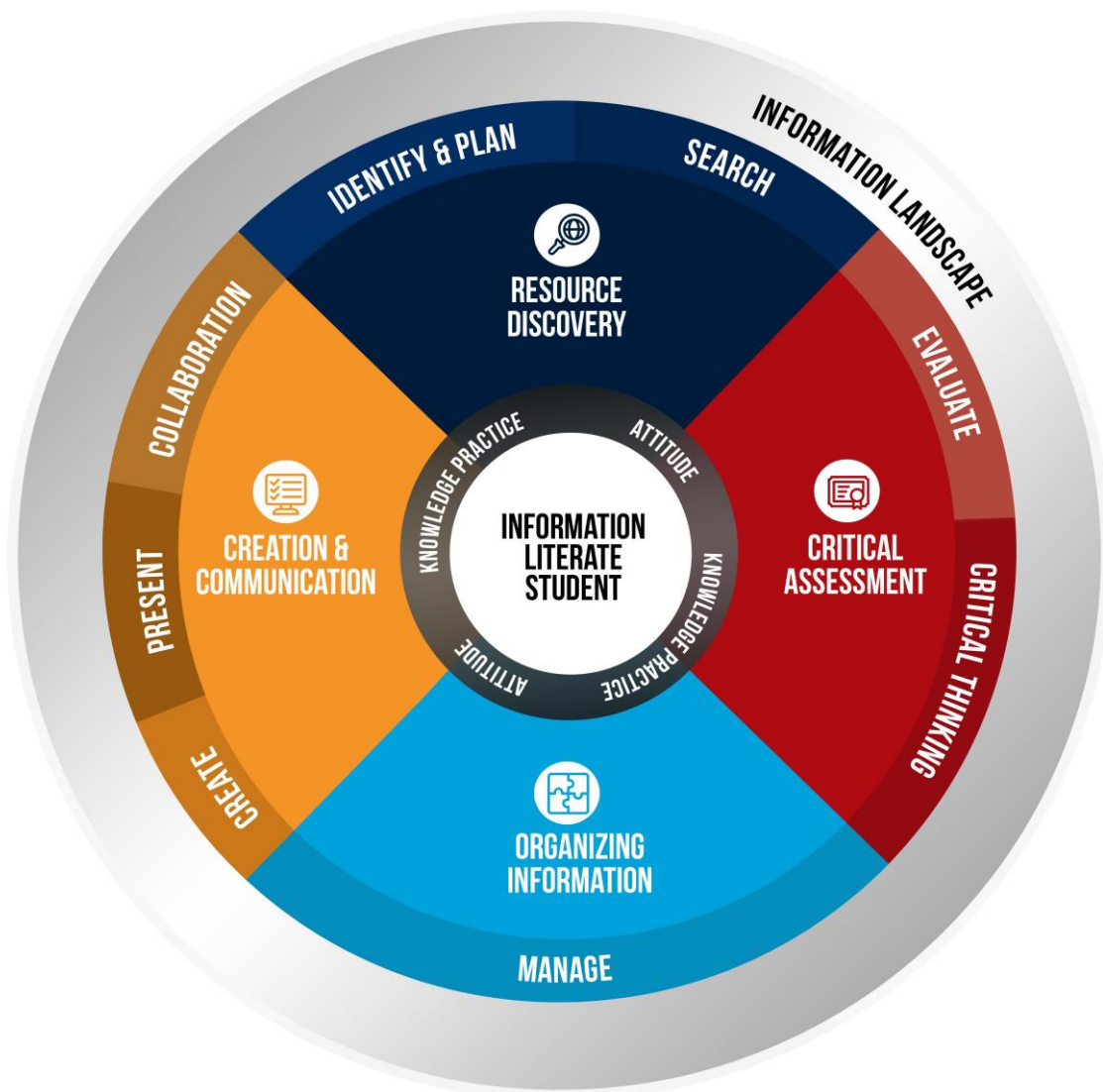


# Information-Wise – The UM Framework for Information Literacy



## Contents

|     |  |    |
|-----|--|----|
| 1   | Introduction .....   | 3  |
| 2   | Who benefits from the information literacy framework? .....                          | 4  |
| 3   | UM information literacy framework.....   | 5  |
|     | Vision of the framework (inspired by prominent information literacy frameworks)..... | 5  |
| 3.1 | Framework Content .....  | 6  |
| 3.2 | Implementation .....   | 10 |
| 4   | Generic Information Literacy Rubric (based on UM framework) .....                    | 10 |
| 4.1 | Rubric matrix divided into the four UM framework pillars and sub-dimensions .....    | 12 |
| 5   | Bibliography .....   | 17 |

## 1 Introduction

Today's digital and technological developments, such as big data, fake news, and social media, play an increasing role in students' learning process. An important element of teaching and learning in the 21<sup>st</sup> 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. Information literacy has been increasingly regarded as part of learning processes and behavior (Bruce, 2016; Bruce & Hughes, 2010; Maybee, Bruce, Lupton, & Rebmann, 2016). For example, students may need to decide if a particular paper is relevant for the inquiry; or to use sources (e.g. videos, online forums, journal articles) beyond the textbook to gather context and understanding of the subject matter. Information literate students are better able to direct their own learning, as they become engaged in using a wide variety of information sources to expand their knowledge, ask informed questions, and sharpen their critical thinking (Association of College and Research Libraries (ACRL), 2000). Furthermore, today's employers expect future graduates to keep themselves informed about the practices and dynamics in their field (Goldstein, 2016). In short, information literacy skills are essential for students to thrive in their academic development and to effectively engage in future employment.

At UM, we are committed to finding optimal and creative ways of stimulating the development of independent and critical thinkers, self-directed learners, skilled communicators and collaborators, experienced problem analyzers and solvers, and lifelong learners (EDview, 2018; Academic Affairs, 2016). As outlined in the EDview report, independent learning requires the right skills and attitude to effectively deal with information, especially in the light of the overload of available information and the growth of fake news on social media. Our students are very unlikely to acquire these high-order thinking skills (e.g. analysis, evaluation, creation) on their own. Instead, they require structured support in dealing independently with (academic) information, and encouragement to develop creative and critical approaches when faced with complex questions and sources. This document includes a framework and a rubric to foster the development of information literate students at Maastricht University.

## 2 Who benefits from the information literacy framework?

### The Student



At UM, the Problem Based Learning (PBL) system means that the student is central in the learning process. To apply this approach, the information literacy framework encourages students to be self-directed and to a certain extent autonomous in their learning. Ideally, they will start looking beyond the sources provided in the course manual, and take a critical stance towards sources they encounter. The framework will offer them a detailed outline of what is expected of them at a given point in time. For instance, what kind of information literacy skills do they need to successfully pass their bachelor thesis?

### The Programme Coordinator



The framework supports programme coordinators in mapping information-literacy related intended learning outcomes (ILOs) and assessments within courses and aligning them to the programme ILOs. This will provide guidance and clarity of how to effectively scaffold and embed relevant information literacy skills within the curriculum.

### The Faculty Teacher



Successful information literacy education requires the commitment and participation of faculty teachers. They have most frequent contact with students and are guiding them to use information in their learning process. The different stages and ILOs within the rubric serve as examples for intended learning outcomes. These then need to be translated by course coordinators into practical teaching and learning activities, as well as formative and summative tasks that assess student acquisition of the ILOs. The tutor plays a significant role in providing right-in time support, i.e. guide this process by probing students where they found the information, why they chose the sources, and how they assessed the quality of these sources.

### Information Specialists



The framework and rubric formulate a new roadmap for information literacy education at Maastricht University. The library information specialists will make use of their content expertise related to information literacy, partnering with relevant faculty stakeholders to harmonize existing information literacy instructions and build additional teaching content. Given the project scope, information specialists will evolve as educators who spend more time in designing and supporting information literacy education across all faculties within the UM. To ensure sustainable and steady implementation of information literacy within faculty curricula, library information specialists will offer continuous support to integrate the information literacy framework and rubric into faculty programmes and courses.

### 3 UM information literacy framework

Vision of the framework (inspired by prominent information literacy frameworks)<sup>1</sup>

In line with the EDview recommendations (EDview, 2018), the framework vision embraces the PBL principles (i.e. constructive, collaborative, contextual, and self-directed) and centers information literacy as part of students' learning process. At the core of this vision stands the UM student, who finds herself in an flood of information created by the quick and easy access to a wealth of online information sources as a consequence of the changing information landscape. Dealing with this overload of information makes students unsure when to stop searching for information and what type of sources are trustworthy. To support them in this learning process, the framework envisions an upgraded academic skills trajectory that teaches students gradually how to be self-reflective and critically when using information at university and beyond.

#### Developing information literacy through social learning

When students feel part of a social group, their learning can develop and improve greatly. Practicing and developing information literacy skills should thus take place in a collaborative setting. Through peer-assessment, for instance, students can evaluate the quality of each other's research questions and learn from different types and approaches how best to formulate an effective research inquiry. This should also include reflection moments where students comparatively evaluate their different approaches to searching, selecting, evaluating, and presenting information in one of their (research) assignments.

#### Information literacy as a constructive process

Constructivism entails the idea that knowledge is constructed by learners as they attempt to make sense of their respective experiences. They thus build on their existing information literacy knowledge and skills as they engage with discipline specific learning activities (Salisbury et al. 2012). Not all students will start at the same point: while one first year student might be familiar with the use of different databases, another might still have to grasp the basics of searching academic literature. The educational design of programmes und courses should thus be planned to allow for different existing knowledge, and for peer learning in the development of relevant information literacy skills throughout the curriculum.

#### Learning information literacy through a contextual process

The UM information literacy framework will form the basis for our teaching and learning engagement opportunities, and has been devised to provide a consistent learning experience for students. As the faculty staff (i.e. programme coordinators, course coordinators, and tutors) design and teach the

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<sup>1</sup> The **ACRL Framework** is organized into six frames (e.g. Information has value) and not only considers the level of knowledge but also the attitude of the learner. The framework takes a constructivist learning approach where the student is not only consumer in the information marketplace but also contributor.

The **SCONUL 7-pillars** organize information literacy into seven dimensions (e.g. identify and evaluate information). With the development of specific lenses (e.g. digital literacy and graduate employability lenses) on these dimensions, the framework intends to address the varied and holistic nature of information literacy.

**A New Curriculum for Information Literacy (ANCIL)** aims to help undergraduates develop an advanced, reflective level of information literacy which will enable them not just to find information, but to evaluate, analyse and use academic material independently and judiciously. The curriculum/framework is built around 10 strands (e.g. becoming an independent learner).

subject content to the students they need to be able to clearly identify how information literacy advances students' learning about disciplinary content (Jongen, Pichel, Vernimmen, & Hospers, 2018). This is why information literacy competencies intended to be fully embedded in the academic curriculum and closely linked to the context in which students learn. This situated approach of information literacy emphasizes the role of information in specific contexts (e.g. disciplinary or professional settings).

Information literacy education is most effective in a meaningful context. This can be achieved for example through reflection on real-life situations, and by using authentic learning and assessment tasks that relate to the achievement of learning outcomes that are meaningful in the real-world, and to the context of the student. This could be for instance a business scenario where students need to identify, search, and evaluate technological innovations from competitors in the market, or a research assignment of a medical organization to explore and select new forms of treatment.

### **Information literacy as a vehicle to self-directed learning**

The UM framework embraces a holistic view on information literacy, including digital capabilities and data literacy. Information literate students at UM are (self-) reflective and are able to locate, evaluate and assess information and data critically; they develop an overarching set of skills within the context of their academic disciplines enabling them to self-direct their learning. They are willing to identify their knowledge gaps, are aware of the political and social aspects of information, and look beyond the provided sources. They can create, use, synthesize, and share (digital) information while demonstrating awareness of the ethical considerations, such as copyright legislation and licenses, of the environment in which they operate. They understand the conventions of (academic) integrity and abide by these. Information literate students are critical, evaluative, self-aware, self-confident, skilled and capable in the use of technologies. They work with a broad range of media and embrace the current cultural shift towards a collaborative world, exchanging and sharing ideas in a variety of contexts and across all subjects. In addition, they are responsible and empowered citizens who know how to create positive (digital) identities and who are capable of looking after personal health, safety, relationships and work-life balance in digital settings (Halfpenny, S., n.d.; Cambridge Information Literacy Network (CILN), 2017).

### **3.1 Framework Content**

The four proposed dimensions below have incorporated content from the SCONUL-7-pillars and ACRL frames. The SCONUL framework has been chosen because of its relative simplicity and accessibility. The ACRL framework has been included due to its focus on self-directed learning, metacognition, and student centeredness, which is closely linked to the educational PBL philosophy. The Maynooth University Library's Key Competencies and the Cambridge Information Literacy Network Framework already combined these two frameworks and serve as a template for the UM information literacy framework.

The UM information literacy framework includes attitudes and knowledge practices. Knowledge practices are the proficiencies or abilities that students develop as a result of their comprehension of an information literacy component (ACRL, 2016). Generally, attitude is a learned tendency to evaluate objects, subjects or persons in a certain way<sup>2</sup>. According to the UM information literacy framework, the information-literate bachelor student has the following attitudes and knowledge practices:

## Resource Discovery:

### Definition:

Learners who develop skills and attitudes relating to resource discovery are able to identify their information need and recognize specific formats and types of information appropriate to answer the research question. They understand that the search process entails both searching for the sources themselves, as well as the means (e.g. databases) to access those sources. Learners are aware that resource discovery is likely to be a non-linear, iterative process where they will engage regularly with searching, finding and evaluating information from a wide range of sources to solve the problem or answer the research question. In addition, resource discovery requires flexibility on the part of learners to pursue alternative avenues as comprehension develops (Cambridge Information Literacy Network (CILN), 2017).

### Identify & Plan

Attitude:

- Acknowledges that information sources vary greatly in content and format and have varying relevance and value, depending on the needs and nature of the search;
- Seeks guidance from experts, such as librarians, researchers, and professionals.

Knowledge Practices:

- Identifies information need by assessing current knowledge and identify gaps;
- Formulates a clear, focused, concise, complex and arguable (research) question and identifies for each concept correct search terms;

### Search

Attitude:

- Seeks multiple perspectives and sources when searching for information;

Knowledge Practices:

- Is able to systematically locate and access information and/or data sources that are appropriate and relevant for the assignment or research need;
- Knows 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.

## Critical Assessment:

### Definition:

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<sup>2</sup> Attitude has different components: affective (act or behave in a certain way towards a certain subject), cognitive (knowledge or belief towards a certain subject), and emotional (feelings and emotions towards a certain subject)

Critical assessment is a critical approach towards information that comprises critical thinking about, evaluation, and critical reading of information. Critical assessment implies the evaluation of an information source with the aim of upholding its dominant paradigms or disproving them and suggesting a better alternative view. It is not the same approach as criticising in that any view or conclusions needs a credible backing. Critical assessment is particularly demanded in higher education or research, the kind of environments where the credibility and origin of the source determines its usability.

### **Critical Thinking**

Attitude:

- Views offline/online sources with an attitude of informed scepticism and an openness to new perspectives and diversity of voices.

Knowledge Practices:

- Understands that the authority, purpose, and accuracy impact the quality of a source;
- Demonstrates the ability to spot own and other biases.

### **Evaluation**

Attitude:

- Acknowledges the ethical and social dimensions of information.

Knowledge Practices:

- Evaluates the appropriateness based on the information need and the context in which the information will be used.
- Is able to define different types of authority (subject expertise, societal position, special experience) and critically assesses the argumentation of the author(s);
- Demonstrates the ability to evaluate online tools in any context;

### **Organizing information:**

**Definition:**

Understanding the practices within their discipline, learners engage with relevant information, and develop strategies for managing information of all kinds. Information has value and, as responsible creators and users of information, learners will consider and understand their rights and responsibilities (ethics) when storing and publishing material. Information use requires learners to choose appropriate tools and systems (e.g. reference manager) to organize their sources; they use and develop practical skills to structure (e.g. concept mapping) the range and variety of information sources they employ (Cambridge Information Literacy Network (CILN), 2017).

### **Managing**

Attitude:

- Values the skills, time, and effort needed to store and organize information;
- Considers accessibility, and the ethical and privacy regulations when storing information.

Knowledge Practices:

- Stores and organizes information sources systematically using, if necessary, digital tools (e.g. citation management software);



- Develops and uses a transparent and accessible system for managing data and files while considering the ethical and privacy regulations;
- Possesses skills to manage the range and variety of information and/or data sources relevant to the topic explored;
- Is able to make effective use of appropriate tools both online (e.g. bookmarking) and offline (note-taking, concept mapping) to structure information.

## **Creation and Communication:**

### **Definition:**

Learners should see themselves as being information creators in addition to information users. Information creation, such as presentations, data visualization, writing, maths models, publishing blog posts etc, is a iterative process, which entails evaluation, revising and re-purposing of discovered content. Learners will understand and value the dynamic processes by which material in their discipline is produced, rearranged and disseminated. Learners consider how they contribute to the body of knowledge through original research work (projects and thesis) and by joining the conversation within their discipline specific community of practice. They create positive (digital) identities and are capable of looking after personal health, safety, relationships and work-life balance in digital settings (Cambridge Information Literacy Network (CILN), 2017).

### **Create**

Attitude:

- Recognizes that s/he is a contributor to, as well as a consumer of, (academic) information;
- Values the skills, time, and effort needed to create new types of information and knowledge;

Knowledge Practices:

- Is able to combine and synthesize multiple (sometimes contradictory) sources;
- Demonstrates the ability to create and communicate information in different formats (from blogs to academic paper) on multiple digital platforms (e.g. LinkedIn, Facebook).

### **Present**

Attitude:

- Respects and values the original ideas of others.

Knowledge Practices:

- Identifies that information possesses several dimensions of value, including as a commodity, as a means of education, as a means to influence, and as a means of negotiation and understanding the world;
- Gives credit to the original ideas of others through proper attribution and citation.

### **Collaboration**

Attitude:

- Views (online) collaborative spaces as an opportunity to share, comment, and debate ideas and thoughts.

Knowledge Practices:

- Is able to communicate (e.g. share and exchange) ideas effectively and ethically (e.g. copyright) in collaborative spaces, and in discipline specific communities of practice.

## 3.2 Implementation

### Delivering information literacy

The aim of the framework is to make faculty staff aware of the scope and importance of information literacy and encourage them to make robust connection between their subject-specific teaching and the effective use of information. Mapping out how specific concepts will be integrated into specific curriculum levels is one of the challenges of implementing the framework. The four pillars of the framework and rubric (see below) can guide the (re)design of information literacy teaching for faculty programmes, general education courses, and academic skills trajectories. Ideally the programme should be embedded in instructions within curriculum and courses in order to ensure a sustainable delivery. Library information specialists and faculty teachers need to understand that the framework is not designed to be implemented in a single information literacy session in a student's academic career; it is intended to be developmentally and systematically integrated into the student's academic program at variety of levels (ACRL, 2016). This may take considerable time to implement fully in the different UM faculties.

The University Library Maastricht will continue to develop an expertise in information- and other literacies (e.g. media, data, digital) and design relevant content. However, the teaching of these skills does not always need to be delivered by a librarian in a face-to face workshop settings. The University Library is therefore committed to developing a range of supports and facilities which complement face-to-face activities and can be delivered in a sustainable, integrated way, including:

- Train the trainer – master classes for academic and teaching staff
- Manuals and support material illustrating how information literacy can be constructively aligned within courses and embedded into content (i.e. ILOs, teaching activities, and assessment practices)
- Examples of how to embed information literacy evaluation into assessment (both formative and summative)
- A wide range of online tutorials and instructional videos
- Increasing support with data- (e.g. data stewardess) and digital literacy (e.g. awareness event)
- Coaching and guidance through Peer-Point and Walk-In sessions
- Delivering workshops and tutorials within the framework of a course

## 4 Generic Information Literacy Rubric (based on UM framework)

The following developmental rubric builds on the four pillars of the framework to clarify what students are supposed to learn as regards information literacy in the course of their academic journey. This will allow curriculum and course designers to constructively align their teaching activities and assessment to the intended learning objectives.

### Stages

The rubric is structured into the four levels Novice, Intermediate, Competent and Advanced. These levels demonstrate the contrast in the skills, knowledge, and attitudes between a novice learner and advanced in a specific area (ACRL, 2016).

### *Scaffolding Approach*

Stages tie only very broadly into levels; there may be considerable areas of overlap, and differences in different subject areas. For this reason we recommend flexibility in applying the framework to any educational (re)design. The process of development will be incremental and challenging. Students need sufficient support at first, with greater autonomy later in the curriculum.

#### *Year 1*

In year 1, it is recommended that Bachelor students achieve level 1 (Novice). Any students who are already at level 1 should have the opportunity to do self-study activities to reach parts of level 2 (Intermediate) in the respective information literacy dimension.

#### *Year 2*

In year 2, Bachelor students should complete their transition to level 2 (Intermediate). Depending on the subject context, some may already progress to level 3 (Competent) in some of the dimensions.

#### *Year 3*

In year 3, it is recommended that Bachelor students reach at least level 3 (Competent) in most dimensions. Depending on the subject context, some students might acquire level 4 abilities (Advanced) to succeed in their bachelor thesis assignment.

### **Intended Learning Outcomes (ILOs)**

ILOs define what students will be able to do as a result of learning activities and provide a measure of the success of those activities. A learning outcome for information literacy is phrased in student-centred language and includes verbs. Verbs are the key for effective learning outcomes, because if ILOs do not call for an observable behaviour (e.g. distinguish, recognize) they result in outcomes that are not assessable (Pichel, Jongen, & Hospers, 2018). The quality and success of information literacy teaching is thus dependent on choosing the right wording for describing intended student learning. We used Bloom's revised taxonomy (Krathwohl & Anderson, 2009) to develop and organize the ILOs for this rubric. The new taxonomy adds a very useful and comprehensive list and explanation of verbs which reflect different types and levels of *cognitive processes* (remember, understand, apply, analyse, evaluate, create), and *knowledge* (factual, conceptual, procedural and metacognitive).

#### 4.1 Rubric matrix divided into the four UM framework pillars and sub-dimensions<sup>3</sup>

|                           |                            | <b>Novice (1)</b>  | <b>Intermediate (2)</b>   | <b>Competent (3)</b>  | <b>Advanced (4)</b>  |
|---------------------------|----------------------------|--|---|---|--|
|                           |                            | The information literate bachelor student:   | The information literate bachelor student:  | The information literate bachelor student:  | The information literate bachelor student:   |
| <b>Resource discovery</b> | <b>Identify &amp; Plan</b> | 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.  |
|                           | <b>Search</b>              | 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). |

<sup>3</sup> Adapted from [Wageningen University](#), [University of Cape Town](#), and [VALUE Rubric](#), [Open University](#)

|                     |          |   |   |   |  |
|---------------------|----------|---|---|---|--|
|                     |          | 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> <sup>45</sup> | 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.   | <i>Same as "3"</i>  |
| <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. | <i>Same as "3"</i>  |
|                               |  | 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).                   | Stores and organizes information and/or data sources systematically using citation management software (e.g. EndNote, Mendeley).                                       | <i>Same as "3"</i>  |

<sup>4</sup> Lucas, L. (n.d.). Critical Thinking and Evaluating Information. Austin Community College. **License:** CC BY: Attribution. Available online: <https://courses.lumenlearning.com/austincc-learningframeworks/chapter/chapter-7-critical-thinking-and-evaluating-information/>

<sup>5</sup> Peirce, W. (2006). Designing Rubrics for Assessing Higher Order Thinking. Available online: <http://academic.pg.cc.md.us/~wpeirce/MCCCTR/Designingrubricsassessingthinking.html>

|                                   |               |   |  |  |  |
|-----------------------------------|---------------|---|--|--|--|
| <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). |

|  |                |  |  |   |   |
|--|----------------|--|--|---|---|
|  | <b>Present</b> | Recalls proper attribution and citation (e.g. use of citations and references; choice of paraphrasing, summary, or quoting etc.).  | Mostly gives credit to the ideas of others through proper attribution and citation (e.g. use of citations and references; choice of paraphrasing, summary, or quoting etc.).                           | Consistently gives credit to the original ideas of others through proper attribution and citation (e.g. use of citations and references; choice of paraphrasing, summary, or quoting etc.). | Consistently gives credit to the original ideas of others through proper attribution and citation (e.g. use of citations and references; choice of paraphrasing, summary, or quoting etc.). Applies techniques that nuance the relationship between those ideas and the student's own argument. |
|  |                | Identifies that information possesses several dimensions of value including as a commodity, as a means of education, as a means to influence, and as a means of negotiation and understanding the world. | Explains that information possesses several dimensions of value including as a commodity, as a means of education, as a means to influence, and as a means of negotiation and understanding the world. | Outlines the different dimensions of information, including as a commodity, as a means of education, as a means to influence, and as a means of negotiation and understanding the world.    | Reflects on the different dimensions of information, including as a commodity, as a means of education, as a means to influence, and as a means of negotiation and understanding the world.   |
|  |                | Recognizes that information has several dimensions (e.g. purpose, type) and understands that there is an intention behind the format that is presented.  | Identifies several dimensions of information (e.g. purpose, type) and understands that there is an intention behind the format that is presented.  | Differentiates between several dimensions of information (e.g. purpose, type) and understands that there is an intention behind the format that is presented.                               | <i>Same as "3"</i>  |
|  |                | Uses multimedia formats (e.g. video, wiki, blog) to comment on subject-related opinions and ideas.   | Reflects on the effectiveness of multimedia formats (e.g. video, wiki, blog) to communicate subject-related opinions and ideas.  | Creates and publishes content in multimedia formats (e.g. video, wiki, blog) to communicate subject-related opinions and ideas.   | <i>Same as "3"</i>  |
|  |                |  | Uses social media platforms such as Facebook, Twitter, ResearchGate, or LinkedIn to present oneself.   | Uses social media platforms such as Facebook, Twitter, ResearchGate, or LinkedIn to present oneself and checks the own digital footprint.   | Uses social media platforms such as Facebook, Twitter, ResearchGate, or LinkedIn to present him/her and checks the own digital footprint. Reflects on the intended (professional) online presence.  |
|  |                |  |  |   |   |



|  |                      |  |  |  |  |
|--|----------------------|--|--|--|--|
|  | <b>Collaboration</b> |  | Responds to online discussions, in a variety of contexts (study, informal, etc.) and on a variety of platforms (e.g. research networks, blogging) to discuss and exchange information. | Uses online discussions, in a variety of contexts (study, informal, etc.) and a variety of platforms (e.g. research networks, social media, blogging) to discuss and exchange information. | Reflects on appropriate and effective communication in online discussions, in a variety of contexts (study, informal, etc.) and variety of platforms (e.g. research networks, social media, blogging) to discuss and exchange information. |
|  |                      | Contributes to an online dialogue with other students on a variety of social media platforms (e.g. Facebook, LinkedIn) | Distinguishes between the different roles and contributions that may be required to produce a piece of work collaboratively online.  | Reflects and uses personal strengths to effectively engage in an (online) community e.g. proposing appropriate media and working methods.  | Demonstrates leadership in an (online) professional community, e.g. take the initiative in proposing appropriate media and working methods, facilitate the group working through agreed processes, and evaluate group outputs.             |

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