported grades ✅
- AIAS-based lesson ✅
- Speaking Chain ✅
- Evaluation ✅

Thank you for your attention!



How generative AI can reinforce learning resistance



According to «Cognitive miser theory» (Fiske & Taylor 2013), people tend to avoid cognitive effort. Learners have been doing this for a long time – for example, by copying things down. With AI tools such as Chat-GPT, this is now easier than ever.

Today, we can observe learners solving tasks directly with Chat-GPT in many classrooms and continuing education courses. Nuxoll (2024) calls this "skill skipping": A result is delivered, but no learning process is undergone. However, learning does not come from correct answers, **but from independent thinking**.

It is not without a certain irony that solving tasks in this way can be interpreted as competence-oriented. In fact, in many professional situations, it may make sense to use an AI language model to complete tasks such as writing an e-mail. Nevertheless, it is not effective to do so in an educational setting, as writing (and, by extension, reading) is learned less effectively.

A metaphor helps to illustrate this: It is clear to everyone how absurd it would be to send a robot to the gym if you want to train your body. Less obvious, but just as absurd, would be to use ChatGPT to solve a learning task in an educational context. Educational institutions are like gyms for the brain. If you don't go there and exercise your brain cells yourself, there is no training effect or learning gain.

Looking at "skill skipping" from the perspective of resistance to learning, the question arises as to why learning does not have positive connotations. Learning in educational contexts is often perceived as an imposition, which generates resistance

and avoidance strategies (just think back to your own school days). Yet it is a central goal of teachers, lecturers, and adult educators to enable successful learning. This raises the question of how and why resistance to learning arises. According to subjective learning theory, resistance to learning arises when learners cannot see **any subjective meaning** in a learning situation or feel compelled to learn without seeing any personal benefit. This leads to them refusing to learn, **becoming unmotivated**, or only learning superficially.

If tasks or learning paths are too far removed from the learners' everyday lives and are not perceived as meaningful, they often react defensively – for example, with automated clicking through or the use of AI. In this case, learners do not engage with the content in depth and have no opportunity to pursue their own learning interests or develop their own questions. This leads to learning being experienced even more as something external, which can trigger even more resistance to learning. A vicious circle.

What Can Teachers Do?

AI can undermine self-directed learning. Meaningful learning requires time and subjectivity – not just technology. It is essential that teachers recognize and act on unreflective applications of AI. Here are a few suggestions:

Talk to learners about learning. This creates space for reflection, which can raise awareness and strengthen subjective relevance. This requires time for questions, confusion, and self-reflection. And teachers gain a better understanding of the origins of resistance to learning, which in turn enables them to take action.

An obvious approach would be to have learners discuss the image of the two robots in groups and create transparency right away: **"You can solve (almost) all tasks in class with AI. Do you want that - and why?"** This promotes awareness of the learning process.

From a culture of correct results to a culture of learning. When teachers place a high value on the right result, for example by only checking the correctness of learners' solutions, they unconsciously give learners an incentive to use AI for all these tasks.

Instead, it is more effective to create awareness that a correct, AI-generated result is largely worthless for learning. **The path to the result, i.e., the learning process, is central, as are the mistakes made along the way**. These provide excellent opportunities for learning. In this sense, assessments document learning progress rather than the result.

For some teachers, this is a major but essential cultural change.

Fig. 1

Transfer responsibility to learners. Many teachers do not want to constantly point out that learners should not use AI to solve tasks. In addition, there are sometimes tasks where **AI support can be helpful**. The following idea comes from Tobias Seidl: Tasks where it is important to think for oneself **first** in order to achieve the learning objectives are marked with a warning (Fig. 1). This allows teachers to avoid the traditional cat-and-mouse game. Learners feel taken seriously and the responsibility for their learning and the use of AI is subtly transferred to them.

If educational institutions are seen as "fitness centers for the brain," the "training" learning process must not be outsourced or automated. In a world shaped by AI, it is crucial that learners **think for themselves,** reflect, and expand their options for action.

Teachers and education officials are therefore called upon to design learning settings that enable expansive learning processes rather than promoting defensive avoidance strategies.

Source: Dernbach-Stolz/Hassler, PH Zurich, 2025

When AI overtakes learning: A threat to education

by Florian Nuxoll on „Skill skipping“ and the need to focus more on the learning process itself.
(October 14, 2024)

Artificial intelligence (AI) has long been part of our everyday lives and is changing many areas of life—including learning.

As a teacher, I use AI tools every day. They help me find ideas for lessons, write sample texts for English lessons (ChatGPT) and improve them (Deepl Write), and I even use them to help me with diagrams (napkin.ai). These technologies have made my daily work more efficient and given me more space for creative lesson planning. But while I use these tools consciously and purposefully, there is one area that increasingly concerns me: how do students deal with this technology?

AI can enrich the learning process, for example, by summarizing texts, providing suggestions for improvement, or structuring arguments. But what happens when technology is used not to support learning, but as a shortcut? What if it is no longer about developing skills, but only about delivering results?

I am reminded of my niece, who recently told me that she, like many of her classmates, simply has an AI do her advanced geography homework. The teacher never noticed, and the results were satisfactory to good, sometimes even very good. But the real problem lies deeper:

> Students can opt out of the learning process. They hand in the final product, but the journey to get there, the actual learning, doesn't take place. I call this "skill skipping."

Learning is not primarily about having a finished product. School is not just about delivering a good text, an impressive poster, or a convincing presentation. It is primarily about acquiring knowledge and skills for oneself—through research, critical thinking, and independent formulation. The learning process is what constitutes sustainable education. When students use AI to skip this process, they lose exactly that: the opportunity to develop their skills and truly learn.

In professional life, it is often unimportant how you arrive at a result—what counts is the end product. An engineer does not have to explain whether she used a calculator, complex software, or her mental arithmetic skills to perform her calculations, as long as the calculations are correct. A baker is judged by how his bread rolls taste, not by how he made them. In education, it's different: here, it's the journey that counts, not the destination.

The challenge for schools, and indeed for universities, is now to recognize this danger to learning and to respond to it. It is not enough to simply tell students, "Don't do that!" Many will – as many of us would have done at their age – look for the easier way out if they can find it. Instead, we need to design lessons in such a way that the learning process is once again placed more at the center. This means less focus on the end

product and more space for the journey to get there. The "flipped classroom" method can help here: some of the knowledge acquisition takes place at home, while cognitive activation, writing, and discussion take place in class.

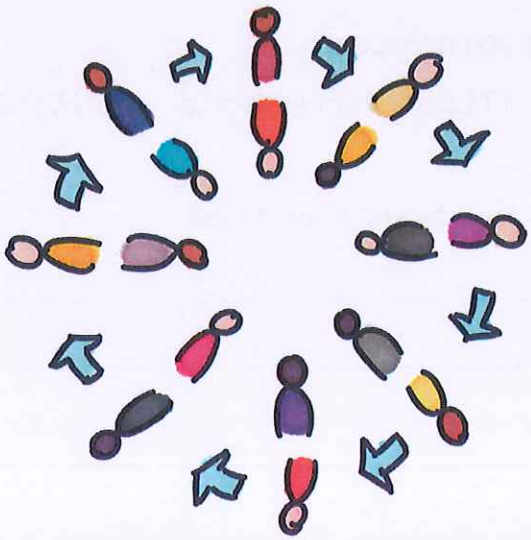
Of course, we need phases in which students work with tablets or notebooks in class and learn how to use generative AI correctly. At the same time, we need to create phases in which digital tools are deliberately excluded. Students must have the opportunity to think, research, and write independently without the crutch of AI. Even in the digital age, the ability to think independently remains one of the most important skills we can give our students.

The possibilities of AI are diverse, but they must not replace the fundamentals of learning. It is our responsibility to manage the use of this technology in such a way that it promotes the learning process rather than shortening it. We owe this to our students—and ultimately to the society they are growing up in.

Self-Reported Grades (Effect size: 1,33)

AIAS-Based 5-Lesson Model

Speaking Chain



Before and After the Exam

Student Name: _____

Date: _____

Faculty / Trainer: _____

Module / Topic: _____

Before the Exam

1. How confident do you feel?

☐ Very confident ☐ Quite confident ☐ A bit unsure ☐ Not confident

2. What score or grade do you expect?

→ ____ / 100 or Grade: ____ (A / B / C / D / Fail)

3. Why do you expect this result?

Short reason: _____

_____

After the Exam

4. What was your actual result?

→ _____ / 100 or Grade: _____ (A / B / C / D / Fail)

5. Did you get the result you expected?

☐ Yes ☐ Almost ☐ Lower than expected ☐ Higher than expected

6. What do you want to do differently next time?

_____

_____

AIAS-based 5-lesson model for all BSDU faculties

Health Care

Lesson 1 - No AI

Topic: Care planning after manual initial consultation
Task: Create a care plan based on a case study (patient with type 2 diabetes) - without the Internet or tools.
Instruction:
Use standardized care models and your experiential knowledge.

Lesson 2 - AI Planning

Topic: Targeted use of AI in care planning
Task: Think about where an AI can help - and where not?
Instruction:
Prompt plan: "Give me a care plan for a 70-year-old male with type 2 diabetes, living a-lone, with mild dementia."

Lesson 3 - AI Collaboration

Topic: Symptom analysis with AI and nursing knowledge
Task: Describe symptoms (e.g. sudden trembling, weakness, thirst) to an AI tool. Develop an action plan with the AI.
Instruction:
Prompt: "A patient shows signs of confusion and trembling. What could be the causes and what should a caregiver do first?"

Lesson 4 - Full AI

Topic: Patient education through AI
Task: Have ChatGPT create an information sheet for relatives about high blood pressure (hypertension).
Instruction:
Prompt: "Write an easy-to-understand patient handout for family members of someone with high blood pressure. Use simple English and practical advice."

Lesson 5 - AI Exploration

Topic: Visionary care with AI
Task: Develop a future scenario: AI-supported home care in rural areas of India
Instruction:
Prompt: "Design a system where AI and local health workers collaborate to provide care in rural India. Include technology, training, and risks."

Computing

Lesson 1 - No AI

Topic: Write your own Python tool (e.g. calculator, to-do list app) without AI help.
Task: Plan, program and document the tool completely yourself.
Instruction:
No use of ChatGPT, GitHub Copilot or Stack Overflow allowed. Focus: Independence and clean logic.

Lesson 2 - AI Planning

Topic: How can AI help me with my next coding project?
Task: Choose a project (e.g. password generator, database query) and plan specifically where AI should help.
Instruction:
Think: What am I good at? Where do I need help?
Write a clear prompt plan.
Prompt exercise: Formulate three precise prompts without sending them.

Lesson 3 - AI Collaboration

Topic: Working with ChatGPT on a complex code project
Task: Contribute your own ideas, get advice, test suggestions critically.
Instruction:
Prompt: "I want to build a weather app using an API. Let's do it step by step - ask me questions first."

Lesson 4 - Full AI

Topic: AI takes over the solution, humans control
Task: Let ChatGPT develop a complete tool.
Instruction:
Prompt: "Create a complete web-based budget calculator with HTML, CSS, and JavaScript."

Lesson 5 - AI Exploration

Topic: Invent a new AI application
Task: Describe the idea + purpose + technical implementation.
Instruction:
Prompt: "I want to design a new AI-powered tool for students. It should solve a real problem."

Manufacturing

Lesson 1 - No AI
Topic: Process analysis: Reducing the set-up time of a machine
Task: Manually document all steps in the set-up process and independently find opportunities for improvement.
Instruction:
Only own experience, no internet, no AI. Analyze with paper & stopwatch.

Lesson 2 - AI Planning
Topic: How can AI help with process optimization?
Task: Plan specifically which data and questions you would ask an AI.
Instruction:
Note: Goal - e.g. less waste, shorter routes.
Write prompt plan: What exactly should the AI analyze or suggest?

Lesson 3 - AI Collaboration
Topic: AI as a consultant in the workshop process
Task: Explain a real-world problem to the AI and work together to find a solution.
Instruction:
Prompt: "We face tool wear problems during milling. Ask me questions to better understand the context, and help me solve it."

Lesson 4 - Full AI
Topic: Automatic creation of a training manual
Task: Have ChatGPT create a complete manual.
Instruction:
Prompt: "Create a step-by-step guide for new machine operators using a CNC lathe."

Lesson 5 - AI Exploration
Topic: The future of AI in manufacturing
Task: Design a fictitious but conceivable scenario.
Instruction:
Prompt: "Imagine a smart factory in 2035. Describe how AI manages the entire production."

Food Production

Lesson 1 - No AI
Topic: Menu planning with seasonal ingredients
Task: Put together a 3-course menu - using only seasonal, regional ingredients in May (Rajasthan).
Instruction:
No internet or AI allowed. Use own knowledge or local market knowledge.
Justify: Why these ingredients? Why this combination?

Lesson 2 - AI Planning
Topic: How can AI help me find or improve new recipes?
Task: Choose a traditional dish (e.g. "Laal Maas", "Dal Baati") that you would like to modify.
Instruction:
Plan 3 targeted prompts like, "Suggest a modern twist to the Rajasthani dish 'Laal Maas' suitable for health-conscious customers."

Lesson 3 - AI Collaboration
Topic: Recipe development together with ChatGPT
Task: Develop a new vegetarian dish for a hotel buffet - together with AI.
Instruction:
Prompt: "I need help creating a new vegetarian buffet dish. Please ask me about my goals and ingredients first."

Lesson 4 - Full AI
Topic: AI develops complete menu - you rate
Task: Have ChatGPT create a complete menu (4 courses) for a wedding event.
Instruction:
Prompt: "Create a 4-course wedding menu for 100 guests, vegetarian, Indian fusion, elegant presentation."

Lesson 5 - AI Exploration
Topic: Visions for the future of gastronomy with AI
Task: Design an innovative application of AI in the kitchen or restaurant of the future.
Instruction:
Prompt: "Imagine an AI tool that helps chefs manage inventory, design recipes, and prevent food waste. How would it work?"

Automotive

Lesson 1 - No AI

Topic: Fault diagnosis on the vehicle - without digital help
Task: Simulate a typical customer problem (e.g. "Engine won't start"). Carry out a complete troubleshooting without digital help.
Instruction:
Document all test steps and observations. Do not use apps, scanners or ChatGPT.

Lesson 2 - AI Planning

Topic: Where can AI help in everyday workshop life?
Task: Analyze your diagnostic process and consider where AI could provide targeted help.
Instruction:
Create 3 scheduled prompts like "What are possible causes for a diesel engine cranking but not starting?"

Lesson 3 - AI Collaboration

Topic: Repair advice together with KI
Task: Work with ChatGPT on a real repair request.
Instruction:
Prompt: "I'm facing a performance issue in a petrol car. The engine feels weak and the MIL is on. Please ask me further questions to help diagnose the issue."

Lesson 4 - Full AI

Topic: AI creates customer recommendation
Task: Give ChatGPT the task of formulating an explanation for gearbox damage.
Instruction:
Prompt: "Write a customer-friendly explanation of a gearbox failure, its possible causes, estimated cost, and repair process."

Lesson 5 - AI Exploration

Topic: AI-supported workshop of the future
Task: Design a system that uses AI for maintenance, scheduling and customer information.
Instruction:
Prompt: "Design an AI-powered service assistant for car workshops that automatically predicts faults, schedules service, and communicates with the customer."

Refrigeration & Air Conditioning (RAC)

Lesson 1 - No AI
Topic: Diagnosis of a cooling problem without digital help
Task: Analyze a split air conditioning system with reduced cooling capacity using only workshop knowledge.
Instruction:
Troubleshooting with visual inspection, pressure measurement, temperature check - do not use internet or tool.

Lesson 2 - AI Planning
Topic: What is the use of AI worthwhile for - and what is it not worthwhile for?
Task: Select a fault (e.g. iced-up evaporator) and plan suitable prompts.
Instruction:
Prompt: "List possible causes and step-by-step checks for an evaporator freezing up in a domestic air conditioner."

Lesson 3 - AI Collaboration
Topic: Develop system proposal with AI
Task: Use ChatGPT to plan a suitable air conditioning system for a classroom.
Instruction:
Prompt: "Help me calculate the required AC capacity for a 30 sqm classroom in Jaipur with 30 students. Include assumptions and cooling load calculation."

Lesson 4 - Full AI
Topic: Technical customer advice through AI
Task: Have AI write a maintenance schedule for commercial refrigeration systems.
Instruction:
Prompt: "Write a professional maintenance guide for a commercial walk-in refrigerator, including daily, weekly, and monthly tasks."

Lesson 5 - AI Exploration
Topic: Ideas for the future with AI and sustainability
Task: Design a smart AI system for energy optimization in the supermarket.
Instruction:
Prompt: "Design an AI-based smart monitoring system for refrigeration units in supermarkets. It should reduce energy waste, detect early faults, and ensure food safety."

General Education

Lesson 1 - No AI
Topic: Learning to argue - without digital help
Task: Discuss the statement: "Discipline is more important than creativity in education."
Instruction:
Write a short argument with introduction, position and justification. No use of AI or the internet.

Lesson 2 - AI Planning
Topic: How can I develop better texts or thoughts with AI?
Task: Plan how you would use AI for support.
Instruction:
Formulate three planned prompts such as, "Give me examples of how discipline and creativity support each other in education."

Lesson 3 - AI Collaboration
Topic: Writing an essay with AI as co-author
Task: Write a text with AI on "The role of critical thinking in the digital age".
Instruction:
Prompt: "Help me write an essay about the role of critical thinking in the digital age. Start by asking me what I think."

Lesson 4 - Full AI
Topic: AI produces complete text - you check
Task: Have ChatGPT write an essay about social media and mental health.
Instruction:
Evaluate the text: Is it logical, correct, convincing?

Lesson 5 - AI Exploration
Topic: AI as an ethical sparring partner
Task: Design an ethical dilemma and discuss it with the AI.
Instruction:
Prompt: "I want to explore an ethical dilemma. Imagine a company uses AI to screen job candidates. What are the pros and cons?"

Facility Management

Lesson 1 - No AI
Topic: Cleaning plan for an office building
Task: Manually create a daily and weekly schedule for cleaning, care and checks - without digital tools.
Instruction:
Pay attention to traffic areas, user frequency, materials.

Lesson 2 - AI Planning
Topic: Where can AI help with building organization?
Task: Analyze an existing cleaning plan and plan specifically where you would use AI for optimization.
Instruction:
Prompt draft: "Optimize this cleaning schedule for a 5-floor office building to reduce labor time but keep quality high."

Lesson 3 - AI Collaboration
Topic: Thinking through energy-saving measures with AI
Task: Together with ChatGPT, develop measures to reduce electricity consumption in a typical school building.
Instruction:
Prompt: "Suggest 5 cost-effective energy-saving strategies for a school building in India. Include air conditioning, lighting, and water usage."

Lesson 4 - Full AI
Topic: Generate maintenance log using AI
Task: Have the AI create a complete maintenance log (e.g. for elevators or fire protection systems).
Instruction:
Prompt: "Create a maintenance checklist and report template for monthly elevator inspection in a residential building."

Lesson 5 - AI Exploration
Topic: Smart Building Vision 2035
Task: Design an AI-based building management system (BMS) that independently regulates cleaning, climate and security.
Instruction:
Prompt: "Imagine a future AI-based building that manages itself. What would it include? How would it communicate with staff and residents?"

Electrical

Lesson 1 - No AI
Topic: Fault diagnosis for a simple circuit
Task: Simulate a circuit (e.g. light switch + load) with a fault. Find the cause without digital help.
Instruction:
Use measuring device and logic - no apps or AI. Document the error pattern, test steps and result.

Lesson 2 - AI Planning
Topic: Planning support for troubleshooting by AI
Task: Plan how you would ask an AI to analyze faults in photovoltaic systems, for example.
Instruction:
Create 3 specific prompts for ChatGPT or an AI diagnostic tool.

Lesson 3 - AI Collaboration
Topic: AI-supported planning of a domestic electrical installation
Task: Design an installation concept for a 3-room apartment - together with KI.
Instruction:
Prompt: "Suggest an electrical wiring plan for a 3-room apartment, considering Indian standards and safety codes."

Lesson 4 - Full AI
Topic: Complete project description by AI
Task: Have the AI create complete project documentation for a control cabinet project.
Instruction:
Prompt: "Write a technical project report for installing a control panel for a small industrial motor. Include diagrams, safety notes, and cost estimate."

Lesson 5 - AI Exploration
Topic: Visionary use of AI in the electrical industry
Task: Design an idea of how AI could automate electrical maintenance in 10 years' time.
Instruction:
Prompt: "Describe an AI system that could automatically monitor, detect, and fix electrical faults in a building."

Woodworking

Lesson 1 - No AI
Topic: Manual planning of a piece of furniture
Task: Design a drawing for a simple wooden shelf including dimensions - without digital help.
Instructions:
Only paper, pencil, tape measure. Note proportions, stability, material consumption.

Lesson 2 - AI Planning
Topic: Preparation of an AI application for design support
Task: Plan how AI could help you optimize the design or material consumption.
Instruction:
Prompt example: "Suggest a way to reduce material waste for a wooden shelf project. Dimensions: 120x60x30 cm."

Lesson 3 - AI Collaboration
Topic: Developing wood joining solutions with AI
Task: Work with ChatGPT to compare alternatives for connections (e.g. prongs, dowels, screws).
Instruction:
Prompt: "Compare pros and cons of using dowels vs screws for joining wooden shelves."

Lesson 4 - Full AI
Topic: AI creates a complete construction plan
Task: Have ChatGPT create a complete construction plan for a piece of furniture, including a list of materials.
Instruction:
Prompt: "Create a full construction plan for a simple wooden bench. Include measurements, material list, and step-by-step instructions."

Lesson 5 - AI Exploration
Topic: Wood workshop of the future - AI in production
Task: Design an innovative application of AI in a modern woodworking shop.
Instruction:
Prompt: "Imagine an AI-controlled woodworking workshop. How does it operate? What tasks are done by AI vs humans?"

The AI Assessment Scale

1	**NO AI**	The assessment is completed entirely without AI assistance in a controlled environment, ensuring that students rely solely on their existing knowledge, understanding, and skills **You must not use AI at any point during the assessment. You must demonstrate your core skills and knowledge.**
2	**AI PLANNING**	AI may be used for pre-task activities such as brainstorming, outlining and initial research. This level focuses on the effective use of AI for planning, synthesis, and ideation, but assessments should emphasise the ability to develop and refine these ideas independently. **You may use AI for planning, idea development, and research. Your final submission should show how you have developed and refined these ideas.**
3	**AI COLLABORATION**	AI may be used to help complete the task, including idea generation, drafting, feedback, and refinement. Students should critically evaluate and modify the AI suggested outputs, demonstrating their understanding. **You may use AI to assist with specific tasks such as drafting text, refining and evaluating your work. You must critically evaluate and modify any AI-generated content you use.**
4	**FULL AI**	AI may be used to complete any elements of the task, with students directing AI to achieve the assessment goals. Assessments at this level may also require engagement with AI to achieve goals and solve problems. **You may use AI extensively throughout your work either as you wish, or as specifically directed in your assessment. Focus on directing AI to achieve your goals while demonstrating your critical thinking.**
5	**AI EXPLORATION**	AI is used creatively to enhance problem-solving, generate novel insights, or develop innovative solutions to solve problems. Students and educators co-design assessments to explore unique AI applications within the field of study. **You should use AI creatively to solve the task, potentially co-designing new approaches with your instructor.**

Perkins, Furze, Roe & MacVaugh (2024). The AI Assessment Scale

Prompting Formulas and Structures

1. RISE Formula (Great for Educational Contexts)
RISE = Role – Instruction – Specification – Expected Output

Example:
"You are a vocational teacher. Give a clear step-by-step explanation on electrical conductivity for low-performing students. Use simple language and a real-life example. End with a comprehension question."

2. RTFT Formula (Good for Educational Contexts)
RTFT = Role – Task – Format – Tone

Example:
You are a hospitality trainer preparing Level 3 students for a guest interaction simulation. Write a safety protocol checklist for solar panel installation during peak heat condition. Generate a step-by-step troubleshooting guide in a numbered list for engine overheating in a Maruti Suzuki. Explain the knife-handling safety steps in plain Hindi with visual icons for low-literacy learners.

3. CAPE Formula (Ideal for Workshop or Training Tasks)
CAPE = Context – Audience – Purpose – Expectation

Example:
"Context: Skills university in India. Audience: New faculty. Purpose: Introduction to action competence-based teaching. Expectation: Create a short interactive role play with reflection questions."

4. 4W + H Prompt Structure
Who, What, Where, When, How

Use these questions to build a complete prompt.

Example:
Who am I (a teacher), what do I want (a worksheet), for whom (Food Production students), when (during hygiene introduction), how (practice-oriented, using a case study)."

5. Prompt Sandwich
Start: Role + Goal
Middle: Detailed Instructions
End: Format Instructions

Example:
"You are an AI coach. Explain in simple terms how a neural network works. Use an analogy. Explain step-by-step. Present the answer in 5 bullet points."

6. If–Then Prompt Cascades
Use conditional logic for better control.

Example:
"If the audience is under 16, use everyday language. If the topic is too technical, include an example. If the answer is too long, summarize it."

Effective Prompting for Students

What is Prompting?

Prompting refers to giving clear and precise instructions to an AI model in order to get the best possible output. The better the prompt, the more relevant and useful the response will be.

Fundamental Principles of Effective Prompting

1. Clarity & Precision

Define exactly what you want. Avoid vague terms like "something like..." or "maybe."

2. Structure & Format

Use bullet points, paragraphs, or formatting (e.g., "Create a table with 3 columns…").

3. Add Context

Tell the AI who it should be (e.g., "You are a history professor") and give background information.

4. Provide Examples

Show what you mean (e.g., "Here's an example…"). AI learns well by imitation.

5. Iterative Refinement

Ask follow-up questions if the answer isn't right. Keep improving your prompt.

Types of Prompts

Prompt Type	Description	Example
Direct Question	Straightforward question	"What is the capital of India?"
Role Prompting	Assign a role to the AI	"You are an experienced journalist. Write an article about…"
Chain-of-Thought	Break down complex tasks	"Solve this equation step-by-step."
Few-Shot Prompting	Provide examples	"Here are three good essays. Write one similar to these on…"
Zero-Shot Prompting	Clear instruction without examples	"Write me a letter in French as if I were a diplomat."

Student Exercise Example

Topic: Writing a Professional E-Mail

Task:
Write a professional cover letter in English for a job application at a German company. You are an Indian student with a degree in Computing.

Procedure:
1. Let students write a prompt **without** guidance.
2. Then, develop a better prompt **together** (with context, role, goals).
3. **Compare** both responses and discuss differences.

Tips for Lecturers
- Integrate Prompting into Existing Subjects: Whether Health Care, Computing, or Manufactoring – AI can help everywhere.
- Encourage Critical Thinking: Always ask students to reflect on AI outputs. Are sources cited? Is there bias?
- Use Project-Based Learning: Let students create presentations, summaries, research questions using AI.
- Discuss Ethics: Talk about plagiarism, copyright, and data sources used by AI models.

Summary
Good prompting = A mix of clear communication, critical thinking, and technical understanding.

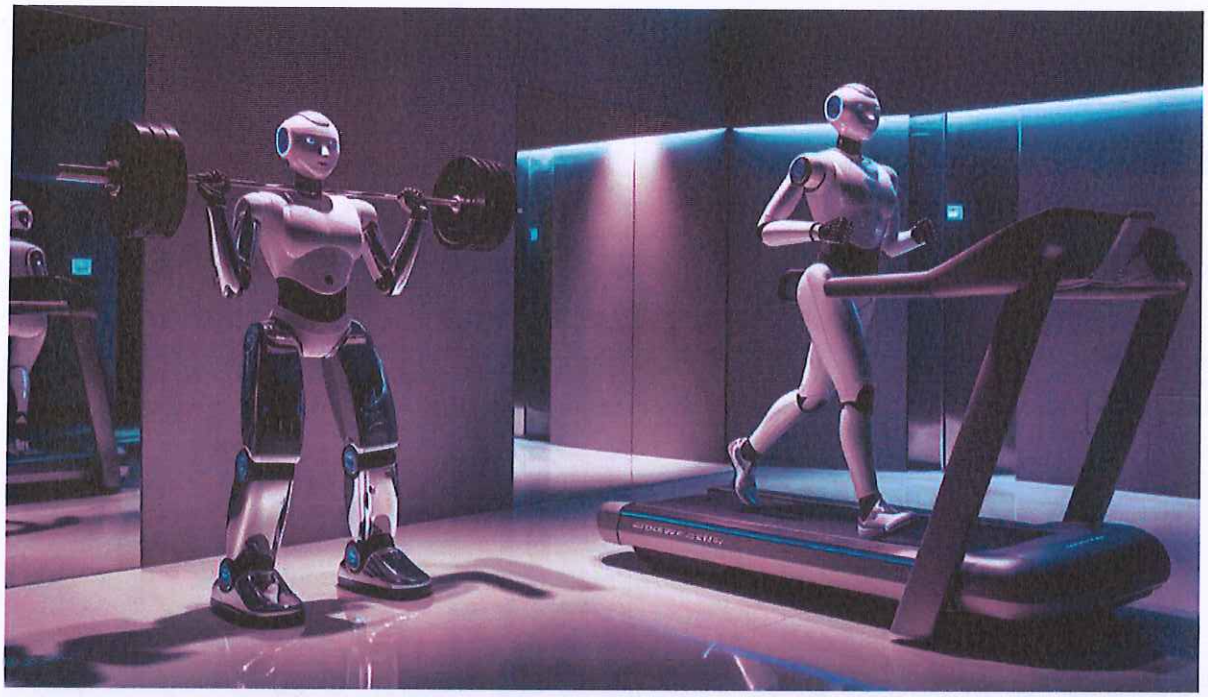
Discussion & Feedback
At the end of the session, ask students:
- Which prompt worked best?
- Why was a certain prompt not effective?
- How could the prompt be improved?

Tips for Prompting

Prompting describes what information the generative AI needs to generate answers. These must be as **precise and detailed as possible**.

What the AI needs to know	**Possible prompt**
Your role	I am a student at BSDU, (age), and study ... (faculty)
Topic	I'm writing a paper about animals in zoos **> not a good prompt.** Too imprecise! **Better**: I am writing a paper on the abolition of zoos in India. I would like to know what is in favor and what is against it and whether only individual animals or animal species should no longer be kept in zoos.
Parameters	I will do an interview. Suggest 10 questions. **> not a good prompt.** Too imprecise! **Better:** I'll do two interviews: with a zoo director and an animal rights activist. Suggest 10 questions each. These questions should not have yes/no answers, but should above all explain in-depth contexts. Or: I need to divide the topic into sub-chapters. Suggest five sub-chapters that make sense and deepen my topic from different perspectives.
Goal	I want to learn how to do a good interview. It should be provocative and exciting. It should inspire the reader. It should be different from the usual types of interview.
Examples (maybe there are examples of what you need. Give the AI such an example)	Use this (example…) as a guide:

How generative AI can reinforce learning resistance



According to «Cognitive miser theory» (Fiske & Taylor 2013), people tend to avoid cognitive effort. Learners have been doing this for a long time – for example, by copying things down. With AI tools such as Chat-GPT, this is now easier than ever.

Today, we can observe learners solving tasks directly with Chat-GPT in many classrooms and continuing education courses. Nuxoll (2024) calls this "skill skipping": A result is delivered, but no learning process is undergone. However, learning does not come from correct answers, **but from independent thinking**.

It is not without a certain irony that solving tasks in this way can be interpreted as competence-oriented. In fact, in many professional situations, it may make sense to use an AI language model to complete tasks such as writing an e-mail. Never-theless, it is not effective to do so in an educational setting, as writing (and, by extension, reading) is learned less effectively.

A metaphor helps to illustrate this: It is clear to everyone how absurd it would be to send a robot to the gym if you want to train your body. Less obvious, but just as absurd, would be to use ChatGPT to solve a learning task in an educational context. Educational institutions are like gyms for the brain. If you don't go there and exercise your brain cells yourself, there is no training effect or learning gain.

Looking at "skill skipping" from the perspective of resistance to learning, the question arises as to why learning does not have positive connotations. Learning in educational contexts is often perceived as an imposition, which generates resistance and avoidance strategies (just think back to your own school days). Yet it is a central goal of teachers, lecturers, and adult educators to enable successful learning. This raises the question of how and why resistance to learning arises. According to subjective learning theory, resistance to learning arises when learners cannot see **any subjective meaning** in a learning situation or feel compelled to learn without seeing any personal benefit. This leads to them refusing to learn, **becoming unmotivated**, or only learning superficially.

If tasks or learning paths are too far removed from the learners' everyday lives and are not perceived as meaningful, they often react defensively – for example, with automated clicking through or the use of AI. In this case, learners do not engage with the content in depth and have no opportunity to pursue their own learning interests or develop their own questions. This leads to learning

being experienced even more as something external, which can trigger even more resistance to learning. A vicious circle.

What Can Teachers Do?

AI can undermine self-directed learning. Meaningful learning requires time and subjectivity – not just technology. It is essential that teachers recognize and act on unreflective applications of AI. Here are a few suggestions:

Talk to learners about learning. This creates space for reflection, which can raise awareness and strengthen subjective relevance. This requires time for questions, confusion, and self-reflection. And teachers gain a better understanding of the origins of resistance to learning, which in turn enables them to take action.

An obvious approach would be to have learners discuss the image of the two robots in groups and create transparency right away: **"You can solve (almost) all tasks in class with AI. Do you want that - and why?"** This promotes awareness of the learning process.

From a culture of correct results to a culture of learning. When teachers place a high value on the right result, for example by only checking the correctness of learners' solutions, they unconsciously give learners an incentive to use AI for all these tasks.

Instead, it is more effective to create awareness that a correct, AI-generated result is largely worthless for learning. **The path to the result, i.e., the learning process, is central, as are the mistakes made along the way**. These provide excellent opportunities for learning. In this sense, assessments document learning progress rather than the result.

For some teachers, this is a major but essential cultural change.

Fig. 1

Transfer responsibility to learners. Many teachers do not want to constantly point out that learners should not use AI to solve tasks. In addition, there are sometimes tasks where **AI support can be helpful**. The following idea comes from Tobias Seidl: Tasks where it is important to think for oneself **first** in order to achieve the learning objectives are marked with a warning (Fig. 1). This allows teachers to avoid the traditional cat-and-mouse game. Learners feel taken seriously and the responsibility for their learning and the use of AI is subtly transferred to them.

If educational institutions are seen as "fitness centers for the brain," the "training" learning process must not be outsourced or automated. In a world shaped by AI, it is crucial that learners **think for themselves,** reflect, and expand their options for action.

Teachers and education officials are therefore called upon to design learning settings that enable expansive learning processes rather than promoting defensive avoidance strategies.

Source: Dernbach-Stolz/Hassler, PH Zurich, 2025

When AI overtakes learning: A threat to education

by Florian Nuxoll on „Skill skipping" and the need to focus more on the learning process itself.
(October 14, 2024)

Artificial intelligence (AI) has long been part of our everyday lives and is changing many areas of life—including learning.

As a teacher, I use AI tools every day. They help me find ideas for lessons, write sample texts for English lessons (ChatGPT) and improve them (Deepl Write), and I even use them to help me with diagrams (napkin.ai). These technologies have made my daily work more efficient and given me more space for creative lesson planning. But while I use these tools consciously and purposefully, there is one area that increasingly concerns me: how do students deal with this technology?

AI can enrich the learning process, for example, by summarizing texts, providing suggestions for improvement, or structuring arguments. But what happens when technology is used not to support learning, but as a shortcut? What if it is no longer about developing skills, but only about delivering results?

I am reminded of my niece, who recently told me that she, like many of her classmates, simply has an AI do her advanced geography homework. The teacher never noticed, and the results were satisfactory to good, sometimes even very good. But the real problem lies deeper:

> Students can opt out of the learning process. They hand in the final product, but the journey to get there, the actual learning, doesn't take place. I call this "skill skipping."

Learning is not primarily about having a finished product. School is not just about delivering a good text, an impressive poster, or a convincing presentation. It is primarily about acquiring knowledge and skills for oneself—through research, critical thinking, and independent formulation. The learning process is what constitutes sustainable education. When students use AI to skip this process, they lose exactly that: the opportunity to develop their skills and truly learn.

In professional life, it is often unimportant how you arrive at a result—what counts is the end product. An engineer does not have to explain whether she used a calculator, complex software, or her mental arithmetic skills to perform her calculations, as long as the calculations are correct. A baker is judged by how his bread rolls taste, not by how he made them. In education, it's different: here, it's the journey that counts, not the destination.

The challenge for schools, and indeed for universities, is now to recognize this danger to learning and to respond to it. It is not enough to simply tell students, "Don't do that!" Many will – as many of us would have done at their age – look for the easier way out if they can find it. Instead, we need to design lessons in such a way that the learning process is once again placed more at the center. This means less focus on the end product and more space for the journey to get there. The "flipped classroom" method can

help here: some of the knowledge acquisition takes place at home, while cognitive activation, writing, and discussion take place in class.

Of course, we need phases in which students work with tablets or notebooks in class and learn how to use generative AI correctly. At the same time, we need to create phases in which digital tools are deliberately excluded. Students must have the opportunity to think, research, and write independently without the crutch of AI. Even in the digital age, the ability to think independently remains one of the most important skills we can give our students.

The possibilities of AI are diverse, but they must not replace the fundamentals of learning. It is our responsibility to manage the use of this technology in such a way that it promotes the learning process rather than shortening it. We owe this to our students—and ultimately to the society they are growing up in.

Speaking Chain Method at BSDU

Purpose of the Method:

The 'Speaking Chain' promotes structured, respectful, and equal participation in classroom discussions. It strengthens speaking skills, active listening, and mutual respect — **all key competencies in action-oriented teaching**.

Preparation

1. Choose a Speaking Object: This could be a small ball, stick, or any item that clearly shows who has the right to speak.
2. Arrange the Seating: Ideally a circle or semi-circle for up to 15 participants.
3. Prepare an Open Question: Example: 'What was challenging during your internship?'

Implementation in Class

Step-by-step Guide:

- Start calmly and explain the method: Only the person holding the object may speak.
- Clarify the rules: no interruptions, respectful listening.
- Give an example yourself to model the process.
- Let the object move around — everyone gets a turn.
- Optional: short reflection at the end.

Tips for Successful Use

- Start with easy, personal questions, but open!
- Encourage quiet students without pressure.
- Allow English/Hindi mix at first.
- Use the method regularly to build routine.
- Tie it to professional topics (e.g. safety rules in practice).

The Role of the Teacher

Traditional Role (still common at BSDU???):

- Teacher as central speaker
- One-way communication
- Frequent correction and control
- High authority distance

New Role of the Teacher in the Speaking Chain Method:

- Active listener
- Withdrawn and non-dominant
- Provider of safe speaking space
- Observer of group dynamics
- Optional: gives a short starting impulse

Important:

During the Speaking Chain, step back deliberately. Your job is to hold the space, **not** to fill it. **Trust** your students — they can speak without your evaluation. That's where real learning begins.

Use Cases

- **At the beginning of a session:** 'What do you already know about this topic?'
- **Midway:** 'What has been clear or confusing so far?'
- **At the end:** 'What is one thing you are taking away from today?'

1. Order (classic "Speaking Chain")

- In this variant, each participant speaks one after the other, i.e. strictly in order. This provides structure and ensures that everyone has the opportunity to speak without being ignored.
- **Advantage**: It provides a clear, comprehensible sequence and helps to avoid chaos.
- **Disadvantage**: Less dynamic and flexibility, as everyone has to wait their turn.

2. Arbitrary forwarding (flexible "Speaking Chain")

- In this variant, the speaker can pass on the "subject matter" (e.g. a question or topic) to the next person at will. This means that each participant can decide who speaks next - creating a dynamic and interactive discussion.
- **Advantage**: Promotes a lively discussion, as students can react flexibly to the contributions of others.
- **Disadvantage**: Could lead to an uneven distribution of speaking time if some participants dominate.

When does which variant make sense?

- **Sequencing** is particularly helpful in large groups or if you want to ensure even participation.
- **Sharing at will** can make interaction more lively and is useful when it is important for students to react quickly to each other and exchange ideas.

You can also use a mixture of both approaches by setting the order at the beginning and allowing more flexibility later to make the exchange more dynamic.

1. Size of the Group

- If the group is rather small (e.g. 5-10 students), **random sharing** could work well, as it leaves more room for spontaneous interaction.
- With a larger group, the **order** might make more sense to ensure that no one is left out and the discussion does not become chaotic.

2. Aim of the Discussion

- If the aim is for each participant to express their thoughts in a structured way and for no one person to dominate, then the **order** is probably the better choice.
- However, if the aim is to promote a lively, unstructured discussion in which participants actively exchange ideas and react directly to each other, **random sharing** could be more interesting.

3. Students and their Commitment

- If students tend to remain passive, the **sequence** could encourage them to speak up without pressure.
- For a group that already actively participates in discussions and is more able to speak flexibly and in a self-organized way, **arbitrary sharing** could stimulate even more engagement.

4. Your Goal as a Teacher

- If you want to have more control over the discussion and the posts, the **order** would be a better approach.
- If your goal is to encourage students to listen and respond to each other, **random sharing** would be more effective.

Possible compromise:

- You could also **start with a sequence** and then switch to a **random handover** in the middle of the session once the conversation is underway. This allows you to combine the two and react flexibly to the group dynamics.

Faculty-Specific Examples for the 'Speaking Chain' Method at BSDU

The goal is to encourage reflection, student voice, and social learning through structured speaking rounds.

Manufacturing Skills
– What was the biggest challenge you faced at the CNC machine?
– How do you recognize good teamwork in the workshop?
– What does 'safety' mean to you in your daily practice?

Electrical Skills
– What was difficult about wiring the circuits?
– What are common mistakes when measuring voltage?
– What dangers should you watch for when working with electricity?

Woodworking Skills
– Which tool do you like the most – and why?
– What was your best moment during practical training?
– What is important when dealing with clients or customers?

Automobile Skills
– What was the most interesting problem you solved in the workshop?
– How do you deal with a dissatisfied customer?
– What makes a good automobile technician in your view?

Food Production
– What does hygiene mean to you in a hotel kitchen?
– What was challenging about cutting, cooking, or plating?
– What did you learn about teamwork during your internship?

Facility Management
– What does a typical day in facility management look like?
– Which task was new or unusual for you?
– How can you tell if a space is well maintained?

Health Care Skills
– How can we treat patients with respect?
– What was emotionally challenging during your training?
– What does good care mean to you?

Computing Skills
– What was your biggest success in programming so far?
– What challenge did you face in your last group project?
– What do you do when you're stuck on a problem?

RAC
– Why is solar energy important for India?
– What was difficult when installing a solar panel?
– How would you convince someone who doubts solar energy

Tip: Start with simple, real-life based questions that connect to students' personal experience or internship.

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