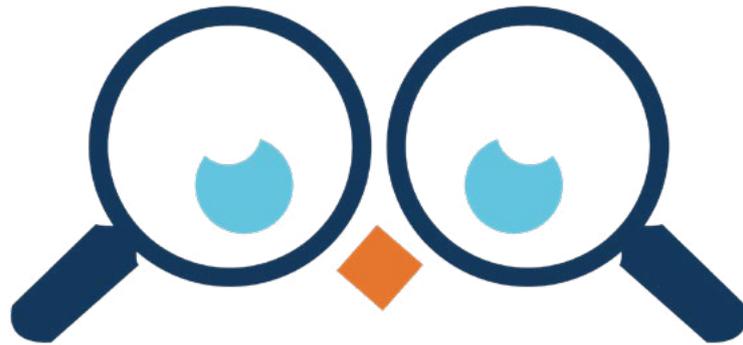


# Information



# Wise

## UM Information Literacy Rubric Manual

Authors

Jaro Pichel (UB/EDLAB), Alicja Garbaciak (UB/EDLAB)

Co-authors

Stefan Jongen (FSE/EDLAB), Julie de Ronde (EDLAB), Henrietta Hazen (UB),  
Barend Last (UB)

# Contents

<b>Summary</b>	4
<b>1. Introduction</b>	6
1.1 Vision and mission	6
1.2 How to read this document?	7
<b>2. Rubric</b>	8
2.1 Overview	8
2.2 UM information literacy rubric	8
<b>3. Translating rubric into PBL-based education</b>	10
3.1 Developing intended learning outcomes	10
3.2 Teaching and learning activities	14
3.3 Choosing learning activity format	15
3.4 Types of assessment	16
3.5 Scenarios programme re-design	18
3.6 Scenario Learning Management System Canvas	19
<b>4. Support for implementation</b>	20
<b>5. References</b>	21
<b>6. Appendix</b>	22
A) UCM, Grading Rubrics for Research Plan Writing Assignment	22
B) Rubric	26

# Summary

The Information-Wise project team developed a UM information literacy framework. This framework entails four dimensions: 1) Resource Discovery, 2) Critical Assessment, 3) Organizing Information, 4) Creation & Communication.

## UM information literacy rubric

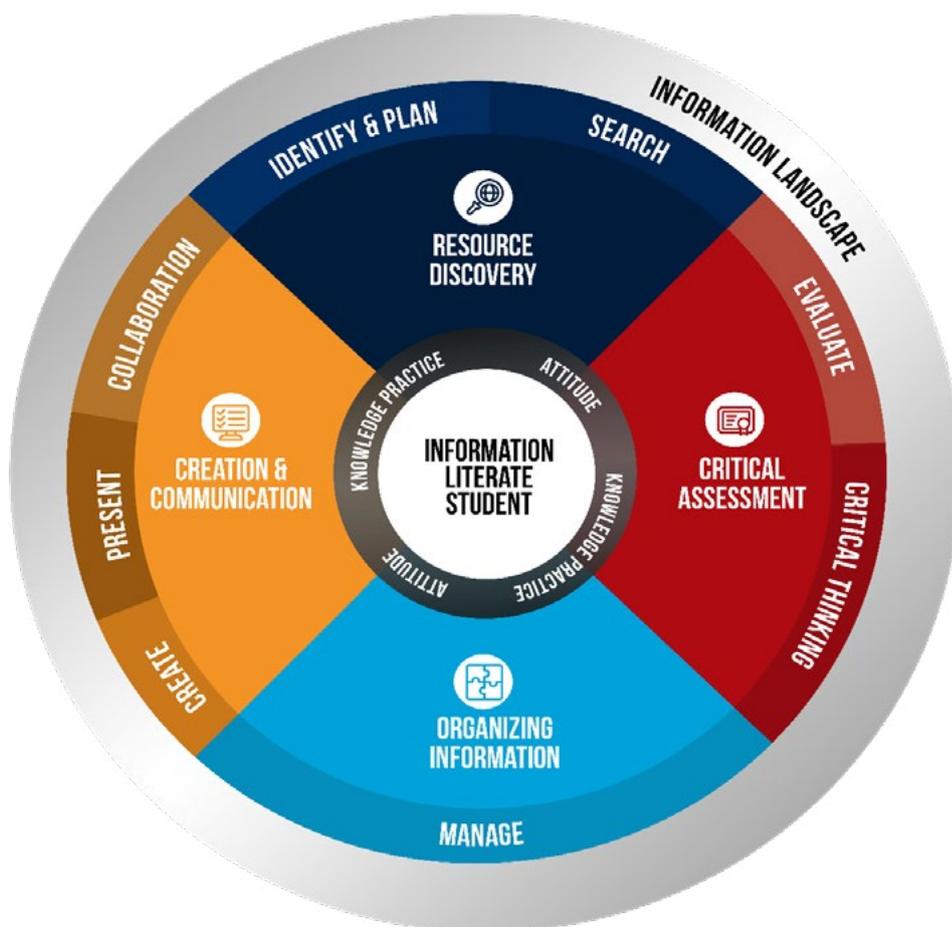
The purpose of the UM information literacy rubric is to determine the level of attitudes (i.e. tendency to evaluate subjects in a certain way) and knowledge practices (i.e. proficiencies that students develop when comprehending an information literacy component) that students acquire over time. The content builds on the dimensions and sub-dimensions of the UM information literacy framework<sup>1</sup>. The rubric is structured into four levels: (1) Novice, (2) Intermediate, (3) Competent, and (4) Advanced (see example below). These levels demonstrate the differentiation of attitudes, knowledge level, and skills level between a novice and an advanced bachelor student in a specific area of information literacy.

### Integrating the rubric into PBL-based education

The constructive alignment approach ensures that the rubric content seamlessly aligns with intended learning outcomes (ILO), teaching and learning activities (TLA), and assessment tasks of specific subjects.

---

1 The vision and dimensions of the UM information literacy framework are presented in the [project mid-term report](#) (P. 9-15).



At a course level, the rubric ILOs will help to evaluate whether the course content sufficiently addresses information literacy skills. This can be done by checking if the course ILOs align with parts of the rubric ILOs, and if necessary, revise certain instructions or assessment activities. Pilots across faculties (Pichel & Jongen, 2019) have shown that small adjustments within the course structure such as additional assessment criteria or tasks related to information literacy can be sufficient to enhance students' information literacy skills.

At a programme level, different scenarios are possible e.g., minor revisions, complete redesign, new programme. Minor revisions are a good opportunity to check if the programme ILOs sufficiently involve the content of the information literacy rubric ILOs. The complete redesign or development of a new programme are good moments to create new information literacy

	Novice (1)	Intermediate (2)	Competent (3)	Advanced (4)
<b>Resource Discovery: Identify &amp; Plan</b>	<b>Identifies</b> different information sources and formats appropriate to the (information) needs of the search.	<b>Explains</b> that information sources vary greatly in content and format and have varying relevance and value, depending on the needs and nature of the search.	<b>Determines</b> the relevance and value of different information sources, depending on the needs and nature of the search.	<b>Designs</b> a systematic search plan which accounts for different information formats and the relevance and value, depending on the needs and nature of the search.

ILOs in alignment with the vision and content of the programme, UM framework and rubric for information literacy.

### Support for implementation

The rubric is a prototype that will require testing and adjustments throughout the next academic years. Programme and course coordinators who integrate information literacy into their curricula should opt for both student and teacher feedback to evaluate the potential value of the UM rubric in their educational setting.

As a strategic partner for information literacy education, the University Library offers rich expertise and years of experience to translate and tailor the UM rubric into the discipline-specific context of your faculty. This includes the (re-) design of ILOs related to information literacy, as well as the development of teaching- and learning activities, and assessments. To support faculty teachers to implement the UM framework and rubric ILOs into their education a continuing professional development (CPD) workshop was piloted. The University Library and EDLAB will offer this workshop, along with other CPD activities for information literacy skills also in the Academic

Year 2020-21. Finally, the University Library provides support in embedding the newly designed information literacy online modules into the new Canvas environment as of Academic Year 2020-21. For more information, please contact the respective library information specialist for your faculty or the didactical experts from the University Library and EDLAB.

### Contact us:

 [Ask your Librarian](#)

 EDLAB: [edlab-info@maastrichtuniversity.nl](mailto:edlab-info@maastrichtuniversity.nl)

# 1. Introduction

## 1.1 Vision and mission

Today's digital and technological developments, such as big data, social media, and artificial intelligence have an impact on students' learning process. An important element of teaching and learning in the 21st century is therefore information literacy — a set of complex and integrated skills that includes critical thinking, metacognitive thinking, problem solving, and self-regulated learning. These skills enable students to access, process, and assess data and information. At Maastricht University (UM), students require structured support in dealing independently with (academic) information, and encouragement to develop creative and critical approaches when faced with complex questions and sources. Especially in a problem-based learning (PBL) environment, which advocates a self-directed and constructive approach toward learning and knowledge creation.

The education innovation project Information-Wise, a collaboration between all six faculties, University Library, and EDLAB, created an evidence-informed programme for information literacy at UM. A collaborative process led to the development of a UM information literacy framework<sup>1</sup>. This framework entails four dimensions:

---

1 In line with the EDview recommendations, the framework vision and dimensions embrace the PBL principles: learning as a Constructive, Collaborative, Contextual, and Self-directed process. More information about the information literacy framework is available via <https://edlab.nl/innovation-2/theme-i-instructional-design/#1550747006641-2ad36740-a9a9>

### 1. Resource Discovery

Learners who develop skills and attitudes relating to resource discovery are able to identify their information need. They recognize specific formats and types of information appropriate to answer research questions or problem statement.

### 2. Critical Assessment

Learners who develop skills and attitudes relating to critical assessment take a critical approach towards information that comprises critical thinking about, evaluation, and critical reading of information.

### 3. Organizing Information

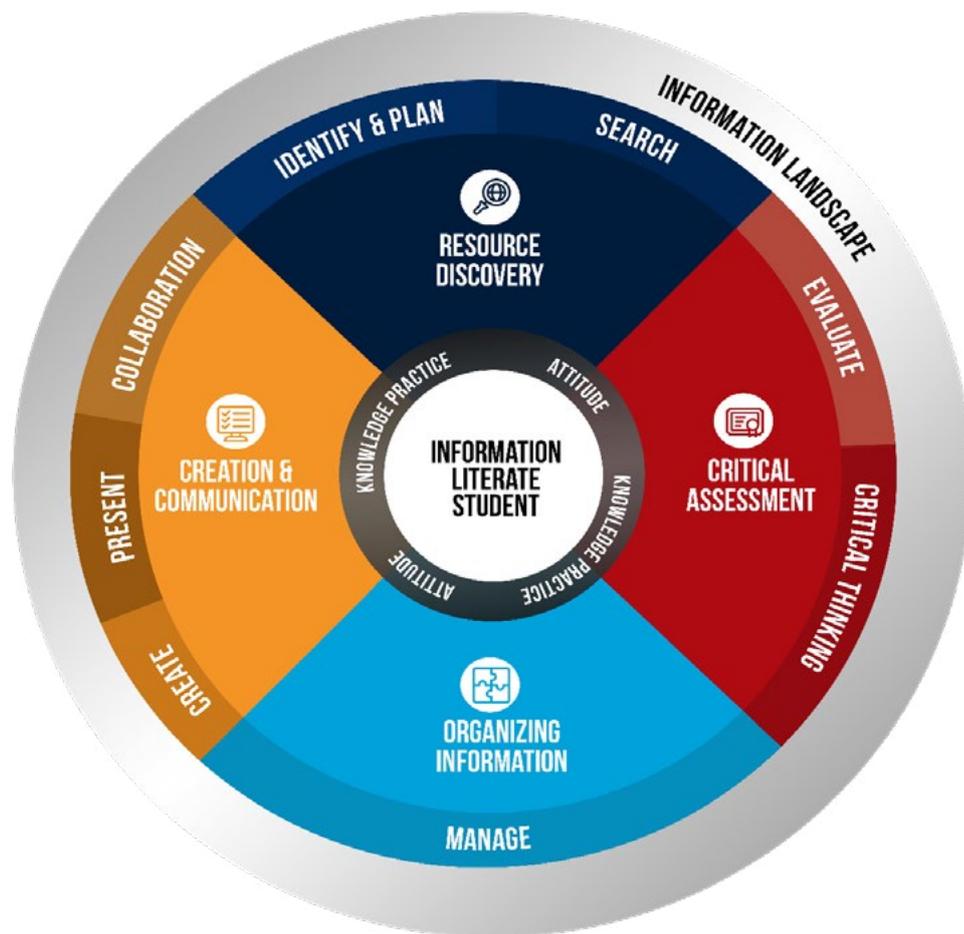
Learners who develop skills and attitudes relating to organizing information engage with relevant information, develop strategies (e.g. concept mapping) and use tools (e.g. reference manager) for managing information of all kinds.

### 4. Creation & Communication

Learners who develop skills and attitudes relating to creation & communication see themselves and act as information creators in addition to information consumers. They understand that information creation, such as presentations, data visualization, and publishing blog posts is an iterative process, which entails evaluation, revising, and re-purposing of discovered content. They create positive (digital) identities and are capable of creating a digital presence.

Because the framework remains rather conceptual, the project team decided to create a developmental rubric to clarify what students are supposed to learn as regards information literacy in the course of their Bachelor studies. The purpose of this developmental rubric (hereafter UM rubric) is to determine the level of attitudes (i.e. tendency to evaluate subjects

in a certain way) and knowledge practices (i.e. proficiencies that students develop when comprehending an information literacy component) that students acquire over time. The UM rubric resulted in a number of intended learning goals (ILOs), each allocated to one of the framework dimensions, and a level ranging from *level 1 - Novice* to *level 4 – Advanced* (Click here for [complete UM rubric](#)). In order to enhance their students’ information literacy skills, curriculum and course designers should adapt these ILOs to their curricula and courses, and constructively align their teaching activities and assessments accordingly.



This guideline document provides a rationale for the development of the UM rubric, and how it can be integrated into courses and programmes, following the constructive alignment approach. Specifically, the guideline addresses the following questions:

- What is the purpose, structure, and content of the UM rubric?
- How to ensure that the UM rubric will be used to implement information literacy within faculty curricula and courses according to the constructive alignment model?

## 1.2 How to read this document?

Chapter 2 defines a rubric, outlines the relevance of rubrics for teaching and learning, and specifies the format and content of the UM information literacy rubric. Chapter 3 focuses on the implementation of the rubric into educational programmes and courses. This includes the application of constructive alignment to integrate information literacy skills into faculty curricula and courses. Different examples and scenarios will provide insights into the use of this rubric for instructional design purposes both on a programme and course level. Chapter 4 describes the available support to implement the rubric into faculty education.

# 2. Rubric

## 2.1 Overview

A rubric defines a coherent set of criteria that presents the proficiency and learning outcome that students should be able to demonstrate. Rubrics support the evaluation of skills, content knowledge, attitudes or behavior of a student. There are multiple types of rubrics, which can be customized for different purpose (e.g. grading, skills development) and contexts (e.g. subject area or discipline) of the instructional design (Brookhart, 2013).

### STOP & REFLECT

What type of rubric are you currently using for your teaching? What could be the benefit of a developmental rubric in enhancing in enhancing academic skills education?

## 2.2 UM information literacy rubric

First of all, the designed UM rubric follows a developmental approach. The purpose of UM rubric is to determine the level of attitudes (i.e. tendency to evaluate subjects in a certain way) and knowledge practices (i.e. proficiencies that students develop when comprehending an information literacy component) that students acquire over time. The content and structure build on the dimensions and sub-dimensions of the UM information literacy framework.

### Content

The content of the rubric was developed in cooperation with information specialists, educational experts, and teaching staff. Multiple feedback rounds, which assessed the structure and content (ILOs), successfully led to the design of an information literacy rubric. For more information, read the [complete UM information literacy rubric including descriptions for each ILO](#).

### Levels

The rubric is structured into four levels: (1) Novice, (2) Intermediate, (3) Competent, and (4) Advanced (see example below). These levels demonstrate the differentiation of attitudes, knowledge level, and skills level between a novice and an advanced bachelor student in a specific area of information literacy. We recommend flexibility in applying the rubric to any educational (re)design. The process of information literacy skills development will be incremental and challenging. Students need sufficient support at first, with greater autonomy later in the curriculum – also known as instructional scaffolding.



#### TIP

Use the UM rubric ILOs to map information literacy instructions and assessments for your bachelor programme.



#### TIP

Account for the ability difference of your bachelor students and provide choices for acquiring higher order information literacy skills.

	Novice (1)	Intermediate (2)	Competent (3)	Advanced (4)
<b>Resource Discovery: Identify &amp; Plan</b>	<b>Identifies</b> different information sources and formats appropriate to the (information) needs of the search.	<b>Explains</b> that information sources vary greatly in content and format and have varying relevance and value, depending on the needs and nature of the search.	<b>Determines</b> the relevance and value of different information sources, depending on the needs and nature of the search.	<b>Designs</b> a systematic search plan which accounts for different information formats and the relevance and value, depending on the needs and nature of the search.

Table 1: Snippet of Information Literacy Rubric

See table 2 below for an example of information literacy skills development based on bachelor study years.

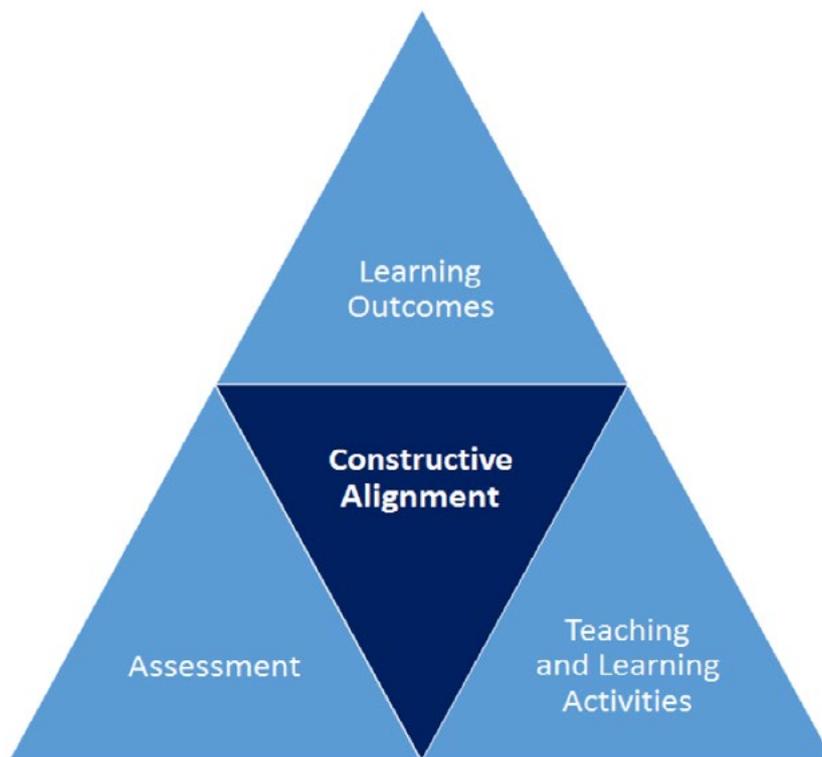
<p><b>Year 1</b></p>	<p>In year 1, bachelor students should achieve level 1 (Novice). For instance, after the first year bachelor students need to be able to identify different types of information sources and formats that are useful to answer a research question or solve a problem. Any bachelor student who is already at level 1 should have the opportunity to do self-study activities (e.g. using the library online modules) to reach parts of level 2 (Intermediate) in the respective information literacy dimension.</p>
<p><b>Year 2</b></p>	<p>In year 2, bachelor students should complete their transition to level 2 (Intermediate). For example, a student who is about to complete the second year of the bachelor programme should opt for being able to explain different information sources and formats, and outline their relevance to answer a research question or solve a specific problem. Depending on the subject context, some may already progress to level 3 (Competent) in some of the dimensions.</p>
<p><b>Year 3</b></p>	<p>In year 3, bachelor students should reach at least level 3 (Competent) in most dimensions. At the end of year 3, when students write their bachelor thesis or similar final product, the students should be able to determine and select the appropriate sources to answer their research question. They would be able to identify the nature of their assignment or project, and can select the right sources accordingly. Depending on the subject context, some students might acquire level 4 abilities (Advanced) to succeed in their bachelor or project assignment.</p>

*Table 2: Information literacy skills development based on bachelor years*

# 3. Translating rubric into PBL-based education

The presented rubric should be a helpful tool to improve faculty-specific programmes, courses, and teaching & learning activities. The intention of this rubric is to create a shared understanding of what is expected from students at different levels of information literacy development.

In line with the recommendations of the Information-Wise research, we stress the necessity to employ the [constructive alignment framework](#) in order to ensure that the rubric content seamlessly aligns with intended learning outcomes (ILO), learning activities (TLA), and assessment tasks of specific subjects. Constructive alignment of ILOs, TLAs and assessment regarding information literacy within the disciplinary context will enhance informed learning. Informed learning describes three approaches 1) functional, 2) situated, and 3) critical. These approaches enable the learner to use information, creatively and reflectively, in order to learn. Students will develop information literacy skills itself (functional approach), apply those skills in the discipline-specific context (situated approach) and take social and political aspects of information into account (critical approach). Therefore, the next step is to develop course or programme ILOs based on the UM rubric, and align them with TLAs and assessment.



## 3.1 Developing intended learning outcomes

Well-described and student-centered intended learning outcomes (ILOs) will improve the quality of information literacy teaching. We used the prominent Bloom's revised taxonomy (Krathwohl & Anderson, 2009) to develop and organize the ILOs for this rubric. This taxonomy helps to formulate learning objectives for a course that are based on the UM rubric .<sup>1</sup>

---

1 ILOs are phrased in a student-centred manner and include verbs. An overview of verbs that reflect the cognitive and knowledge dimensions of the learner is available here: <https://www.celt.iastate.edu/teaching/effective-teaching-practices/revised-blooms-taxonomy/>.

The UM rubric follows a hierarchy of learning levels (i.e. cognitive processes and knowledge) by incorporating different verbs for each competence level (see table 3 below). For example, a novice would be able to **recognize** the influence of different factors (e.g. expertise level of an author) on the quality of a source, but might still face difficulties to explain the role of these factors. At an intermediate level, students are already able to **explain** why certain factors such as the expertise level of the author might influence the credibility of a piece of information or a written article. At a competent level, the students are able to **deconstruct** the factors that influence the quality of a source. The students scrutinize the concept of authority and identifies different perspectives of authority (e.g. institutional power, level of expertise). At an advanced stage, the students are able to **create** their own factors or criteria that will help in assessing the quality of the source. These might differ depending on the research interest and scope.

**Programme Level**

Check whether (1) all information literacy ILOs are addressed; (2) there are no gaps of information literacy ILOs not (sufficiently) being addressed. Consider using [curriculum maps](#) to gain a good overview of the alignment.



**TIP** Learning is not a hierarchy or a linear process. Students will engage with and learn from activities that reflect all stages of the UM rubric. Through clearly defined ILOs, assignments and assessments, you can ensure that students grasp the basic knowledge of the subject. If students comprehend the basic skills levels, it will come easier for them to master the higher order skills at a later stage.

	<b>Novice (1)</b>	<b>Intermediate (2)</b>	<b>Competent (3)</b>	<b>Advanced (4)</b>
<b>Critical Assessment: Evaluation</b>	<b>Recognizes</b> the influence of authority, purpose, and accuracy on the quality of the source.	<b>Explains</b> the influence of authority, purpose, and accuracy on the quality of the source.	<b>Deconstructs</b> the influence of authority, purpose, and accuracy on the quality of the source.	<b>Generates</b> and <b>reflects</b> on different factors (e.g. authority) which influence the quality of the source.

Table 3: Snippet of Information Literacy Rubric

### 3.1.1 Case study: example of information literacy in Fiscal Economics at SBE

In the first introductory course of the Fiscal Economics Bachelor programme at SBE, students encounter a variety of academic and non-academic sources. In period 1 of Academic Year 2019/2020, an information literacy pilot was deployed throughout that course to support students in becoming informed readers and learners. The formulated course ILOs concerning information literacy focused on the Critical Assessment component of the UM rubric. Specifically, students learned how to recognize the differences between various sources regarding context, relevance, purpose and credentials of the author. In this way, students could improve their approach to evaluating information by using explicit criteria to check for its quality. The figure below provides a brief summary of how the course objective was formulated from the UM rubric ILOs.

#### Step 1: What do the students need to know?

Critical Assessment was identified as essential for students to deal with different types of sources and compare their quality.

*Dimension: Critical Assessment*

*Sub-dimension: Evaluate*

#### Step 2: What do the students know already?

Since it is the very first course of the Fiscal Economics bachelor, we could assume that students are situated in the lower levels of information literacy competence. Some individual differences can exist given various educational backgrounds and experiences.

*Level of competence: novice*

*Verb: recognize*

#### Step 3: How can the UM rubric ILO be translated into a course ILO?

The following presented UM Rubric ILO was adjusted to the course by adding both academic and non-academic sources and extending it by some additional criteria for critical appraisal based on the CRAAP (currency, relevance, accuracy, authority, purpose) test.

	Pre-bachelor (0)	Novice (1)
<b>Critical Assessment: Evaluation</b>	The student is unaware of the different criteria that can be used to critically assess a source.	Recognizes the influence of authority, purpose, and accuracy on the quality of the source.

Figure 2: ILO case study example



#### TIP

Make sure to adapt the UM rubric ILOs to fit your own context, so it reflects the language and content of your discipline.



#### TIP

Consider the different levels of information literacy development to ensure that students have pre-requisite knowledge and can progress from there.

### 3.1.2 ILO case study: an example of translating ILOs into a grading rubric

For grading purposes, the rather conceptual ILOs of the UM rubric might be insufficient to explain the performance indicators to the assessor and/or student, and therefore needs adapting. A pilot at the UCM course Academic Skills Introduction II (see also 3.2.2) incorporated and adjusted the UM rubric ILOs into their existing grading rubric, which assesses students' performance for writing a research plan. The purpose of this pilot was to put more emphasis on the Critical Assessment dimension of the UM information literacy framework. The pilot team picked three ILOs from the information literacy rubric to better integrate critical assessment into the course:

- 1) Students are able to identify critical appraisal skills (e.g. judgements on reliability) and tools (e.g. CRAAP test) to select sources)
- 2) Describes different types of authority (subject expertise, societal position, special experience)
- 3) Describes own and author's biases regarding information (e.g. filter bubbles, confirmation bias).

The wording and explanation of these ILOs were rewritten, so that exact requirements were clearly stated in the final grading rubric of the research plan assignment. For example, students received a failing grade when the work provided a missing or insufficient description of author's biases. Whereas the highest grade (excellent) was allocated, when the student clearly described own and author's biases regarding information (e.g. confirmation bias, google effect, Dunning Kruger effect) and explained how it could influence the selection of the source. See Appendix A for grading rubric.



#### TIP

Communicate clear expectations to the students about the expected learning outcomes. These should be less prescriptive and kept as a general indication for students about the desired outcomes.



#### TIP

Stimulate self-assessment, or peer-feedback, so that students learn how to evaluate and grade each other's work.



#### TIP

Involve students in the design of assessment criteria. The UM information literacy rubric can serve as a foundation to further specify and contextualize the ILOs.

## 3.2 Teaching and learning activities

The next step is to design teaching and learning activities (TLA) that match the formulated ILOs with regard to target verbs and available timeframe. This can be achieved by including information literacy in an existing course assignment or providing additional IL activities that act as a supplementary support for students in reaching course goals. While the [UM Constructive Alignment Handbook](#) provides more extensive support in connecting TLAs

to ILOs, there are some general criteria that TLAs should meet in the context of information literacy education. The PBL learning principles stating that learning should be contextual, constructive, collaborative and self-directed are well-established within education at UM. We emphasize their importance in designing TLAs that aim to develop information literacy skills.



**Contextual.** Learning activities do not have the desired impact when students do not see their value. This is especially risky for out-of-context IL activities that are not perceived as achievable or are not connected to real-life problems. Information literacy activities should therefore incorporate materials that represent relevant, current and authentic issues for the respective subject area.



**Constructive.** Active learning, experimentation and formative feedback go hand in hand with the development of higher-order information literacy skills and at the same time, enable students to construct their own knowledge and understanding. The rubric levels (1-4) can help to test students' prior-knowledge and designing instructions for information literacy that account for the zone of proximal development (i.e. task that is too difficult for students to do on their own, but that can be done with support and guidance).



**Collaborative.** Learning with and from other people brings many benefits, like heightened self-awareness or motivation. Collaboration at UM is an inherent part of our educational model and the UM rubric devotes an entire section to this competence. Activities like peer feedback or reflection sessions are a great opportunity for students to learn about effective information literacy practices from fellow students. Maybe even across competence levels?



**Self-directed.** How am I doing? What are my mistakes? How can I improve? These are just some of the reflective questions that learners can ask themselves to direct their learning. By letting students practice the art of self-questioning and self-assessment, we give them control over their own learning process. E-portfolios and learning diaries are powerful tools to elicit this, as writing reflectively can help students to understand their own information literacy development and engage in deeper learning of the course contents. In addition, as of Academic Year 2020/21, the University Library provides new online modules for students to acquire basic information literacy knowledge and skills at their own pace.

### 3.3 Choosing learning activity format

Depending on the purpose of the course and pre-defined ILOs, faculty teachers can choose different classroom formats to implement information literacy. Below you find an example of some of the available formats, their advantages, matching Bloom’s taxonomy verbs as well as opportunities and challenges for information literacy. For a more comprehensive overview, have a look at the UM Constructive Alignment Handbook.

#### Programme level

As a curriculum designer you want to make sure that teaching and learning activities create opportunities for students to acquire the skills and attitudes they need to succeed in their studies and future profession. The types of learning activities should enable students to achieve the global learning goals for information literacy in your programme.

TLA (Examples)	Advantages	Challenge	Bloom’s verbs	Suitable for...
<b>Tutorial</b>	Collaborative, allows for application of knowledge to explain concrete problems	Integrating information literacy (IL) materials with course materials; tutor preparation	Analyzing, Understanding, Remembering, Applying, Evaluating, Creating	Independent search of (non) academic sources and assessment of quality (Resource Discovery, Critical Assessment); formative and peer feedback in a group setting
<b>Lecture</b>	Can be delivered to many students at once; integration and clarification of topics	Keeping it interactive; transfer of knowledge to practice	Understanding, Remembering, Creating	Introduction to core IL practices depending on the context (all dimensions)
<b>Online Module</b>	Students can follow them at their own pace; Easy to embed into Canvas and course environment	Identify the learning impact of these online modules; Providing feedback on students’ learning	Remembering, Understanding	Introduction to IL dimensions; training of “low-order” skills such as identifying different types of sources
<b>Workshop</b>	Support on a specific topic; Students or staff learn practical skills	Integrate it into overall course structure; Keep students engaged	Applying, Understanding, Evaluating, Creating	Practice different IL skills such as writing a blog post, search for sources, using digital technology purposefully; Training teaching staff in using the UM rubric to design IL instructions

Table 4: Teaching and Learning Activities

### 3.3.1 TLA case study: a lesson about “bullshit” at UCM

One of the pilots at UCM focused on preparing students to deal with overabundance of information found both online and offline. First, the course coordinators addressed the information literacy dimension Critical Assessment and formulated the following ILOs:

- 1) Students will be able to recognize “bullshit” and misinformation in daily life, particularly in the online environment.
- 2) Students will be able to critically assess an academic paper.

Second, the course coordinators implemented two learning activities to help students achieve the ILOs. The first activity was a lecture on “bullshit” that provided explanation and tips on how to identify misinformation and biases in online environments. In a following tutorial, students read and critically assessed an academic journal paper, where they had the opportunity to apply the knowledge from the lecture.



**TIP** Identify parts of the UM rubric that could naturally fit in the course, so it does not require much extra work to adapt the course curricula to the rubric ILOs.

## 3.4 Types of assessment

There are summative and formative methods to assess learning. Both are relevant to measure the use of information in the learning process. The figure on the right side outlines the characteristics of these types of assessments. However, it should be noted that the difference between the two is not always black and white, the same assessment instruments could be used for either purpose, for example.

Another classification distinguishes between objective, performative and authentic assessments (Jongen, Pichel, Vernimmen, & Hospers, 2018). Objective tests represent traditional assessment methods and typically consist of a series of open-ended or fixed-choice questions that are based on course materials. Their strengths lie in identifying gaps in the existing knowledge of students and can be translated into formative assessment.

### Summative

- Takes place at the end of the learning process and represents what has been learned
- Provides quantifiable data
- Examples include final products such as theses, writing assignments, presentations or IL-related items on multiple choice exams

### Formative

- Takes place throughout the learning process
- Fosters self-reflection and self-correction
- Guided group discussions, online discussion boards and Web 2.0 technologies (e.g. Facebook, blogs, and Twitter) can be used to provide feedback

Figure 3: Summative and Formative Assessment

For example, a short, interactive [Wooclap](#)<sup>1</sup> quiz on search strategies in a beginning of a tutorial helps to diagnose the student's Resource Discovery competence. Performative assessment tests student's ability to perform a task in a simulated real-world scenario, such as identifying sources to fill an information need and creating references in a chosen referencing style. Because performative assessments provide immediate feedback and can be used to evaluate higher-order skills, they belong in the category of active "assessment as learning" approaches. The third category, authentic assessments, measures if students can apply what they have learned to real-world situations. To resemble reality, they often present complex and ill-defined challenges. Authentic assessments have become popular because of positive effects on student motivation and contextualization of knowledge. In the above-mentioned pilot within the bachelor's programme fiscal economic (see 3.1), students demonstrated their abilities to evaluate sources in an authentic assessment context. Specifically, students were asked to imagine preparing for an in-class presentation on the potential regressive nature of sales taxes. The assignment was to apply the CRAAP-test<sup>2</sup> in order to critically assess two new sources that are part of this business presentation.

All of these three methods fit into formative or summative assessments. The choice depends on the intended learning outcome and teaching & learning activity.

---

1 This audience response tool is licensed by the Maastricht University. The University Library offers support for the use of Wooclap:

[blended-pbl@maastrichtuniversity.nl](mailto:blended-pbl@maastrichtuniversity.nl)

2 CRAAP is an acronym for Currency, Relevance, Authority, Accuracy, and Purpose. This test is commonly used to evaluate the quality of (academic) sources.

### Programme level

From a programme coordinator perspective it is crucial to make sure that the course ILOs align with the overall planning and strategy for developing information literacy skills. The different assessment formats will provide evidence and detailed information about where the students stand. Make sure that [assessment methods](#) can provide the expected outcomes and that they are shared amongst colleagues.

#### 3.4.1 Summative assessment case study: Critical Assessment online module

In another one of the information literacy pilots at Maastricht Science Programme, students learned to identify their information need, assess the quality of sources using evaluation criteria and spot biases in argumentation. To achieve the ILOs, students completed an online module on critical assessment. Based on the newly gained knowledge, students then had to select and critically appraise sources for a presentation on a scientific topic. The course coordinator assessed students' learning in two ways. Firstly, students had to upload a written reflection of 400-500 words on the appropriateness of selected sources on the Student Portal EleUm, for which students received a Pass or Fail. Secondly, students devoted one slide during the final presentation to reflect on the chosen evaluation criteria (e.g., authority, purpose, accuracy) and its effects on the quality of the used sources. They also had to outline biases that potentially affect their and the author's perspective.

### 3.4.2 Formative assessment case study: reflective diary pilot at FHML

As a part of Bedreigingen van Gezondheid course, first year Health Science bachelor students received a writing assignment. In addition to that, they had to find at least two additional sources from the Online Library and explain their systematic search strategy. The last part of the assignment included a recurring written reflection on why they chose certain sources. To make information literacy development more explicit, the course team formulated ILOs based on the UM rubric. Then, they added information literacy related prompts to the reflection assignments, where students could put their learnings from the library workshops and assignments into personal perspective. Preliminary results indicated that students who actively used the learning diary showed a more critical attitude towards the information they use and selected appropriate sources based on their information need. The figure below shows example questions that prompted students to reflect on their information literacy skills

- **Which search strategy did you use and why did you chose this strategy? What went well? What would you improve for next time?**
- **How do you organize information that you find for the project? (e.g., referencing tools, mindmaps, Excel). What works well and what could be improved?**
- **What factors do you take into account when presenting in front of an audience or writing your own content?**

### 3.5 Scenarios Programme Re-Design

To ensure the quality of educational programs, programme teams will need to scrutinize the curriculum and courses every year, and effectively revise them every few years. Such revisions can require minor adjustments, or if necessary, a complete redesign. For examples about programme (re-) designs, check out the [constructive alignment handbook](#) (P.44-53). These redesigns are an ideal opportunity to assess the quality of information literacy education in your curriculum. The following questions and tips will help you to consider and improve information literacy skills education, according to the nature of your revision.

#### 3.5.1 Minor Update

In this scenario, the programme team evaluates whether the curriculum is still up-to-date and constructively aligned. No large adjustments are expected.

1. Who is responsible for overlooking and adjusting information literacy skills at your programme?
2. What other stakeholders (e.g. University Library) can be involved to strengthen information literacy skills education in your programme?
3. What parts of your programme/ course curriculum contain elements of information literacy?
4. Do you recognize the UM information literacy framework dimensions and UM rubric ILOs in your curriculum?
5. Are the courses designed in a way that students have sufficient opportunity and support to develop their information literacy skills further?

Figure 4: Example prompting questions for information literacy skills

### 3.5.2 Complete Redesign

In this scenario, the final qualifications of the programme will be revised. Following the idea of constructive alignment, the programme team will examine and update educational activities and assessment formats, and match them with the intended learning outcomes.

1. Are the information literacy ILOs clearly and sufficiently defined in your curriculum?
  - a. How do these ILOs cohere with the UM-wide framework and rubric for information literacy education?
2. According to these ILOs, examine and update the teaching and learning activities i.e. study materials, lectures, assignments, PBL-tasks, online tutorials, workshops;
3. According to these ILOs, examine and update the assessment programme i.e. assessment formats and contents;
4. Involve relevant stakeholders i.e. information specialists from the library to execute the redesign of information literacy education.

### 3.5.3 New Programme

In this scenario, programme ILOs will be developed based on the “big ideas” of the new programme. The programme team will create a course structure, including course ILOs, teaching activities, and assessment methods, that aligns with the global programme ILOs.

1. Define your information literacy ILOs according to the overall vision of the programme & the UM-wide framework and rubric for information literacy education;

2. Carefully select the right moments to address and incorporate information literacy skills into the programme structure;
  - a. Specify information literacy ILOs, teaching- and learning activities, and assessment for each course;
3. Involve information literacy experts from the University Library early in the programme design.

### 3.6 Scenario Learning Management System Canvas

As of 1 August 2020, every course at UM will transition to the learning management system (LMS) Canvas. Canvas can facilitate the implementation of information literacy education into courses.

The University Library and EDLAB have developed - and still are developing - online modules based on the UM information literacy framework. The modules are available on the [Library Information Skills portal](#). As of **Academic Year 2020-21** the University Library will offer a newly designed online curriculum that provides generic- and discipline specific modules based on the UM rubric. These information literacy modules can be seamlessly integrated and embedded into your course structure. Embedding refers to the integration of external content into your Canvas course. Embedded content appears as part of your course content and often supplies a visual element that encourages increased click through, interaction and engagement.

# 4. Support for Implementation

The UM rubric is an institutional attempt to structure and coordinate information literacy education across the university. The rubric is not a final product but rather a prototype that will require experimentation and refinement throughout the next academic years. This process requires monitoring processes such as feedback rounds and evaluations. As such, programme coordinators who integrate information literacy into their curricula should opt for both student and teacher feedback to evaluate the potential value of the UM rubric in their educational setting.

As a strategic partner for information literacy education, the University Library offers rich expertise and years of experience to translate and tailor the UM rubric into the discipline-specific context of your faculty. This includes the (re-) design of ILOs related to information literacy, as well as the development of teaching- and learning activities, and assessments. To support faculty

teachers to implement the UM framework and rubric ILOs into their education a continuing professional development (CPD) workshop was piloted. The University Library and EDLAB will offer this workshop, along with other CPD activities for information literacy skills also in the Academic Year 2020-21. Furthermore, the University Library provides support in embedding the newly designed information literacy modules into the new Canvas environment as of Academic Year 2020-21. For more information, please contact the respective information specialist for your faculty or our didactical experts from EDLAB and the University Library.

## Contact us:

 [Ask your Librarian](#)

 EDLAB: [edlab-info@maastrichtuniversity.nl](mailto:edlab-info@maastrichtuniversity.nl)

# 5. References

- ACRL. (2016). Framework for Information Literacy for Higher Education. <http://www.ala.org/acrl/standards/ilframework>.
- Brookhart, S. M. (2013). How to create and use rubrics for formative assessment and grading. Alexandria, VA: ASCD.
- Dijkstra, J., Gerhards, S., Matthijs, K., Menten, M., Radulova, E., Spigt, M., Vaatstra, R., Vermeer, P. (Ed.)(2016). [The UM Handbook for Constructive Alignment. Maastricht: EDLAB](#)
- Jongen, S., Pichel, J., Vernimmen, F., & Hospers, H. (2018). Analysing informed learning at Maastricht University: A narrative review <https://openmonographs.maastrichtuniversity.nl/index.php/ISLHE/catalog/book/2>
- Krathwohl, D. R., & Anderson, L. W. (2009). A taxonomy for learning, teaching, and assessing: A revision of Bloom's taxonomy of educational objectives. Longman.
- Pichel, J., Jongen, S., & Hospers, H. (2018). The changing role of information literacy skills in higher education: Trends of information literacy. <https://openmonographs.maastrichtuniversity.nl/index.php/ISLHE/catalog/book/2>
- Ross, J. A., Hogaboam-Gray, A., & Rolheiser, C. (2002). Student self-evaluation in grade 5-6 mathematics effects on problem-solving achievement. Educational Assessment, 8(1), 43-58.
- Stevens, D. D., & Levi, A. J. (2013). Introduction to rubrics: An assessment tool to save grading time, convey effective feedback, and promote student learning. Stylus Publishing, LLC

# 6. Appendix

## A) UCM, Grading Rubrics for Research Plan Writing Assignment

<p><b>Section 1: Descriptive background and argumentation</b></p>	<p>Misses or does not give enough clarity on:          - background, esp. linking to TS/RQ.          - relevance and purpose of paper.          - research question and/or Thesis Statement.</p>	<p>Gives some background and explains some keywords in RQ/TS.          Minimal discussion of relevance and purpose of paper.          RQ and TS are somewhat relevant, arguable, researchable, balanced, and specific.</p>	<p>Gives important background and explains some keywords in RQ/TS.          Discusses relevance and purpose of paper.          RQ and TS are mostly relevant, arguable, researchable, balanced, and specific. They provides guidance for the research and writing process.</p>	<p>Gives important background and explains all important keywords in RQ/TS.          Discusses relevance and purpose of paper.          RQ and TS are relevant, arguable, researchable, balanced, and specific. The formulation is unambiguous and provides guidance for the research and writing process.</p>
<p><b>Outline Outline</b></p>	<p>Fewer than three arguments outlined.          Sub-arguments missing/have little or no relation to TS/RQ/          Sources are missing or relationship to TS/RQ unclear.          Outline does not show enough effort.</p>	<p>Three arguments presented describe what topic the argument will discuss. No sub-arguments included          Relationship to TS/RQ and use of sources clearly explained for some main arguments.</p>	<p>At least three arguments presented. Description of what topic the argument will discuss. Some sub-arguments have been included.          Relationship to TS/RQ and use of sources clearly explained for most main arguments.          Holes in argumentation/ research acknowledged.          Outline shows effort.</p>	<p>At least three arguments presented. Clear description of what topics the arguments will discuss. Sub-arguments have been included for all main arguments possible.          Relationship to TS/RQ and use of sources clearly explained for all main arguments.          Holes in argumentation/ research acknowledged.          Outline shows effort.</p>

<p><b>Section 2: Research strategy and sources</b></p>	<p>No or incomplete explanation of search strategy (see pass column). Search strategy only uses Google Scholar, does not use academic databases effectively enough. Few relevant sources found. Does not include Search Planner and Results Documentation Form.</p>	<p>Includes explanation of research strategies. Search strategy includes use of at least one relevant database, which has been somewhat effectively used. A few relevant references found. Includes Search Planner Form and Results Documentation Form.</p>	<p>Explanation of research strategies (including explanation of choice of database and short paragraph on preliminary search strategy). Search strategy includes use of at least two relevant databases, which have been effectively used. Some relevant references found. Includes Search Planner Form and Results Documentation Form.</p>	<p>Complete explanation of research strategies (including explanation of choice of database and short paragraph on preliminary search strategy). Search strategy includes use of at least three relevant databases, which have been effectively used. Relevant and extensive references found. Includes Search Planner Form and Results Documentation Form.</p>
<p><b>Critical assessment</b></p>	<p>Missing or insufficient description of author's biases</p>	<p>Somewhat describes author's biases e.g. confirmation bias, google effect, dunning kruger etc.</p>	<p>Describes own and author's biases regarding information confirmation bias, google effect, dunning kruger etc.</p>	<p>Clearly describes own and author's biases regarding information, e.g. confirmation bias, google effect, dunning kruger etc. And explains how it could influence the selection of the source.</p>
<p><b>Research strategy and sources – critical assessment</b></p>	<p>Description of type of authority is not specific enough. Research strategy does not contain critical appraisal method.</p>	<p>Describes at least one type of authority (subject expertise, societal position, special experience).  Uses critical appraisal (e.g. CRAAP) method for one source.</p>	<p>Describes two different types of authority (subject expertise, societal position, special experience). Is able to demonstrate a basic understanding of how authority could influence quality of the source.  Uses critical appraisal (e.g. CRAAP) method for two source.</p>	<p>Describes at least three different types of authority (subject expertise, societal position, special experience). Explains how authority could influence quality of the source.  Uses critical appraisal (e.g. CRAAP) method for at least three sources.</p>

<b>Interdisciplinarity, author contributions</b>	<p>No or completely unclear explanation of how different academic or scientific disciplines help to answer the RQ or support the TS. No or unclear explanation of individual authors.</p>	<p>Short explanation of how different academic or scientific disciplines help to answer the RQ or support the TS. May be sometimes unclear. Contributions of individual authors are somewhat explained.</p>	<p>Explanation of how different academic or scientific disciplines help to answer the RQ or support the TS. Contributions of individual authors are explained.</p>	<p>Clear and concise explanation of how different academic or scientific disciplines help to answer the RQ or support the TS. Contributions of individual authors are clearly explained.</p>
<b>Schedule</b>	<p>No or unclear time plan of period 3. No or unclear deadlines &amp; task distributions.</p>	<p>General time plan of period 3. Includes some deadlines &amp; task distribution.</p>	<p>Clear time plan of period 3. Includes deadlines &amp; task distribution.</p>	<p>Clear and well thought through time plan of period 3. Includes clear deadlines &amp; task distribution; clear indication of drafting, revising, incorporating feedback, etc.</p>
<b>Readability</b>	<p>Paragraphs are mostly unstructured, and/or not unified, and/or not coherent. Transitions are hardly used within and between paragraphs, and often not effectively.</p>	<p>At least half of paragraphs are structured, unified and coherent. Transitions are sometimes used within and between paragraphs, although sometimes not effectively. At least half of sentences are clear and concise.</p>	<p>Most paragraphs are structured, unified and coherent. Transitions are usually used within and between paragraphs, mostly effectively. Sentences are mostly clear and concise.</p>	<p>Meets “good” and some aspects of 2000 or 3000 level, e.g.:</p> <ul style="list-style-type: none"> <li>• Paragraphs are structured, unified and coherent.</li> </ul> <p>Transitions are effectively used within and between paragraphs.</p> <ul style="list-style-type: none"> <li>• Sentences are clear and concise.</li> </ul>

<b>Interdisciplinarity, author contributions</b>	<p>No or completely unclear explanation of how different academic or scientific disciplines help to answer the RQ or support the TS. No or unclear explanation of individual authors.</p>	<p>Short explanation of how different academic or scientific disciplines help to answer the RQ or support the TS. May be sometimes unclear. Contributions of individual authors are somewhat explained.</p>	<p>Explanation of how different academic or scientific disciplines help to answer the RQ or support the TS. Contributions of individual authors are explained.</p>	<p>Clear and concise explanation of how different academic or scientific disciplines help to answer the RQ or support the TS. Contributions of individual authors are clearly explained.</p>
<b>Schedule</b>	<p>No or unclear time plan of period 3. No or unclear deadlines &amp; task distributions.</p>	<p>General time plan of period 3. Includes some deadlines &amp; task distribution.</p>	<p>Clear time plan of period 3. Includes deadlines &amp; task distribution.</p>	<p>Clear and well thought through time plan of period 3. Includes clear deadlines &amp; task distribution; clear indication of drafting, revising, incorporating feedback, etc.</p>
<b>Readability</b>	<p>Paragraphs are mostly unstructured, and/or not unified, and/or not coherent. Transitions are hardly used within and between paragraphs, and often not effectively.</p>	<p>At least half of paragraphs are structured, unified and coherent. Transitions are sometimes used within and between paragraphs, although sometimes not effectively. At least half of sentences are clear and concise.</p>	<p>Most paragraphs are structured, unified and coherent. Transitions are usually used within and between paragraphs, mostly effectively. Sentences are mostly clear and concise.</p>	<p>Meets “good” and some aspects of 2000 or 3000 level, e.g.:</p> <ul style="list-style-type: none"> <li>• Paragraphs are structured, unified and coherent.</li> </ul> <p>Transitions are effectively used within and between paragraphs.</p> <ul style="list-style-type: none"> <li>• Sentences are clear and concise.</li> </ul>

## B) Rubric

Resource discovery	Identify & Plan	Novice (1) The information literate bachelor student:	Intermediate (2) The information literate bachelor student:	Competent (3) The information literate bachelor student:	Advanced (4) The information literate bachelor student:
		Identifies different information sources and formats appropriate to the (information) needs of the search.	Explains that information sources vary greatly in content and format and have varying relevance and value, depending on the needs and nature of the search.	Determines the relevance and value of different information sources, depending on the needs and nature of the search.	Designs a systematic search plan which accounts for different information formats and the relevance and value, depending on the needs and nature of the search.
		Recognizes the evolution of questioning within the research process.	Explains the evolution of questioning within the research process.	Deconstructs the evolution of questioning within the research process.	Concludes that research is iterative and depends upon asking increasingly complex or new questions whose answers develop additional questions or lines of inquiry in any field.
		Formulates a topic based on a selection of main themes (related to student's interest and course content) and keywords (connect to selected topic and themes).	Formulates a clear, focused, concise, complex and arguable research question for a paper assignment	Formulates a clear, focused, concise, complex and arguable research question for a bachelor thesis.	Same as "3"
		Identifies information and/or existing data sources that meet the research need.	Selects information and/or existing data sources that meet the research need.	Selects a variety of information and existing data sources that are generally appropriate and relevant for the assignment or research need.	Creates and evaluates inclusion and exclusion criteria that are relevant for the assignment or research need.
	Search	Explains the relevance of going beyond a regular "google-search".	Explains the benefits of using a variety of academic databases.	Outlines the benefits of using a variety of academic databases.	Reflects on the benefits of using a variety of academic databases.
		Uses basic search techniques (e.g. Boolean operators, search planning form) to carry out a subject search.	Identifies advanced search techniques (e.g. Boolean operators, wildcards) and/or database functionalities (e.g. Thesaurus/MeSH).	Uses advanced search techniques (e.g. Boolean operators, wildcards) and/or database functionalities (e.g. Thesaurus/MeSH).	Reflects on advanced search techniques (e.g. Boolean operators, wildcards) and/or database functionalities (e.g. Thesaurus/MeSH) and refines the search as needed (e.g. broadening and narrowing).

		Selects databases on a pre-defined topic using pre-defined resources.	Selects multiple databases that somewhat relate to selected concepts or (research) questions.	Selects multiple databases appropriate for selected concepts or (research) questions.	Same as "3"
		Carries out a search to find familiar information sources both online and offline (e.g. a journal article or book from a reference).	Carries out a subject search within multiple databases or platforms to find unfamiliar sources.	Selects familiar and unfamiliar sources independently and confidently, refining the search as needed (e.g. broadening and narrowing).	Searches independently and fluently across a comprehensive range of information sources in any medium, including specialised information such as archives, data sets, special collections, colleagues and contacts in research networks.
Critical Assessment	Evaluate	Recognizes the appropriateness of selected sources based on the information need and the context in which the information will be used.	Summarizes the appropriateness of selected sources based on the information need and the context in which the information will be used.	Determines the appropriateness of selected sources based on their appropriateness regarding the information need and the context in which the information will be used.	Same as "3"
		Identifies critical appraisal skills (e.g. judgements on reliability) and tools (e.g. CRAAP test) to select sources.	Uses critical appraisal skills (e.g. judgements on reliability) and tools (e.g. CRAAP test) to select sources.	Chooses the most appropriate critical appraisal skills (e.g. judgements on reliability) and tools (e.g. CRAAP test) to select sources.	Reflects on critical appraisal skills (e.g. judgements on reliability) and tools (e.g. CRAAP test) to select sources.
		Describes different types of authority (subject expertise, societal position, special experience).	Explains different types of authority (subject expertise, societal position, special experience).	Deconstructs different types of authority (subject expertise, societal position, special experience).	Reflects on different types of authority (subject expertise, societal position, special experience).
		Recognizes the influence of authority, purpose, and accuracy on the quality of the source.	Explains the influence of authority, purpose, and accuracy on the quality of the source.	Deconstructs the influence of authority, purpose, and accuracy on the quality of the source.	Generates and reflects on different factors (e.g. authority) which influence the quality of the source.
		Identifies appropriate criteria to evaluate the instances of online tools for their relevance to the study context.	Uses appropriate criteria to outline the instances of online tools for their relevance to the study context.	Chooses appropriate criteria to judge the instances of online tools for their relevance in any context.	Same as "3"

	<b>Critical Thinking</b>	Describes own and author's biases regarding information (e.g. filter bubbles, confirmation bias).	Clarifies own biases and author's biases regarding information (e.g. filter bubbles, own point of view).	Outlines own and author's biases regarding information (e.g. filter bubbles, own point of view).	Reflects on own and author's biases regarding information e.g. Does the author present alternate points of view? What is my own political view?
			Recognizes contradictory claims by evaluation and/or synthesis.	Integrates contradictory claims into own work (e.g. paper assignment) by evaluation and/or synthesis.	Reflects on contradictory claims by evaluation and/or synthesis.
		Clarifies the relevance to support argumentation with evidence	Uses evidence to support argumentation.	Reflects on evidence to support argumentation.	Same as "3"
<b>Organizing Information</b>	<b>Manage</b>	Identifies a range of tools and techniques for managing and exporting references (e.g. EndNotes, Mendeley).	Uses a range of tools and techniques for managing and exporting references (e.g. EndNotes, Mendeley) and is able to select and use as appropriate.	Differentiates between different tools and techniques available for managing references and sources, e.g. social bookmarking tools, card index, diary, EndNote, Excel.	Same as "3"
		Identifies several options to store information and/or data (e.g. in Word, Excel).	Stores and organizes information and/or data sources systematically using citation management software (e.g. EndNote, Mendeley).	Same as "2"	Same as "2"
<b>Creation and Communication</b>	<b>Create</b>	Summarizes information and/or data from different resources to create an information product (e.g. paper, blog post)	Analyses and summarizes information and/or data from different resources to create an information product (e.g. paper, blog post).	Synthesizes information and/or data from different resources to create an information product (e.g. paper, blog post).	Synthesizes information and/or data from different resources and – based on this analysis – he / she formulates insights, hypotheses or applications
		Indicates that the purpose, message, and delivery of information are acts of creation.	Explains that the purpose, message, and delivery of information are intentional acts of creation.	Outlines the purpose, message, and delivery of information as intentional acts of creation.	Interprets the underlying process of creation as well as the final product to critically evaluate the usefulness of information.

		Identifies the value of a collaborative production of (digital) content related to study activity.	Selects collaborative production of (digital) content appropriate for the study activity.	Reflects on the collaborative production of (digital) content related to a study activities.	Creates a collaborative production of (digital) content related to study activities.
		Describes the ethical and legal requirements (e.g. plagiarism, copyright) surrounding the use and reuse of information.	Explains the ethical and legal requirements (e.g. plagiarism, copyright) surrounding the use and reuse of information.	Integrates ethical and legal requirements (e.g. plagiarism, copyright) into the use and re-use of information and identifies sources of relevant advice (e.g. expert for privacy regulations).	Reflects on the ethical and legal requirements (e.g. plagiarism, copyright) surrounding the use and reuse of information and knows where to seek advice (e.g. expert for privacy regulations).