Lab**4**STEM

# TEACHER'S MANUAL

# Coaching methods, tools and techniques

The Teacher's Manual is dedicated to educators (teachers of STEM subjects, carrier guidance and support specialists) of general education, who have some educational background and experience working with pupils. The coaching methods, tools and techniques provided in this unit are dedicated to support educators and may be applied optionally depending on the educator's choice and good practice.

## Coaching

Coaching may be defined as a systematic collaborative, solution-based process, where the teacher contributes to the pupils' academic performance, self-learning and personal development by guiding them. This is a special mean of communication during which the teacher focuses on the pupil's needs so that he or she can increase work performance, identify his or her needs and get motivated to take action.

With the rise of online learning modalities and a departure from the notion of the "sage on the stage" analogy that was previously dominant within the teaching profession, it is becoming more apparent that teachers integrate more coaching practices into their practice. But what is the difference? Teaching is concerned with the acquisition of new knowledge, as learners are "taught" by an expert (i.e., the teacher).

The goal of a teaching experience is typically two-fold, as learners seek to:

1. Gain new knowledge;
2. Master new skills.

On the other hand, a teacher uses their knowledge and experience to:

1. Help learners learn;
2. Allow learners to become more knowledgeable in their subjects.

Coaching is unlocking a person's potential to maximize their own performance, but the assumption is that the individual seeking out coaching already has the expertise and knowledge needed. The ultimate goal of coaching is to tease out the knowledge and skills the coachee is looking to apply[1].

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[1] https://positivepsychology.com/educational-coaching/

Coaching is non-directive, where the answer is not known and waiting to be discovered, while teaching is directive, with an idea of the path learners are on and the questions that will be asked (Ellis & Smith, 2020).

The benefits of coaching for pupil:

▪ improve academic and personal skills and performance;
▪ learn to solve own problems;
▪ have greater confidence and accept responsibility;
▪ learn to communicate more effectively;
▪ acquire new skills and abilities;
▪ learn to adapt better to changes.

Coaching establishes a special relationship that promotes change only when the teacher and the pupil work in close cooperation. On the one hand, the coaching process is directed by the teacher who keeps focus on maintaining a well-defined goal, supports the pupil's thinking and provides beneficial feedback. On the other hand, the pupil takes responsibility for the coaching contents, i.e., sharing his ideas, deciding on actions to achieve the goal. Coaching encourages communication and feedback between team members, it helps to develop an atmosphere of trust within a team.

The principles of good coaching

▪ Equality. Both parties are equal. The teacher and the pupil are equal partners in the coaching process on equal terms. The pupil feels respected and appreciated when the trainer expresses openness and interest in his way of thinking and behaviour. This requires the teacher to be collaborative, facilitate the development of the pupil's strengths rather than weaknesses, as well as to express interest in the pupil's experience and viewpoints.
▪ Openness. The relationship is based on openness, trust and mutual confidence. Coaching helps the student to improve self-awareness, take responsibility for his or her decisions and actions. Mistakes are welcomed as they are regarded as valuable learning experiences.
▪ Solution focus. Coaching reveals different insights, raises awareness and focuses on decisions instead of problems. Therefore, pupil discover more opportunities that encourage their willingness to take action and make certain changes in their professional and personal life.
▪ Awareness. The teacher believes that the pupil is mindful of his skills and capabilities, that he or she is capable of changing and developing his or her competence. Coaching can help the pupil to achieve better results, so the teacher aims to raise the pupil's self-awareness.
▪ Self-responsibility. It is the pupil (and not the teacher) who is in charge of the results. The pupil is committed to plan actions and take necessary steps to reach his or her goal. When pupils are not advised, directed or commanded what to do, they make better progress.
▪ Support. The teacher assists the pupil continuously during the coaching process. Pupils believe in themselves when they can learn from both the mistakes and achievements. Teachers encourage pupils by providing constructive feedback and helping them to discover different perspectives.

Through coaching, the teachers can enhance the learning process and motivate pupils to reveal their strengths and achieve their objectives more effectively. It may not appear as easy as expected to learn new skills. Therefore, it can be helpful to understand the process of learning to help pupils overcome learning challenges and acquire new knowledge and skills.

Coaching methods, tools and techniques

As the teaching of STEM subjects is based on practical exercises, the coaching of pupils should take place during the preparation stage, performance and presentation of the achieved results. The teacher may use different kind of coaching techniques, depending on the subject, number of pupils, timing, etc., but it is recommended to follow the mentioned below:

•            Building trust;
•            Active listening;
•            Asking open-ended questions;
•            Effective goal-setting;
•            Encouraging an outcome focus;
•            Fostering engagement with goals;
•            Providing support on the development journey;
•            Giving constructive feedback;

The coaching methods, used by the teacher, should be oriented to improve results of pupils' achievements in STEM. Teachers also need to consider how to build a healthy workplace culture that is conducive to learning and skills development. This is linked intrinsically with psychological safety – the idea that mistakes are viewed as normal, questions are encouraged, and pupils feel comfortable asking for feedback (Lipshitz et al., 2002).

Coaching tools very much depend on the teacher and how he or she want to encourage pupils, reveal and improve their knowledge. In addition, they differentiate according to the number of pupils in the classroom, duration of the lesson, number of the lessons, subject and equipment, etc. Therefore, coaching tools are to be selected by the teachers individually, depending on their experience and following the principles of good coaching.

Skills and characteristics of a good coach

Skills of a good coach include:

• Active listening. Active listening requires a teacher to participate in the conversation by paying close attention to the speaker and confirming what they hear. The teacher may use verbal and non-verbal cues to show the listener that they are interested.

• Focus on goals. By encouraging pupils to clearly state specific, concrete goals the trainer helps them to commit to taking action and making changes. Focusing on outcomes is fundamental to the unleashing of pupils' potential and upgrading their performance.

• Using open-ended questions. Open-ended questions are questions that cannot be answered with a simple yes, no and other one-word answer. Such questions typically begin with "why" or "how". By using open-ended questions, the teacher creates an opportunity for the pupils to discuss and reflect rather than simply agree or disagree with the teacher.

- Giving constructive feedback. Feedback should build pupils' confidence and motivate to improve. The teacher should describe and discuss facts and their own observations rather than generalizations. They should be as specific as possible and should not express stereotypes or judgment based on assumptions.

Characteristics of a good coach:
- Coachable. Effective coaches are those who are coachable themselves – they are motivated by the goal of improving their work, they are willing to be observed while working, and they will openly answer questions about their own performance. People who respond well to being coached usually have the insight, sensitivity and understanding needed to coach others.
- Respected. While a good coach does not need to hold a senior position, effective coaches should be trustworthy and respected.
- Humble. Coaches who are humble and honest are able to build successful relationships with their pupils. Effective coaches treat others as though they were doing their best.

## Suggestions for Exercises

**Exercise: Nonverbal listening**
Overview: The exercise increases awareness of the importance and value of nonverbal (passive) listening skills.
Guidelines: Pupils work in pairs: one speaker, one listener.
- The speaker's role: talk for 2-3 minutes about an assigned topic or any of the following:What was it like growing up in my home? / Ways in which I have changed as a person over the years. / What I hope and plan to do over the next ten years. / How I have come to do the kind of work I am doing now.
- The listener's role: say nothing at all, not even "mm hmm" or other vocal noises. Absolute silence. Instead, the listener is to use nonverbal skills to communicate to the speaker that he or she is listening and understands.

Debrief: What was this experience like for the speakers? And for the listeners? Listeners often observe that they were aware of all the things they would have said. Ask the listeners to indicate what they might have said had it been permitted. The experience is often a mixture of pleasure and frustration for those who like more interaction. This sets the stage for introducing methods for active listening.

**Tool for the trainer: Rowing for confidence**
Overview: The teacher enhances the pupil's confidence for change.
Guidelines: The pupils' topic is "One thing that I would like to change or have good reasons to change, or is important for me to change but I am not sure if I can or have the ability to do so, or have the time/energy to do so".
The teacher's task is to evoke motivation. The teacher should refrain from advice-giving and carefully offer more reflections than questions. Possible strategies include:
- asking open questions,

- using the confidence ruler,
- reviewing past successes,
- discussing personal strengths and resources.

Open questions give the student a very large area for expression, propose an alternative or a choice, and invite to share information rather than demand it. Open questions begin with words like: what, when, who, how and where. Be cautious of "why" questions as they can seem authoritarian. Answers to these questions and other variations will bring new insights into how to better handle the situation.

| **What** | is the essence of the problem? |
| | will it be like when this problem is completely solved? |
| **When** | does it seem not like a problem? |
| | does it need to be resolved by? |
| **Who** | could solve this problem most easily? |
| | would benefit the most from this problem being solved? |
| **How** | could you motivate yourself to do what needs to be done to solve this problem? |
| | will you know that this problem has been solved? |
| **Where** | haven't you looked for answers yet? |
| | else has something like this happened, in your life or in the world? |

Closed questions should be asked with caution. If the choice is proposed too early, students may not be ready to decide. Closed question propose a choice between specific options or within a defined alternative and are preceded by "Does it?", "Can you? "Have you?".

**Group exercise: Opening strategies**
Overview: The concept of the readiness ruler is used to help pupils to examine their own readiness to participate in learning activities.
Guidelines: Have participants line up along a "ruler" on the floor, with numbers from 0 to 10. Spread the numbers out on the floor or along a wall and ask students to stand next to the number that corresponds to their current level. Then interview people at various points along the ruler as to why they are where they are on the scale. Various questions can be used for self-rating.
Ask them:
- Why are you here next to (the number)?
- Why here and not next to (zero or a lower number)?
- What would it take for you to move from (the chosen number) to (a higher number)?

Notes: This can be useful at the beginning of a workshop to assess pupils' level of interest in the training topic or their readiness for coaching. It can be a particularly good way of reflecting initial resistances to training. When used in the middle of the training, this exercise can point to areas on which the teacher needs to focus during the remainder of the training. When used at the end of the training, it serves as an assessment tool to determine where pupils are in the context of their experience, and what they need to do next to continue learning.

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