

Recommendation for the Appropriate and Responsible Use of Artificial Intelligence in Education at Corvinus University of Budapest

AI Guide for Lecturers

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GUIDE FOR LECTURERS on the use of Artificial Intelligence solutions in education

This AI Guide for Lecturers summarises what to expect as a teacher, how to adapt to technological change, what minimum one needs to know and do - and what university regulations say. The Guide aims to make – as much as possible – each subsection meaningful and usable on its own.

You may use this Guide as follows:

1. Chapter 1 helps you to understand the challenges facing teachers in using AI.
2. Chapter 2 provides general guidelines to follow when using AI in teaching.
3. For those who are not familiar with the technological background and features of current Large Language Models (such as ChatGPT) or just want to check their knowledge, Chapter 3 is worth reading - those who are familiar with the subject can skip this section.
4. For those who already know the basics, some specific AI tools are presented in Chapter 4 that may be useful to know about.
5. Chapter 5 provides guidance on the administrative aspects of the application of AI in courses.
6. For guidance on preparing for classes, see Chapter 6.
7. Chapter 7 gives ideas and examples for in-class work.
8. For guidance on the impact of AI on assessment, see Chapter 8.
9. Chapter **Hiba! A hivatkozási forrás nem található.** aims to provide techniques to support students in using AI more effectively and in line with institutional regulations.
10. Issues related to limiting the use of AI by student are reviewed in Chapter **Hiba! A hivatkozási forrás nem található..**
11. If you need further help, Chapter **Hiba! A hivatkozási forrás nem található.** provides information on where to start solving your problem .

(Disclaimer: The text of this Guide was translated from the Hungarian original using DeepL and Google Translate then corrected and refined.)

1. How to approach AI in education?

It is predicted that artificial intelligence (AI) will play an increasing role in the learning and teaching process by making information easily and quickly available to students - but also to teachers. It can support the work of lecturers, but they also have a role to play, as AI tools can complete or significantly facilitate certain student tasks, so teachers need to rethink both class work (and preparation for it) as well as assessment and performance monitoring. This changes the role of teachers: the emphasis shifts from knowledge transfer and frontal teaching to mentoring and facilitating. Personal contact and verbal communication will be valued more.

We can use AI in all main phases of education: it can help us, but we may also avoid using it - the guide gives techniques and ideas for these situations. Teachers should be prepared for students using AI in their work, especially for text-generating activities: one can ban, allow or even include AI in classes.

The rest of this guide also gives tips and possible solutions. However, please note that the ability to control the use of AI by students in solving their assignments is limited. It is not feasible to implement and especially enforce a strict prohibition, rather soft techniques of guidance, version control and gentle pressure are recommended.

One should try to be open and discover what works in his/her own area and what doesn't. Teachers need to find out what solutions suit them, in what depth and in what ways: like other technologies, AI applications need to be personalised by educators, to fit their own teaching ideas and style.

But don't just focus on the problems because that can take away the opportunity for discovery and successful use.

AI can be used to raise the level of expectations towards students, since they can do some basic things more easily with these systems. It is worth moving towards more sophisticated use, but this assumes that the instructor is open and prepared. However, in this situation there is no reason to be afraid that there will be students who will be more adept at using AI more effectively: involve them in teaching.

Figure 1 provides a graphical summary of the steps to follow when considering and implementing the use of AI for a given course.

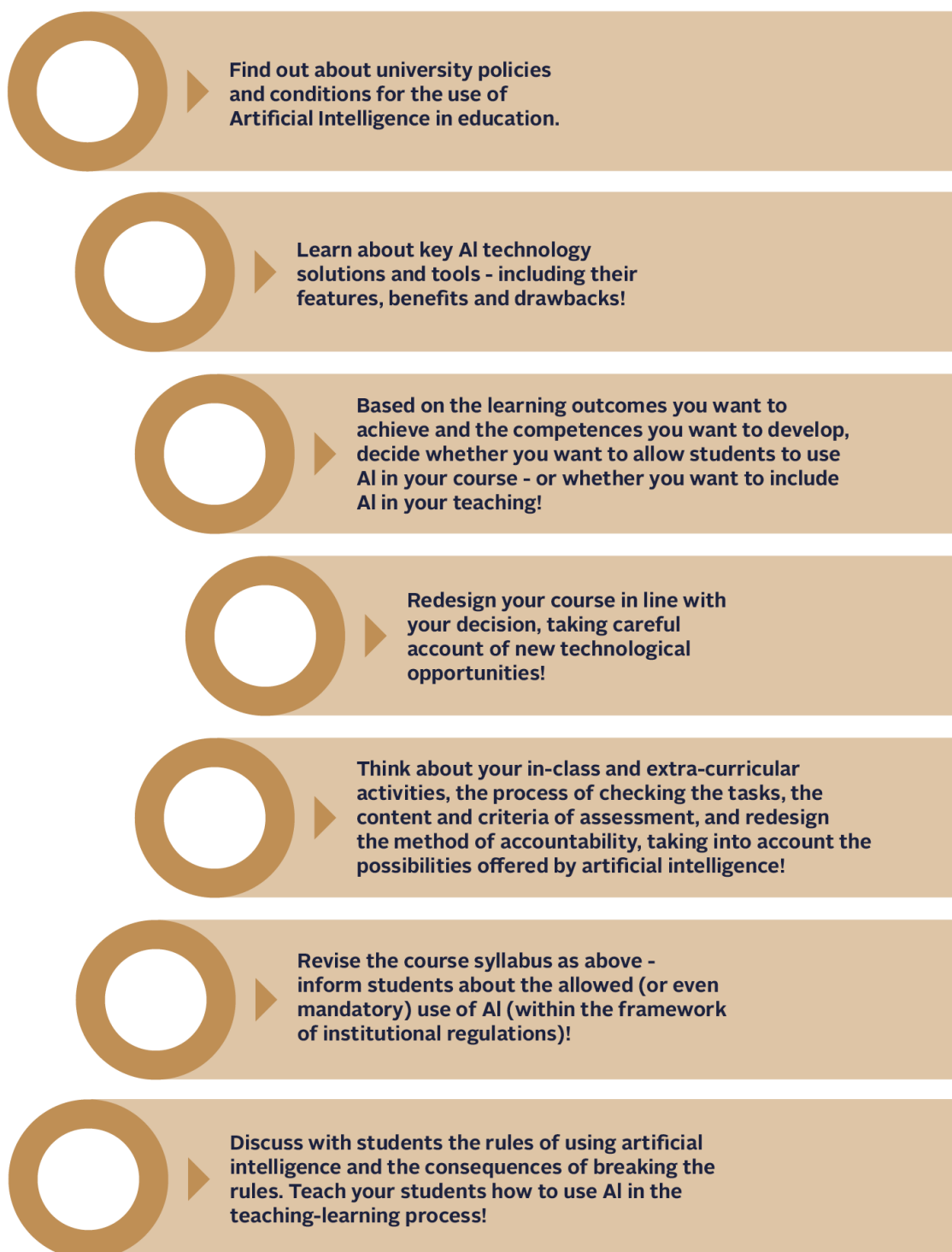


Figure 1. How to approach AI in education

2. Guidelines for Lecturers

Below is a summary of the **recommended guidelines for educators** on the use of artificial intelligence. Following these guidelines will ensure that the use of AI in the

educational process is appropriate and safe. In cases where these conditions are not met by the educator, the default approach of the institutional policy will be triggered.

Be familiar with and respect the institutional framework for AI

- Get familiar with the institutional policy: before using or allowing students to use any AI-based assistive technology in a course, check the general university policy for the conditions of use.
- If there are additional expectations concerning the use of AI by student that differ from the basic regulations, students should be properly informed of those (e.g. on the course syllabus).

Supporting teaching and learning

- Carefully plan the use of AI for the course considering both content and pedagogical aspects.
- Help students to use AI properly, correctly, and ethically.

Course syllabus and e-Learning system

- Clarify the fact and conditions for the use of AI in all subject syllabi and, if necessary, in the e-Learning system (e.g. Moodle).
- In the course syllabus, indicate in detail for what and how students can use AI in the course.
- Define specific tasks or areas for which AI can be used, as well as the conditions of use and the way how use of AI should be indicated.
- Refer to the official university recommendation or other available samples.

Transparency and referencing

- When using the results of AI in formal work, always make it clear to what extent and in what way it has been used and which tool has been used.

Critical approach and prudence

- Always be sceptical of AI-generated results and treat them with caution.
- Check the texts or images generated by AI before using them.

Data protection, security and privacy


- Avoid the use of sensitive data in the classroom, either your own or that of others, if possible.
- Take particular care when using publicly available AI models: check the developer's background and look for reviews of the tool, check the published privacy notice - seek help from the education technology team if needed.

Self-reflection and development

- It is important for the teacher to be self-critical in the application of the AI, to reflect on what has been learned at the end of a section, topic, or semester and to feed it back into the work of the next academic year.


Artificial Intelligence Guide for Corvinus Lecturers

GETTING INFORMED




Be familiar with all relevant parts of institutional documents (Study and Examination Regulations, Plagiarism Policy, Ethics Policy)

TEACHING AND SUPPORTING LEARNING




Applying AI in courses need to be designed while considering both goals and pedagogy
Support students in their ethical use of AI

COURSE SYLLABUS AND E-LEARNING




Determine up-front for what students may use AI tools in your course and how
Indicate conditions of using AI in the course syllabus clearly

OPEN COMMUNICATION ENVIRONMENT




Create a supporting environment where students may share their experiences and may ask questions regarding the application of AI in their work

RELEVANCE




Application of AI should be aligned with the content of the course while considering the abilities of students

TRANSPARENCY AND REFERENCING




When using AI in class, that fact and the form of utilization should always be clear to students

CRITICAL APPROACH AND PRUDENCE




Be sceptical about the results generated by AI solutions
Always check any AI generated text or image before using in class

DATA SECURITY AND PRIVACY




Avoid using sensitive data or information when applying AI
Be careful with free AI tools: check the background of the developers and their privacy policy

INTEGRATION



After a topic, course segment, or semester reflect on your experiences with AI and consider the insights learnt for the future

ASKING QUESTIONS



If uncertain about AI in general or the use of a specific tool, please contact the educational-technology group

Figure 2. Summary of AI Application Principles for Teachers (Design by Krisztián Hegedüs)

3. What AI and the chatbot is - Capabilities and weaknesses

The term Artificial Intelligence (AI) is used to refer to technologies and applications that are developed to represent some aspect or subset of human thinking and abilities, to implement them in machine form, and to solve complex tasks that require specific cognitive abilities usually attributed to humans. This could be, for example, the recognition of objects (images), the interpretation or writing of texts, or the task of solving complex problems.

One type of AI is the so-called Large Language Models (LLMs). LLMs belong to the generative AI group together with image generating applications (e.g., Midjourney or DALL-E). Another type of AI is the category of machine learning (ML) models (now considered traditional AI).

LLMs include ChatGPT, which burst onto the scene at the end of 2022 and now is the best-known representative of this AI category.

ChatGPT is a specialised text generation and question answering solution built on top of the GPT base (English) language model version 3.5 or 4, on which additional applications, add-ons and plug-ins can be built (such as the latest version of Bing or Bing.AI).

A typical LLM algorithm can analyse the relationships between words and put them together on a probabilistic basis to form grammatically correct sentences. So, if you ask it a question or give it a prompt, it will find the answers based on the probabilistic relationships between the words in the prompt and the relationships of words represented in the multilayer network model.

The data of the model, i.e., its probabilistic relations, are constructed by learning: there is a basic language model, which is responsible for the linguistic correctness of the input and generate sentences, while knowledge relations are built on top of it by fine-tuning.

When you 'talk' to the model, you can further refine the question/instruction (e.g., clarify the context), as it will keep the previous steps (at least for a while) and then adjust which words, phrases or expressions to search for based on the modification. The input query can be a longer text, depending on the sophistication of the model (more powerful models usually must be paid for, such as ChatGPT version 4 which was available in June 2023 for a monthly fee of about \$US 20).

More specific models can be built on top of the existing language models or even on top of the chatbots built on them (e.g. using specific information, books, and articles in a particular field of science for training) or linked to search engines (MS Bing.AI is built on top of ChatGPT, but there is also Google Bard or Meta LLaMa).

Although these large language models produce impressive results in many areas and for many tasks - e.g. summaries, text ordering, searching for concrete facts - they also have many problems due to the technology and their structure. The most common error is the so-called hallucination, where the language model does not know the answer but still produces the text elements with the highest probability based on the internal relations. In many cases they do not return facts or concrete data, instead,

return related but sometimes incorrect facts (formed into sentences). There may be cultural or other biases which, in extreme cases (where more hidden texts used in teaching are revealed), may be racist, sexist or offensive to certain minority groups.

Creating and training these models consume a lot of resources - thousands of high-end machines, energy, human labour, etc. - and take a lot of time (months or years). In principle it is possible to deliberately attack and modify the base model with undesirable content, although filters are usually used to avoid this.

Although there are fears that the model might learn private data or typical prompts of a user, to the best of our knowledge (at the time of writing) current models are not technically capable of doing this - instead, it is possible to use historical prompts to further train the model after verification (anonymization) of such prompts. This means that even if other users cannot see our prompts, the model operator can. Prompts may contain personal information which is then available to the developer and (with a small chance) can theoretically be stolen.

Finally, we would like to draw your attention to some basic privacy and data protection issues that everyone in the institution should be aware of when using AI:

- It is not clear on what data and on whose publications each chatbot was trained.
 - The question arises whether any materials were used without permission.
 - More specifically, texts available for free on the web were used - but without asking for permission.
- It is not possible to know exactly what is not in the tool.
- LLMs collect questions and comments during use - and freely reuse them or may reuse them later.
- Individual developers use a variety of so-called fine-tuning techniques of which little is known (especially considering their content).
- The data used to train the AI may be lopsided and contain biases.
- The long-term effects of using AI and language models are not known.

4. Examples of typical AI tools supporting the work of teachers

The tools presented here are mainly examples of specific types of applications, but we have tried to select those that appeared to be useful in higher education teaching. This gives teachers the opportunity to see and try out what the latest solutions can do - but it also makes later descriptions, methods and explanations easier to understand if you look at more examples.

Concerning currently available tools, it is important to note that they were developed in English and that materials originally written in other languages (websites, documents, books, etc.) are incorporated into the teaching material by first translating them into English - and when communicating with such LLMs in other languages (such as Hungarian), the questions asked are translated into English with using some tool, and then the generated answers are translated back into the language of the question. These steps may have side-effects, which should be taken into account when using them in education. In many cases the tools currently available (July 2023) can be most

accurately used in English - so their performance in Hungarian on a specific topic should be checked, but it is worth experimenting. There are also tools in Hungarian (such as HuBERT or Puli) but they (at least for now) fall short of the leading English solutions in terms of knowledge.

Conversion AI platforms such as ChatGPT can help with text generation, authoring and media content creation (e.g. generating engaging, impact-maximising social media posts, emails or other written content based on specified parameters):

- <https://writesonic.com/>
- <https://app.copy.ai/>

The AI interfaces for **text writing, rewording and paraphrasing** allow you to reformulate, edit and improve pasted texts to make them more expressive, understandable and comprehensible, e.g. from informal to formal, from longer to shorter, from verbose to focused and so on:

- <https://app.wordtune.com/editor/>
- <https://quillbot.com/>
- <https://jenni.ai/>

Tools supporting the **creation and semi-automatic generation of educational videos**:

- <https://app.elai.io/>
- <https://www.synthesia.io/>

Conversion platforms are available that can be used primarily **as research tools**, where the AI tool does not generate its answers based on a large language corpus unknown to the user, but the user can upload documents typically in pdf format and ask the tool specific questions about their content. Consequently, if the instructor asks the student to read a particular source and then summarise its content or extract its essence, the instructor can no longer rule out with absolute certainty that the answers have not been written by AI. Solutions that work along these lines are "docalysis", "chatpdf" or "askyourpdf".

"Connected Papers" is an online platform for **connecting and visualising scientific papers** by keywords, DOI identifiers or titles. This tool allows researchers to discover connections between different scientific publications, making it easier to see related research areas, and helps researchers/educators to find relevant literature faster and discover new connections (not based on merely co-citation). The database is constantly being expanded (there are still gaps in it at the moment), but it has the advantage of visualising the manuscripts' publication date, citations and how strongly correlated the literature is to the phrases the user provides:

- <https://docalysis.com/>

- <https://www.chatpdf.com/>
- <https://askyourpdf.com/>
- <https://www.connectedpapers.com/>
- <https://consensus.app/search/>.

5. Administrative aspects of the application of AI in teaching

The fact and conditions of using AI should be made clear in each course syllabus and, where appropriate, in the e-Learning system used (Moodle) - both in terms of how the teacher uses AI and what is expected of students regarding their use of AI (what they can and cannot do). If the course syllabus does not specify any rules concerning the use of AI, then the institutional default approach to regulation must be applied, which typically allows for the use of AI. At the same time, the general expectation is that students should indicate and clarify where and how AI has been used by them, including which tools, if any, have been used when submitting any independent work. The typical approach is that AI bots can be used freely in source research, while the permission of using generative functions is approached in three levels. The key point is that students should not claim any work as their own if they have used any form of AI, especially a chatbot.

It must be indicated on the course syllabus if students are not allowed to use AI in the context of that course. It is worth giving reasons for the restrictions. It should also be made clear what happens in case a student does use it during an assignment. For example: *“Intentionally using artificial intelligence tools in an exam, test, assignment or any other academic work will be considered as a learning misconduct in this course”*.

If the lecturer allows students to use AI during the learning and teaching process, the course syllabus should specify the tasks for which students may use AI, to what extent and under what conditions, and how they should indicate the use of AI in the materials they prepare (there are recommendations and samples in the university regulations – check the latest versions adapted to AI).

In addition to defining the conditions of using AI by students, instructors should also check what needs to be changed in the content of the course syllabus in case of using AI. In other words, in addition to the administrative points of course syllabus, it is also worthwhile to indicate in detail for what AI is used in the course by the instructor(s) and where and how students can use it and when they cannot. As part of the teacher's preparation, this should be thought through and planned in advance.

6. Applying AI during preparation for classes

6.1 AI as a curriculum preparation tool

Although students should be aware of the general institutional rules on the use of AI and the specific conditions of the course (typically from the course syllabus), it is worth drawing attention to these in the first few lessons at the beginning of the year. If you do allow the use, be prepared to provide (at least basic) assistance to students in the appropriate use of AI tools including how to deal with any shortcomings or weaknesses. Explain how to use AI both in the classroom and at home.

There have already been many suggestions in the literature and circulating online on how to use AI in preparing for classes or even in preparing course content, but their effectiveness or even their efficiency has not yet been clearly established. We therefore suggest that everyone should look for solutions that suit their own profession, subjects and personal views - and one should feel free to experiment.

AI as an assistant can support teachers in the following ways:

- generating class plans for a given training level, on a given topic, according to given criteria,
- generating ideas, find resources,
- support the production of educational materials, e.g. instructional videos (see example below),
- generating a large number of alternative exercises of a single task type, which allows students to understand solution patterns and then helps the evaluation of results and the analysis of errors,
- creating tests and text-based exercises from a given course material (however, care should be taken as the actual content of the tool and the questions should be checked first).

Obviously, the limitations of large language models (see the relevant subsection of this Guide) must also be taken into account during any of the above applications of AI.

Overall, with the conscious and well-prepared involvement of AI in the teaching work more time can be spent on motivating and supporting students. But let's not forget that achieving this takes time and energy, especially in the early stages. The 'learning curve', i.e. the time and rate of return is not yet known and there is not enough experience yet.

6.2 Example of automatic creation of video tutorials

There are a number of solutions (e.g. <https://app.elai.io/>, <https://www.synthesia.io/>) that can be used to create tutorial videos from text material. The video (<https://www.synthesia.io/examples/newtons-third-law-action-reaction>) of the lecture by "Professor Sergey Brink" was not recorded in a studio but was generated by an AI tool. Using these tools, the user can choose from hundreds of characters, even customise their clothes and appearance, and then "they" "read" the text of the lecture given to them. Some solutions even have ChatGPT integration, so it is not even necessary to write the text, it is created by ChatGPT based on user instructions. It even

creates the presentation and animations behind the speaker, so the complete tutorial video is created by the AI based on text instructions only.

7. AI in class work and in students' independent work

7.1 Rethinking the nature of student work

Regardless of the use of AI in a course or subject, it is important to clearly define the learning outcomes to be achieved and to plan learning activities based on these outcomes. In the wake of the latest AI tools this requires a particular focus and approach. The relationship between teaching goals and AI should be explored before regulating the use of AI, as it may be influenced by the intended application (or on the potential limitations).

As it is likely that in the near future there will be a change in what we consider valuable knowledge, skills and competences, it is advisable to adapt our student evaluation system to take this into account. We need to rethink what we evaluate and why. In other words, what depth and scope of knowledge the student should have. We propose to do this by taking into account the generic competences to be developed, Bloom's taxonomy levels (remembering, understanding, applying, analysing, evaluating or creating) and the institutional measurements expected in (national or international) accreditation processes. Based on these, rethink the activities, tasks and assessment of learners, and determine where and how you will allow AI to be used.

However, there may be competences that can be best developed by not allowing the use of AI tools for certain parts of the task. We propose solutions for such cases too, taking into account the limitations of AI detectors. We suggest that in cases where the goal is to help students remember or understand facts, concepts, processes, or to develop soft skills that can be fully covered by AI but are needed by students (e.g. text comprehension), do not allow the use of AI.

According to Bloom's taxonomy, conversational bots basically cover the lower two levels: Knowledge and Understanding (Explanation) are the zones where they work, but for Applying they do not; although the Analysing level is covered to some extent, they lack depth and they can easily become schematic and repetitive at this level. Synthesis and Evaluation can only be done in simple terms and formally (not to mention Creating).

In addition, the performance of individual instruments can typically vary widely from one domain to another.

AI language models should be used wisely, thinking in advance about what materials and tasks they can help with.

AI supports the so-called flipped-classroom practice: With the help of AI, students can prepare in advance, and then the focus in class may be on discussion, answering questions and deepening knowledge or application of what learnt. In other words, AI can be used as a tutor.

7.2 Rethinking essay-type exercises

In the world of higher education the use of text-based, essay-type assignments is common in mid-term assignments as well as during exams. These types of assignments are a way for students to demonstrate their knowledge, opinions and generic competences (e.g. finding sources, text comprehension, critical thinking, highlighting, structuring, problem solving, proposition writing). Currently, students are mostly using AI to solve these types of assignments, i.e. to write texts. Therefore, some examples are given below how essay-type tasks can be adapted, bearing in mind that the redesign of tasks must be done with a thorough consideration of the learning outcomes to be achieved and the generic competences to be developed (in the example below for the sake of simplicity we reference ChatGPT but other LLMs may of course be utilized).

- 1) Students state their views on a question and then ask ChatGPT to refute them. In the presence of a rebuttal, students are asked to supplement their original argument.
- 2) Students read a text and then have ChatGPT create a test. They then solve and correct each other's test.
- 3) Students write an essay on a topic using ChatGPT. In the completed essay, they mark the content that goes beyond what they have learned and augment it based on what they learned in class. They create a mind map from the completed text.
- 4) The instructor writes a short text on a given topic with ChatGPT and then asks students to write their text (in class). Students need to identify which text was written by the AI and which by other students. The choice must of course be justified.
- 5) The goal is to write a well-defined professional text using ChatGPT. Since questions and comments can shape the response by the bot, the task is to provide as precise prompts and questions as possible, and to arrive at the expected level of detail and quality (as specified in class) with the least amount of interaction.
- 6) The student will use ChatGPT to write an essay on a given topic. The text written by ChatGPT is then evaluated according to the criteria discussed afterwards, and any gaps identified should be covered.
- 7) The students write a simple text on a given topic or problem, which they transform into a regular essay/academic text using ChatGPT, several times in a row. They then compare, analyse and evaluate the resulting solutions and use them as a basis for their own final text.
- 8) After reading an article or academic text, students generate drafts of the text using ChatGPT. After reading, analysing and evaluating the different drafts, they choose which the draft that best reflects their own interpretation of the text.

- 9) Considering a given professional topic, students are asked to produce texts for different well-defined target groups using ChatGPT. They will then compare the language used and check whether it is appropriate for the target group.

8. AI in the evaluation of student work

8.1 Re-evaluating and rethinking student tasks

With the rise of AI, for each course it is necessary to consider how student assignments will be affected by the fact that students will be using AI. Here we need to think not only about the content of the tasks, but also about the way they are assessed, i.e. how the emergence of AI changes the way the work submitted is being judged (see also chapters **Hiba! A hivatkozási forrás nem található.** on how to limit the use of AI). To adapt tasks appropriately, we need to understand the essence of how generative chatbots work and know what activities they are good for - and what their weaknesses are (see e.g. chapters 3 and 4). Although AI bots can make mistakes, they can write convincingly in several languages, and are typically grammatically sound and able to produce summaries and abstracts, so these should be taken into account when assessing tasks.

What is worth paying particular attention to (what AI is weak at):

- critical thinking
- accuracy of references
- consistency
- variety of writing and language
- application of individual reflection.

Written submissions should be complemented by oral reports, student presentations and in-class work.

At the same time, AI can support teachers as a (non-human) teaching assistant in the following ways:

- providing feedback and comments (on student's work),
- automating parts of the assessment (it can assess answers to open-ended questions among others),
- generating answers to student questions, emails,
- summarising student feedback,
- helping the instructor to be informed on topics related to mental wellbeing and student support.

8.2 Examples of how AI can help evaluation and assessment

This Section looks at some examples of how artificial intelligence can be used to create tasks and assess assignments submitted by students.

8.2.1 *Preparation of assignments for examination*

1. Ask AI to create tasks from a given text (part of the curriculum, literature).
2. The type of task to be created should be specified.
3. Then AI can prepare
 - i. a test
 - ii. true-false questions
 - iii. open questions.
4. Always check the tasks created.

8.2.2 *Main steps of using LLM in essay assessment*

1. The prompt should define that the task is to correct essays and then the text of the essay should be copied.
 - i. Experience has shown that if the text is too long, it should be broken up into smaller chunks.
2. As a second step the evaluation criteria must be defined along with the rating scale (e.g. from 1 to 10) - without this, only a summary is generated.
3. The result will be:
 - i. a short summary of the essay
 - ii. a mark on the scale defined
 - iii. a short explanation, why such a mark is given – along with potential suggestions.
4. It is worth reviewing the evaluation received and then refining the evaluation criteria if necessary.

9. Supporting students in their use of AI

The most important task is to inform students about when and under what conditions they can use AI in the given subject. This should be done during the first class at least-but it's worth coming back to it later. Also explain to students for what and how AI was used in the preparation of classes and how it will be used during the teaching of the subject. In particular, highlight that there are university policy guidelines for the use of AI. In addition, specifically mention the dedicated rules of the given subject or course (as communicated on the course syllabus - see Chapter 5).

According to plans, a course is being prepared (and is expected to be available in September within the Moodle e-Learning system) by the Centre for Educational Quality Enhancement and Methodology (OMMK in Hungarian) both for lecturers and students. Taking this online course they can learn about the ethical use of AI at Corvinus and can get advice on where and how they may use during the learning and teaching process. The course content will constantly be evolved and updated as possibilities grow. It will also include advice and suggestions on how to avoid potential risks.

However, for the AI techniques and practices chosen for a given course to be effective, students must also be prepared. Students need to be taught and they need to learn how to use AI:

- at what parts of the teaching-learning process they can use it and for what,
- how they can use it ethically,
- how to ask questions and how to write prompts,
- how to (critically) evaluate the answers they get,
- where and how to find information about the use of AI in specific courses and during specific tasks.

Some useful advice that we can be shared with students even without in-depth knowledge of AI:

- AI bots do not always give the best answer or result the first time, i.e. the quality of the outputs depends on the time and energy invested (prompt questions should be improved gradually) - effective use of the tools needs to be learned with practice.
- Do not rely on what you get as an answer – check each output.
- Even though AI is a tool, due to its specific properties and capabilities, the fact and the way it is used must always be acknowledged.
- Learn when a tool is good - and when it is not worth trying (use it for what it is good at, learn and rely on its strengths and avoid weaknesses).

An online survey of 318 Corvinus students conducted by experts of the Library on the topic of AI in education revealed that students do expect the institution to provide not only information but also training and subscription access to useful tools. Within this, 52% of the respondents would primarily require this in an extracurricular way (such as occasional, extracurricular roundtable discussions, lectures, workshops, MyCorvinus app, informative videos, brochures, seminar discussions on ethical application, recommending tools that can be used in learning); 40% consider deeper integration of AI adequate and would like to be able to acquire the theoretical and practical knowledge related to AI through being incorporated into course content (new targeted courses, courses, freely available courses on AI use, or adaptation of existing ones so that AI use is included in the syllabus - there were also students who would have required a dedicated specialization). Furthermore, 51% would require a university-level subscription to AI platforms, e.g. Grammarly, DeepL, ChatGPT 4. In addition, 7% of respondents also mentioned that they would require clear university regulations on the issue.

10. What to do if AI is not allowed in a course – and how unauthorized use may be revealed

10.1 Applicability of AI detector tools

There are a number of solutions out there that claim they can detect if AI was used in the generation of a certain text or work – some of these are free others charge a fee. However, at the time of writing, various tests show that, up to a certain level, all solutions have both false positives and false negatives, even if there are detectors that some analysts have found to be better than others (e.g. originality.ai, Hive moderation, Turnitin, etc.). False positives occur when a detector identifies content as being generated by artificial intelligence, even though it was written by a human. False negatives occur when the detector does not detect AI-generated content. False positives and false negatives are a big problem, as they can result in an instructor rejecting authentic student-written text or accepting machine-generated content as real student accomplishment.

It is especially difficult for detectors to identify the AI content of a text when that text is part human-written and part generative AI. In addition, even slight modification of an AI-generated text by humans can result in false negative output if it is deliberately modified to appear more "human". This could be the case, for example, if someone introduces spelling mistakes into the text. But there may also be prompts to try to force the AI model to make the text appear human-formulated. Similar to the way ChatGPT detectors have been released to detect writings by generative AI, tools are already being developed to circumvent these detectors. A significant challenge is the rapid evolution of generative AI models, making it difficult for content detectors to keep up. As AI language models evolve, they become more realistic and harder to detect.

Since it is not possible to rely 100% on the results provided by most detectors, the following tricks may be utilized if it is important to identify whether a given text was partially produced by generative AI or if detection errors need to be minimized:

- Choose a detector that has been tested recently by independent experts and they have found it good enough (as AI tools improve, so do AI detectors, the field is constantly changing so it is necessary to be up to date).
- During the evaluation of a text or piece of work do not rely on detectors only.
- Use your own judgement and experience – and improve your related skills.

Here is what may be considered – beyond the outcome by detectors - when assessing whether a piece of work is AI generated or written by a student:

- Typical characteristics of texts produced by current generative AI tools include boring writing style that emphasises clichés and commonplace and has a lack of personal voice.
- Incorrect, "hallucinatory" expressions and references regularly occur in AI text.

- It is possible to check whether what is included in the text is in line with what we know about the given student, whether it contains biographical data or perspectives that are specific to that person.
- To what extent does the writing reflect the human writing/research process itself (which normally may include dead-ends and uncertainties)?
- To what extent is there an original, atypical perspective in the text.
- To what extent is there a personal perspective, an expression of emotions in the text.

In any case, since it is not possible to establish with absolute certainty that a text was produced by an AI, it is not recommended to apply strict sanctions if the detector indicates that the text was produced by an AI. Rather, a "soft" approach such as a clarification session may be useful, where the results of the AI detector are presented along with a personal review what have been found – and then this discussed with the student. It may also be possible to emphasize to students when announcing the assignment that results may be checked through personal discussions – this may deter some students already from mis-using AI. Alternatively, they may be asked to fill in a declaration whether they wrote the text.

Some AI companies plan to "watermark" their products to prevent fraud. We'll see how this plays out.

10.2 Alternative solutions to limit or control the use of AI

Here are a few tips and suggestions how the use of AI by students may be limited or controlled (one special solution, the so called 'draft-back' technique will be covered in a separate section after this one).

- Since fraud with AI detectors cannot be properly identified, student tasks may need to be modified in many cases if we do not want students to use AI to solve them. It is worth changing the tasks so that they are less feasible to do with AI tools (e.g. on the spot handwritten answers about a particular reading exercise assigned for the class, rather than computer work at home uploaded to Moodle; or asking for personal opinions and experiences to be written about).
- If we do not want generative AI to be used by student when writing their answers, perhaps the easiest way to test students' knowledge in the future could be to use a final exam where students write by hand, using only pen and paper, or in a controlled environment, using a computer without internet access. When creating open exams where technical aids are allowed but where we do not want to rely too much on large language models for answers, care should be taken to test the exam questions in advance on generative AI models, to see if they are questions that can be easily answered well by these models. If so, it is worthwhile to pose different questions.

- Ask a statement from students stating that they have not used generative AI tools for those parts of their tasks for which that was not allowed (see also Chapter 5).
- Encourage oral presentations, which can be used to evaluate and assess students' understanding of the class material as well as their abilities to talk in public.
- Design collaborative group exercises, where students work in small teams to complete a specific task or project.
- Instead of creating texts (which generative AI models are very good at), we can ask students to create other kinds of materials, such as web pages, videos, and animations, that express critical thinking.
- Require an individual voice, a unique approach in all submitted materials and check how much of the individual perspective is reflected in the writing: discuss this with the student. The importance of feedback does increase with the emergence of generative AI.
- Since generative AI models are very good at formulating and paraphrasing text, it could be difficult to tell whether the AI or the student wrote the text submitted for each task. Therefore, we encourage teachers to put more emphasis on the supervision process for writing and essay-type tasks (see for example subsection 10.3). This way teachers can better assess how the task was produced and whether students are acquiring specific expertise during the production process: e.g. supervise group work in class or ask for reports on the steps of the work, but an oral presentation of the results can also be useful.

Of course, above proposals have a number of limitations, but they could nevertheless be useful in the current situation. In many cases they require more work from the instructor, which is also an additional difficulty – and takes time.

It is important to note that in other cases and for certain competency goals it may be appropriate to allow the use of AI tools. Alternatively, it may be worth considering allowing the use of AI text generators also because this may prepare students for their future workplaces where they may (or even be required to) use them. Nevertheless, it needs to be clearly communicated for what they can and cannot use AI.

10.3 Screen monitoring, version tracking and draftback

Consider asking students to use screen monitoring devices or version control as optional proofs of original work. Example tools include GoGuardian or Draftback (among others).

Draftback is an easy-to-use extension for the Chrome and Edge browsers that is used to track the writing history of Google docs, essentially saving every single keystroke which then can be retraced later (with speeding up the replay). With the Draftback

extension students can create an accelerated video of their typing, backspaces, corrections, etc. Once installed, Draftback adds a special button to the top of the Google Doc interface that can be used to track the entire revision history of the document. Clicking the Draftback button brings up a secondary window that shows the timeline of the document. When the play button is pressed, all the entries and revisions that have been made to the document are shown playing as a movie, but can also be rewound. It also provides accurate timestamps showing when and how long the document was worked on. Alongside the timeline, Draftback provides data summaries, including a graph showing when and where the document was revised. If someone was to copy and paste AI-generated text into a document, the Draftback timeline would display it all at once. It is important to note that in order to produce a Draftback summary of a doc, the student must provide the instructor with a link to view it using the Share button in Google docs; it is also recommended that this is set to "*Anyone with link*" to facilitate the viewing process.

So, using Draftback, it appears to be possible (at least for now) to verify that a piece of writing is not produced by AI, unless the student has opened a separate window and instead of pasting, types in the AI-generated text. While it would technically be possible for someone to type a ChatGPT-generated essay word by word, and even deliberately introducing typos and taking realistic pauses and breaks, and even credibly revising the resulting essay, this would in some cases be more complicated than actually writing the essay. Especially, since Draftback also records how much time is spent writing. (Of course, it may be that technological solutions that cheat Draftback will appear over time).

There may be students who don't like working in a googledoc or who feel overly monitored when Draftback is applied. In addition, there may be cases where the Draftback recording disappears even if no cheating has occurred (e.g. when a file has been downloaded from google docs, this can still happen). For this reason, we do not recommend Draftback to be required as a mandatory audit tool. However, we do recommend it as a non-mandatory self-defence tool for students. For instructors, it is also possible to provide a choice to use Draftback (e.g. students could choose to digitally prepare a short text at home under Draftback supervision or to handwrite a text in class, etc.).

11. Who to ask for help - who to contact about what

You may find additional information at the following institutional units:

Library:

- What is plagiarism?
- How to use artificial intelligence ethically and responsibly.
- How to help students to avoid accidental infringements.
- What tools are available and which AI can be used to solve different tasks.
- Managing various AI technical tools.

IT support:

- What are the IT risks of using artificial intelligence?
- Managing technical tools.

***Learning support, teaching methodology group
(Centre for Educational Quality Enhancement and Methodology):***

- How the requirements and expectations set for artificial intelligence should be interpreted during teaching.
- Methodological support for the use of AI in education.
- Managing technological tools..

Office of the Vice Rector for Education:

- Feedback on the Guide.
- Why artificial intelligence can or cannot be used in certain subjects and for certain tasks.
- How students should be informed about the use of AI in the course syllabus.
- Administrative issues (e.g. syllabus form fields not interpretable, how to formulate precise wording about the use of AI in a course, etc.).