ASSESSMENT CYCLE

Course with learning objectives

Planning of the assessment

Creation of the assessment

Formative guidance by the learner/ teacher

Implementation of the assessment

Assessment and grading

Evaluation of the course/assessment

Analysis of task quality

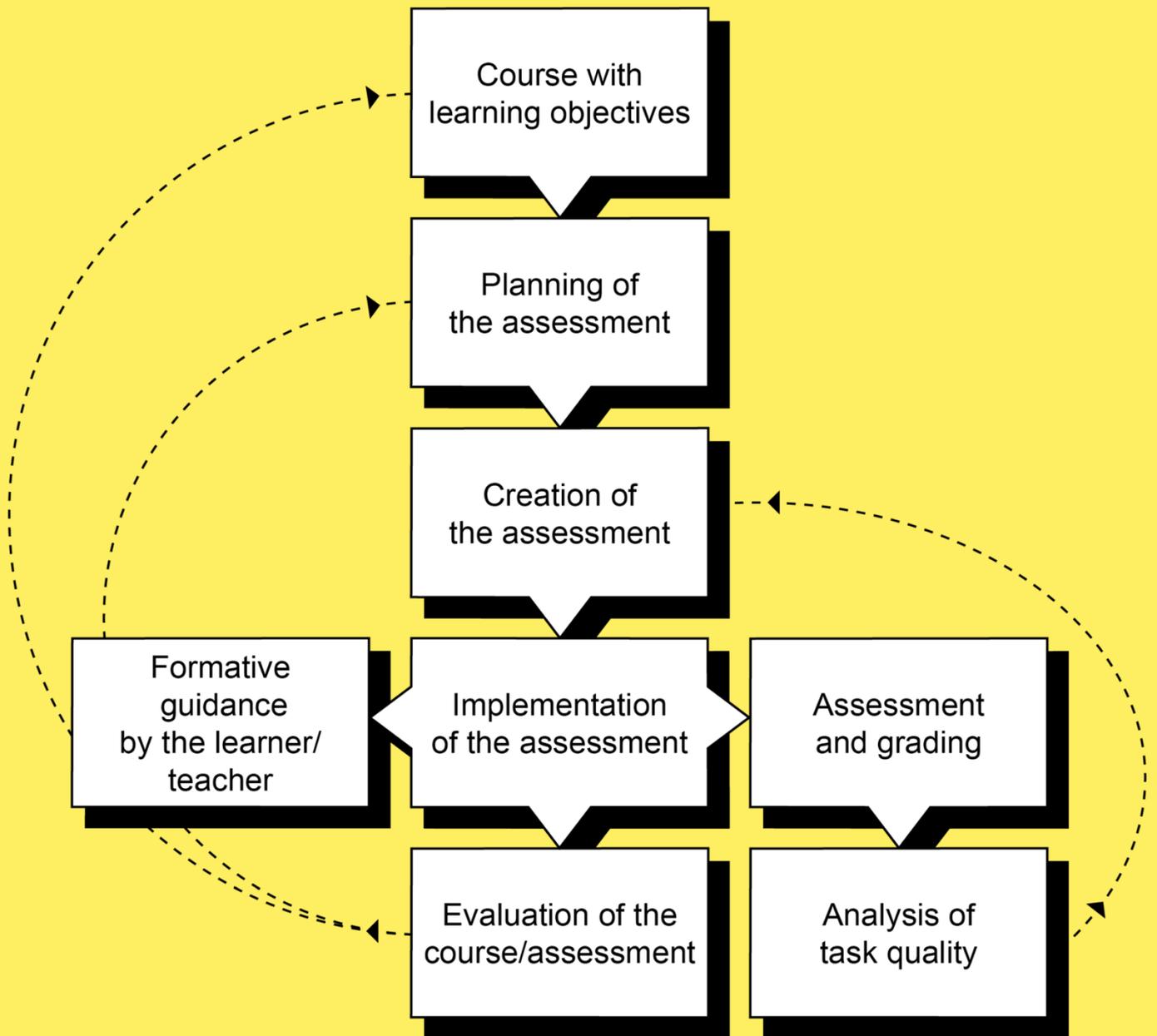Le el

INTRODUCTION

This assessment cycle aims to combine didactic aspects of assessment with the use of generative artificial intelligence (AI). The steps of the assessment cycle are divided into phases, although it is not always possible to clearly distinguish between them.

The use of AI in the assessment cycle offers opportunities to optimize or inspire the single phases. For example, it can support the planning and implementation of new assessments and the validation of existing assessment formats and tasks.

Practical tips on how to use the AI are given below for each stage and specific prompts are provided. These sample prompts can be adapted to suit your own needs, making it easier to get started using AI in assessments.

The use of a prompt engineering framework, such as PREP and EDIT, helps to create good prompts:

→ Use the PREP method when writing prompts:

+ **Prompt:** Write a short and concise prompt.
+ **Role:** Give the AI a specific role. Prompts often improve when the AI is given the role of an expert.
+ **Explicit:** Be explicit about what you want to achieve with your prompt. This includes defining clear objectives and the framework to ensure that the generated prompts are effective at different stages of the assessment cycle. For example, also specify the resources to be used, such as web pages, texts, uploaded PDFs, etc.
+ **Parameters:** Define the parameters of your desired answer (e.g. table format, maximum number of words).

→ Active engagement with the AI and continuous questioning of the process is crucial; the EDIT method helps with this:

+ **Evaluate:** Evaluate the AI's output in response to your prompt.
+ **Determine:** Determine the correctness of the output. The result must always be checked for correctness and feasibility and adapted to individual needs. The author is responsible for the generated content.
+ **Identify:** Identify possible bias or incorrect information.
+ **Transform:** Adjust your prompt accordingly, and re-PREP and EDIT until you are satisfied with the result. When working with AI, repeated checks and adjustments are important, as this iterative process can improve the quality of the output. This may take some time and practice at first–don't give up, you're learning!

→ Effective prompting requires some understanding of the capabilities of the AI technology being used, the context and potential biases, and the ability to adapt prompts based on feedback. Available AI tools are programmed and trained for specific tasks, such as text generation or image analysis. This understanding helps to set realistic expectations and adapt prompts accordingly.

→ Before using generative AI, it is up to each user to check their own institution's current terms of use and privacy policy (information on the use of AI in education in the canton of Zurich: https://www.zh.ch/en/wirtschaft-arbeit/wirtschaftsstandort/innovation-sandbox/ki-in-der-bildung-rechtliche-best-practices.html).

→ Resources for further guidance in the educational context: https://www.aiforeducation.io/prompt-library

PHASES OF THE ASSESSMENT CYCLE

COURSE WITH LEARNING OBJECTIVES
Learning objectives structure the course, guide the learner's learning behavior and are therefore central to assessment. They are <u>written in an understandable and comprehensible way</u> and aim to achieve <u>different levels of competence</u>.

Practical tips:
> → The learning objectives of my course are formulated in a competence-oriented, observable and measurable way.
> → The learning objectives are known to the learners.

Useful resources:
Bloom, B. S., Engelhart, M. D., Furst, E. J., Hill, W. H. & Krathwohl, D. R. (Hrsg.). (1956). Taxonomy of Educational Objectives. The Classification of Educational Goals, Handbook I: Cognitive Domain. New York: David McKay Company, Inc.

Tips for using AI:
1. AI can be used as a **source of inspiration** for formulating learning objectives. Important variables are the subject, the level and the topic of the course.

Example prompt:

```
You are a very experienced teacher at a Swiss university and you are asked
to teach a [INSERT TEACHING COURSE] for the [INSERT STUDY COURSE] program
in the [INSERT SEMESTER] semester on [INSERT TEACHING COURSE TOPIC]. What
specific content do you propose to work on? Formulate five learning
objectives that learners should be able to achieve by the end of the
semester. The learning objectives should be relevant to the learners'
everyday working life.
```

2. If the teaching materials on which the content of the course is based are already known, they can serve as a **data base** for the AI **to formulate concrete learning objectives**.

The AI also serves as a good support for the formulation of learning objectives at different competence levels.

Example prompt:

```
You are a very experienced teacher at a Swiss university and you have to
teach a course on [INSERT COURSE COURSE] in [INSERT SEMESTER] on [INSERT
COURSE TOPIC]. Based on the following content [INSERT NUMBER OF LEARNING
OBJECTIVES], formulate the learning objectives to be achieved by the
learners at the end of the semester. Formulate the learning objectives for
the following levels of Bloom's cognitive taxonomy: knowledge,
comprehension, application, analysis and synthesis. The learning objectives
should be relevant to the learners' everyday working life. Content: [INSERT
SECTION OF TEXT OR FILE].
```

3. If there are formulated learning objectives, generative AI can also be asked for a **suitable performance assessment format**.

Example prompt:

```
You are an experienced lecturer at a Swiss university and you are giving a
[INSERT LECTURE FORMAT] on [INSERT LECTURE SUBJECT] in [INSERT STUDY
COURSE] in [INSERT SEMESTER]. The learning objectives are [INSERT LEARNING
OBJECTIVES]. The course will be attended by [INSERT NUMBER OF LEARNERS]
learners and [INSERT NUMBER OF LEARNERS WHO CAN SUPPORT THE CORRECTION]
persons have the capacity to correct the performance record. The amount of
correction should be appropriate to the capacity available. Learners
should be able to complete the assessment independently within [INSERT
DURATION OF ASSESSMENT AND/OR TIME]. What forms of assessment are
appropriate for testing the [INSERT COMPETENCES]?
```

PLANNING OF THE ASSESSMENT

An assessment has a learning promoting (formative) and/or a qualifying (summative) function. The format of the assessment is aligned with the learning objectives and teaching/learning activities (constructive alignment): Is it appropriate to collect and assess learner performance orally, in writing (online or paper and pencil, closed or open book) or practically? Is it better to visualize the learner's performance in the form of a single event or by means of several individual partial performances (e.g. learning portfolio)? If the latter, how are the individual performances weighted in the overall assessment?

Practical tips:

→ I am aware of the framework conditions and institutional resources (e.g. time of assessment, rooms, technical equipment, human resources, compensation for disadvantages).

→ Learners are prepared for the assessment. They can familiarize themselves with the format through previous assessments or mock examinations. If necessary, they can also practice giving and receiving feedback.

→ Learners are informed about the content, procedure, permitted aids and assessment criteria in order to prepare them optimally for the assessment and to reduce exam anxiety.

→ A valid form of assessment and/or type of feedback to learners is defined for the chosen assessment format and taken into account in the planning of teaching and learning activities (e.g. use of peer feedback).

→ There is a checklist for preparatory tasks, training of participants (e.g. supervisors, assessors, correctors) and for the organizational process of the assessment.

Useful resources:
Checklists of the PH Zurich:
https://ilias.phzh.ch/goto.php?target=pg_138136_3493532&client_id=phzh&lang=en

Checklist of the ETH Zurich:
https://ethz.ch/staffnet/en/teaching/academic-support/performance-assessments/examination-development.html

Tips for using AI:
1. AI can be used to generate ideas for alternative, authentic forms of assessment.

Example prompt:

```
You are a highly experienced teacher at a Swiss university who is well
versed in developing innovative and effective authentic assessments. These
assessments enable learners to develop and demonstrate their learning.
Your task is to create [NUMBER] authentic [FORMATIVE OR SUMMATIVE]
assessments for my [TYPE OF EVENT, LEVEL AND COURSE] which deals with
[TOPIC]. The assessments should measure [STANDARDS, LEARNING OBJECTIVES].
Assessments should include practical application, complex tasks, multiple
response formats and meaningful feedback. [OPTIONAL IF SUMMATIVE:
INCLUDING VERIFICATION THAT THE STANDARD HAS BEEN ACHIEVED]. The
[FORMATIVE OR SUMMATIVE] assessments should be appealing to learners and
effectively demonstrate their learning and improve their skills and
understanding of the subject in a meaningful way. Be creative and unique,
do not add [INSERT RESTRICTED SPECIFICATIONS].
```

CREATION OF THE ASSESSMENT

When creating an assessment, the following aspects (quality criteria) must be taken into account: The assessment should be the same for all learners (objectivity) and cover the learning objectives to be tested in a representative manner (validity). It should also allow conclusions to be drawn about the degree to which a learner has achieved the competences to be acquired. Learning objectives form the evaluation standard for an assessment.

Careful construction of the individual tasks/assignments or a sufficient number of tasks make it possible to measure the competences to be acquired with a high degree of accuracy (reliability). Feedback from subject matter experts on the content of tasks is helpful.

Practical tips:
→ The weighting of subtasks/assignments reflects the weighting of content in the courses.
→ Previous experience/evaluation results/results of task quality analyses have been taken into account in the design.
→ A model solution with points/a rubric (also for formative feedback) and a grading scale have been created. These have been reviewed by another expert (see ASSESSMENT AND GRADING phase).

Useful resources:
Guide to creating good multiple choice questions at ETH Zurich:
https://ethz.ch/content/dam/ethz/main/eth-zurich/education/lehrentwicklung/files_DE/Leitfaden_MCfragen.pdf
Guide to creating good multiple choice questions at ZHAW:
https://digitalcollection.zhaw.ch/bitstream/11475/14508/1/2018_SML_MC%20Aufgaben.pdf

Tips for using AI:
1. AI can be used to learn about the basics of different assessment formats.

Example prompt:[1]

```
You are an extremely experienced teacher at a Swiss university and are
giving a [INSERT TEACHING SEMESTER] course on [INSERT TEACHING COURSE
TOPIC] in the [INSERT SEMESTER] semester. As an assessment format, you
would like to create a [INSERT CHOSEN FORMAT].

What should lecturers consider with regard to the structure of the
questions/tasks and the overall composition of this assessment format?

or

Describe the structure of a multiple-choice question[1].

or

According to Obrist and Städeli (2010), an examination question consists
of an information section and a question section. Explain the structure of
the information and question sections.

or

According to Hein (2008), the question part of an examination question
consists of a task stem and answer options. Explain the structure of the
question stem and answer options.
```

2. AI can be useful as inspiration when designing content, especially for multiple choice, open questions and case studies.

Example prompt (on the example of a Multiple-Choice Exam):

```
You are a highly experienced teacher at a Swiss university and you are
giving a [INSERT LECTURE FORMAT] on [INSERT LECTURE SUBJECT] in [INSERT
STUDY COURSE] in [INSERT SEMESTER]. You have selected a multiple-choice
examination as the assessment format.

Create [INSERT NUMBER OF QUESTIONS] multiple-choice questions on [INSERT
TOPIC] at the [INSERT TAXONOMY LEVEL] of Bloom's Cognitive Taxonomy with
[INSERT NUMBER OF CORRECT ANSWERS] correct answers and [INSERT NUMBER OF
DISCETRACTORS] distractors.

or

…Based on the text [INSERT TEXT IN '…'], formulate a multiple-choice
question with [INSERT NUMBER OF WRONG AND CORRECT ANSWERS] answers. The
difficulty of the task should correspond to [INSERT TAXONOMY LEVEL] in
Bloom's Taxonomy.
```

3. AI can lead to an improvement in the structuring of questions to better meet quality criteria. This includes the congruence of the wording of the question stem, items and explanations. In addition, AI supports the

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[1] Please note: The question type multiple choice is used in English-speaking countries for a selection task in which only one answer option is correct (in German-speaking countries this would correspond to a single choice task). Selection tasks in which several possible answers are correct are referred to as multiple response questions in English-speaking countries. For some AIs, the creation of a multiple choice question may therefore work better in German-speaking countries if we use the term multiple response instead of multiple choice.

formulation of good and fair distractors, the adjustment of the language level and the checking of open-ended questions for correctness and comprehensibility.

Example prompt:

```
…students [INSERT STAGE, PROCEDURE AND INSTITUTION] have studied the
subject [INSERT TOPIC]. In order to assess performance, I have formulated
the following multiple-choice question with the following possible
answers:

[INSERT MULTIPLE-CHOICE QUESTION WITH CORRECT ANSWERS AND DISTRACTORS IN
'…'].

Improve the wording of the choices.

or

…Formulate the distractors in such a way that they are not obviously
false. Avoid using absolutes such as 'always', 'never', 'always',
'exclusively'.
```

IMPLEMENTATION OF THE ASSESSMENT
Irrespective of the learner's performance to be assessed, the same conditions must apply to all participants (objectivity of implementation). The performance to be assessed varies according to the assessment format and influences the assessment process (see ASSESSMENT AND RATING phase). Guidance to facilitate learning, whether through formative feedback or otherwise, is appropriate depending on the learning objectives and the assessment format (see FORMATIVE GUIDANCE BY THE LEARNER/TEACHER phase).

Practical tips:
→ Learners are provided with all relevant information about the assessment (e.g. verbal/written instructions).
→ All those involved (examiners, assessors, minute-takers, supervisors, correctors) are trained to ensure that the assessment is fair.
→ Appropriate provision is made for learners with compensatory disadvantages.

Useful resources:
Checklists on UZH teaching tools for an examiner (https://teachingtools.uzh.ch/asset/62f6136ef6bddb066b07c315/download) and an exam protocol (https://teachingtools.uzh.ch/asset/62f614d8f6bddb0664708279/download)

Tips for using AI:
AI can be used **to formulate assessment instructions for learners.** AI can further be used to simplify the instructions for lecturers/supervisors etc. involved in the assessment.

Example prompts for writing an assessment instruction:
1. AI-supported systems can provide support in **finding and implementing compensation for**

```
You are a highly experienced university teacher at a Swiss university of
[subject area]. As a performance assessment you carry out an [INSERT
ASSESSMENT FORMAT] with the learners. Write instructions for the learners
to complete the assessment which include the following [INSERT CONTENTS
(e.g. what resources are allowed, seating arrangements, time allowed for
completion, emergency contact details etc.)]. Structure the instruction as
follows: [INSERT STRUCTURING DETAILS]. Write the instruction [IN LETTERS /
IN FULL FORMULA]. The instruction should be written in simple and
understandable language and contain a maximum of [INSERT NUMBER OF PHRASES
/ WORDS].
```

disadvantages. AI-supported software is usually required for implementation. Examples include an AI-supported screen reader, Braille translator or sign language interpreter or AI-supported speech recognition software.

2. For online exams, AI-assisted proctoring software can be used where necessary to **limit cheating attempts**.

FORMATIVE GUIDANCE BY THE LEARNER/TEACHER

Regardless of the assessment format, it is important to provide learners with formative support in their learning process. Individual support can identify misunderstandings and difficulties, discuss suggestions for improving performance and encourage critical thinking. Feedback can take place at different levels: From teacher to learner or from learner to learner, i.e., peer feedback. The latter reduces the supervisor's workload and at the same time promotes the learner's understanding of good performance, communication skills and mutual respect.

Practical tips:
→ Feedback discussions are designed constructively and based on a structure that promotes learning (see e.g. Henderson & Philips, 2015).
→ A productive feedback culture is established in the course, in which the recipient's understanding is also addressed (feedback uptake).
→ (Technical) implementation options for formative support are known (e.g. by means of audio or video feedback).
→ The frequency and timing of (peer) feedback is defined and known to all participants.
→ Rubrics and assessment grids are used during the work process as tools for orientation and (independent) assessment of the level of performance.

Useful resources:
Henderson, M. & Phillips, M. (2015). Video-based feedback on student assessment: Scarily personal. Australasian Journal of Educational Technology, 31(1). https://doi.org/10.14742/ajet.1878

Methods for organizing feedback from the ZHDK: https://designtools.zhdk.ch/#activities=1461

Tips for using AI:
1. AI can provide **inspiration for assessment settings** with formative support and feedback formats, in particular.

Example prompt:

```
You are a highly experienced teacher at a Swiss university and you design
your [INSERT TEACHING FORMAT] using [INSERT NUMBER OF ECTS]. Finally, you
summatively assess your students' learning using [INSERT ASSESSMENT FORMAT
OR METHOD]. Over the course of the semester, you will provide learners
with formative feedback on their [INSERT PERFORMANCE/ WORK PROCESSES] to
produce a representation of their knowledge in different forms [INSERT
FORM; e.g. oral, written], at different times [INSERT TIMES] and through
different feedback settings [INSERT FEEDBACK SETTING; e.g. peer feedback]
using [INSERT FEEDBACK TOOL; e.g. rubric].

Create a table by entering the list of assessment activities [INSERT
FORMS] in the rows and the following dimensions in the columns for each
[INSERT PERFORMANCE/LEARNING PROCESS]:

      • Time of task: initial, continuous, final (when?)

      • Type of activity: introductory, applied, conceptual, synthesizing
      (aim, for what?)

      • Voluntary / compulsory (what?)

      • Grouping of learners: individuals, pairs, small groups, entire
      course (how?)

      • Person providing assessment / feedback: tutor, peer assessment,
      self-assessment, AI (who?)

      • Forms of feedback: written, audio feedback, video feedback,
      verbal (which?)

      % (How much the assessment activity is weighted. In the end, the
      sum of all assessment activities must be total 100%).
```

2. AI can be an additional **resource in the feedback process**, alongside tutors, peers and the learner.

The interaction and dialogue between AI and learner is kind of a formative guidance in the learning process.

Critical questioning (a reflexive process) of the AI's output encourages more precise answers from the AI and strengthens critical thinking, which has a positive effect on the learning process.

ASSESSMENT AND GRADING OF STUDENT PERFROMANCE

Sample solutions or rubrics are helpful for assessment (assignment of performance to grades). This ensures fair and objective assessment (assessment objectivity) and increases transparency for students.

A factual reference standard is central to grading (allocation of points achieved to a grade): a performance is assessed on the basis of previously defined criteria. This makes it possible to reflect the achievement of a learning objective.

Practical tips:
   → Sample solutions, evaluation grids and report templates are available.
   → A grading scale is defined beforehand (which score is assigned to which grade).

→ The correction workflow is defined. Deadlines for correction, storage, submission of grades, appeal period, etc. are known.

→ Correctors are trained and informed about the correction tools to be used. Quality assurance recommendations: Serial and anonymous correction procedure.

→ The archiving of the transcript of records and the procedure for inspection of examinations are organized.

Useful resources:
A helpful collection of rubric templates from the Association of American Colleges and Universities (AAC&U): https://www.aacu.org/initiatives-2/value

Tips for using AI:
1. AI can support the assessment and grading process when designing a rubric. It is essential to specify the performance criteria and the performance levels. All other properties of the rubric can be customized as required.

Example prompt for creating a rubric:

```
You are a highly experienced teacher at a Swiss university in the subject
area of [INSERT SUBJECT AREA]. Create a tabular rubric that will be used
to assess different aspects of [INSERT SUBJECT OF ASSESSMENT], including
the criteria [INSERT PERFORMANCE CRITERIA TO BE EVALUATED WITH THE
RUBRIC]. Each criterion is given a specific score from 0 to 3 reflecting
the level of performance for that criterion (0 point (not met), 1 point
(partially met), 2 points (fully met), 3 points (met expectations)).

OPTIONAL: Weight the content of the criterion [SELECTION OF ONE OR MORE
CRITERIA] with a factor of 3, the criterion [SELECTION OF ONE OR MORE
CRITERIA] with a factor of 2, other criteria [SELECTION OF ONE OR MORE
CRITERIA OR MORE CRITERIA] with a factor of 1. On the right side of the
table, add a column labelled "Weighting", which contains the weighting
factor for each criterion. Add a second blank column on the right called
"Total". Add a third blank column on the right called "Comments". Suggest
also a grading scale according to the Swiss grading system with a concrete
point system.
```

2. The AI can support the **individual formulation of feedback** to the learner.

Example prompt (to support feedback formulation):
The following prompts are based on the assumption that a rubric with individualized feedback (in bullet points) has been written in the comments column for each learner and loaded into ChatGPT. Please note that importing learner data and performance into the AI is problematic from a privacy perspective. Therefore, this step must be carefully prepared, for example, no personal names should be read into the AI.

```
PROMPT 1: Use this section for the following request: [INSERT CONTENT OR
UPLOAD DOCUMENT].

PROMPT 2: You are an experienced teacher at a Swiss university who wants
to support the learning process of your students in an optimal and
individual way and therefore you attach great importance to feedback that
is conducive to learning. The Comments column contains the performance
rating for each criterion, as well as any other comments about the
performance. Based on the performance rating ("Total" column) and the
individual comments ("Comments" column), formulate detailed, constructive,
learning-promoting feedback in continuous text that addresses both
positive and critical aspects of the performance and makes concrete
suggestions for improvement. The feedback should be approximately [NUMBER
OF CHARACTERS] characters long.
```

ANALYSIS OF TASK QUALITY

The level of difficulty and quality of items (especially multiple-choice and short-answer items) can be objectively determined using statistical key figure analysis. This allows you to identify errors in the design of the assessment and to optimize tasks for the next assessment.

Practical tips:
→ Check whether the agreement between the items is high (reliability; Cronbach's alpha).
→ Check whether the distribution of scores resembles a normal distribution.
→ Check that the items have an appropriate, constant level of difficulty (P-value).
→ Check whether the tasks were correctly completed by high achievers and incorrectly completed by low achievers (selectivity).

Useful resources:
Explanation of each measure:
https://teachingtools.uzh.ch/asset/6361452d33def1ab920ce0b3/download

Tips for using AI:
For example, AI can support the following aspects

→ Interpretation of scores (e.g. Cronbach's alpha) or translation of statistical output into plain language
→ Help with programming for analysis (e.g. in R)
→ Help and inspiration for the revision of items (which were conspicuous in the quality analysis)
→ Comparison of blueprint and designed test

Note: Depending on the purpose of the AI, it may be helpful to provide the formulated learning objectives of the course, the learning content, the blueprint and the used (and analyzed) exam questions.

Example prompt of how to interpret the numerical values:

```
You are a highly experienced statistician at a Swiss university and you
teach in [INSERT DIVISION]. You have carried out a [INSERT CLOSED
ASSESSMENT FORMAT] to check the performance level of the students. The
result of the quality analysis is: [INSERT VARIABLE RESULT (at item or
test level / DOWNLOAD EXCEL FILE WITH ALL VALUES]. Interpret the result in
terms of how the quality, fairness and validity of the assessment could be
improved if it were administered again.
```

EVALUATION OF THE COURSE/ASSESSMENT

Evaluations are used for quality assurance and development of teaching. A distinction can be made between course evaluations and/or assessment evaluations. In addition to institutional evaluation schemes, there are various ways of carrying out evaluations independently.

Practical tips:
→ The timing of the evaluation is chosen so that meaningful adjustments can be made afterwards.
→ Evaluations can also be used as a tool for self-reflection and as an artefact for creating a teaching portfolio.
→ The joint interpretation of the evaluation results with those responsible for the program can serve as a reflection tool for the revision of the program.

Useful resources:
Guidelines for the evaluation of study programs at the University of Bern:
https://www.philnat.unibe.ch/ueber_uns/e95924/e258233/e321619/Leitfaden_StudienprogrammEvaluation_final_ger.pdf

Tips for using AI:
1. AI can be used as a source of inspiration for the **formulation of evaluation questions, categories and planning**. An important variable is the specification of the evaluation object.

Example prompt:

```
You are a very experienced teacher at a Swiss university in the field of
[INSERT FACULTY]. You want to evaluate your [INSERT TEACHING FORMAT]. You
want to evaluate both the [INSERT ASSESSMENT FORMAT] and the course.
Create assessment categories and an assessment plan.
```

2. You can also specify specific survey objectives that you will pursue at the end of the assessment in a follow-up prompt. The AI tool can also help you to create an evaluation questionnaire. For example, work with the following follow-up prompt.

Example prompt:

```
Create an evaluation questionnaire.
```

3. You can use other follow-up prompts to get inspiration for your evaluations, get evaluation types suggested, and then try them out yourself.

TEAM

This assessment cycle with appropriate recommendations for the integration of generative AI was developed by the E-Assessment cluster between 2023-2024 as part of "LeLa – Learning Lab Higher Education Didactics for Digital Skills".

Participants:
The following individuals were involved in developing the assessment cycle:
Carina Greif (UZH), David Schmocker (UZH), Ute Woschnack (UZH), Dana Blume (ZHdK), Mònica Feixas (PHZH), Thomas Matti (PHZH), Franziska Klarer (ETH), Marcel Mösch (ZHAW)

Editors:
LeLa – Learning Lab Higher Education Didactics for Digital Skills
A collaborative project of the Zurich universities: A collaborative project of the Zurich universities: Federal Institute of Technology Zurich (ETH), Zurich University of Teacher Education (PHZH), University of Zurich (UZH), Zurich University of Applied Sciences (ZHAW), Zurich University of the Arts (ZHdK), lela.ch

Webmaster:

University of Zurich, Educational Development, Dr. Carina Greif (carina.greif@uzh.ch)

Design:
Knopp und Kniel GmbH, Basel

Hosting:
University of Zurich, Educational Development

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