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Background

The faculty board of the VU Faculty of Science (hereinafter referred to as BETA) is aware that there is a need for clear guidelines on the use of generative AI (hereinafter referred to as GenAI) in education. VU already has several guidelines in place^{1 2}. However, BETA teachers, curriculum designers and examination committees asked for additional and/or more specific faculty guidelines, that they can fall back on. The following document has been compiled using a number of available documents and guidelines as inspiration. Sources include (non-exhaustive): VU guidelines (both VU-wide and other faculties), guidelines used by other universities and procedures used by various programmes within BETA. This document will be updated as new VU guidelines are published and as the state-of-the-art progresses. Parts of these guidelines will be incorporated within the BETA assessment policy where appropriate, as the two fields occasionally overlap.

The BETA guideline on use of GenAI consists of 3 parts:

- **Part I:** An exploration of the challenges of the use of GenAI in education and a justification of the choices BETA makes in the use of generative AI. This document serves as a context for the BETA policy and is available for all interested parties.
- **Part II:** BETA policy on the use of GenAI. This document states what is and is not allowed concerning the use of generative AI in BETA education (necessarily non-exhaustive).
- **Part III:** Guidelines on BETA curriculum design regarding learning paths for AI Literacy. In this part we give some background for programme management and teachers on how to design a curriculum aligned with the BETA policy for use of GenAI, on curriculum-, course- and assessment level.
This document contains part III. The other parts can be accessed via <weblink>.
- **Part IV:** Tips for teachers and examiners on the use of GenAI in education. This part includes some tips and best practices which have previously been shared by other sources, for example the Center for Teaching and Learning (VU CTL).

This document is a living document, since GenAI is continuously evolving, it would be presumptuous to define a definitive guideline. Both derivative versions (e.g. web-based) and this document will be updated to reflect new developments, with major changes communicated through newsletters and stakeholder emails.

Any input regarding the guidelines can be shared via <weblink>, so they can be integrated in a new iteration of the guidelines.

¹ <https://vu.nl/en/student/examinations/generative-ai-your-use-our-expectations>

² <https://vu.nl/en/student/examinations/generative-ai-your-use-our-expectations>

Part III: BETA guidelines on designing learning paths for skills

In this part, BETA guidelines for integrating learning paths (such as AI Literacy) into the curriculum are described. We will offer guidelines tailored to curriculum, course and assessment design regarding AI literacy. This document gives guidance to programme management, teachers and examiners on how to implement the policies on the use of GenAI in BETA education³.

1. Designing learning path for skills

BETA firmly argues that study programmes should be viewed as a **coherent and well-aligned programme, keeping in mind the workload and studyability of the programme (constructive alignment⁴)**.

Besides programme-specific knowledge and cognitive skills, we strive to teach students broader (not necessarily programme-specific) skills. Examples include presentation skills, teamwork, academic writing, and following recent developments also AI literacy.

Often, skills are both taught and assessed in multiple courses. This makes sense from a course perspective, since many different skills might be taught in one course. However, consider the curriculum level. If one of the final exit qualifications of the programme concerns a specific skill, is it not enough to *practice* that skill in multiple courses, but not *assess* it in every course it is practiced? This requires a way of thinking about curriculum design in which courses are not always stand-alone in setting their course objectives but need to be coordinated within the teaching team, resulting in a learning path for a specific skill set.

Divided over the curriculum one should be mindful how to locate and balance the following:

- Specific instructions on a certain skill
- Specific practice of the skill and improving the skill with feedback
- Using the skill as a mode for assessment without specific attention for the development of the skill itself (maintenance of the skill level).

This leads to the following guidelines when designing a curriculum

1. The exit qualifications are the starting point for each study programme. The curriculum is designed to lead students to mastering these exit qualifications at the end of their study programme. Therefore, the exit qualifications should not only reflect knowledge, but also any (academic) skills deemed necessary for a student to have obtained in order to graduate. Anything you wish to assess should count towards the mastery of the exit qualifications.
2. Next, determine in which courses which learning objectives should be addressed and at which level. Students need to be able to practice skills multiple times, before they are required to prove their mastery of the skills at the final attainment level of the exit qualification. Therefore, for each skill, determine specific courses where the skills will be practiced and/or assessed (formative assessment, where feedback leads to better understanding). For example, consider creating learning paths for each skill.
3. Then decide where the summative assessment (counting towards a grade) of the skill takes place. This could be one or multiple times in a curriculum but does not need to be part of every course where the skill is practiced. For example, a skill can be practiced only, or put to the test in a formative assessment (for example, a debate or peer review), where the student does get feedback but not a grade. Only at determined moments in the curriculum, the practiced skills might be assessed. It is good not to leave too much time between the last practice and the summative assessment, to help students get a timely 'wake-up call' to practice.

³ Link will follow, when document is approved by the Faculty Board of Science and published.

⁴ <https://vu.nl/en/employee/didactics/motivated-students-with-constructive-alignment>

It will take time to re-educate students (and teachers) and to familiarize them with this form of education. Communication is key here, explain to your students why you follow this approach and what you expect from them. Early in their study career, it should be made clear to students that they have a personal responsibility in acquiring the necessary skills and that their actions have consequences. Working together as a team with all teachers and examiners in the programme, is necessary when optimally designing the curriculum. The programme director has a leading role here and is crucial for the success of this endeavor. It needs to be clear for everybody involved that the objective is for students to learn, not just to pass the examinations.

Implementing (and therefore, redesigning) more formative assessment into courses may require an investment up front. Giving formative feedback on a larger scale will most likely also require a time-investment in the long run. The same is true for types of assessment to circumvent misuse of GenAI, such as reflection documents, logs, etc. On the curriculum level, the programme management plays an important part in deciding in which courses which type of assessment is needed, and how this can be tailored to the specific target group (for example, large numbers of students versus smaller groups). It is key to spread the amount of work required throughout the curriculum, both for students and for teachers. It is simply not feasible to give in depth feedback to large numbers of students in multiple times in each and every course. There are, however, numerous best practices how the workload can be managed better, while students still benefit and learn. CTL, the VU Center for Teaching and Learning, can help with questions regarding assessment design. Contact the Director Education BETA if you wish support for your programme.

This way of thinking about teaching and assessing skills (including the use of GenAI) is closely related to the assessment policy guidelines (which will be updated in 2024-2025 to reflect this close relationship as well) and this document will expand on this topic.

2. Learning path for AI Literacy

In this section, we will give some guidelines on how to design a learning path for AI Literacy, divided into design on the curriculum level, course level and assessment level.

With all the news coverage of GenAI, we need to be careful to not let GenAI take over the curriculum. Just like with each new educational innovation there is a risk that the new overshadows the known. Much as any other skill, like presentation skills and teamwork, AI literacy should be practiced several times in the curriculum but not be the headline in every course. An easy way to incorporate AI literacy into the programmes is to align the skills with the so called 'information skills' (how to use sources, how to judge quality, etc.) and/or with the academic core. When using the term AI literacy, we mean both the practical use of GenAI and understanding the ethical implications of using GenAI.

When designing a learning path for AI Literacy, also consider **the place of writing skills in the curriculum**. While writing assignments are most at risk of fraud by use of GenAI, many of our courses rely heavily on written assignments. Again, we need to teach students the skills needed for academic writing, but it may not be necessary to do so in every course that it currently features in. Limiting the number of summative assessments and therefore limiting the number of opportunities for misuse of GenAI allows us to make sure that the few written assessments that are carried out have sufficient controlled environments where GenAI cannot be used.

2.1 Guidelines on *curriculum design* for a learning path in AI Literacy

1. Educate students (at the very least) at the start of each year of study about the boundaries concerning the use of GenAI in their studies. This involves the VU guidelines for responsible use of GenAI, and the VU's guidelines for academic integrity. Not only inform students of the existence of these guidelines but also educate them on what does and does not constitute fraud.

This is not only important for students to know, but will also save teachers, examiners and examination boards sizable amounts of work.

Review the final exit qualifications of the programme, and discuss (with teachers, examiners, and programme committee) whether the ability to correctly and responsibly use GenAI (AI literacy) should have a place in the exit qualifications of the programme. Since the entire curriculum is geared towards the mastery of these exit qualifications, this influences the focus in the programme on these skills. For instance, this skill set could be integrated with the ‘information skills’ that are often mentioned in the exit qualifications of BETA programmes.

2. Please refer to the guidelines on AI Literacy in education as compiled by the UvA-VU Taskforce AI in education⁵ for guidelines on starting points for translating AI literacy into teaching practice and learning objectives.
3. Next, determine how to incorporate education on the use of GenAI. Single out specific courses where these skills might be practiced and/or consider designing a learning path.
4. Decide in which courses the specific skill will be practiced (and maybe assessed formatively), and where the skills are assessed summatively (counting towards a grade). A skill does not need to be assessed every time a skill is practiced.
5. Also carry out steps 2-4 for the academic writing skills, since academic writing and the use of GenAI are the most at odds with each other. Try to integrate it into courses where information skills and/or writing skills are assessed. Courses where you specifically train and assess students on academic writing, are probably the courses where you would like to limit and/or eliminate the use of GenAI the most. Think about what writing skills you wish to teach your students. Some of the writing skills are easily replicable by GenAI, other skills rely heavily on the students’ perception, interpretation and reasoning, skills that constitute the core of academic education. When assessing academic writing, you may wish to emphasize certain writing skills more, or even decide not to assess some of them at all. See figure 2 for a breakdown of writing skills and their replicability by GenAI⁶.

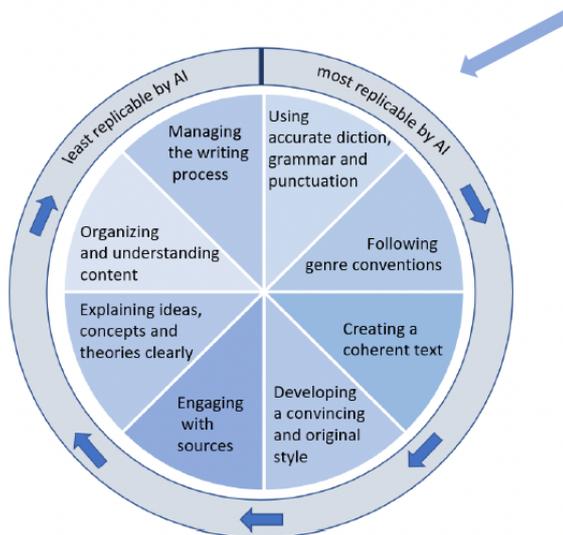


Figure 2 The ALP's writing pie: a breakdown of writing skills

⁵ <https://assets-us-01.kc-usercontent.com/d8b6f1f5-816c-005b-1dc1-e363dd7ce9a5/0fa9a790-e5ef-4bee-b091-5c23db7b5aad/AI%20literacy.pdf> (Dutch only)

⁶ VU Academic Language Programme (ALP) did a project on AI and writing skills. An important result, the Writing Pie, can be found via: https://assets.vu.nl/d8b6f1f5-816c-005b-1dc1-e363dd7ce9a5/8aa4dd69-284c-41ac-81f3-c10eba4c2ecd/De%20ALP%20Schrijftaart_feb%202024.pdf. Tips from ALP about AI and writing skills: <https://vu.nl/nl/over-de-vu/meer-over/ai-en-schrijfvvaardigheden-tips-van-het-alp>

2.2 Guidelines on course design for a learning path in AI Literacy

1. When distribution of focus on academic writing skills and use of GenAI has been decided, the course coordinators will design their specific courses, keeping in mind whether the courses only teach and/or formatively assess, or if a summative assessment is needed.
2. When designing the course objectives, consider:
 - Level and type of skills. See also the BETA GenAI Assessment scale, in the BETA policy for use of GenAI⁷.
 - What forms of assignments and/or (formative) assessment could be used, in line with the course objectives and the course content?
 - What skills are absolutely necessary for the course? Some basic skills might no longer be necessary to be learnt, since there are tools that can do this as well. Of course, sometimes it is necessary to understand the basics behind it, but in other cases, the necessity for such knowledge and skills might have become obsolete.
3. Use active forms of work during lectures, which center around feedback. Any feedback moment may be seen as a form of formative assessment, where the student may use the feedback as a learning opportunity. This may be a 'formal' assessment setting (a quiz or multiple-choice exam to see whether a student is on track), but think also about debates, oral presentations, peer feedback, etc.
4. Always include a statement in the course guide/syllabus stating the bounds of use of GenAI in this specific course and the assessment, always including information on the VU guidelines for use of GenAI and academic integrity. See BETA policy on use of GenAI for example texts, based on current best practices within BETA.
5. In the appendix to this document, a number of possible assignments have been added, to help teachers design meaningful assignments either making use of GenAI or making sure that it is not possible to use GenAI.

2.3 Guidelines on assessment design for a learning path in AI Literacy

1. The course coordinator/examiner who designs the assessment confers with the course coordinators from the courses where the skill has been practiced, to make sure the assessment adequately reflects the level a student should be able to achieve. This follows the principle of constructive alignment, where learning outcomes, learning activities and assessment are all alignment in order to reach the exit qualifications of the programme.
2. Examine the course objectives and course content and decide what type of assessment would be a good fit. Is writing essential to show mastery of the course objectives?
 - If yes:
 - Consider designing an assessment environment in which it is not possible to misuse GenAI, for example supervised in-class assessments where the student cannot use the internet/GenAI tools.
 - Consider organizing the writing process differently, focusing on the writing process and not the end product. For example, discuss types of products as compiled by each student. For example an argument diagram or a marked bibliography in which the student describes what they have taken from the articles. This is more time-intensive than other ways of assessment. Consider that only a few courses in the curriculum need to be assessed in this way.
 - If not:
 - Is a non-written form of assessment possible, for example presentation, group work, oral examinations? Even for larger groups, oral examinations may prove to be time efficient⁸. Emphasize other academic skills than writing (collaboration, argumentation, etc.).

⁷ Link will follow, when document is approved by the Faculty Board of Science and published.

⁸ <https://sites.google.com/vu.nl/vu-teaching-learning-tips/teaching-tips-planning-a-lecture-lesson-or-workgroup/responding-to-writing-assignments>

- If another assessment type than a written assignment is possible, then only use a writing product as a (short) justification of the choices made in the final product.
 - Do not give a writing assignment that students can work out through prompts. If this would be the case, you are mostly assessing knowledge and understanding, which may be better assessed using a (multiple choice) examination or other form than writing assessment. Narrow the scope/context of the assessment, for example by using real-life examples from a very specific context (for example, community-based learning assignments which focus in a very specific example in the community, on which GenAI tools will probably not have much data). Generative AI does not work optimally with very context-specific assignments, since this information has not been part of its training.
3. Use reflection on choices made as the assignment, instead of the final result. Thereby focusing on the process and the (mental) choices necessary to arrive at this product instead of assessing the product itself. This could also be part of a writing assignment, in which you ask a student to critique a paper, for example. Generative AI may be able to give an answer to such a prompt, but it would be general and not deeply informed, nor creative. In addition, consider placing more emphasis on the analysis of student-specific data sets and the results and insights that can be generated from them, instead of more text-oriented assignments.
 4. Design assignments in a series of successive phases. Multiple BETA programmes already designed their final project in such a way, where each phase needs a go/no go or other form of feedback to move forward to the next phase. In a regular course, this could be in the form of peer review, oral presentation, group discussion, etc.
 5. Do you suspect a student of using GenAI? Currently available AI content detection tools remain highly inaccurate⁹. Therefore, think about ways to determine whether the students did the work themselves in case of suspicion. For example, have students explain their work in an oral session to assess whether they have done the work themselves or not. This then does not replace the assessment itself but is an extra check before you hand the case over to the examination committee for fraud.
 6. When the course assignment really demands a situation where a student should be entirely excluded from having access to GenAI, consider the assessment method and the assessment environment. In such a case, for example revert to a written assignment on campus, where the student works in an invigilated situation.

⁹ Elkhatat, A.M., Elsaid, K. & Almeer, S. Evaluating the efficacy of AI content detection tools in differentiating between human and AI-generated text. *Int J Educ Integr* **19**, 17 (2023). <https://doi.org/10.1007/s40979-023-00140-5>