Applying the Universal Design Lens in Assessment: A Flemish case study

Biomedical Laboratory Science and Bioinformatics (Howest)

Abstract

In the case-study the added value of a Universal Design-inspired method is illustrated in a detailed account of the assessment policy adopted by the bachelor programs Biomedical Laboratory Science and Bioinformatics (Howest, Flanders). This policy was designed according to the key principle for assessment, which resulted in five steps: completing a test matrix, verifying the chosen approach using a self-assessment checklist, consulting a 'second pair of eyes' to get an outsider's perspective, the assessment, and a post-assessment analysis aimed at eliminating inconsistencies and improving future assessment practices. In the case-study the specifics of these five steps are outlined and their link to the Universal Design framework is examined. In the appendix, relevant policy documents and templates can be found as a means of inspiration for the reader.

Keywords: *Universal Design, Universal Design for Learning, assessment practices, inclusive supporting measures, second pair of eyes, self-assessment, post-assessment analysis, templates, matrixes, good practice*

Introduction

Although society at large is starting to accept that 'one size does not fit all' in teaching and learning, it remains a challenge to put this philosophy into practice. This realization is also starting to hit home in the field of higher education. Recent research has shown that the current average student population does not accurately reflect the make-up of society. Particularly so-called 'disadvantaged groups' are underrepresented in the Flemish institutions and have more difficulty obtaining a bachelor's or master's degree, these include for example students with disabilities, migrant backgrounds or those combining work and learning (VLIR, 2021). Students with disabilities, for instance, are more than twice as likely to drop out of higher education (25,7% as opposed to 11,5%) (VLOR, 2018). Another illustration of this imbalance can be found in the impact of a student's socioeconomic status. In Flanders, students with parents of unqualified or moderately qualified backgrounds combined only take up 16% of the total student body in higher education (VLIR, 2021). These low representations invite us to take a closer look at the current inclusion measures in Flanders that generally take on an approach centered around 'reasonable adjustments' (SIHO, 2017). This policy focusses on offering extra study and exam adjustments to students with disabilities and specific target groups. Common accommodations are being granted more time during assessments, getting flexible deadlines, permission to use reading software, getting the opportunity to comment on written exams afterwards, and so on.

Universal Design for Learning (UDL), also referred to as Universal Design (UD), offers an interesting alternate view on inclusion in education and as such can play a significant role in turning the tide. Amongst others, the International Convention on the Rights of Persons with Disabilities (CRPD) (2007) endorses this method as a means for its contracting parties - including Belgium- to implement a more inclusive education system. In 2017 the publication of a policy document by the Flemish government titled 'Regulation Inclusive Higher Education' served as another crucial step in the move towards a broader, more social view on inclusive practices in education. With its "Decree for Higher Education" Flanders stipulated that the institutions of higher education themselves were to be responsible for fostering change and providing

education fit for students from diverse backgrounds. This change put UDL back in the spotlight as the appropriate framework to achieve inclusive higher education (SIHO, 2017).

This article will illustrate how the theory of UDL can be put into practice in the specific context of higher education by outlining the strategy adopted by the program Biomedical Laboratory Science (Bachelor Program) and Bioinformatics (Advanced Bachelor Program) offered at Howest University of Applied Sciences, a university college located in West Flanders. It will discuss its UDL-inspired policy in assessment.

UD as opposed to UDL

This article will use Universal Design (UD) as its framework. The term "Universal Design" was originally coined in the field of architecture by architect and designer Ron Mace who, together with his colleagues, described the principle as 'the design of products and environments to be usable by all people, to the greatest extent possible, without the need for adaptation or specialized design' (CAST, 2018). The architects believed that this approach to design was not only preferred from an aesthetical point of view, but also in terms of accessibility. A classic example in this respect is the incorporation of ramps instead of/in addition to stairs. A ramp eases access not only to wheelchair users, but also to mothers with strollers, moving companies or commuters with a (folding) bicycle and so on. By including ramps in a building's design, access for a diverse group is ensured from the onset and the need for ad-hoc interventions is reduced.

This idea of taking accessibility into account from the design to minimize needs for adaptation, found its way into the field of education. Universal Design for Learning (UDL) is based on the similar conviction that barriers in the learning environment should be proactively removed as much as possible and that such an approach benefits all students. Based on findings from the fields of neuroscience, the learning sciences and cognitive psychology, this philosophy was translated into three main principles by the Center for Applied Special Technology (CAST, 2018):

☐ Provide multiple means of engagement (the WHY of learning)

- ☐ Provide multiple means of representation (the WHAT of learning)
- ☐ Provide multiple means of action & expression (the HOW of learning)

On their turn, these three main principles can be split up into 9 guidelines for learning that suggest to provide options for:

- ☐ Recruiting interest, sustaining effort & persistence, self-regulation (WHY)
- ☐ Language & symbols, perception, comprehension (WHAT)
- ☐ Physical action, expression & communication, executive functions (HOW)

Such an approach to education fosters expert leaders who are purposeful & motivated, resourceful & knowledgeable and strategic & goal-oriented (CAST, 2018). Although the neurological basis of UDL proposed by the CAST-research team (2018) is somewhat contested, innovative classroom practices illustrate the added value of implementing an approach to learning environments that take diversity as a starting point in its design, as such meeting the needs of a broad range of students from the get-go (cf. Burghstaler, 2013; van Tright, 2016; Fovet, 2021). This way, good practices advocate a strong social model of student support and education as stipulated by UDL (SIHO, 2017).

This article opts to use Universal Design (UD) as opposed to Universal Design for Learning (UDL) to refer to the theoretical framework. This conscious consideration is motivated by the choice to look at the good practice from a broad perspective. The 'L' for Learning seems to suggest that Universal Design is solely applicable to the 'learning aspect' of education like course materials or classroom practices, while it can be used to evaluate and redesign various aspects of higher education - not only at the micro level (educator), but also at meso (institution) and macro level (government and legislation) in different areas. For institutions of higher education, this means that not only teachers and departments, but also student services, the internationalization office, infrastructure, and national legislations are important agents in a successful implementation of UD.

Case-study

Howest University of Applied Sciences (hereafter called Howest) is a university college based in West-Flanders and offers 25 professional bachelor's degree programs and 16 graduate courses across different campuses. The three key values of Howest are 'serve', 'empower', 'care'. In its mission statement, the university college explicitly writes that the talents and passions of students serve as a starting point for its teaching staff and that the diversity of its student body is respected (Howest, 2021). Although these key values and mission touch upon concepts central to UD, the method itself is not mentioned as such.

Nevertheless, Howest has started to take some steps towards an approach that is more explicitly centered around the principles of Universal Design on a meso, institution-wide level. One of these is the policy decision to make some reasonable adjustments inclusive for the complete student body, which are:

Adjustments written examinations	Adjustments teaching & learning
☐ Oral clarification of exam questions by the lecturer at the start of the examination. ☐ Appreciation for content and tolerance for language errors, except for exams from the module 'languages'. ☐ Sufficient time to complete the exam unless component 'time' is assessed. ☐ Permission to use formulary on exams (with one or two exceptions).	☐ Use of read-aloud and compensatory software.

This case-study discusses a good practice at micro level as it is centered around the UD-approach as implemented in one of the programs in Howest, namely the Biomedical Laboratory Science and Bioinformatics (campus Bruges), coordinated by Mieke Demeyere who introduced the concept in her program. The coordinator and her team have been actively adopting a UD-approach since 2014 - 2015.

The change to a method more profoundly centered around UD was instigated by an analysis of the diversity and student services department in 2013 - 2014 which showed that an above-average number of students with adjustments or special student conditions (e.g., professional athletes, students with a household and so on) were enrolled in the bachelor's program. This information encouraged the coordinator and her team to reflect on their current modus operandi. There was sufficient support to foster this transition towards UD as the team was already familiar with the UD-concept through trainings organized by the Support Centre Inclusive Higher Education (SIHO) and since the method had been a recurrent topic in team meetings. Moreover, the planned revision of the bachelor's program provided the ideal starting point to structurally introduce UD in the program's make-up. Eventually, UD was fully incorporated in the policy plan of the program by 2014 - 2015 and a 'UDL manual BLT Howest' was drafted. To conclude the transition, the team set up a collaboration with representatives from the working field who were invited to go over and provide feedback on the team's course materials, assessment, and general working methods. This committee is considered the program's "third pair of eyes" in addition to their "second pair of eyes – principle" (see below).

The determination to use UD as the point of reference for their program's design is presented as one of the program's main assets. On their website, for instance, the bachelor's program states the following:

"The program resolutely opts for Universal Design of Learning (UDL). This means that all kinds of facilitating aspects are embedded in our activities, such as, among others, a sans serif font

for all communication (e-mail, syllabi, assignments, exam questions, etc.), an oral clarification to written exams and varied teaching formats." (Howest, 2021)

Furthermore, the website describes the way the programs organize access to course materials or personal guidance for their students.

"All syllabi are made available online before the start of each module. Learning objectives are listed at the beginning of each chapter, self-test questions are presented at the end of each chapter, and sample exam questions are included. Supporting PowerPoint presentations, tutorials, ... help you to better understand the subject matter." (Howest, 2021)

"The students are individually supported by a mentor (who is a lecturer of the team) and can request tutoring on those parts of the subject matter that have not yet been fully understood. In addition, it is possible to receive specific guidance or request facilities (e.g., for dyslexia). The practical courses are organized in small groups (with a maximum of 20 students), so that personal feedback and follow-up are possible. During the seminars, students are also divided into smaller groups to create optimal learning and working conditions." (Howest, 2021)

To conclude, the choice of words used to describe the core values of their bachelor's course is a testimony to how the program embraces the UD-methodology as they talk about 'teams' in terms of both teachers and students. This way, highlighting the UD-approach which encourages a collaborative stance, considering students as active participants and stakeholders in education design.

"Our program values respect for the (fellow) student, the professors and the environment. You will be part of the BLT team from day one!" (Howest, 2021)

The program's description on the website only attests to some of the different measures taken by the coordinator and her team to implement aspects of the UD-framework throughout its program and in different domains such as:

☐ **Course organization**

    ☐ Teaching at various locations (including self-study from home) and using different teaching methods and learning materials over the three years:

- o Bachelor's thesis
- o Guided independent learning (guided independent learning, self-study)
- o Practicum (case-based reasoning, brainstorm, task-oriented teaching, lab practicum)
- o Activating lecture (demonstration, lecture, the Socratic Method, excursion)
- o Collaborative learning (poster parade, groupwork)
- o Self-directed teaching method (feedback, portfolio, logbook)
- o Project (project-based education)
- o Games (role-playing)
- o Internship
- o Seminar
- o Workplace learning

The program monitors and analyses their teaching formats and course materials to ensure sufficient variety and a logical structure in the learning process (see figure 1).
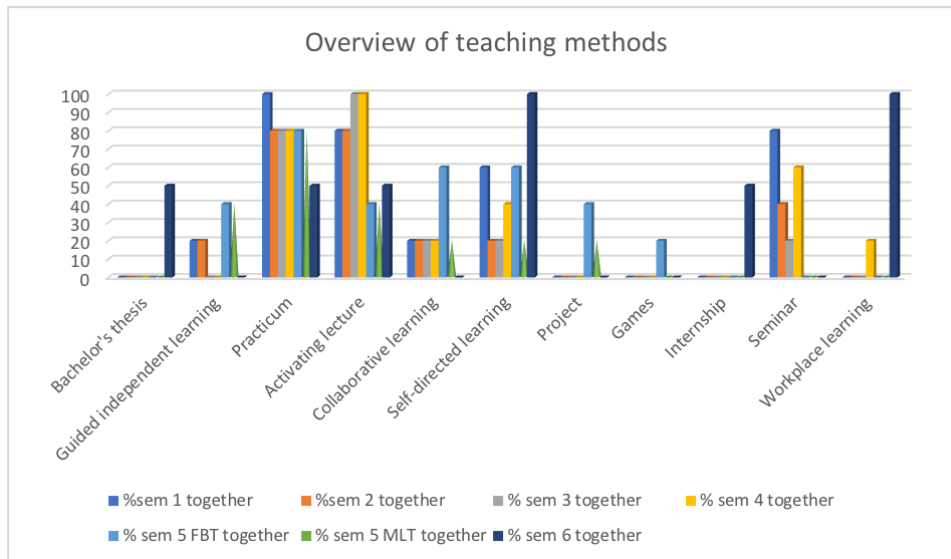
Figure 1: overview of teaching methods used over the course of 6 semesters.

☐ The development of a fixed template for all course materials. This template was constructed in accordance with instructions of the department for quality assurance and the ground rules of competency-based education. In addition, the ten pointers on designing accessible documents as formulated by SIHO were taken into consideration in its design. The overall quality is checked as the finished document is presented to a second pair of eyes and a committee of representatives from their future professional field.

☐ Opting for a Word format to facilitate the usage of reading software.

☐ The introduction of a 'word trainer' and the incorporation of a section in different courses dedicated to the explanation of symbols.

☐ The incorporation of learning goals and sample questions in the fixed template for course design.

☐ The three guiding principles of UD and its nine ensuing guidelines serve as a blueprint for choice of course content and materials. These were integrated in a checklist designed by SIHO which is actively used by the team to reflect on the quality of its course materials.

☐ Course materials are made available to students before the start of classes.

☐ Permitting students to record sessions, if necessary.

☐ Implementing mandatory monitoring sessions for first year students to allow for more differentiation and support for students who face difficulties transitioning to college.

☐ **Communication**

☐ Opting for a Verdana 10 pt for all communication with students and staff – a sans serif font which is proven to be accessible for a diverse reading audience.

☐ **Students' involvement**

☐ Mentioning students as stakeholders in its mission and vision statement.

☐ Providing individual mentoring for all students.

☐ Actively working on students' learning skills and facilitating student autonomy by offering student counselling sessions on the usage of mindmaps.

☐ Making formative evaluations and feedback an essential part of their policy. Students keep track of their learning process in a mandatory portfolio consisting of formative evaluations with feedback and reflection papers. This portfolio is also used as a link to summative exams.

☐ Involving students by implementing flexibility in their program as they have a say in their choice of internships, topics for academic papers, topic for specialization via continuous training…

☐ **Assessment**

☐ Following institutional policy on making some reasonable adjustments previously reserved for students with disabilities or learning difficulties available for all students (see above). In addition, they have specified and expanded on the measure 'Sufficient time to complete the exam' by translating this into 1/3 additional exam time for written exams and ensuring standard written preparation time to oral exams. Next to these accommodations, students from disadvantaged backgrounds can still request additional measures if necessary.

Some common allocated adjustments are the usage of specialized software or the permission to complete written examens on a laptop.

☐ Applying the 5 UD-principles to ensure a valid and fair assessment policy (see below).

☐ Adhering to a quadrimestrial calendar to increase students' success rates and decrease drop-out (see below).

This article opts for an in-depth analysis and will therefore restrict its focus to the program's approach to assessment as briefly outlined just above. It starts with an outline of its mission and vision and how this is translated into its 5-step assessment strategy. Next, it discusses how this policy is translated into practice by discussing each step in more detail and referring to relevant policy documents that are also included in the appendix.

Applying the UD(L) - lens on assessment

Part of its mission and vision

As discussed in the introduction to the bachelor programs above, the coordinator and her team have deliberately and resolutely chosen to adopt the UD-lens to design a program that is accessible for a diverse student body. By explicitly mentioning the wish to adhere to the principles of UD in its mission and vision statement on its website and implementing the 'UDL manual BLT – Howest', the coordinator ensures that UD becomes part of the program's DNA. A resolute choice for UD as a policy in the program's design is promoted. This way UD becomes part of the structural framework, which is an important prerequisite for a long-lasting and deep-rooted implementation of UD (SIHO, 2021)

An inclusive assessment policy

The contribution in the UDL manual BLT – Howest that focusses on its assessment policy, was drafted with the following five key principles for UD-based evaluation in mind, as presented by SIHO.

☐ Principle 1: What do you want to measure with your assessment?

☐ Principle 2: In what different ways can you achieve this goal?

☐ Principle 3: Which support measures do you allow?

☐ Principle 4: How do you avoid confusion?

☐ Principle 5: When do you test?

These fundamental questions were the starting point to produce a 5-step assessment policy that shows a continuous reflection on the choice of method and overall design of the evaluation. Important agents in this procedure are the program's coordinator, the evaluator of the course, the second pair of eyes and a colleague from the team that supports the coordinator for the post-analysis. In appendix 1 a brief, step-by-step account of who does what in the existing procedure is added. The analysis below will discuss how these five steps are put into practice and how they are linked to the principles of UD.
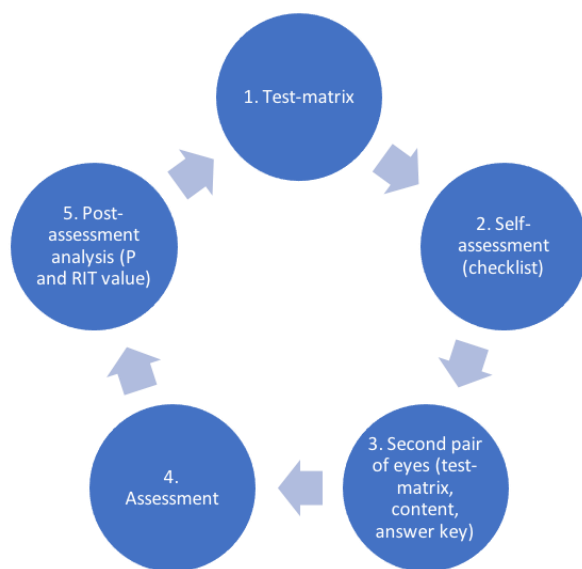

Figure 2: 5-step assessment policy

A 5-step framework put into practice

Step 1: Test-matrix

In the first step of the procedure, lecturers are asked to fill in a test-matrix. This test-matrix consists of two main components. The first links exam questions to predefined goals and learning objectives, distinguishing between knowledge – insight – application of knowledge,

insight, and skills/behavior. In a second part, it asks to attribute marks to the questions in accordance with their relevance and link to the course's learning objectives (see figure 3 + appendix 2).

Course unit: ...
Evaluator: ...
Student group: ...
Fill in the test matrix
1. complete the learning objectives
2. assign a % per learning objective, important learning objectives get a higher evaluation %

howest university of applied sciences

Learning outcome	Learning objective	Knowledge questions (%)	Insight questions (%)	Application of knowledge and insight (%)	Skills/behaviour (%)	total (%)	control
		20			10	30	
			20			20	
				10		10	
					10	10	
		10				10	
			10			10	
				10		10	
						0	
						0	
	Control	30	30	20	20	100	100
	Total					100%	

Determine the number of marks per type of question according to the test matrix
Fill in the yellow box the total result of the exam and the point per learning objective and type of question will appear

Learning objective	Knowledge questions (number of marks)	Insight questions (number of marks)	Application of knowledge and insight (number of marks)	Skills/behaviour (number of marks)	total (number of marks)	tested in question number ...
	4	0	0	2	6	
	0	4	0	0	4	
	0	0	2	0	2	
	0	0	0	2	2	
	2	0	0	0	2	
	0	2	0	0	2	
	0	0	2	0	2	
	0	0	0	0	0	
	0	0	0	0	0	
Control	6	6	4	4	20	
Total					20	

Figure 3: test-matrix (step 1)

By completing the matrix, educators are invited to reflect on whether their test questions are in line with their learning objectives and are therefore relevant and valid. Moreover, these test-matrixes can be used throughout different semesters and years, ensuring that the evaluation criteria remain similar for all students which adds to more transparency about the lecturer's expectations.

A bonus is that the test-matrix requires teachers to not only monitor the quality of their (exam) questions, but also to continue to reflect on their objectives. Because of this dual focus, the

test-matrix ties in with the first two principles of UD-assessment: 'What do you want to measure with your assessment?' and 'In what different ways can you achieve this goal?'. Lecturers are stimulated to reflect on their expectations and assessment purposes and are encouraged by management to eliminate unnecessary barriers. Possible unnecessary restrictions can be, for instance, an explicit mentioning of the means or circumstances under which the objectives must be demonstrated. When students need to be able to give a presentation the stipulation of which means of presentation they need to use (f.i. Prezi) can impose unnecessary difficulties. In accordance with the UD – perspective, this information is dropped for assessments where the learning objectives are not altered by doing so.

As stipulated in its UD manual these learning objectives are also incorporated in course materials and listed in 'module manuals'. This manual offers an overview of the courses and their corresponding assessments, distinguishing not only the need-to-know, but also the level of comprehension expected from the students (knowledge - application - …). In addition, students can consult keys to exams providing model answers. This way, misunderstandings amongst students about the focus of the course - and corresponding evaluation- are eliminated as much as possible. This practice can be linked to principle 4: 'how do you avoid confusion'.

Step 2: Self-assessment using checklist

After the matrix has been completed, lecturers use a checklist for self-assessment (see figure 4 and appendix 3). The checklist deals with six aspects of their evaluation format:

1. informing the students about expectations,
2. way of formulating questions in terms of choice of words and sentence structure,
3. overall design of the exam,
4. grading exams,
5. post-exam assessment of approach,
6. feedback to students.

In this step of the assessment procedure, the first three items will be considered.

Formulating questions

For all question types
- Are information and questions clearly separated?
- Is the most direct "instruction" used (give, describe, sum, draw, calculate ...)?
- Are complicated sentence structures avoided?
- Are there no double negatives?
- Is everything written in full?
- Are the question parts clearly distinguishable from each other?

Specific for open-ended questions
- Does the question contain sufficient information on the desired length (and form) of the answer?
- Are open questions restricted?[1]

Specific for multiple choice questions
- Is it clear to the student whether it is a multiple choice question or not?
- Are the wrong answer possibilities plausible?
- Are the answer options about the same length?
- Are the correct answers spread across all response options?
- Is there an appropriate number of alternatives (4/5)?

TIP: Have a colleague solve the questions to check whether the formulating of the questions is unambiguous.

Figure 4: part of checklist focused on formulating questions

Once this second step is completed, the educator can result to ready-to-use templates depending on the exam format (written, oral or a combination). Both the usage of a checklist and a fixed template can be linked to principle 4 which is centered around avoiding misunderstandings.

Step 3: The second pair of eyes – policy

In the third step, staff is invited to work as a team and give feedback on each other's evaluations (see 'TIP' in figure 4 above). This third procedure is anchored in the program by its 'second pair of eyes'-policy and attests to a strong consideration of principle 4.

Using SharePoint, the team is divided into groups after which members of staff are paired up with colleagues from different theoretical backgrounds to check each other's assessment. The choice for a lecturer with a different training is deliberate as this ensures that he/she is not too familiar with the course materials which could hamper his/her critical eye. This is also prevented by reconfiguring the teams on a yearly basis. The assigned colleague takes on the task to double check whether the means of evaluation are in line with the guidelines. He or she takes a closer look at the test matrix, compares the key to the exam with the make-up of the

questions and verifies if the exam questions are clear and correspond to the information given in the matrix and checklist.

Step 4: Assessment

In the stipulation of the assessment conditions, all five UD-principles mentioned earlier have been embedded. Below it is outlined how they are translated into the adoption of assessment <u>for</u> and <u>of</u> learning, a quadrimestrial calendar and inclusive supporting measures.

Assessment for and of learning

To anticipate misjudgments amongst students about the main learning objectives of classes (cf. principle 4) the program employs both assessment <u>of</u> learning (resulting in marks, and a part of a course's assessment) and assessment <u>for</u> learning. The latter does not result in a formal result and therefore gives the student the possibility to get acquainted with the lecturer's expectations and evaluation style in an informal manner. This type of assessment is also key in providing the student with sufficient feedback and insight on their current understanding of the course content. The assessment for and of learning is linked to the use of peer-feedback and self-assessment throughout their student's career, encouraging students to take on an active role in their learning.

A quadrimestrial calendar

The bachelor embraces permanent evaluation and (peer)feedback. In addition, it differentiates itself from most Flemish bachelor programs by adhering to a quadrimestrial evaluation system as opposed to the more widespread method of semestrial examinations. This suggests that they have thoroughly reflected on principle 5 'when do you test'.

In a quadrimestrial calendar, students have final exams four instead of two times per academic year. These exams are immediately followed by a mandatory moment for feedback. This approach has extensive implications for how the bachelor is organized and how its course content is presented to the bachelor students. Instead of teaching various courses

simultaneously over the course of twelve weeks, students are presented with around three courses per quadrimestrial, allowing them to restrict their focus on the three topic matters at hand. Moreover, the exam schedule is less crammed resulting in a better spreading of exams.

The bachelor program states that this approach has resulted in a decrease in drop-out numbers as the system with frequent examinations allows for earlier feedback, giving students the opportunity to get a quick view on where they stand and to adjust their learning methods if necessary (cf. principle 4).

Inclusive supporting measures

The program is dedicated to eliminating unnecessary boundaries as much as possible if they are not the focus of the course. This is aspired by continuously reflecting on what they want to test specifically and in what different ways students can demonstrate their knowledge or skill (cf. principle 1 and 2, see step 1: test-matrix). This commitment does not only affect the design of learning objectives, course materials and its corresponding exam, but also comes into play in its view on supporting measures.

As suggested by institutional policy (see earlier), some of the reasonable adjustments that were previously reserved for specific (groups of) students are now made available to the complete student body. As suggested by principle 3 'which measures do you allow?', the assessment manual outlines the supporting measures that are engrained in the bachelor's policy. The majority of these are institutional policy, which are:

☐ A focus on content in assessments which includes that spelling or other language mistakes will not be penalized for courses that are not focused on language acquisition.

☐ It is standard procedure for the responsible lecture to go over the exam questions with the group at the start of the examination. This also allows students to ask for clarification.

☐ Permission to use formulary on exams.

In addition, the program has elaborated and added on the institutional decree to provide sufficient preparation time for exams by specifying that this results in 1/3 additional exam time for written exams, and the standard option to prepare in writing for an oral exam.

Step 5: Post-assessment analysis

During the procedure of designing their assessments, teaching staff are asked to hand in the relating documents to the coordinator (see appendix 1). She collects and follows up on the matrixes which allows her to get a clear overview of the evaluation formats and questions adopted across the program. By mapping out the existing types of evaluation, variety throughout the program can be ensured, preventing it from being catered to only one type of student. This way, the test-matrixes also serve their purpose in relation to the second principle of UD-based assessments.

Immediately after the examinations, the exams are submitted to a final quality check in step 5. Before the exam results are processed, an assisting team member performs a first statistical analysis and determines the P- and RIT-values after which this information is provided to the coordinator who interprets the results. She conducts a first review by comparing these average results to those of the previous year, as such establishing whether it is advised to perform final alterations to the make-up of the exam. If the P-value of an exam question is 1 or 0, for instance, the question is dropped, and exam results are altered accordingly before they are processed. Over the years, this intervention has become a rarity as results from previous post-analyses were considered by teaching staff and inconsistencies were resolved accordingly.

Once the exams are processed, the coordinator uses the post-assessment analysis to reflect on overarching trends by comparing the statistics to those from previous years. Since the student body has remained similar over the years, average results and other exam tendencies should be as well. In this process a success rate before resists of 50% for first year courses and 80% for second year courses is used as a point of reference in this process. In addition, an exam is considered good practice if at least 80% of the questions are deemed qualitative based on their

P- and Rit-values. If a marked deviation is found, like a P-value of >0.8 or <0.2, exam questions are added to a SharePoint file and the responsible lecturer is informed and explicitly asked to reflect on and commit to actions to be taken. Course of actions in terms of assessment are rephrasing or deleting the question and/or altering the exam key. In addition, the findings can be relevant in terms of teaching as updating the corresponding chapter in the syllabus, reserving more time in class to discuss the content, or adding the question as sample question to the course materials can be advised. All changes to course materials or assessment need to be communicated to and approved by the coordinator as she is responsible for maintaining the general overview. To conclude, general tendencies and findings are discussed in team meetings and preserved for future quality assurance.

Discussion

In this specific case-study, the coordinator seized the moment of a revision of its program to introduce a shift in its vision and mission, redefining its blueprint and approach of higher education in accordance with the guidelines of UD. The success of this transition illustrates how important transitions or revisions in programs can provide the ideal base to introduce a durable UD-based action plan. By linking this to a renewed policy document and involving stakeholders from the get-go, the coordinator opted for a more labor-intensive yet structural renewal. Universal Design was given a central position in its mission and vision and an ongoing commitment was ensured.

In the process, the bachelor program introduced various ready-to-use templates and matrixes such as a test-matrix, self-assessment checklist and fixed exam template depending on format. The design and installment of these assessment documents helped to minimize the workload for individual actors and ensures a similar approach across the team. Expectations towards staff are made apparent with clearly defined roles and steps to be taken (see appendix 1), making the method part of the modus operandi of the bachelor program. This way Universal Design was designed as a team effort in which all members play a vital role in checking the accessibility of the assessment formats. The principle of second eyes is utilized throughout the program to

optimize content creation, assessment practices etc. and is a clear example of a good practice from a UD-perspective as it aims at avoiding misunderstandings on different domains (UD-principle 4).

Next to the second eyes principle, the program has incorporated several strategies in their assessment policy aimed at reducing misunderstandings amongst students. Among others, the choice to work with peer reviews, assessment of and for learning and mandatory incorporation of learning objectives in each syllabus aim at clarifying expectations from lecturers towards students.

Moreover, teaching staff are stimulated to keep reflecting on the focus of their course and what it is they want to measure specifically (and what not) and in what different ways students can demonstrate their skills or knowledge (UD-principle 1 and 2). To this means, the test-matrix and self-assessment checklist explicitly invite them to link exam questions to the learning objectives and goals as they were incorporated in the course materials. From the UD-perspective it is expected from educators that they eliminate unnecessary boundaries that may hinder students in their studies as much as possible. From a similar point of view, the program adheres to the institutional policy of making supporting measures that may benefit the whole student body inclusive like the extension of exam time or the possibility to ask clarification about the focus of an exam question (cf. UD-principle 3).

One of the most noticeable policy decisions is the installment of a quadrimestrial calendar as this differs from customary practice in Flanders. This calendar stimulates frequent testing and feedback on students' progress which has resulted in a decrease in drop-out numbers as it allows students to adjust their learning strategies if necessary or gain more insight on expectations overall. In addition, students remain more actively involved in their learning process. This ties into the mission of the bachelor to engage their student body as stakeholders since students are stimulated to reflect on their own learning process by going to the mandatory feedback sessions, but also by giving peer-feedback, writing self-assessment

papers…

A final important note is that the cyclical nature of its assessment policy encourages the whole team to engage in a continuous reflection on the bachelor's practices. With the feedback of the post-assessment analysis in mind, lecturers can start a next evaluation moment and/or reflect on the effectiveness of the chosen course materials and teaching methods. The coordinator takes on the role of maintaining a helicopter view ensuring that the policy is translated into practice successfully and that alterations are made when necessary.

In the future the coordinator wants to invest more in the autonomy of their students by fostering self-regulated learning and committing more profoundly to soft skills related to their professional field (e.g., adopting a critical stance or a flexible attitude). From this respect they are exploring how they can optimize their individual student mentoring to support the students with challenges that go outside the domain of education. This should result in a broader approach to student counselling focused on supporting students in becoming new young professionals (NYP's). A second action point is to explore how to use differentiation to cater to the needs of the better performing students so that the UD-approach can be of clear value to them as well. These considerations are currently being discussed with the team to establish shared values and objectives. Again, the sense of belonging to 'one team' and the claim on team-effort is utilized as the vehicle for change.

Glossary

Assessment for learning: Is a form of formative assessment organized throughout the instruction, aims at improving students' learning. Can also be used to improve teaching practices.

Assessment of learning: Is a form of summative assessment that aims at testing students' achievements, organized at the end of an instruction.

Disadvantaged groups: VLIR (2021) mentions the following students when discussing disadvantaged groups: students with disabilities (cf. Definition WHO and ICF), students from migrant backgrounds, students with a mother tongue different from Dutch or multilingual students, student newcomers, students combining work and studies, grant recipients, and parental educational attainment.

Drop-out: To leave school or college before finishing the necessary course of instruction.

Formative evaluations: A form of evaluation that is intended for learning, an informal manner of assessment that has no or low point value.

Learning objective: Also called 'learning outcomes'. It explains the expected goal of a course, curriculum or activity in terms of which skill and/or knowledge needs to be demonstrated in order to pass the course.

Moderately qualified backgrounds: Student from a medium-skilled/moderately qualified background is a student of which at least one parent finished high school. Neither parent has a college degree. (VLIR, 2021)

New Young Professionals (NYP's): Term used by the bachelors Biomedical Laboratory Science and Bioinformatics to refer to their graduating students to refer to them as professionals who are not only qualified in terms of knowledge and hard skills but also demonstrate a comprehensive set of soft skills.

Peer-feedback: Feedback given among students, from one student to another.

P-value: The p-value is the proportion of correct responses to an individual item used to assess the quality of an individual item.

Quadrimestrial calendar: An academic calendar that is divided into four periods: two per semester.

Resits: To take an exam again, usually because you failed it or did not do well on the exam during the first examination period.

Rit-value: The Rit value represents the distinctiveness of an item and represents the correlation (often indicated by the letter R) between the item and the total score on the test (Rit).

Self-regulated learning: A student's ability to be in charge of their own learning environment.

SIHO: The Support Centre for Inclusive Higher Education (SIHO) in Flanders serves both policy makers and institutions in the development and implementation of equity measures for inclusive higher education. It has extensive expertise in the policy domain, e.g., writing policy papers, advising the government, translating policy advice into practice. (SIHO, 2021)

Summative evaluations: A form of evaluation that is intended to assess a student's learning, a formal manner of assessment with a high point value.

Unqualified backgrounds: Student from a low-educated/unqualified background is a student whose parents did not complete high school. (VLIR, 2021)

VLIR (Vlaamse Interuniversitaire Raad): The Flemish Interuniversity Council was founded in 1976 to foster cooperation and dialogue amongst Flemish universities. It serves as a thinktank and advises the Flemish government on relevant topics.

VLOR (Vlaamse onderwijsraad): The Flemish Education Council, is the official advisory body on the education and training policy of the Flemish Community and consists of representatives from different stakeholders in education and training. (VLOR, 2021)

References

Biomedical Laboratory Science and Bioinformatics – Howest (2014 – 2015). *UDL manual BLT* [Internal document].

Burgstahler, S. (2013). Preface. In S. Burgstahler (Ed.). *Universal design in higher education: Promising practices*. Seattle: DO-IT, University of Washington. Retrieved from www.uw.edu/doit/UDHE-promisingpractices/preface.html on 26/04/2021

Capp, M.J. (2017). The effectiveness of universal design for learning: a meta-analysis of literature between 2013 and 2016. *International Journal of Inclusive Education, 21(8),* 791–807.

Center for Applied Special Technology (2018). *UDL: The UDL Guidelines*. Wakefield, MA: CAST. Retrieved from

https://udlguidelines.cast.org/?utm_source=castsite&lutm_medium=web&utm_campaign=none&utm_content=aboutudl on 22/04/2021

Center for Applied Special Technology (2018). *Universal Design for Learning Guidelines version 2.2.* MA: CAST. Retrieved from http://udlguidelines.cast.org

Center for Applied Special Technology (2021). *CAST: Timeline of innovation*. Wakefield, MA: CAST. Retrieved from https://www.cast.org/impact/timeline-innovation on 22/04/2021

Demeyere, M. (2021, 11 February). *Universal design for learning in the classroom: best practices for inclusive assessment: DESIGN of an EXAM* [Powerpoint]. Retrieved from

https://siho.be/nl/publicaties/webinars-inclusive-universities on 7/03/2021

Fovet, F. (2021). *Handbook of Research on Applying Universal Design for Learning Across Disciplines: Concepts, Case Studies, and Practical Implementation.* IGI Global: International academic publisher.

Howest hogeschool (n.d.) *Bachelor Biomedische Laboratoriumtechnologie – Onze troeven*. Retrieved from https://www.howest.be/nl/opleidingen/bachelor/biomedische-laboratoriumtechnologie/troeven on 7/03/2021

Howest hogeschool (n.d.) *Organisatieconcept Howest.* Retrieved from

https://www.howest.be/nl/hogeschool/organisatie/organisatieconcept#Opleidingen on 08/03/2021

Howest hogeschool (n.d.) *Dit is Howest!* Retrieved from https://www.howest.be/nl/hogeschool on 27/04/2021

Support Centre Inclusive Higher Education [SIHO] (2017). O*ndersteuningsmodel Inclusief Hoger Onderwijs. Van beleid naar praktijk*. Ghent: Support Centre Inclusive Higher Education.

Support Centre Inclusive Higher Education [SIHO] (2021, 11 February). *Webinar 3 - Universal design for learning in the classroom: best practices for inclusive assessment* [Video]. Retrieved from https://siho.be/nl/publicaties/webinars-inclusive-universities on 7/03/2021

UN General Assembly (2007). Convention on the Rights of Persons with Disabilities: resolution / adopted by the General Assembly, 24 January 2007, A/RES/61/106.

Van Trigt, M. (2016). *De optimale blend voor flexibel hoger onderwijs bij Hogeschool Utrecht*, Hogeschool Utrecht, retrieved from https://www.surf.nl/files/2019-03/gp_hu_flexibelonderwijs_web.pdf on 26/04/2021

Vlaamse Interuniversitaire Raad (VLIR) (2021, January) *Achtergrondkenmerken van studenten aan de Vlaamse universiteiten: gegevens over de academiejaren 2018 – 2019, 2019 – 2020*. Retrieved from https://vlir.be/beleidsdomeinen/diversiteit-en-sociaal-beleid/#tab_2 on 7/03/2021.

VLOR - Raad Hoger onderwijs (2018, 11 September) *Advies over het diversiteitsbeleid in het Vlaamse hoger onderwijs*. Brussel: VLOR.

Appendix

Appendix 1 – assessment policy: step-by-step overview of who does what

What	Who
Create Sharepoint listing the different exams, evaluators and second pair of eyes	Program coordinator
Notify people involved who are not part of regular staff (e.g. guest lecturers, ... = others)	second pair of eyes
Complete test matrix using the template	Evaluator
Use checklist for designing exams / key to exam	Evaluator
Write report or add comments or track changes to document to enable others to keep track of (motivated) changes	Evaluator
Provide second pair of eyes with exam copy/ test matrix/ key	Evaluator
Use checklist to check test matrix/ exam copy/ key	second pair of eyes
Write report or add comments or track changes to document to enable others to keep track of (motivated) changes	second pair of eyes
Provide evaluator with feedback	second pair of eyes
Incorporating feedback second pair of eyes, again using a detailed report, 'new comment' or track changes	Evaluator
Complete template in Excel with marks/question	Evaluator
Provide colleague in charge of the assessment policy with Excel for post-assessment analysis (p-value, RIT-score, average)	Evaluator
Provide evaluator and program coordinator with the results of the post-assessment analysis	Colleague assessment policy
Hand in all documents related to assessment policy to program coordinator: 1) test matrix, 2) report evaluator with checklist, 3) report second pair of eyes, 4) report incorporation of feedback, 5) definitive version exam/key/assigned marks	Evaluator
Analyse all documents of evaluator	Program coordinator
Interpreting post-assessment analysis	Program coordinator
Adjusting Sharepoint	Program coordinator
Offer feedback to evaluator if adjustments are required	Program coordinator
If necessary: make changes in light of post-assessment + report back to program coordinator	Evaluator
Give general feedback about submitted documents, procedure and results of post-assessment in team meetings	Program coordinator

Appendix 2 – Test-matrix

Course unit: ...
Evaluator: ...
Student group: ...
Fill in the test matrix
1. complete the learning objectives
2. assign a % per learning objective, important learning objectives get a higher evaluation %

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Learning outcome	Learning objective	Knowledge questions (%)	Insight questions (%)	Application of knowledge and insight (%)	Skills/behaviour (%)	total (%)	control
		20			10	30	
			20			20	
				10		10	
					10	10	
		10				10	
			10			10	
				10		10	
						0	
						0	
	Control	30	30	20	20	100	100
	Total					100%	

Determine the number of marks per type of question according to the test matrix
Fill in the yellow box the total result of the exam and the point per learning objective and type of question will appear

Learning objective	Knowledge questions (number of marks)	Insight questions (number of marks)	Application of knowledge and insight (number of marks)	Skills/behaviour (number of marks)	total (number of marks)	tested in question number ...
	4	0	0	2	6	
	0	4	0	0	4	
	0	0	2	0	2	
	0	0	0	2	2	
	2	0	0	0	2	
	0	2	0	0	2	
	0	0	2	0	2	
	0	0	0	0	0	
	0	0	0	0	0	
Control	6	6	4	4	20	
Total					20	

Appendix 3 – checklist for self-assessment

- **This checklist is a guideline for drafting written and oral exams and can be a starting point to discuss exam formats with colleagues.**
- **This checklist, together with the course information, exam document and key enable the assessment committee to give feedback on the exam.**
- **This checklist can be used to assess exams aimed at testing knowledge, insight, the application of knowledge and insight and performing relevant operations.**

TIP: before designing your exam,
before discussing your exam with a colleague,
consult the learning objectives and goals that you intend to test in your exam.

Informing students	
- Did I provide sample exam questions? - Are these questions in line with my formal exam questions in terms of question type? - Are these questions in line with my formal exam questions in terms of difficulty? - Are these questions a valuable point of reference for all content types related to my course.	
TIP: Choose your most recent exam to serve as a sample exam for student.	

Formulating questions	
For all question types - Are information and questions clearly seperated? - Is the most direct and clear term for 'instruction' used? (give, describe, sum, draw, calculate …)? - Are complicated sentence structures avoided? - Are there any double negatives? - Is everything written in full? - Are the question parts clearly distinguishable from each other? **Specific for open-ended questions** - Does the question contain sufficient information on the desired length (and form) of the answer? - Are open questions restricted? **Specific for multiple choice questions** - Is it clear to the student whether it is a multiple choice question or not? - Are the wrong answer possibilities plausible? - Are the answer options about the same length? - Are the correct answers spread across all response options? - Is there an appropriate number of alternatives (4/5)?	
TIP: Have a colleague solve the questions to check whether the questions are ambiguous.	

Overall design of the exam	
- Does the evaluation match the information in the course information? - Does the exam reflect the focus of my course (in line with learning objectives and goals)? - Is the overall level of difficulty acceptable?	

- **Are my questions indepent from one other?** - **Did I draft a key for each question?** - **Did I indicate the maximum mark for each question?** - **Did I draft a een scoringsprincipe for each question?** - **Is it possible for my students to complete the exam in the foreseen examination time?** - **Is it realistic for me to grade exams in the time I have available to do so?**	

TIP: Have
a colleague grade the exam (using the key and guidelines for grading the exam) to check whether he/she arrives at a similar exam result.

Grading the exam

• **Do I grade per question (instead of per exam)** • **Does the key including the guidelines for grading the exam assist me sufficiently, minimizing ad-hoc decisions as much as possible?**	

TIP: If necessary,
change your guidelines for grading exams to better correspond to student's answers.

Post-exam assessment

• **Does the result of the post-exam assessment meet my expectations?** • **Is the average result acceptable?** • **Are the results distributed as expected?** • **Are there any questions that were wrongly answered by the com plete class?** *(possible indication that these were too difficult)* • **Are there any questions that were correctly answered by the co mplete class? (***possible indication these were too easy)*	

TIP: Take your time to thoroughly reflect on the result of the post-exam assessment as this can provide you with interesting insights for your next assessment.

Feedback to students

• **Do students have their exam copy available to them during the fe edback session?** • **Can students consult the exam key during the feedback session?**	

TIP: do not only focus on feedback, but also offer "feed
forward" by giving study advice or pointing out how they can improve the quality of their answers during their resit.