

Reflective Teaching with Artificial Intelligence

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Learning objective

“The quality of an education system cannot exceed the quality of its teachers.”
(Angel Gurría, Secretary-General of the OECD, 2009)

Teaching is one of the most complex professions: subject expertise and pedagogical sensitivity must be combined with excellent presentation, observation and organisational skills. Every lesson is a unique, unrepeatable story that can hold surprises even with the most careful planning. Learners' motivation, their physical and emotional state, and the mood of the class on the day all influence how the lesson unfolds and how effective it is.



The reflective teacher (Source: ChatGPT)

Every lesson offers the teacher new experience and can become a source of continuous development – provided that it is followed by analysis and evaluation, that is, by teacher reflection. Without it, to borrow Stephen D. Brookfield's idea, ten years of teaching may be nothing more than one year's distorted experience repeated ten times.¹

¹ Stephen D. Brookfield: *Becoming a Critically Reflective Teacher*. San Francisco: Jossey-Bass, 1995, p. 7. Cited in Karen Hanson: “‘Reflect’ – is this too much to ask?” *Reflective Practice*, Vol. 12, No. 3, 2011, p. 295.
<https://doi.org/10.1080/14623943.2011.571862>

Amid the daily teaching routine, frequent overload and lack of time, it is hard to devote regular time and attention to reflection. This is where artificial intelligence can help.

The aim of this learning material is to show how artificial intelligence can support teachers in thinking through their classroom experiences, drawing lessons from them and planning their next lessons, so that self-reflection becomes part of their everyday practice and continuous professional development.

Why does reflection so often remain a good intention?

Most teachers know that it is worth thinking back over the lessons they have taught. In practice, however, the curriculum repeats itself year after year, tried-and-tested tasks return on their own, and routine is comfortable. Educational researchers warn that experience without reflection remains narrow and yields superficial knowledge at best.

This is particularly important in vocational education and training. Occupations, technologies and workplace expectations change quickly, some learners study in workshops or at companies, and the teacher's work is divided between theory lessons, practical sessions and cooperation with company partners. What worked well last year may no longer be enough this year.

Teacher reflection is a cyclical process made up of several steps that are repeated continuously. One of its best-known models comes from the British educational researcher Graham Gibbs², who breaks it down into six steps.



Gibbs' reflective cycle: description, feelings, evaluation, analysis, conclusion and action plan

1. **Description:** "What happened in the lesson?" (facts)
2. **Feelings:** "What did I feel and think?" (heart)
3. **Evaluation:** "What was good and what was not?" (scales)
4. **Analysis:** "Why did it turn out this way?" (magnifying glass)
5. **Conclusion:** "What have I learnt from it?" (light bulb)

² Graham Gibbs is a British educational researcher and a well-known expert on teaching and learning. He described the reflective cycle in his book *Learning by Doing*, published in 1988.

6. **Action plan:** “What will I do next time?” (target board)

The questions are simple, but answering them takes time and a partner who asks questions, gives feedback and can suggest new perspectives compared with our own ideas. After a lesson we have to prepare for the next one, colleagues are overloaded, and collecting and processing learners’ opinions is a separate task in itself. As a result, reflection is often skipped or, at best, stays at the level of an impression.

What we could not do before, we can do now

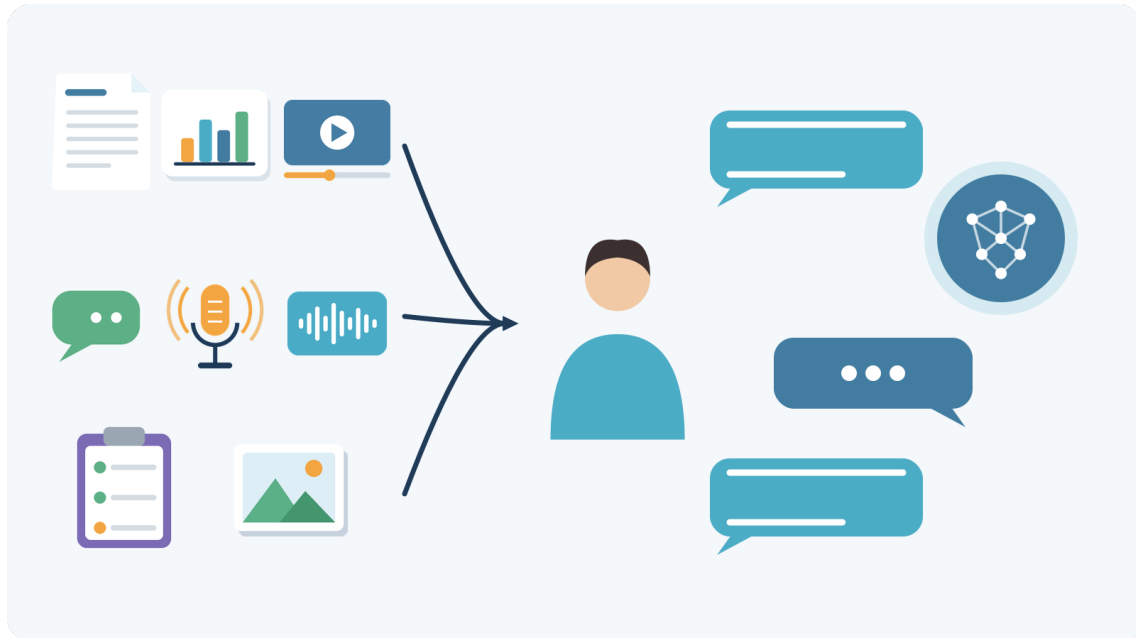
Artificial intelligence can make a difference at exactly these two points: it saves time and it is always available. The following table shows what concrete help AI can offer in the individual steps of reflection.

Until now, for lack of time or tools...	Now, with AI...
Notes after the lesson were skipped or consisted of just a few words.	A two-minute voice note on the way home. AI transcribes it, organises it and asks back about what was left out.
We have no direct view of our own lessons; even if a video or audio recording is made, watching or listening to it takes hours.	AI produces a summary of the media sources within minutes: how much the teacher talked, what questions they asked, and where learners joined in.
There is rarely time for a longer discussion with colleagues or with in-company trainers coming from external companies.	AI prepares the conversation: it compiles the lesson observation materials and suggests concrete questions for the discussion.
Learner feedback stays in the drawer; there is no time for really detailed processing.	AI groups the anonymous responses by theme, prepares an analysis and formulates conclusions.
Only the average is visible in the results; recurring patterns in the learning process remain hidden.	AI helps to spot which task type or vocational competence regularly causes difficulties.
Designing our own “experiment” to improve the quality of teaching and learning is too big an undertaking alongside daily work.	AI helps to design the experiment, formulate the research question, prepare a short questionnaire and summarise the results.

The real novelty: when AI sees, hears and reads at the same time

The biggest change is brought by **multimodal AI**: artificial intelligence that can interpret not only text but also sound, images and video, and analyse them together. This matters for teacher reflection because we can collect many kinds of data about a lesson: voice notes, short audio or video recordings, photos of the board or of learners’ work, learners’ written feedback and test results.

Until now, teachers had to summarise these one by one, relying on their own memory – if they had time for it at all. Multimodal AI (for example NotebookLM) can analyse the sources together and recognise the connections between them. It may notice, for instance, that while the teacher’s notes say the learners were engaged, the recording shows that only the teacher was talking for most of that part of the lesson.



Notes, anonymous learner feedback, aggregated results and observations form the basis of the reflective dialogue

Example prompt: analysing several sources together

“I am attaching an audio recording of part of a lesson, a photo of the learners’ work and the learners’ anonymous feedback. Compare them and show me where they confirm and where they contradict each other. Do not evaluate the lesson and do not give a score. Ask me three questions that help me understand what happened and what would be worth trying next time.”

Or, for example, that the task the learners said they did not understand also turned out to be the weakest in the tests. In vocational education and training this is especially valuable: a short video of a practical demonstration, a photo of the learners’ workpieces and the learners’ oral explanations together reveal much more than any of them on their own.

With this approach, reflection no longer has to rely on personal impressions alone. Together, images, sound and text can reveal things that got lost in the heat of the lesson and that we did not even notice.

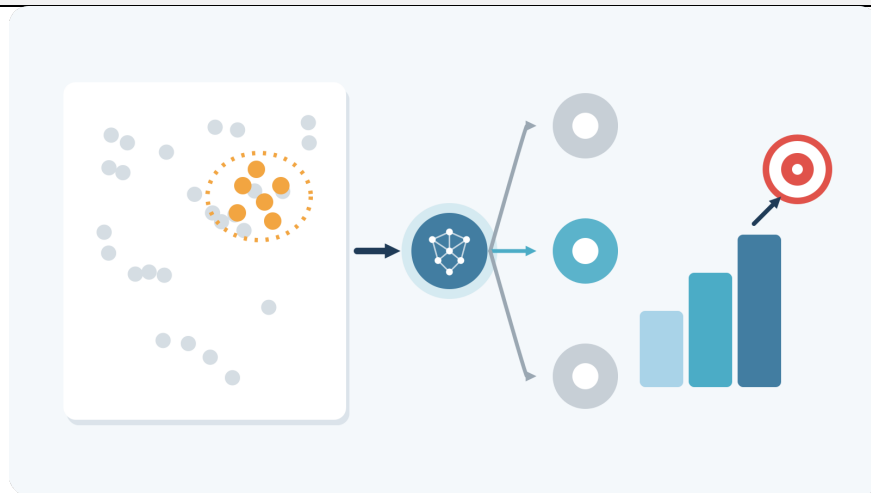
Five minutes at the end of the day: building reflection into daily work

AI really helps when reflection becomes a regular, daily routine. There is no need to analyse every lesson in detail; a simple rhythm is enough:

- **Five minutes a day:** after an important lesson, a short voice note or a few sentences about what worked, what did not, and what we observed in the learners. AI organises the thoughts and asks one or two questions.
- **Once a week:** adding a piece of “evidence”, for example a recording of a short part of a lesson, a photo of learners’ work or a few exit cards, and analysing them together.
- **Once a month:** a conversation with a colleague or the in-company trainer about the month’s experiences, based on a summary prepared by AI.

Example prompt: a questioning partner at the end of the day

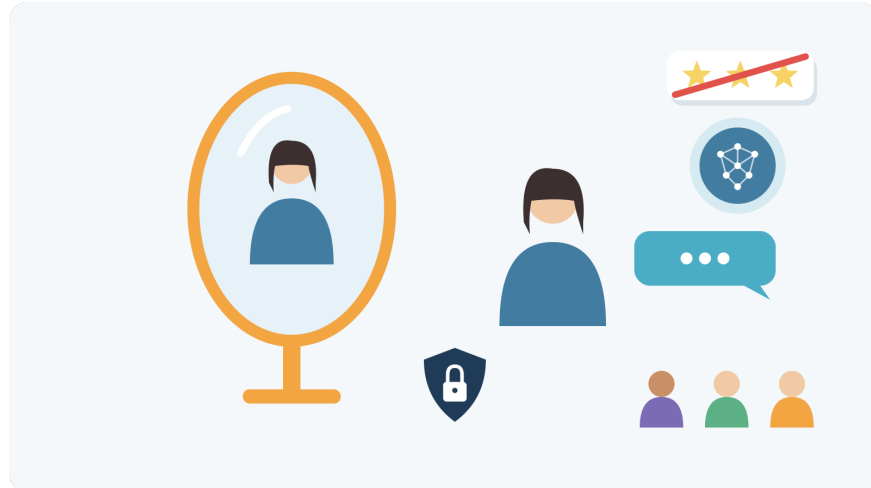
“Act as a critical friend to a vocational teacher. Guide me through the steps of the reflective cycle about a lesson I taught recently. Ask one question at a time and wait for my answer. Do not judge or rate, and do not give advice before the analysis stage. Ask for evidence when I make generalisations, point out my assumptions, and offer at least one alternative interpretation. At the end, summarise the patterns you noticed and help me formulate one or two small, concrete action steps. I will not share the names or personal data of learners or colleagues.”



Recurring patterns give rise to alternative approaches; we choose one of them and try it out in small steps

AI asks, the teacher decides

AI is a good partner, but it is not infallible and tends to agree with whoever is asking. It is worth asking it to pose questions, point out our assumptions and offer other interpretations – but not to write the reflection for us or to evaluate our work. Do not share the names of learners or colleagues, make recordings only after informing the learners, and delete them once they have been processed. Data protection and the ethical use of AI are covered in detail in a separate learning material.



AI can be a questioning partner, but the reflection and the decisions remain with the teacher; colleagues and learners are indispensable

Transcribing audio recordings for self-reflection is not meant for assessment. However, if the same tool starts to be used to evaluate learners or teachers, stricter rules apply. Detailed rules may change, so it is worth following the latest guidance. Further points of reference are provided by UNESCO's AI Competency Framework for Teachers (2024) and the European Commission's ethical guidelines for educators (2022).

Signal	Examples
Green: safe to use	Organising your own voice notes; summarising anonymous exit cards; the example prompts above.
Yellow: with care and clear rules	Analysing a transcript of part of a lesson, with prior information and deletion afterwards; video analysis among colleagues; simulated learners.
Red: not permitted	Recognising emotions or attention from learners' faces or voices; automatic ranking of learners; forwarding AI summaries to management without the teacher's knowledge.

Takeaways for teachers

Reflection is not a new requirement but an old, often invisible part of good teaching. What has been missing so far is time and a conversation partner who is always available. So the question is no longer whether there is time for reflection, but whether we make use of the opportunity.

- Self-reflection is the foundation of teacher development: experience is continuously fed back to improve the quality of teaching and learning.
- Multimodal AI analyses notes, recordings, photos and learner feedback together, so reflection can be based on evidence.
- Small, regular steps (five minutes a day, one piece of evidence a week, one conversation a month) are worth more than an occasional big analysis.

- Let AI ask questions, not pass judgement. The decision and the responsibility remain with the teacher.

As a first step, record a two-minute voice note after two of your lessons next week and talk it through using the first example prompt. At the end of the week, ask yourself: what did you notice that you had not noticed before?

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Links

- Yuting Wu: How to Be a Reflective Teacher? (open-access article):
ojs.bbwpublisher.com
- Gibbs' reflective cycle – Reflection Toolkit of the University of Edinburgh: reflection.ed.ac.uk

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