

Information Literacy in higher education: developing a rubric to measure bachelor students' competences

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Foreword and acknowledgements

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Samenvatting

In het afgelopen decennium hebben veel technologische innovaties plaatsgevonden rondom digitale middelen (b.v. internet, mobiele telefoons en online applicaties). Deze ontwikkelingen hebben een sterke invloed op onderwijs. Moderne studenten zijn opgegroeid met digitale media, komen daar dagelijks mee in aanraking en bezitten vaardigheden om deze media succesvol toe te passen. Door deze technologische ontwikkelingen is er echter een enorme hoeveelheid informatie beschikbaar gekomen. Niet al deze informatie is bruikbaar, betrouwbaar of correct. Studenten hebben een gebrek aan informatievaardigheden: de vaardigheid om op een effectieve manier informatie te verzamelen, beoordelen en gebruiken. Bovendien overschatte studenten hun eigen informatievaardigheden sterk. Het gebrek aan informatievaardigheden aan de ene kant en de overschatting door studenten aan de andere kant benadrukken het belang van het verkrijgen van een duidelijk beeld van de informatievaardigheden in het hoger onderwijs. Het doel van deze ontwerpstudie was het ontwikkelen van een rubric waarmee informatievaardigheden gemeten kunnen worden in het bachelor curriculum van de universiteit van Twente. De studie onderzoekt de mogelijkheden om informatievaardigheden te meten en te verbeteren in geschreven producten. Literatuuronderzoek, interviews en vragenlijsten met experts en stafleden hebben geleid tot de ontwikkeling van een generieke rubric. Vervolgens zijn de bruikbaarheid en de duidelijkheid van de rubric geëvalueerd met informatie experts en andere stafleden. Het onderzoek resulteerde in twee rubrics: een definitieve complete rubric en een aangeleide korte rubric voor praktische toepassing.

Summary

In the past decade, many technological innovations in digital media (e.g. internet, mobile devices and online applications) occurred rather quickly. These innovations have a strong influence on education. Modern students grew up with digital media, are in contact with it daily and possess skills to use it successfully. However, due to these technological innovations, an enormous amount of information is available. Not all information available is useful, reliable or correct. Students lack Information Literacy: the capacity to gather, judge and use the information effectively. Students overestimate their own Information Literacy competences strongly. The lack of Information Literacy competences on the one hand and the overestimation of students on the other stresses the importance of acquiring a closer view on current Information Literacy competences in higher education. The goal of this design study was to design a rubric for measuring Information Literacy competences in students in the bachelor curriculum at the University of Twente. The study explores possibilities for measuring and improving Information Literacy competences in written student products. A general rubric was designed through literature research, interviews, and questionnaires with Information Literacy experts and Information Literacy staff members. Afterwards, the clarity and usability of the rubric were evaluated with Information Literacy staff members and teachers. The study resulted in two rubrics: a complete final rubric and a derived short rubric for practical implementation.

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1. Introduction

In the past decade many technological innovations have occurred rather quickly, both in digital hardware, such as smartphones, tablets etc., and in digital applications, such as social media, knowledge sharing applications and (big) data analytics. Knowledge sharing and collaborative knowledge development have become easily available through the Internet (Greenhow, Robelia & Hughes, 2009). Greenhow et al. indicate that due to these innovations, higher education students automatically engage in new, different sorts of learning, both in practice and digital, formal and informal ways. Knowledge is easily accessible and co-created by many different users. Through digital media students interact, share and create content, and gather information (Greenhow et al., 2009; Levin & Arafah, 2002). As for formal education, many online educational initiatives have become popular, such as Online Educational Resources, Massive Open Online Courses, and the Flipped Classroom. All of these initiatives have become available through technological innovations and allow for students to acquire, share, and use information online and on a broader base.

This increased accessibility of information implies that students in higher education have more choice in how and where they learn. Modern students grew up with digital technologies and are in contact with it daily. These students belong to the 'net generation': a generation of people roughly born between 1980 and 2000 (Berk, 2010). This generation uses the internet intensively almost every day and is able to describe many education-related uses of it (Greenhow et al., 2009; Levin & Arafah, 2002). The majority of modern higher education students exists of net generation members. These students possess different technological skills than previous generations (Berk, 2010; van Deursen, 2010). According to Berk (2010, p. 4) these students "Are technology Savvy; Rely on search engines for information; Are interested in multimedia; Create internet content; Learn by inductive discovery; Multitask on everything; Communicate visually; Are emotionally open; Prefer teamwork and collaboration; And prefer typing to handwriting".

Digital innovations influence the way learning is viewed and the use of digital innovations can be beneficial in education (Greenhow et al., 2009). Expertise that was formerly shared in a small area can be shared on a larger scale, which creates collaborative and up-to-date knowledge sharing and extensive partnerships (Levin & Arafah, 2002). This knowledge sharing and creating has a strong positive influence on both the accessibility and the scale of information. However, this accessibility also has a downside. The amount of information available increases rapidly, whereas the quality of the information is uncertain (American Library Association, 2000; Dede, 2009). In modern times, editing and creating information has become possible for almost everyone and the processes regarding this creation are often unclear. This implies that a student's chances of finding and using unreliable information increases. The American Library Association (ALA) claims that the doubtful quality and large quantity of the information available creates large challenges for society in general. According to Dede (2009, p. 2), "many of these resources are off-target, incomplete, inconsistent, and perhaps even biased." The ALA agrees with this vision, stating that "information comes to individuals in unfiltered formats, raising questions about its authenticity, validity, and reliability." (ALA, 2000, p. 2). Because of the overwhelming amount of information available which arose with the digital innovations mentioned earlier, net generation members, now more than ever, need to be able to filter information. Therefore, using digital media in education to obtain positive learning outcomes also requires specific information related competences (Dede, 2009, p. 2): students must "access, manage, integrate, and evaluate this information".

The previous paragraphs elucidate the fact that students have acquired opportunity and useful capabilities for information collection, however, the quality of this information is doubtful. Fieldhouse and Nicholas (2008) stress the effect that being able to use digital media does not guarantee students being what is called 'Information Literate'. Information Literacy can be defined as: having the ability to find, evaluate, and use information (ALA, 1989). Research even shows that net generation students "lack an understanding of how to find, evaluate, use, and present that information" (Berk, 2010, p. 4). Despite the fact that in the overall Dutch population Internet skills generally have increased significantly from 2010 to 2013, the information skill level of the Dutch

population did not increase significantly (Van Deursen & Van Dijk, 2014). Van Deursen and Van Dijk argue that acquiring these information skills in four years is only possible in formal education, however, little policy has been made for increasing these skills. As the availability of information does not automatically create or improve information using behaviour (ALA, 2000; Fieldhouse & Nicholas, 2008), students need to be taught how to become information literate. At the same time, multiple studies (Gross & Latham, 2011; Maughan, 2001) demonstrate that students overestimate their own Information Literacy competences strongly and lack a realistic view of their capacity to search, find and judge information successfully.

Concluding, three risks for successful information processing in higher education can be defined. First, students can easily access large amounts of data without quality assurance. Second, research shows that students lack the capacity to successfully evaluate this information. Third, students overestimate their own Information Literacy capacities. If students lack Information Literacy which is increasingly crucial, but at the same time overestimate themselves, improving their Information Literacy becomes more important.

At the University of Twente in the Netherlands, Information Literacy is a key topic addressed throughout several courses in the Bachelor curriculum. However, there is no universal assessment tool for measuring Information Literacy competences across different subjects and faculties available yet. Several researchers (e.g. ACRL, 2000; SCONUL, 2011; Vitae, 2010) present indicators for defining and assessing Information Literacy, but for practical use these models need to be specified to the context. Also, Van Helvoort (2010) has developed an assessment rubric for assessing Information Literacy, but this is limited to the two extremes of literate and non-literate. This model does not define intermediate stages between insufficient and sufficient Information Literacy competences.

The Institute for Museum and Library Services (IMLS) in Washington DC, USA, has funded the RAILS project: Rubric Assessment of Information Literacy Skills (Oakleaf, 2012). The aim of the RAILS project is to enable librarians and other interested parties to share Information Literacy Rubrics in order to assess Information Literacy. This possibility to share rubrics online leads to a large number of Information Literacy rubrics. RAILS provided a general assessment rubric for Information Literacy, with the remark that it needs to be specified for each individual institution. As a result, the rubrics presented online are either too general or too context specific to be directly applicable for the University of Twente throughout their bachelor program.

Summarizing, there is need for a valid measuring tool to gain realistic insight in students' Information Literacy competences for both students and teachers. If a generic tool is developed for the University of Twente, students' Information Literacy competences can be measured throughout the entire curriculum. Therefore, the purpose of this study is to develop a tool to assess Information Literacy competences in the bachelor programme of University of Twente in written student products. Written products are consistent and recurring in the bachelor programme, creating a common theme in the assessment of Information Literacy. This would enable IL staff members, teachers and possibly also students to score (other) students on Information Literacy competences interdisciplinary throughout the entire bachelor curriculum.

2. Theoretical framework

In the previous paragraph, the goal of the study (i.e., designing a tool for the measurement of Information Literacy in higher education) was explained. Below, the key concepts will be presented. First, the concept of Information Literacy is analysed into further detail and a definition that will be used in this study is given. Subsequently, five existing Information Literacy models will be presented and compared. The theoretical framework concludes with the concept of assessing Information Literacy through assessment rubrics and the criteria for rubric development.

2.1 Information Literacy: a definition

The key concept in searching, finding and using information is Information Literacy. A commonly used definition of Information Literacy was defined by the American Library Association (ALA) in 1989, stating that an Information Literate individual is able to “recognize when information is needed and have the ability to locate, evaluate, and use effectively the needed information.” In 2000, a division of the ALA, the Association of College and Research Libraries (ACRL) specified competency standards for Information Literacy in higher education. According to the ACRL (2000, p. 2), an information literate individual is able to carry out the following steps:

- Determine the extent of information needed;
- Access the needed information effectively and efficiently;
- Evaluate information and its sources critically;
- Incorporate selected information into one's knowledge base;
- Use information effectively to accomplish a specific purpose;
- Understand the economic, legal, and social issues surrounding the use of information, and access and use information ethically and legally.

These definitions are rather alike. The starting point of these approaches are somewhat different (Johnston & Webber, 2003): the ALA definition starts off with the recognition of information need, whereas this recognition process is not mentioned in the ACRL standards. However, in general the ACRL steps are rather similar to the 1989 definition of the ALA. In 2011, the Society of College, National and University Libraries (SCONUL) in the UK, formulated their own definition, stating that “Information literate people will demonstrate an awareness of how they gather, use, manage, synthesise and create information and data in an ethical manner and will have the information skills to do so effectively.” (SCONUL, 2011, p. 3). Becoming Information Literate is not a linear process and a person can develop in all of the components independently (SCONUL, 2011). For each element, one can evolve from novice to expert. However, because society and information sources change, it is also possible that a person's performance on an element declines, rather than progresses (SCONUL, 2011). Although these definitions vary somewhat, in general it can be said that Information Literacy competences globally consists of the following elements: seeking information, analysing it critically and then using it.

2.2 Students' Information Literacy in times of digital innovation

Due to the rise of digital media, the concept of Information Literacy has become inextricably linked with other concepts, such as digital literacy. These concepts are partly overlapping. In today's society, with a large amount of information provided online, digital literacy and Information Literacy naturally become intertwined. Being digitally literate means having “an ever-growing assortment of technical, cognitive, and sociological skills that are necessary in order to perform and solve problems in digital environments.” (Eshet-Alkali & Amichai-Hamburger, 2004, p. 421). As indicated in the introduction, an important element of using digital innovations for educational purposes is evaluating the information gathered online. The ability to do so is called Information Literacy. According Eshet-Alkali & Amichai-Hamburger, Information Literacy is an aspect of digital literacy. In this, digital literacy is the umbrella term, covering several literacies, including Information Literacy.

However, this also can be seen the other way around, in which the ability to process information found online is an aspect of Information Literacy. In the context of this study, the latter vision fits best, because the focus of the study is students' skill to find and use information. Therefore, we will follow the view of most modern literature and definitions, in which Information Literacy is seen as a combination of both digital skills and content-related information skills (Van Deursen, 2010).

2.3 Information Literacy competences in higher education

Several empirical studies have been conducted on Information Literacy in higher education. Multiple studies show that higher education students have great confidence in their own Information Literacy competences (Ganley, Gilbert & Rosario, 2010; Gross & Latham, 2011; Head & Eisenberg, 2009; Maughan, 2001). On average, students score higher on Information Literacy competences in the last year of their education compared to the first two years (Dubicki, 2013; Ganley et al.). However, research (Ganley et al., 2000; Gross & Latham, 2012; Maughan, 2001) has shown that students generally lack Information Literacy. In an Information Literacy skill test (Gross & Latham, 2011), a vast majority of the participants scored below-proficient. Dubicki (2013) conducted a research on faculty perceptions of students' Information Literacy competences on five different aspects. On all aspects, the faculties rated students Information Literacy competences as sufficient or poor. In the Ganley et al. study (2010), all aspects of Information Literacy but one were significantly perceived more challenging for students by faculty members than by students themselves. Students were rated highest on identifying a need for information and lowest on evaluating information critically. Multiple studies (Ganley et al., 2000; Gross & Latham, 2012; Maughan, 2001) show significant differences between students' self-perceived Information Literacy competences and their actual performance. Students' perceived Information Literacy competences are higher than their measured competences at a skill test. Post-tests regarding students self-perceived Information Literacy after taking the Information Literacy test, showed a smaller but still significant difference between students' self-perception and actual scores. In general, it can be concluded that students' Information Literacy competences do not meet the standards on the one hand and that students are unaware of this on the other, because they over-estimate their own Information Literacy competences.

2.4 Information Literacy models

Through the past years, several models regarding Information Literacy have been developed. These models provide more insight in the process of Information Literacy and Information Literacy competences, either globally or in more detail. This can be specifically helpful when developing an assessment tool. Therefore, five of these models developed in the last twenty years will be presented below with the analysis of its benefits. These models were selected after a literature study on the assessment of Information Literacy. Models that were generally accepted by Information Literacy researchers were studied, no models were discarded prior to the analysing process. Eventually, this analysing process led to a model choice for the Information Literacy assessment tool. The figure for each model can be found in appendix A: Information Literacy Models.

Each model will be analysed based on the following criteria: is the model up-to-date, does the model contain explicit behaviour/competence indicators, and is it focused specifically on the entire Information Literacy process. Ideally, the model should provide specific behaviour indicators for each individual Information Literacy aspect. This model serves as a solid framework which creates a base for the assessment rubric. The models are presented in order of applicability.

Marchionini's information searching model (1995)

Marchionini developed a model for information searching behaviour. This model divides the entire information seeking process into eight steps. The model shows the following steps: Recognize, Accept; Define problem; Select source; Formulate query; Execute query; Examine results; Extract info; Reflect, Stop. There will be linear transitions between the steps, but transitions can also take

place between different steps in a non-linear order (Marchionini, 1995). Although this model is clear and covers the entire search process, it is also twenty years old. In the last twenty years, digital innovations have evolved strongly, making this model outdated for use in this study. Furthermore, the model does not provide specific performance indicators.

Research Development Framework (Vitae, 2010).

More recently, the Research Development Framework was developed by Vitae in 2010. VITAE is an international programme for improving research. The Research Development Framework aims to describe excellent performance levels of researchers in higher education. The model covers the entire spectrum of research in higher education, of which Information Literacy is an important aspect. The model consists of four domains - A. Knowledge and intellectual abilities; B. Personal effectiveness; C. Research governance and organisation; and D. Engagement, influence and impact - twelve subdomains and 64 descriptors. The Information Literacy component is mentioned primarily in domain A. Although the Research Development Framework is recent and complete, the overall framework is too broad and extensive to serve as a base for an Information Literacy assessment rubric. Furthermore, Information Literacy is only a small aspect of the Research Development Framework and the model lacks concrete skill definitions.

Information Problem-Solving model (Brand-Gruwel, Wopereis & Vermetten, 2005)

In 2005, Brand-Gruwel, Wopereis and Vermetten developed the Information Problem-Solving model, based on an information-seeking model developed by Eisenberg and Berkowitz (1990), the Big6TM-model. The Big6TM exists out of six elements: task definition; information-seeking strategies; location and access; use of information; synthesis; and evaluation. Brand-Gruwel et al. translated these elements into a six element model. The model displays five sequential elements, respectively matching the first five Big6TM elements: Define the information problem; Select sources of information; Search and find information; Process information; and Organize and present information. Furthermore, the Problem-Solving model contains one overall element which is the sixth Big6TM element: regulation. This element is important in each stage. Afterwards, Brand-Gruwel et al. defined a concrete skills decomposition for each element, mainly focussing on the problem seeking process. An important advantage of this model is that it is based on the Dutch higher education and it is concrete and specific. However, the concrete skill decomposition is focused on the *Information Seeking process*, whereas an important aspect of Information Literacy and this study is the *use of information gathered*.

ACRL standards (ALA, 2000)

The Association of College and Research Libraries (ACRL), a division of the American Library Association (ALA) developed standards for Information Literacy. These ACRL standards date from 2000 and are in revision since 2012. The 2000 model exists out of five standards with underlying performance indicators. This version of the model describes the criteria for Information Literacy specifically and detailed. Theoretically, this model is very suitable for the development of assessment rubrics because it defines several elements of Information Literacy with explicated underlying competences. However, since digital media developed fast in the past 15 years, the 2000 model is too outdated to be the basis for a new score rubrics. Although the model has been updated in 2015, this revision is still under construction and the adaption of the model is not complete. Therefore, using the current (2015) model contains the risk that it changes too much during the development of the rubric for it to be up-to-date and applicable.

SCONUL seven pillars of digital Information Literacy (2011)

The Society of College, National and University Libraries (SCONUL) developed a model called the "Seven Pillars model of Information Literacy". This model was developed in 1999 and updated in 2011. It exists out of seven pillars: Identify, Scope, Plan, Gather, Evaluate, Manage and Present

information. The model is circular, which means that a person can develop in several aspects at the same time and in random, independent order (SCONUL, 2011). Each pillar of the SCONUL model is divided into two categories: ability and understanding. For each pillar, both categories are explicated with indicators. In this, a person can develop from 'novice' to 'expert'. Due to shifts in context and innovation however, a person does not always improve in competences, he can also move down the line when entering a new domain of knowledge (SCONUL). In general it means that displaying more of the defined aspects in a pillar, means a higher score. However, the SCONUL pillars and their aspects are broadly formulated. For practical assessment use, they should be adapted to the specific context (SCONUL). This circular model with specific competence indicators is therefore very suitable to serve as a base for developing an assessment tool.

To conclude, from the five models, the latter two are specifically suitable for serving as a framework for the rubric, based on recency and the availability of concrete competence indicators: the ACRL standards and the SCONUL model. Because the ARCL-standards are still in revision and the definitive model has not been released yet, the SCONUL model is adopted as a framework for the rubric.

2.5 Assessing Information Literacy competences with assessment rubrics

Several researchers have compared different tools for Information Literacy assessment. Oakleaf (2008) compared fixed-choice tests, performance assessments and rubrics. She addresses the pros and cons of each method for testing Information Literacy. According to Oakleaf (p. 236), fixed-choice test have several important limitations for measuring Information Literacy, -such as not being able to assess complex behaviour, authentic performances and higher-thinking skills- whereas performance assessments and assessment rubrics have mostly benefits. For instance, assessment rubrics enable the measurement of complex higher-order thinking skills, can be used for self and peer assessment and facilitate consistent scoring (Oakleaf, p. 248). Also, assessment rubrics are suitable for measuring competences across the curriculum. Although Oakleaf does not specifically conclude in this article that rubrics are more applicable for Information Literacy measurement, several subsequent Oakleaf studies (2009, 2012) focus specifically on measuring Information Literacy with assessment rubrics.

A similar study, conducted by Van Helvoort (2010) compared the use of tests, portfolios, rubrics and questionnaires for scoring Information Literacy competences. Van Helvoort concluded that rubrics are the most suitable for assessing Information Literacy. Subsequently, he designed a general assessment rubric for assessing Information Literacy in higher education, which he evaluated with both students and faculty (Van Helvoort, 2012; Van Helvoort, 2013). Researchers generally agree that the use of rubrics for assessment has positive effect on student learning (Jonnson & Svynbi, 2007). According to Jonnson and Svynbi (p. 141) "the main reason for this potential lies in the fact that rubrics make expectations and criteria explicit, which also facilitates feedback and self-assessment".

As mentioned in the previous paragraph, rubrics have several benefits. The use of rubrics for assessing Information Literacy benefits students strongly, argues Oakleaf (2008). Students are informed about what is expected and receive valuable feedback. Also, when students are accustomed to rubrics, these can be used for self- and peer assessment (Jonnson & Svynbi, 2007). Moreover, rubrics can be used by several different assessors and still provide consistent results (Oakleaf, 2008). Dutch students were positive about using the rubric as a feedback tool and as a tool for self-assessment (Van Helvoort, 2012). Van Helvoort also provided faculty members with the assessment rubric, with the option to adapt and use it for assessing Information Literacy. In 2013, all faculty members asked, indicated that they used (elements of) the tool for scoring Information Literacy (van Helvoort, 2013). The most important disadvantage of rubrics mentioned by researchers (van Deursen, 2010; Knight, 2006; Oakleaf, 2008) is that it costs time and effort to design them. Possibly, this is one of the reasons why Dutch assessment rubrics for Information Literacy in the context of higher education are rare. This also makes it less likely that teachers develop their own rubric and keep it up-to-date.

2.6 Assessment rubrics: characteristics

Several researchers (Callison, 2000; Huba & Freed, 2000; Stevens & Levi, 2011; Wiggins, 1998) defined characteristics of assessment rubrics. Starting, two different types of rubrics can be defined: holistic and analytic rubrics (Wiggins, 1998). A holistic rubric assesses a task as a whole, whereas an analytic rubric defines performance levels for each component of the task. In this study, an analytic rubric will be developed because an explicit wish of the University of Twente was to be able to assess individual differences in the Information Literacy components. Holistic rubrics are also task specific, whereas the University of Twente wishes to be able to assess Information Literacy across the bachelor curriculum, instead of a single, explicit task. In general, a rubric shows by what criteria a specific performance should be judged and what the range in the quality of performance looks like. These elements together make it possible to define a score (Wiggins, 1998). A rubric should provide enough descriptive detail to ensure that students and/or alternative graders can easily grasp the content (Knight, 2006).

A rubric is displayed on a grid or table (Callison, 2000, p. 34) and consists of the following elements: a rating scale, dimensions, and matching criteria (Callison, 2000; Stevens & Levi, 2011). According to Stevens and Levi (2011) a rubric also needs a task description on the top, which describes the overall task that is being assessed. This task can either be a concrete product or a type of behaviour (Stevens & Levi, 2011). Visually, the criteria are formulated in the left column of the table and the scale comprises the top row (Callison, 2000). Below, criteria for the three main elements, scale, labels and criteria, are summarized.

Scale

The scale describes the levels of performance from unacceptable to excellent (Huba & Feed, 2000; Stevens & Levi, 2011). The scale exists at least out of one level, which is the optimal performance level. In this case, the rubric is called a Scoring Guide Rubric (Stevens & Levi, 2011). Ideally however, the scale exists out of three to five levels (Stevens & Levi, 2011). Multiple levels increase clarity of the criteria. However, too many levels make it difficult to differentiate between behaviour (Stevens & Levi, 2011). The use of positive, non-judgmental and less normative terms is advised. An example of a non-judgmental, four level scale is: novice; intermediate; intermediate high; advanced.

Dimensions

The dimensions usually cover the first column of the table. Dimensions break up the complete task into smaller elements, making the different components of a task more explicit (Stevens & Levi, 2011). It is not necessary to weigh the dimensions differently, however it is possible to emphasize certain elements by adding weight (Stevens & Levi). If the dimensions are clear and complete, they easily provide global information about the strong and weak points of students (Stevens & Levi).

Descriptions

For each dimension, a clear description of performance should be displayed in the assessment rubric (Huba & Freed, 2000). Each dimension and each scoring level requires its own description. The descriptions outline concrete performance or behaviour for all scale levels (Stevens & Levi, 2011). In a rubric with a three level scale and five dimensions, this leads to 15 different descriptions. It is important to "use precise descriptions that include specific criteria to be met" (Knight, 2006, p. 46). Optimal descriptions consist of clearly defined, not value-laden and objective terms (Huba & Freed).

2.7 Developing a rubric

The development of the rubric will be based on the six steps defined by Huba and Feed (2000). In order to develop a rubric successfully, six questions need to be answered (Huba & Feed, 2000):

1. What criteria or essential elements must be present in the student's work to ensure that it is high in quality?
2. How many levels of achievement do I wish to illustrate for students?
3. For each criterion or essential element of quality, what is a clear description of performance at each achievement level?
4. What are the consequences of performing at each level of quality?
5. What rating scheme will I use in the rubric?
6. When I use the rubric, what aspects work well and what aspects need improvement?

For developing an analytic rubric with multiple criteria, the following steps need to be carried out. First, identify the characteristics of what you are assessing. Afterwards, describe at least three scale levels for each characteristic: the best work you could expect using these characteristics, the worst acceptable product and an unacceptable product. Then, if applicable, develop descriptions of intermediate-level products and assign them to intermediate categories. And at last, ask others to assess products or behaviour with the rubric.

3. Research questions

The theoretical analysis above leads to the following general research question:

How can the SCONUL core model be used to develop a rubric to measure students' Information Literacy competences in the bachelor curriculum of the University of Twente?

This leads to the following subquestions:

1. What, according to experts, are possible opportunities, pitfalls, and areas of concern for developing a rubric for Information Literacy?
2. Which SCONUL indicators are suitable for assessing Information Literacy competences in bachelor students' written products?
3. How can the indicators defined under research question 2 be explicated into dimensions and underlying descriptions for each performance level?
4. To what extent do Information Literacy staff members and teachers consider the rubric usable and helpful for assessing Information Literacy in students' written products?

4. Method

In the following chapter the research method is presented. The purpose of this chapter is to explicate the steps taken during the research process, the instrumentation used and the sample involved. The chapter starts with a figure displaying the chronology of the study. Subsequently, all elements are explained in detail. For an overview of all elements of the method and the relations between them and the concepts, table 1 (p. 22) is provided as a conclusion.

4.1 Design of the study

The goal of the study was to design an assessment rubric for measuring Information Literacy in bachelor students' written products. The study was carried out in six steps. The chronology of the study is summarized in figure 1 below for more clarity and support. Respondents, instruments, sub products delivered, and research questions answered are presented in the figure in chronological order, organised by the six steps with which the study was structured.

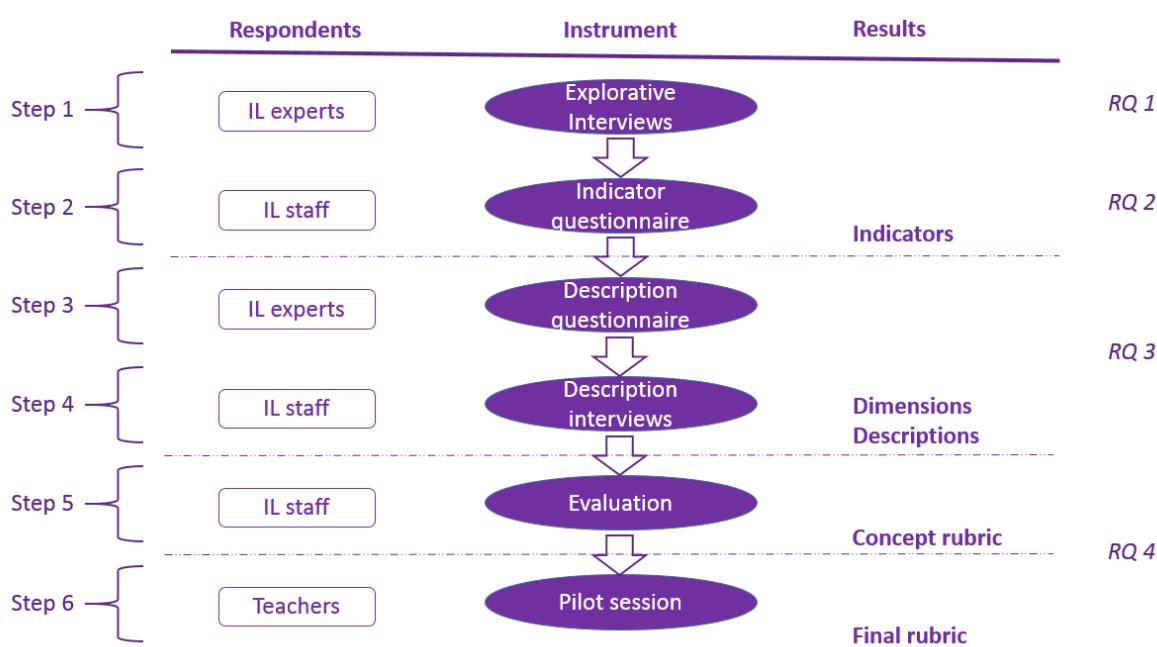


Figure 1. Chronology of the research design. The study was carried out in six steps to answer one overall research question and four subquestions. Each arrows introduces a next chronological step in the research process. Each cube displays a group of respondents, each oval an instrument. Every dotted line presents a sub product developed.

Each research question contributed to the overall goal by outlining and filling in elements of the rubric. The goal of research question 1 (RQ1) was to explore the context and possible tips and pitfalls in designing. Together with literature research, this led to the decision for the SCONUL model and the four-point scale for the rubric. Goal of research question 2 (RQ2) was to select all SCONUL indicators that could be measured in a students' written product. The seven SCONUL pillars provided a structure for the rubric, whereas the indicators were used as a base for answering research question 3 (RQ3). In research question 3, IL staff members and experts were asked to translate the indicators explicated by research question 2 into dimensions, descriptions and subsequently a concept rubric (see chapter 2.6). Finally, the goal of research question 4 (RQ4) was to evaluate and adapt the first version of the rubric in order to create its final version.

The research questions were answered with use of three types of data collection instruments: questionnaires, semi-structured interviews, and formative evaluation sessions. Individual participants were involved in a semi-structured interview, a questionnaire, a (formative) evaluation or a

combination of instruments. Experts and staff were approached by telephone, email or a posted message on the board of a digital community. Participation was voluntary and confidential.

4.2 Context

The research was carried out at the University of Twente in Enschede in The Netherlands. The University of Twente is a technical university, situated in the East of The Netherlands. It consists of five departments: Behavioural, Management and Social sciences (BMS); Engineering Technology (CTW); Electrical Engineering, Mathematics and Computer Science (EEMCS / EWI); Science and Technology (TNW); and Geo-Information Science and Earth Observation (ITC). Overall, the University of Twente offers twenty bachelor's and 31 master's programmes. All departments were involved in the research, with a focus on the bachelor programs.

4.3 Research methodology

This study is a design study. Therefore, the type of research can be classified as design-based, due to its goal of designing a rubric usable for the measurement of Information Literacy competences. Two types of research design were used. First, the study is partly descriptive, because the purpose of the study was to describe different indicated levels of Information Literacy in higher education students. In addition, this is also a case study because it studies the specific context of the current bachelor curriculum at the University of Twente.

4.4 Sample

To answer the research questions and design the rubric, three different types of respondents were approached. All respondents were sampled through non-random criterion sampling. Except for the national Information Literacy experts, all categories were sampled from the University of Twente bachelor studies. In some cases, respondents were involved in multiple stages of the process, in either the development or the evaluation process. Therefore, the three categories and their inclusion/exclusion criteria are presented below, structured by the steps these respondents contributed to (see also figure 1, p. 17).

4.4.1 Information Literacy experts

Information Literacy experts were involved in steps 1 and 3. Because the sampling was not fully equal for each step, the sampling is explicated for each research question separately below.

Step 1

For the first stage of the study, four Information Literacy experts from The Netherlands were contacted. These are experts who possess concrete and in-depth state of the art knowledge on Information Literacy. The experts were selected based on scientific publications on Information Literacy in Dutch higher education. Experts involved and experts who were not able/willing to participate were asked to recommend possible other experts. One expert was not able or willing to participate, but suggested to interview a colleague instead. So, this led to four expert interviews. Three out of four experts (expert A, B and C) had particular experience with developing tools for measuring digital and/or Information Literacy competences in higher education. Also, expert B, C and D had specific experience with measuring information-seeking behaviour or Information Literacy with higher education students.

Step 3

In a later stage of the study, the same four experts were approached to fill in the Description Questionnaire (see 'Instrumentation' below). Also, through social media, the same questionnaire was spread to national internet communities of Information Literacy experts. The questionnaire was opened 455 times in total, out of which three were valid entries. This means that a maximum of 452 people opened the questionnaire without participating, although it is also possible that the same

experts opened the digital link multiple times. In the end, three experts had fully filled in the questionnaire. Two of these experts were Information Literacy experts of other higher education institutions in the Netherlands, the other expert remained anonymous.

4.4.2 Information Literacy staff

Information Literacy staff (hereafter: IL staff members) are University of Twente staff members who primarily teach Information Literacy subjects and/or are involved in measuring and improving Information Literacy skills in the curricula. All nine IL staff members were approached. The IL staff members involved belonged to the following University of Twente faculties: Faculty ITC, TNW, BMS (MB), BMS (GW), and EWI. IL staff members were involved in steps 2, 4 and 5.

Step 2

In defining the Indicators, six IL staff members responded, out of which five filled in a complete questionnaire and one decided not to participate. This process was anonymous, so nothing can be said about gender, age or faculty.

Step 4

Subsequently, seven IL staff members were involved in the process of defining dimensions and descriptions. Three staff members were male, four staff members were female, and all staff members were aged 25 – 50.

Step 5

At last, six IL staff members were involved in the first evaluation of the outcomes, four female and two male. Three out of these six staff members were involved in the previous stage. Three staff members (two male, one female) did not participate earlier. All staff members were aged 25 – 50.

4.4.3 Teachers

Step 6

Furthermore, each IL staff member was asked to suggest a teacher who cooperated with him or her in the bachelor programme and who would be motivated to participate in improving Information Literacy measuring in the curriculum. In contrast to the IL staff members, Information Literacy is not the main purpose of their subject, but is an aspect of it. Each suggested staff member was also asked to suggest names of colleagues that would be willing to evaluate the assessment rubric. In this process, eighteen teachers were approached. This group existed out of: two PhD students, one educational consultant and twelve teachers who teach courses in the different bachelor curricula of the University of Twente. Of this group, eight teachers were willing and able to participate.

Figure 1 (p. 16) and table 1 (p. 22) show how each category of respondents contributes to each subquestion and its related product.

4.5 Procedure

4.5.1. Procedure for research question 1:

Step 1

After a literature study, four experts were selected, based on publications on Information Literacy or assessment tools handling either net generation skills or skills concerning Information Literacy. These experts were approached by email. Three experts accepted the invitation to contribute immediately, one expert suggested a colleague, who also accepted the invitation. Two experts were interviewed in a face-to-face (respondent-researcher) setting, two experts were interviewed by telephone.

4.5.2. Procedure for research question 2:

Step 2

First, one IL staff member was approached. This member approached the other IL staff members by email, presenting them the link to the online questionnaire. After a week, a reminder was sent. After two weeks, the questionnaire was closed to analyse the data.

4.5.3 Procedure for research question 3:

Step 3

Through online communities for education or Information Literacy, and through social media, the Description questionnaire was distributed to national IL experts. Because of the summer period, a reminder was posted six weeks later.

Step 4

All nine IL staff members were approached by email if they were willing to contribute to the concept rubric. This led to individual face-to-face appointments with seven IL staff members. Prior each meeting, the IL staff member received an email with the two SCONUL pillars randomly assigned to them, and the indicators selected from research question 2. In approximately an hour, IL staff members formulated dimensions and descriptions for the two SCONUL pillars assigned to them.

4.5.4 Procedure for research question 4:

Step 5

For evaluating the first results, a presentation was held at the EIS-IS meeting. This is a meeting of the Embedded Information Services department, in which the IL staff members take part. In this meeting, the results were presented to the IL staff members present. At this occasion, IL staff members answered questions about the completeness and correctness of the results interpreted.

Step 6

Subsequently, eighteen teachers were approached by email. Twelve teachers responded to this email. Originally, eleven teachers wished to cooperate. One teacher was too busy to cooperate. Of these eleven teachers, two were not available within the desired time frame and one withdrew after receiving more information about the study. Eight teachers consented in a meeting. With each participating teacher an individual face-to-face appointment was planned. Prior to this appointment, the teacher received an email with the concept rubric and seven accompanying questions. The face-to-face appointment had a duration time from 30 – 60 minutes per person, in which the rubric was evaluated and the seven questions were answered.

After the Teacher evaluation, the concept rubric was adapted to the final rubric. For a final check, this rubric was sent to the IL staff members by email for a last evaluation. However, none of the IL staff members responded to this request.

4.6 Instrumentation

For this study, three types of instruments were used: questionnaires, semi-structured interviews and (formative) evaluation sessions. Two types of questionnaires were carried out in the study, with two different groups of respondents. The Indicator Questionnaire, distributed amongst IL staff members, contributed to answering research question 2. To answer research question 3, the Description Questionnaire was carried out with IL staff members and IL experts. Also, two kinds of semi-structured interviews were used: Explorative Expert Interviews (answering research question 1) and Description Interviews (answering research question 3). Finally, two kinds of evaluation sessions were conducted to answer question 4: the IL staff evaluation and the Teacher evaluation.

Figure 1 (p. 16) shows that variations of the same instrument types were used in different phases of the research process. Therefore, the following paragraph is divided into 4.6.1 Interviews,

4.6.2 Questionnaires, and 4.6.3 Evaluation sessions, in which the subtypes of these instruments are explained, together with the step(s) this instrument contributed to.

4.6.1 Interviews

Two types of interviews were held, to answer research questions 1 and 3.

Explorative expert interviews

Step 1

To explore the position of Information Literacy in current higher education, four experts were interviewed. The following aspects were measured in these interviews:

- Personal experiences of the expert. Either in Information Literacy, in developing assessment tools in higher education, or in both.
- From this experience, tips and pitfalls for developing the Information Literacy assessment rubric at the University of Twente.

Each interview was designed specifically for the expert interviewed, based on the model or tool he/she had developed. Examples of interview questions are:

- *What are your experiences with dividing Information Literacy competences in sublevels?*
- *Did you experience any drawbacks during the development of your model/tool that can also be a risk in developing this rubric?*
- *What, according to you, are the strong and weak points in the goal of this study?*
- *What opportunities do you see for developing a rubric for higher education?*

Description interviews

Step 4

After the data of the Indicator Questionnaire and Description Questionnaire were analysed, each IL staff member was asked to also formulate dimensions and descriptions of the four levels of products. The content of this interview strongly resembles the Description Questionnaire, however, it was carried out in a face-to-face individual session with only University of Twente IL staff members. Furthermore, IL staff members were presented with two SCONUL pillars instead of one.

Prior to the interview, the staff member received two randomly selected SCONUL pillars by email together with the underlying indicators as selected by the Indicator Questionnaire. In an individual session, each IL staff member was asked to formulate at least one dimension for this pillar. Following, they were asked to formulate four descriptions for these dimensions. This process was iterated until the IL staff member considered all indicators for his/her two SCONUL pillars covered.

4.6.2 Questionnaires

Two types of questionnaires were distributed, to answer research questions 2 and 3.

Indicator questionnaire

Step 2

In the Indicator Questionnaire, all seven pillars of the SCONUL (2011) model (also see 2.4 Information Literacy models) and their underlying competence indicators were presented. These competence indicators were copied directly from the SCONUL core model and consisted out of all behaviour indicators formulated by SCONUL. SCONUL also defined indicators for 'understanding Information Literacy', but these were not included because the indicators needed to be directly measurable in a written product. In total, SCONUL defined 49 individual performance indicators, with a minimum of five and a maximum of nine for a single pillar.

The questionnaire consisted of three pages. The first page was an introduction page with an explanatory text. The middle page started with an optional informative text about the entire

research. Following, seven questions were presented: the SCONUL pillar, with their indicators as multiple choice options. If desired, it was also possible to select indicators in order to combine them into one new indicator. The final page contained an open-end question for possible comments, an uploader for uploading optional documents and a button to close the questionnaire.

Description questionnaire

Step 3

After data analysis of the first questionnaire, a second questionnaire was presented digitally to national Information Literacy communities and the Information Literacy experts involved in the evaluative interviews. To ensure that filling in the questionnaire would not be very time-consuming, only one randomly chosen SCONUL pillar was presented, accompanied by its underlying indicators which were selected in the Indicator Questionnaire. The respondent was asked to imagine that they were assessing Information Literacy in a bachelor student's written product. Then, they were asked to formulate four descriptions for the products:

- an unacceptable product
- an insufficient product
- a sufficient product
- the best product to be expected.

Also, they were able to leave a comment and to upload documents they considered helpful.

4.6.3 Evaluation sessions

In order to answer research question 4, two evaluation sessions were carried out, one for the IL staff members and one for teachers. In the IL staff evaluation (step 5), the first results of the Description Questionnaire (step 3) and Description Interviews (step 4) were presented to the IL staff members. This led to a first rubric. This rubric was evaluated with teachers in the Teacher evaluation (step 6). Both evaluation sessions are described in more detail below.

IL staff evaluation

Step 5

The IL staff members have a recurring meeting called EIS-IS. In this, the results of the Description Interviews were presented and evaluated, regarding clarity, completeness and structure. Also, the results of the Description Questionnaire were presented and IL staff members were asked whether or not these results should be included in the rubric. Six IL staff members were present at this meeting.

Teacher evaluation

Step 6

Besides IL staff members, teachers were also asked to evaluate the rubric. In preparation for this evaluation, participants were asked to read the rubric to determine its clarity. Afterwards, the participants assessed the usability of the rubric by using it to score a student's Information Literacy competences in a written assignment. The results were evaluated with a short interview with seven questions regarding clarity, usability, strengths and tips for improvement:

- *In general, what is your impression when you see the rubric?*
- *Do you understand it completely? If no, what parts are unclear?*
- *Which elements would you use to assess a students' written product for Information Literacy?*
- *Which elements would you not use?*
- *Do you consider this tool useful to assess Information Literacy in bachelor students? Why (not)?*
- *What do you prefer: an extensive rubric in which you can decide for yourself which parts you use, or a predefined short rubric?*
- *Do you have any other comments?*

All respondents and their relation with the data collection methods and the measured concepts are depicted in table 1 below.

Table 1
Relation between research questions, products, respondents and data collection methods.

Respondents	Instruments	Concepts
Information Literacy Experts	<ul style="list-style-type: none"> ▪ Explorative Expert Interviews (RQ1) ▪ Description Questionnaire (RQ3) 	<ul style="list-style-type: none"> ▪ Experience of the experts in Information Literacy, developing assessment tools in higher education, or both. ▪ Tips and pitfalls for developing the Information Literacy assessment rubric.
Information Literacy staff members	<ul style="list-style-type: none"> ▪ Indicator Questionnaire (RQ2) 	<ul style="list-style-type: none"> ▪ Performance indicators for each SCONUL pillar, present in a written product.
University of Twente	<ul style="list-style-type: none"> ▪ Description Interviews (RQ3) ▪ IL staff members evaluation (RQ4) 	<ul style="list-style-type: none"> ▪ Descriptions for each SCONUL pillar, present in a written product. ▪ Usability, clarity, completeness of the rubric for student assessment
Teachers University of Twente	<ul style="list-style-type: none"> ▪ Teacher evaluation (RQ4) 	<ul style="list-style-type: none"> ▪ Usability, clarity, completeness of the rubric for student assessment

4.7 Data analysis

The type of data generated is qualitative and is retrieved on an individual level. The analysing methods are presented below structured by the instruments used.

4.7.1 Interviews

Explorative Expert Interviews

Step 1

The first sequence of interviews was used for orientation purposes. Therefore, the content of the interviews was different for each expert. However, the interviews concentrated around two themes:

1. Experience of the expert on Information Literacy, assessment tools, or both.
2. Tips and pitfalls for the development of the assessment rubric.

Interviews were recorded and transcribed. Subsequently, the two themes of expert experience and tips and pitfalls for the scoring rubric were used for open coding and analysing the results of each individual interview. In this process, fragments of text of each individual interviews were selected and assigned to one of the themes.

Description Interviews

Step 4

For the analysing of the second sequence of interviews, a scheme was created. For each individual expert, this scheme consisted of the following elements:

- two randomly selected SCONUL pillars
- the underlying indicators of this pillars (derived from questionnaire 1)

- for each pillar a table with four columns (level 1, 2, 3 and 4) and multiple rows.

For an example, see Appendix C: Example format formulating dimensions and descriptions. The competence descriptions of each Information Literacy expert was filled in in these schemes. Interviews were carried out with seven IL staff members, which led to 14 filled schemes, two for each SCONUL pillar. These data were compared using open coding.

4.7.2 Questionnaires

Indicator Questionnaire

Step 2

Goal of the Indicator Questionnaire was to select only those SCONUL indicators that were suitable for assessing Information Literacy in a written student product. The Indicator Questionnaire existed out of seven closed-end questions, in which multiple answers could be selected. For the data analysis, all individual answers were counted. Information Literacy indicators chosen by at least two Information Literacy experts were selected. Options chosen by one or no expert were excluded. Respondents were also given the opportunity to combine indicators. When an indicator was chosen for this, it was retained when at least one other respondent had chosen this indicator as a useful performance indicator.

Description Questionnaire

Step 3

Data for the Description Questionnaire resembles the data for the Description Interviews, leading to four descriptions per SCONUL Pillar. Because of the small amount of valid respondent entries (3) on the one hand, and the expertise of the respondents (IL staff members), all results were presented to the University of Twente IL staff members during an Information Literacy meeting. Only the elements IL staff members reached consensus on were either accepted or rejected.

4.7.3 Evaluation sessions

IL staff evaluation

Step 5

Prior to the Information Literacy meeting, all results from the Description Interview were categorised using open coding. These categories and their underlying dimensions were presented in the meeting. Also, the level 4 descriptions for these dimensions were presented. Adaptations to the results were made only if the IL staff members reached consensus.

Teacher evaluation

Step 6

In the individual teacher evaluation, answers on the seven questions regarding clarity, usability and completeness were collected verbally and directly typed out by the researcher. All comments on the dimensions and/or descriptions were collected in a blank version of the rubric. Elements that were unclear to one or more teachers were adapted. Dimensions and descriptions that were overlapping according to the teachers were categorized based on the SCONUL core model (2011). Dimensions that were declared redundant by one or more teacher(s) were removed only in the adapted short version of the rubric.

5. Results

Below, the results are presented structured by the research question they contributed to.

5.1 Research question 1

What, according to experts, are possible opportunities, pitfalls and areas of concern for developing a rubric for Information Literacy?

The Explorative Expert Interviews focused on two elements:

1. Personal experiences of the expert. Either in Information Literacy, in developing assessment tools in higher education, or in both.
2. From this experience, tips and pitfalls for developing the Information Literacy assessment rubric at the University of Twente.

Below, the results of these interviews are summarized for each element.

Experiences of the expert regarding Information Literacy and/or developing assessment tools for higher education

Three out of four experts had been involved in developing models, either for student skills or for the information seeking process. One expert was specifically experienced with developing an assessment rubric for Information Literacy, although this expert did not develop intermediate levels. From their own experience, all experts considered it challenging to define intermediate levels for Information Literacy difficult. The reasons for this were: this is a time consuming process; levels are task specific and/or context specific, defining general levels is complex; in the definition of descriptions, context and Information Literacy expertise is necessary. None of the experts had specific experience with defining intermediate levels for Information Literacy. For three experts, the distinction of intermediate Information Literacy levels was not their focus area. One expert deliberately left the intermediate levels out to ensure that his model would be short and efficient in use.

Tips and pitfalls for this developing an assessment rubric for Information Literacy

The following tips were derived from the interviews:

- Select a well-known, easily recognisable model and keep that as a framework for the rubric.
- Involve content and context experts in the development.
- Define the two outer levels and their descriptions first, then fill in the middle levels.
- Pay attention to the testing/evaluation process. Preferably, organize an iteration in which the rubric is evaluated and adapted if applicable.

Experts mentioned the following possible pitfalls:

- Make clear decisions in the process; Information Literacy has been debated thoroughly and there are many different definitions and models.
- The more levels and descriptions, the more time consuming the rubric will be in use.
- In Information Literacy, the process of searching information is especially important. This is also the hardest to assess if no search log and/or reflection is available.

These results led to decisions for the following steps, in which the SCONUL model was selected, IL staff members and teachers were involved and the process was evaluated. These results are explicated below for research questions 2, 3, and 4.

5.2 Research question 2

Which SCONUL indicators are suitable for assessing Information Literacy competences in bachelor students' written products?

In order to create a rubric for assessing Information Literacy in written products, it was necessary to remove all SCONUL indicators that were not applicable for assessing a written product. Therefore, to answer research question 2, IL staff members were presented with the total list of SCONUL indicators with the question to select only the SCONUL indicators with which they could assess a written product.

In total, SCONUL defined 49 individual indicators. The five IL staff members who participated were requested to select a maximum of three indicators per pillar. Table 2 below shows an example of the results of one IL staff member.

Table 2
Example of results Indicator Questionnaire

Pillar	The following criteria are suitable to assess a written product for Information Literacy:
IDENTIFY	- Identify a lack of knowledge in a subject area; - Articulate current knowledge on a topic; - Recognise a need for information and data to achieve a specific end and define limits to the information need
SCOPE	- "Know what you don't know" to identify any information gaps; - Identify which types of information will best meet the need; - Identify the available search tools, such as general and subject specific resources at different levels
PLAN	- Scope their search question clearly and in appropriate language; - Define a search strategy by using appropriate keywords and concepts, defining and setting limits; - Select the most appropriate search tools
GATHER	- Use a range of retrieval tools and resources effectively; - Access full text information, both print and digital, read and download online material and data; - Identify when the information need has not been met
EVALUATE	- Choose suitable material on their search topic, using appropriate criteria; - Assess the quality, accuracy, relevance, bias, reputation and credibility of the information resources found; - Critically appraise and evaluate their own findings and those of others; I would like to combine indicators 3 and 4.
MANAGE	- Cite printed and electronic sources using suitable referencing styles; - Create appropriately formatted bibliographies; - Demonstrate awareness of issues relating to the rights of others including ethics, data protection, copyright, plagiarism and any other intellectual property issues; I would like to combine indicators 4 and 6.
PRESENT	- Use the information and data found to address the original question; - Summarise documents and reports verbally and in writing; - Incorporate new information into the context of existing knowledge
Comments	Identify and Scope overlap

The Indicator Questionnaire led to 116 answers in total for all IL staff members. On average, each IL staff member selected 23 indicators, with a minimum of seventeen indicators for one IL staff member and a maximum of 32 indicators for another staff member. From the total number of indicators presented by SCONUL (2011), four indicators were not chosen by any of the IL staff members, nine were chosen by one IL staff member and 36 indicators were chosen by two or more IL staff members. For the final list of indicators used for the rubric, all indicators selected by two or more IL staff members were retained, whereas all indicators selected by one or no IL staff member(s) were

rejected. This means that nine indicators were rejected and the rest remained, resulting in a total of 36 performance indicators. In this selection, each pillar maintained a minimum of four and a maximum of eight performance indicators: four for Identify; four for Scope; five for Plan; four for Gather; eight for Evaluate; five for Manage; and six for Present. The selected indicators for each pillar are displayed in Appendix B: Remaining Performance Indicators after Indicator Questionnaire. All of these indicators were retained and used to answer research question 3.

5.3 Research question 3

How can these indicators defined under research question 2 be defined into dimensions and underlying descriptions for each performance level?

The goal of research question 3 was to develop the first full version of the rubric. Therefore, IL staff members defined dimensions and underlying descriptions for the SCONUL pillars and the indicators derived from research question 2. Dimensions are keywords that break up the full task into smaller tasks. Descriptions consist of the formulation of concrete behaviour and form the individual content for each rubric cell (see also chapter 2.6 and 2.7).

In this process, seven IL staff members participated. Each staff member received two SCONUL pillars with the underlying indicators selected at the previous research question (paragraph 5.2). The pillars were randomly assigned, resulting in the following combinations:

- Scope and Present;
- Identify and Evaluate;
- Scope and Gather;
- Identify and Present;
- Evaluate and Manage;
- Plan and Manage;
- Plan and Gather.

IL staff members were asked to formulate dimensions and descriptions for their two SCONUL pillars. On average, each IL staff member formulated five dimensions, with a minimum of two and a maximum of nine dimensions per IL staff member. In total, 37 dimensions were defined, with four descriptions for each dimension. This meant that on average each IL staff member formulated twenty descriptions, with a minimum of eight and a maximum of eighteen descriptions per IL staff member. Based on these results a first version of the assessment rubric was composed. This version resembled the full original results closely. Only exactly equal descriptions had been removed and overlapping descriptions within the same SCONUL pillar were combined. This version consisted out of 34 dimensions in total: six for Identify, four for Scope, three for Plan, four for Gather, six for Evaluate, three for Manage, and eight for Present. For the concept rubric, these results were listed in a table with 37 rows and five columns: a dimension column and four description columns.

For more clarity, the results of the first SCONUL pillar are presented in table 3 below. These are descriptions for 'Identify' formulated by two IL staff members: staff member A and B.

Table 3

First version of the rubric. First SCONUL pillar: Identify.

Identify					
IL staff member	Dimension	Description 1	Description 2	Description 3	Description 4
A	Introduction: references current state of affairs	There is no description of the current state of affairs.	The introduction contains too few references.	The references in the introduction are one-sided, lack of variance.	In the introduction, sufficient references are used. The references give a varied picture of the available literature.
A	Relation between problem statement and literature	The problem statement appears quite sudden.	References to the literature are made, but the question does not flow logically from that.	The question flows logically from the literature, but the literature also raises other questions that are not addressed.	The problem statement refers in a clear manner to the gaps in the literature of the area.
A	Argumentation for choices made	Choices made are not substantiated.	To support the choices made, important publications are missing.	Choices are adequately supported by literature, but the argumentation is not always correct.	Wherever choices are made, these are properly substantiated by references to literature or, if applicable, own experiments
B	Kinds of information	Does not recognize the existence of different types of information that can be found on several places. I.e.: externally specified conditions (standards, patents, licenses), basic information (knowledge from books), scientific information / articles.	At least one crucial kind of information is missing.	The crucial kinds of information were searched. Additional, not crucial, issues are missing.	All necessary information types have been used.
B	Customer needs / gaps in the market	Customer needs / gaps in the market are not appointed (if applicable: not tested).	Customer needs / gaps in the market are appointed, but not substantiated correctly.	Customer needs / gaps in the market are appointed and substantiated with sources.	Customer needs / gaps in the market are appointed, substantiated with sources and analysed correctly.
B	Recent developments	Used developments are out-dated/essential developments have been missed	Use of recent developments is incomplete, essential developments have been missed	Essential developments were used, but total use of recent developments is incomplete.	Full attention was given to recent developments in the field

In general IL staff members considered the SCONUL pillars and its indicators to overlap. Also, IL staff members indicated that defining descriptions for the middle two levels proved most challenging. Naturally, staff members started with either defining the lowest or the highest level and then filling in level two and three. In this process, they indicated that the latter two levels were more difficult to describe. They considered it especially complex to differentiate between these levels and to decide whether or not a part of the description was (in)sufficient. Nevertheless, all individual IL staff members managed to define descriptions for all levels independently. No levels remained blank.

Furthermore, three Information Literacy experts outside University of Twente responded on the Description Questionnaire. Their unique responses were:

- Excellent writing skills and/or presentation skills
- Using new and complex information
- Used literature covers both central and background questions.
- Student reflects critically on the literature and involves both supporters and opponents of a position.

5.4 Research question 4

To what extent do Information Literacy teachers and regular teachers consider the rubric usable and helpful for assessing Information Literacy in students' written products?

Research question 4 was answered by combining the results of two separate groups of respondents: IL staff members first and teachers subsequently. Therefore, the results presented below are categorized by respondent group.

5.4.1 IL staff members

IL staff members regularly meet in a meeting on Information Literacy at the University of Twente. The IL staff evaluation took place in one of these meetings and was held directly after the data collection described in paragraph 5.3. At this time, only raw data was available and the concept rubric had not been developed yet. As a preparation for the IL staff evaluation, all 37 dimensions and corresponding descriptions were categorised based on similarities in the terminology used by the respondents. This categorization led to fifteen different categories. These are presented below in alphabetical order. Four categories cover multiple dimensions. In these cases, the number of dimensions will be presented among parentheses.

- Analysing the current situation
- Choices made by the student
- Different kinds of information
- Information types
- Missing knowledge
- Search process
- Sources (*8 dimensions*)
- Stopping the search process
- Structure
- Recent developments
- Recognising the gap in the market
- References (*10 dimensions*)
- Research question and goal of the information search (*5 dimensions*)
- Underpinning assumptions
- Writing style (*2 dimensions*)

In order to evaluate the collected data with the IL staff members, the best level (level 4) descriptions were organised by the categories presented above. These categories and level 4 descriptions were presented in a meeting for IL staff. The IL staff members were asked whether this list was either incomplete, complete or over complete. All IL staff members considered the list of themes and descriptions to be complete. None of the IL staff members opted to add or remove items. The IL staff members were presented with the results from the Description Questionnaire (see also 5.3) and opted to adopt one description: "involves both supporters and opponents of a position". According to the IL staff members, this could be added to the description they had designed. As for the large amount of descriptions, IL staff members considered it important to ask the opinion of teachers in order to decide whether or not to compress or summarize the rubric for its final version.

5.4.2 Teacher evaluation

Because none of the IL staff members wished to add or remove items from the concept rubric, the concept rubric with 34 dimensions (see paragraph 5.3) was preserved for the teacher evaluation. The results of these evaluations are presented below and are organized by the seven key questions (see 4.6.3). This leads to the following results:

In general, what is your impression when you see the rubric?

All eight teachers mentioned that the rubric seemed very long, that there was overlap between dimensions, and that not all dimensions were applicable or necessary. Three teachers noted that elements from this rubric were already present in their own tools for assessing written products within their subject area, or that these elements could easily be implemented in the subject assessment tools. Furthermore, all teachers suggested to adapt the language in the rubric to make it more consistent, both in the dimensions and the descriptions.

Do you understand it completely? If no, what parts are unclear?

All teachers did not directly understand the SCONUL pillars. Especially 'Scope' was unclear. Furthermore, the difference between 'information types' and 'kinds of information' was unknown to the teachers. All other elements were clear.

Which elements would you use to assess a students' written product for Information Literacy? Which elements would you not use?

All teachers pointed out one or more elements they would not use for assessing Information Literacy in a written product. Table 4 below shows, in descending order of frequency, the elements that one or more teachers wished to reject. Behind each dimension the category the dimension belongs to, is displayed in italics.

Table 4

Dimensions rejected by teachers in evaluation

Dimension	Number of teachers rejecting this dimension
Know when to stop (<i>Stopping the search process</i>)	6
Customer needs / gaps in the market (<i>Recognising the gap in the market</i>)	3
Information types (<i>Information types</i>)	4
Relation between search question and references (<i>Research question and goal of the information search</i>)	3
Kinds of information (<i>Different kinds of information</i>)	3
Information seeking process (<i>Search process</i>)	3
Checking/underpinning assumptions (<i>Underpinning assumptions</i>)	1
Goal of the information (<i>Research question and goal of the information search</i>)	1
Argumentation for choices made (<i>Choices made by the student</i>)	1
Introduction: references current state of affairs (<i>Analysing the current situation</i>)	1

Furthermore, all teachers suggested to combine multiple dimensions on sources, equal to multiple dimensions on references to shorten the rubric and simplify the assessment.

Do you consider this tool useful to assess Information Literacy in bachelor students? Why (not)?

In general, all teachers considered the tool to be useful to assess Information Literacy. However, teachers did not see Information Literacy itself as their own goal in assessing. Two teachers viewed the assessment with this rubric to be a task for IL staff members or possibly tutors to ensure a consistent assessing. Four teachers considered the rubric to be useful, whereas three considered it difficult to implement. One of these three teachers saw more possibilities for assessing literature studies than other written products. Another teacher did not take a position in the usability of the rubric, arguing that the usefulness of the rubric would only become clear after its implementation in practice.

What do you prefer: an extensive rubric in which you can decide for yourself which parts you use, or a predefined short rubric?

All teachers agreed that it would be necessary to shorten the rubric to a maximum of two pages. Three teachers did not see the seven SCONUL pillars as beneficial; they would rather have the rubric formatted in the general written product structure. One teacher considered the seven pillars useful but suggested to combine them into three parts:

- Part 1: Identify, Scope, Plan
- Part 2: Gather, Evaluate
- Part 3: Manage, Present.

According to the teachers, the SCONUL pillars contributed to the structure of the rubric. One teacher who did not value the SCONUL pillars suggested three categories to divide the descriptions under: 1. Quality of sources; 2. Referring; 3. Applying sources in text. All teachers suggested two actions to shorten the rubric: remove and/or combine all overlapping dimensions and preserve only the most important elements.

Other comments

One teacher addressed that Information Literacy would be difficult to assess in a cooperation product. Furthermore, two teachers indicated that some aspects of the rubric are also part of assessing

the quality of the written product instead of Information Literacy, such as structure, quality of the research question, writing style, and quality of reasoning. Two teachers also advised the development of a clear explanatory text, possibly with examples. Last, according to one teacher, the rubric lacked emphasis on written products that are too broad in scope, rather than too limited.

5.5 Overall research question

How can the SCONUL core model be used to develop a rubric to measure students' Information Literacy competences in the Bachelor curriculum of the University of Twente?

Finally, to answer the overall research question, all results described in paragraphs 5.1, 5.2, 5.3, and 5.4 were combined in order to create the rubric for Information Literacy in higher education.

Based on the answers on the four subquestions one concept rubric and one final rubric were developed:

Concept rubric two with 34 dimensions and 136 (34 x 4) descriptions.

The concept rubric consisted of nearly all dimensions and descriptions formulated by the IL staff members. For the concept rubric only double dimensions and/or descriptions were removed or combined if they were formulated within the same SCONUL pillar. This concept rubric contains six dimensions for Identify, four for Scope, three for Plan, four for Gather, six for Evaluate, three for Manage, and eight for Present. See Appendix D: Concept rubric for this first version of the rubric.

Final rubric with 30 dimensions and 120 (30 x 4) descriptions.

After the two evaluation sessions the concept rubric was adapted. Based on the design criteria and the feedback received in the evaluation sessions a final thirty dimension rubric was created. This final rubric contains six dimensions for Identify, three for Scope, three for Plan, two for Gather, seven for Evaluate, two for Manage, seven for Present. This rubric can be found in Appendix E: Final rubric.

Shortened rubric for practical use

As described in paragraph 5.4.2, all teachers indicated that the length of the rubric would prevent them from using it in practice. Therefore, the following suggestion for a short version of the overall rubric is also made, based on the results presented in paragraph 5.4.2:

- Combine the elements according to the suggestion of one other teacher, resulting in three elements: "Identify, Scope, and Plan", "Gather and Evaluate", and "Manage and Present".

- Remove the items suggested by the teachers, which means that the following dimensions are removed: 1, 3, 4, 5, 9, 11, 12, 14, 19, and 21.

This short rubric is presented in Appendix F: Compressed rubric. Although the shortened rubric has clear advantages regarding practical implementation, removing multiple items also comprises pitfalls considering validity. Therefore, the shortened rubric is only a suggestion which needs further development and preparation for implementation. This matter will also be addressed in paragraph 6.4: Recommendations for implication in practice.

6. Conclusion and discussion

Developments in digital innovation and education stress the importance of Information Literacy. Information Literacy involves the ability to “locate, evaluate, and use effectively the needed information” (ALA, 1989). In a period where the amount of information available digitally increases rapidly, it becomes more difficult to ensure the quality of this information (ALA, 2000; Dede, 2009). Hence, students need to possess the competences to search, evaluate and use information now more than ever. According to multiple studies, students generally lack the ability to evaluate and use information (Ganley et al., 2000; Gross & Latham, 2012; Maughan, 2001). Students are accustomed with using digital media daily and knowledge sharing has become easy (Berk, 2010). However, students tend to overestimate their own Information Literacy competences (Gross & Latham, 2011; Maughan, 2001). Therefore, the development of Information Literacy becomes a more urgent issue that requires attention in higher education. This study was conducted to design a tool that provides insight in the Information Literacy competences in bachelor students. This resulted in the development of an assessment rubric which can be used in the bachelor curriculum of the University of Twente. With this rubric, an overall view of Information Literacy competences in written products can be created, which can subsequently be used for improving the general curriculum and Information Literacy education in particular. For this, two starting criteria were important: the rubric needed to be generic for use in the entire bachelor curriculum, and it needed to provide intermediate performance levels to provide a clear and thorough view on the different performance levels students display. To develop this rubric, the following research question was answered:

How can the SCONUL core model be used to develop a rubric to measure students' Information Literacy competences in the Bachelor curriculum of the University of Twente?

To answer this question, the following subquestions were formulated:

1. What, according to experts, are possible opportunities, pitfalls and areas of concern for developing a rubric for Information Literacy?
2. Which SCONUL indicators are suitable for assessing Information Literacy competences in bachelor students' written products?
3. How can the indicators defined under research question 2 be explicated into dimensions and underlying descriptions for each performance level?
4. To what extent do Information Literacy teachers and regular teachers consider the rubric usable and helpful for assessing Information Literacy in students' written products?

The answers on the subquestions were provided in chapter 5. Results. This conclusion summarizes these results, reflects on them and answers the major research question.

6.1 Summary of the results

Based on the answers on the four subquestions an assessment rubric was developed. In this process, Information Literacy experts, IL staff members and teachers were involved. The rubric was structured by the seven pillars formulated by SCONUL (2011): Identify, Scope, Plan, Gather, Evaluate, Manage, and Present. The SCONUL model was selected from a number of five Information Literacy models because it is a recent model that focusses solemnly on Information Literacy and describes concrete performance indicators. The six steps for rubric development defined by Huba and Freed (2000) were valuable for the development process. The University of Twente specifically desired the formulation of intermediate performance levels. According to Stevens and Levi (2011) three to five description levels are advisable for an assessment rubric with intermediate levels. In this study, the definition of four levels was chosen based on literature and the wish for intermediate levels expressed

by the University of Twente. The definition of four performance levels would ensure enough variety but not too many detail, because the rubric had to be generic enough to be implemented in the entire bachelor curriculum.

Subsequently, dimensions and descriptions were formulated, prior to the evaluation sessions. The summative rating element from Huba and Freed (2000) was deliberately left out of the rubric because the purpose of the rubric is to create insight and not a rating.

In chronological order, the answering of the four subquestions led to:

The selection of 36 SCONUL performance indicators.

IL staff members selected 36 SCONUL performance indicators. This created the outline for the first version of the rubric.

The formulation of 37 dimensions and 148 (37 x 4) descriptions.

The 36 selected SCONUL indicators mentioned above provided a framework for the IL staff members to formulate dimensions and descriptions. These dimensions and descriptions formed the content of the first version of the rubric.

The selection of 34 dimensions and 136 (34 x 4) descriptions.

Based on the IL staff evaluation a first version of the rubric was created, consisting of 34 dimensions. See Appendix D: Concept rubric for this first version of the rubric.

This concept rubric was evaluated in eight evaluation sessions with teachers of different University of Twente faculties. These teachers evaluated the completeness, usability and clarity of the 34 dimension rubric. Concluding, it can be said that generally teachers were motivated to cooperate, but had their doubts about the usability of the rubric for their own practice. They saw, however, many opportunities for IL staff members. Their feedback on the completeness and clarity, combined with a last analysis of the SCONUL core model (2011) resulted in the selection of thirty dimensions and 120 (30 x 4) descriptions.

Together, this resulted in the answering of the main research question. Based on the design criteria and the feedback received in the evaluation sessions a final thirty dimension rubric was created. This can be found in Appendix E: Final rubric. Next to this rubric, an adapted version (Appendix F) was created for practical use. In the teacher evaluation all teachers indicated that the complete rubric was not usable in practice because of two reasons: not all elements are applicable in each written product and using the complete rubric would be too time consuming. Their main focus is their own subject, not Information Literacy. Although they all recognize and endorse the importance of Information Literacy competences, they do not see the assessment of Information Literacy as their responsibility. Even though, they were willing to contribute. Developing a short version of the rubric would increase the usability of the rubric, which raises the chances that the rubric will be adapted in practice strongly.

6.2 Reflections on the results

Several reflections can be made on the results from this study. This paragraph starts off with a general reflection on the results. Furthermore, four specific aspects were salient in the results, regarding the following elements: the SCONUL model as a framework; formulating the intermediate performance levels; the generalisability of the rubric; and the responsibility of teachers for Information Literacy development in higher education. All elements are addressed in the paragraphs below.

6.2.1 General reflections

In general it can be said that the results of this study contribute to addressing the issues outlined in the introduction and theoretical framework. Modern students possess skills on how to use digital media and technology in general (Berk, 2010). Nevertheless, being digitally competent does not

necessarily imply that students are also able to find, evaluate and use information (Fieldhouse & Nicholas, 2008). It is a common assumption that students independently gain these competences (Brand-Gruwel et al., 2005). However, according to multiple studies students actually lack Information Literacy (Berk, 2010; Van Deursen & Van Dijk, 2014; Ganley et al., 2000; Gross & Latham, 2011; Maughan, 2001). In addition, the importance of Information Literacy is stressed by findings that information available online increases in number rapidly, whereas the quality of that information is unclear (ALA, 2000; Dede, 2009). With use of the rubric developed in this study, more insight is gained in students' Information Literacy performances. The rubric serves as a tool to investigate whether or not the lack of Information Literacy, found by the researchers mentioned above, applies to University of Twente bachelor students. If this is the case, the rubric and the assessment outcomes can be used as a foundation to improve Information Literacy where necessary.

6.2.2 SCONUL model as a framework

The SCONUL (2011) model turned out to be very useful for maintaining a framework and structure. As pointed out in the Theoretical Framework, one of the criteria for the selection of the model was the availability of concrete competence indicators. During the data collection, this was a great advantage, providing structure for both the study and the participants. However, the SCONUL model also turned out to have a disadvantage. According to the IL staff members parts of different pillars overlap, which resulted in the formulation of similar descriptions appearing in different SCONUL pillars. This proved to be a challenge in the definition of the final rubric, but also highlighted the Information Literacy elements considered important by more IL staff members. This finding also provided motive to suggest a short version (see paragraph 5.5).

6.2.3 Formulating intermediate performance levels

In the Explorative Expert Interviews the Information Literacy experts predicted that it would be difficult for IL staff members to define descriptions for the intermediate levels. This is consistent with the findings later in the study: all IL staff members considered it difficult deciding what a concrete intermediate performance between level 1 and level 4 would resemble. In this, IL staff members also indicated that it was difficult to distinguish whether or not a performance would be sufficient but not perfect (level 3) or insufficient but improving (level 2). Eventually, this was not an obstacle because when given enough time, all IL staff members managed to provide input for all four levels. This is in line with remarks made by the experts, who stressed the importance of involving context experts to solve the complexity of defining intermediate levels.

6.2.4 Generic versus context-specific

As desired, this study resulted in a generic product for assessing written products which transcends individual subjects and curriculum elements. Although it was developed in a specific and closed context, the final rubric does not contain task specific or location specific descriptions. This provides a rubric which could likely be used within all faculties of the University of Twente, especially because IL staff members of multiple faculties contributed to the rubric keeping their own faculty in mind. Furthermore, it could possibly be implemented within different universities without needing adaptions. If desired, individual faculties and other universities could specify the rubric into more contextual detail. However, this does not appear to be necessary in order to implement the rubric.

6.2.5 Information Literacy in higher education: shared responsibility

Last, all teachers indicated that according to them, Information Literacy is primarily the concern of IL staff members. This result makes clear that teachers generally do not consider Information Literacy one of their core responsibilities. Teachers did not regard Information Literacy as a concrete issue in their own subjects that they need to address themselves. As presented in paragraph 1, multiple researchers (ALA, 2000; Berk, 2010; Van Deursen & Van Dijk, 2014; Ganley et al., 2000; Gross & Latham,

2011; Maughan, 2001) stress the urgency of improving Information Literacy. Ganley et al. (2010) and Dubicki (2013) specifically studied the difference between student perception of their Information Literacy competences and faculty member perceptions, emphasising the role of teachers within Information Literacy improvement. Brand-Gruwel et al. (2005) acknowledge this, stating that finding and evaluating information is a complex cognitive skill that needs specific support and instruction, which leaves an important role for teachers.

The findings in this study expose a contradiction within the curriculum. All teachers recognize the importance of measuring and improving Information Literacy competences. Implicitly, Information Literacy is required in students to perform well in written assignments. However, the teachers do not consider themselves responsible for improving Information Literacy. This suggests that teachers assume that students acquire these competences without actually addressing them explicitly. The importance of this result is stressed because the teachers' implicit assumption is amplified by findings that students overestimate their own Information Literacy strongly (Ganley et al., 2000; Gross & Latham, 2012; Maughan, 2001). These results confirm the deficiency in Information Literacy displayed in the introduction and theoretical framework and emphasizes the value of implementing the rubric.

6.3 Reflections on the method

The quality, transferability and usability of this study and the rubric designed have been assured by the use of different research instruments, involving different stakeholders and evaluating the results thoroughly. In this paragraph, the research method is evaluated. Limitations of the research method and their solutions are presented below.

As seen in the Theoretical Framework, the biggest disadvantage of developing a rubric according to the literature (Van Deursen, 2010; Knight, 2006; Oakleaf, 2008) is that it is time consuming, which was also noticeable in this study. This was especially the case because all IL staff members were involved to create foundation within all faculties. Therefore, seven IL staff members all spent approximately 90 minutes to the creation of the rubric and another 30 minutes on the evaluation. Also, eight teachers were involved for approximately 60 minutes, which creates a total of 1340 minutes for only the IL staff and teachers, and 900 minutes for the researcher in the Description Interviews and Evaluation sessions. Implementing it in the curriculum will also require time. Summarizing, the time effort for the design and development of this rubric was high. However, the involvement of IL staff members of different faculties, also provided good insight in the opinions of different staff members. This reduces the risk that the input for the rubric was too limited. It also introduces another strong point of this study. Multiple IL staff members contributed to the outlining, the content, and the evaluation of the rubric. This can be beneficial in future implementation because the IL staff members are already aware of the existence of the rubric, committed to it and are familiar with it.

In paragraph 6.2 the overlap in different SCONUL pillars was pointed out. This effect was reinforced by the research method for the Description Interviews, in which one IL staff member only provided descriptions for two pillars. While defining these descriptions, the IL staff members had no knowledge of the descriptions defined by other IL staff members. On the one hand, this was beneficial because it made clear which elements were valued high by several staff members. On the other hand, it also made it difficult to shorten the rubric afterwards. IL staff members had defined similar dimensions in different SCONUL pillars, whereas teachers unanimously indicated this to reduce the clarity and usability of the rubric strongly. This problem was solved by analysing the complete original SCONUL core model (2011), defining which SCONUL pillars specifically focused on which Information Literacy elements. To clearly differentiate between dimensions, the dimensions were specified more closely.

Another note with this study, also indicated in paragraph 6.2, is that execution of the study was context specific. The concrete development of the rubric and the specific descriptions has solemnly been done with University of Twente staff members. This raises questions about generalisability and suggests that for the use in other educational situations, the rubric needs revising and probably adaption by local experts. However, its aim was to create a generic tool, so use of context or task

specific description has been avoided completely, making it a general rubric which could possibly be implemented in other contexts without adaption.

6.4 Recommendations for implication in practice

Several opportunities can be noted for implication in practice. The up-to-date rubric with intermediate levels designed is new for the University of Twente and according to the experts the topic of assessing Information Literacy is trending, now more than ever. IL staff members continuously invest in Information Literacy within the (bachelor) curriculum. Therefore, they could play a crucial role in implementing the rubric by involving it in their curriculum program. For example, it would be interesting to apply the rubric for a recurring Information Literacy check. This process could be iterated, for example twice a year, in which teachers working within the bachelor curriculum are asked to measure the Information Literacy competences for the written products they received in that period. This would create a thorough image of the Information Literacy competence status in the current bachelor curriculum. This knowledge would be beneficial for the development of Information Literacy education throughout the programme.

Additionally, as both IL staff members and teachers clearly recognize the importance of developing Information Literacy competences in students, it is important that this topic will be addressed by both. By explicating Information Literacy in the curriculum, both IL staff members and teachers get more grip on Information Literacy development of students. This enables them to provide more adjustments and support and contributes to the development from students to researchers. Furthermore, it can be expected that the timing for the implementation now is right, because modular education is trending and is being implemented in the bachelor curriculum.

Keeping the points above and the practical implications in mind, other implementation options are suggested below. These suggestions would solve the issue pointed out by teachers that the rubric is too extensive and overlapping. Ideally, teachers are always provided with the entire rubric. This will inform them about all aspects regarding Information Literacy, even though these are not all applicable in every measurement moment. This can provide insight on important Information Literacy elements, which can contribute to the role of Information Literacy in continuous bachelor education

Selection of dimensions based on the assessment goal

The rubric could be shortened based on the assessment goal. To do so, the assessment goal needs to be defined prior to the measuring process and the rubric would be adapted accordingly, selecting only those elements applicable for that measuring moment. Preferably, this would be done by the IL staff members, who share expertise on both the curriculum and Information Literacy.

Selection of dimensions based on the teacher feedback

Because all teachers indicated that the length of the rubric would prevent them from using it in practice, the suggestion for a short version was made in paragraph 5.5. This short version has not been evaluated because the IL staff members indicated to leave the choice for shortening the rubric to the teachers. Evaluating with the teachers was the last step in the development cycle. However, the teachers considered a short version indispensable for use in practice. Therefore, the compressed rubric in Appendix F is suggested. Shortening the rubric to this version however also raises challenges regarding validity and continuity. For successful implementation in practice, the shortened needs to be studied further with a focus on completeness and validity.

Optional implementation of selected dimensions in current curriculum assessment tools

Another option is to provide the teachers with the full rubric and suggest them to involve applicable elements in their own assessment tool for the written assignment. This will shift the responsibility for assessing Information Literacy to teachers also, without a need for compromising the usability for teachers. This way, teachers can easily explicate Information Literacy aspects and gain insights on their

own accord. This is in line with claims made by Brand-Gruwel et al. (2005) that teachers play an important role in the instruction and improvement of Information Literacy.

In order to do so, ideally teachers would cooperate with other teachers within their subject area and/or curriculum and adopt multiple elements from the complete rubric (Appendix E) in a consistent way. In this case, it would be consistent to assess the same elements in multiple written assignments throughout the bachelor years, and preferably also by multiple teachers within the same curriculum. University of Twente provides IL staff members for each faculty. To optimally adopt this suggestion, it would be advisable to involve the IL staff member(s) concerned in the selection of the elements.

This suggestion however also has limitations that need attention. Using a small selection of the rubric would not be valid for assessing Information Literacy as a whole. If the goal is to assess Information Literacy competences in general, this suggestion should therefore not be applied. It can however be used to gain more insight in student performance on Information Literacy elements teachers value highly and include in their subject.

Specific student rubric

As a last implication suggestion: all IL experts, IL staff members and some teachers stressed the importance of the information seeking process in Information Literacy. In this, use of databases, key words and inclusion and exclusion criteria are specifically important. Generally, teachers have no information about this process, unless they include a search journal and a reflection in their assignment. IL staff members usually include this process in the education, but this education is offered only a limited number of times. In written products, the process generally only is assessed implicitly. This seems contradictory: the importance of the process is indicated by the majority of the participants, but in practice this process usually is not monitored. However, students have insight in their own information seeking process. Therefore, it would be interesting to develop a specific student version, in which processes are adapted that students can assess themselves. This could focus on the search terms used, databases searched, inclusion and exclusion criteria applied, etc. Based on the literature stating that students overestimate their own performances (Ganley et al., 2000; Gross & Latham, 2012; Maughan, 2001) this is a risk. This risk however is reduced because the rubric does not offer a summative grade, making it less attractive for students to embellish their performances.

6.5 Recommendations for further research

For further research, four suggestions can be made. First of all, it might be interesting to zoom in on validity of the rubric when used by different staff members throughout an entire bachelor program. Because the rubric can be used by different staff members to assess different types of written products, it would be interesting to define how consistent the view of Information Literacy is, based on the rubric. This is specifically important when the suggestion for a shortened rubric (see paragraph 6.4) is applied. Second, because research showed that students overestimate their own Information Literacy (Gross & Latham, 2011; Maughan, 2001) future research could focus on comparing students' self assessment with assessment by a teacher or a tutor. Based on literature research, the hypothesis would be that students value their Information Literacy higher than staff members do. Third, if teachers are giving the opportunity to involve elements of the rubric in their own assessment criteria, further research could be conducted on which elements have added value to their own assessment criteria according to the teachers. Last, because of the generic nature of the rubric, further research can easily be conducted in other educational setting throughout The Netherlands. To initiate a broader implementation of the rubric a one year pilot could be conducted. To ensure the quality of the product for a broader use, the Information Literacy experts could be asked to evaluate the product from a broader viewpoint.

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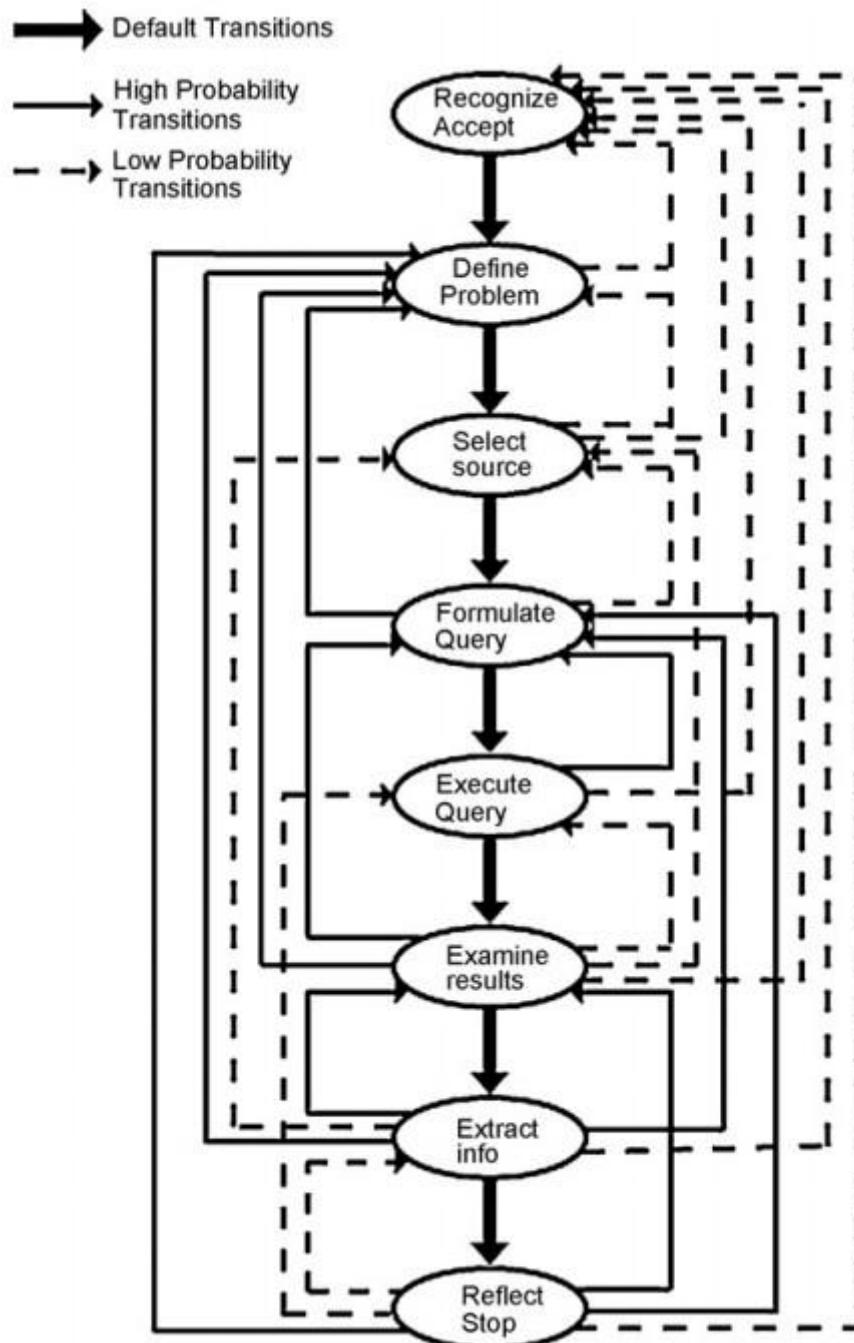
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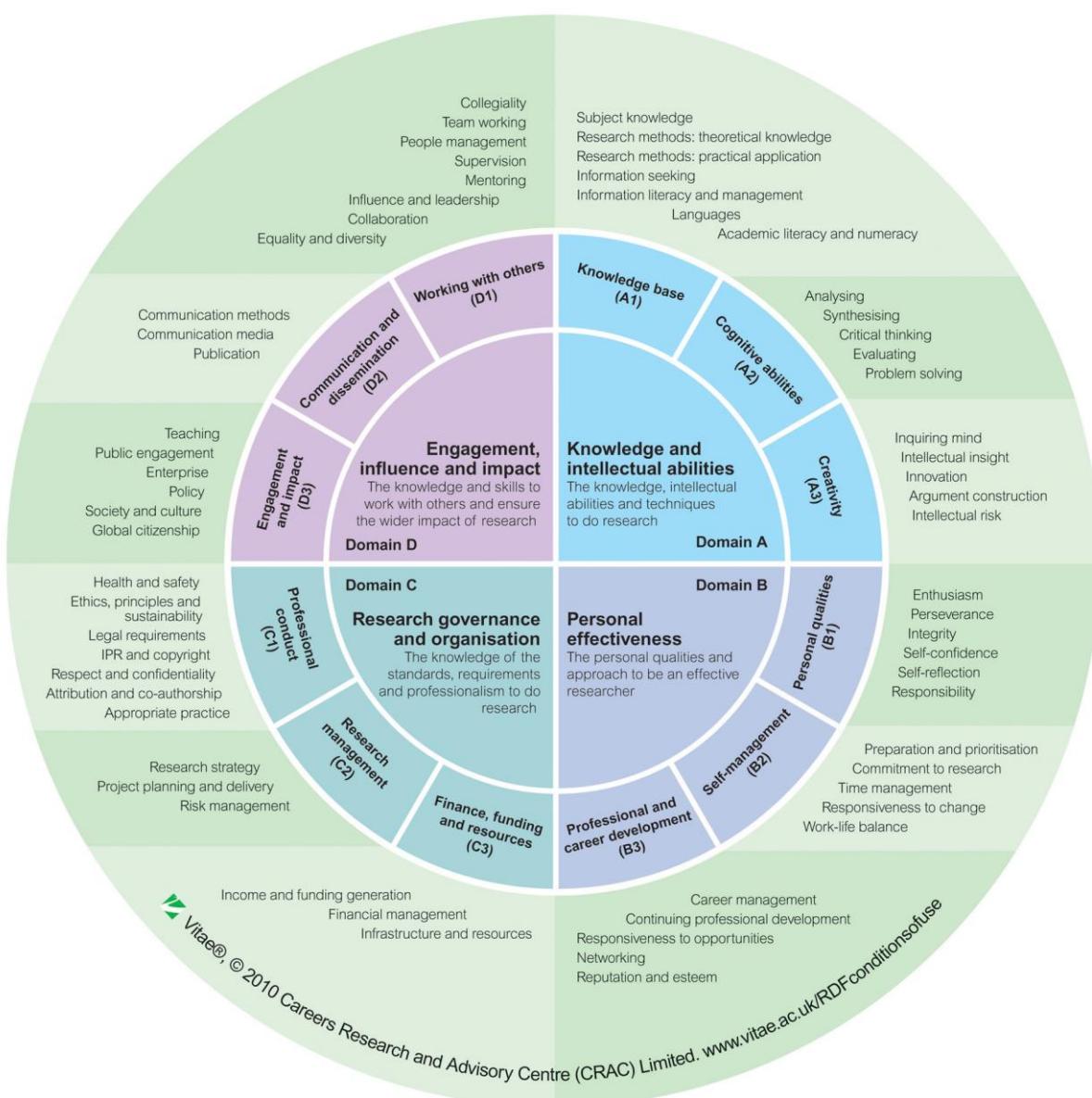
8. Appendices

A. Information Literacy Models

Information Seeking Model (Marchionini, 1995).



Research Design Framework (Vitae, 2010).



Information Problem-Solving Model (Brand-Gruwel et al., 2009).

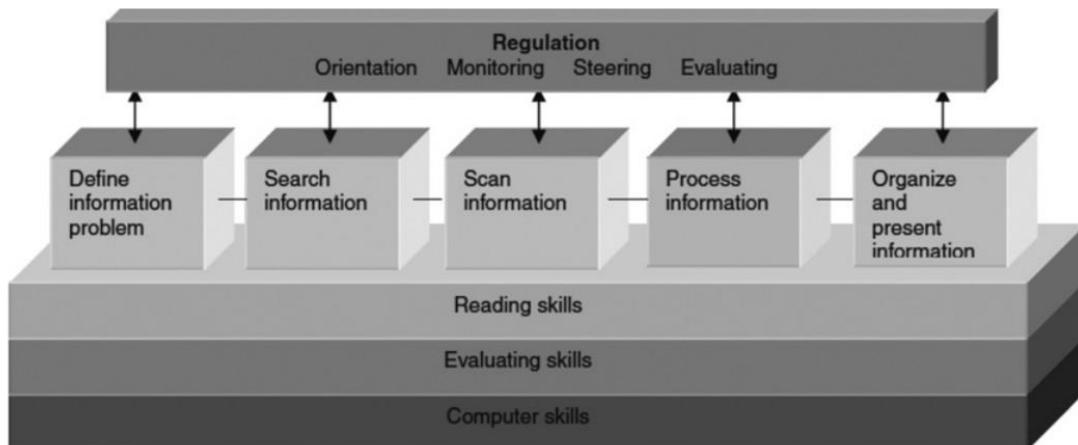


Fig. 7. The Information Problem-Solving on the Internet (IPS-I) model from Brand-Gruwel et al. (2009).

Information Literacy Competency Standards for Higher Education (ACRL, 2000)

No graphic model available, the following standards are identified:

1. The information literate student determines the nature and extent of the information needed.
2. The information literate student accesses needed information effectively and efficiently.
3. The information literate student evaluates information and its sources critically and incorporates selected information into his or her knowledge base and value system.
4. The information literate student, individually or as a member of a group, uses information effectively to accomplish a specific purpose.
5. The information literate student understands many of the economic, legal, and social issues surrounding the use of information and accesses and uses information ethically and legally.

SCONUL 7 pillars of Information Literacy (Sconul, 2011).

Identify	Scope	Plan	Gather	Evaluate	Manage	Present
Understands:	Understands:	Understands:	Understands:	Understands:	Understands:	Understands:
<ul style="list-style-type: none"> New information & data is constantly being produced & that there is always more to Being information literate involves developing a learning habit so new information is being actively sought all the time Ideas and opportunities are created by investigating / seeking information Scale of the world of published and unpublished information and data 	<ul style="list-style-type: none"> What types of information are available The characteristics of the different types of information source available to them & how they may be affected by format The publication process in terms of why individuals publish & the currency of information Issues of accessibility What services are available to help & how to access them 	<ul style="list-style-type: none"> Range of searching techniques available Differences between search tools Why complex search strategies can make a difference to the breadth & depth of information found Need to develop approaches to searching such that new tools are sought for each new question Need to revise keywords & adapt strategies Value of controlled vocabularies & taxonomies in searching Taxonomies in searching operating in a virtual world Importance of appraising & evaluating search results 	<ul style="list-style-type: none"> How information & data is organised How libraries provide access to resources How digital technologies are providing collaborative tools to create & share information Issue involved in collecting new data Different elements of a citation Use of abstracts Need to keep up to date Difference between free & paid for resources Risks involved in operating in a virtual world Importance of metadata Role of professionals in advising with all aspects of info management 	<ul style="list-style-type: none"> Information & data landscape or their learning research context / dissemination Issues of quality, accuracy, relevance, bias, reputation & credibility relating to information & data sources How information is evaluated & published, to help inform personal evaluation process Importance of consistency in data collection Importance of citation in their learning / research context Importance of ethicality Relevance of Freedom of Information to research activities Need to curate and archive research data ethically Importance of metadata Role of professionals in advising with all aspects of info management 	<ul style="list-style-type: none"> Responsibility to be honest in all aspects of information handling & dissemination Need to adopt appropriate data handling methods Role play in helping others in information seeking & management Need to keep systematic records Importance of storing & sharing information/data ethically Relevance of Freedom of Information to research activities Need to curate and archive research data ethically Importance of metadata Role of professionals in advising with all aspects of info management 	<ul style="list-style-type: none"> Difference between summarising & synthesising Different formats of writing / presentation styles Data can be presented in different ways Personal responsibility to store & share information & data Personal responsibility to disseminate information & knowledge How their work will be evaluated Processes of publication Concept of attribution Individual can take an active part in creation of information through traditional publishing & digital technologies
Is able to:	Is able to:	Is able to:	Is able to:	Is able to:	Is able to:	Is able to:
<ul style="list-style-type: none"> Identify a lack of knowledge in a subject area Identify a search topic/question and define it using simple terminology Articulate current knowledge on a topic Recognise a need for information and data to achieve a specific end and define limits to the information need Use background information to underpin research Demonstrate the ability to use new tools as they become available Take personal responsibility for an information search Manage time effectively to complete a search 	<ul style="list-style-type: none"> "Know what you don't know" to identify any information gaps Identify which types of information will best meet the need Identify the available search tools, such as general and subject specific resources at different levels Identify different formats in which information may be provided Identify appropriate search techniques to use as necessary Identify specialist search tools appropriate to each individual information need Use online & print help & can find personal & expert help 	<ul style="list-style-type: none"> Scope their search question clearly and in appropriate language Define a search strategy by using appropriate keywords and concepts, defining and setting limits Select the most appropriate search tools Identify controlled vocabularies and taxonomies to aid in searching if appropriate Identify appropriate search techniques to use as necessary Identify specialist search tools appropriate to each individual information need 	<ul style="list-style-type: none"> Use a range of retrieval tools & resources effectively Construct complex searches appropriate to different digital & print resources Access full text information Use appropriate search techniques to collect new data Keep up to date with new information Engage with their community to share information Identify when the information need has not been met Use online & print help & can find personal & expert help 	<ul style="list-style-type: none"> Distinguish between different information resources Choose suitable material on their search topic Assess the quality, accuracy, relevance, bias, reputation & credibility of the resources found Assess the credibility of the data gathered Read critically, identifying key concepts & arguments Relate the information found to the original search strategy Critically appraise & evaluate own findings Know when to stop 	<ul style="list-style-type: none"> Use bibliographic software if appropriate to manage information Cite printed & electronic resources using suitable referencing styles Create appropriately formatted bibliographies Demonstrate awareness of issues relating to the rights of others including ethics, data protection, copyright, plagiarism & other intellectual property issues Synthesise & appraise new & complex information into context of existing knowledge Analyse & present data appropriately Synthesise & appraise new & complex information into context of existing knowledge Communicate effectively using appropriate writing styles in a variety of formats Communicate effectively verbally Select appropriate publications & dissemination outlets in which to publish Develop a personal profile in the community using appropriate social networks 	

B. Remaining Performance Indicators after Indicator Questionnaire

Table 2: Remaining Performance Indicators

IDENTIFY - In staat een persoonlijke informatiebehoefte te herkennen
Een tekort aan kennis in een gebied herkennen
Een zoekonderwerp/-vraag identificeren en deze definiëren door simpele terminologie te gebruiken
Huidige kennis over een onderwerp kunnen uitwerken
Behoefte aan informatie en data herkennen om een specifiek doel te bereiken en definiëren van limieten aan de informatiebehoefte
SCOPE - Huidige kennis kunnen beoordelen en hiaten kunnen herkennen
Weten wat je niet weet om hiaten in informatie te herkennen
Herkennen welke informatietypes het meest geschikt zijn om aan de behoefte te voldoen
Herkennen van verschillende formats waarin informatie wordt verstrekt
Identificeren van de beschikbare zoekinstrumenten; zoals generieke en onderwerp-specifieke bronnen op verschillende niveaus
PLAN - Strategieën voor het lokaliseren van informatie en data kunnen bepalen
De zoekvraag duidelijk definiëren in geschikt taalgebruik
Een zoekstrategie definiëren, gebruik makend van geschikte trefwoorden en concepten, definiëren en het stellen van grenzen
De meest geschikte zoekinstrumenten selecteren
Identificeren van gecontroleerde woordenlijsten en taxonomieën om te helpen bij het zoeken indien nodig
Geschikte zoektechnieken kunnen herkennen om te gebruiken indien nodig
GATHER - De benodigde informatie en data kunnen lokaliseren en benaderen
Een reeks zoekinstrumenten en -bronnen effectief gebruiken
Complexe zoektochten kunnen construeren, passend bij verschillende digitale en schriftelijke bronnen
Toegang krijgen tot volledige teksten, zowel schriftelijk als digitaal, lezen en downloaden van online materiaal en data
Herkennen als de informatiebehoefte niet is voldaan
EVALUATE - Het zoekproces kunnen evalueren, informatie en data kunnen evalueren en vergelijken
Onderscheid maken tussen verschillende informatiebronnen en de informatie die ze bevatten
Geschikt materiaal over het zoekonderwerp kiezen - gebruik makend van passende criteria
De kwaliteit, nauwkeurigheid, relevantie, vooringenomenheid, reputatie en geloofwaardigheid van de informatie beoordelen
De geloofwaardigheid van de verkregen data beoordelen
Kritisch lezen, hoofdpunten en argumenten identificeren
De gevonden informatie relateren aan de oorspronkelijke zoekstrategie
Eigen en andermans bevindingen kritisch taxeren en evalueren
Weten wanneer te stoppen

MANAGE - Informatie professioneel en ethisch kunnen organiseren

Bibliografische software gebruiken om informatie te beheren indien nodig

Schriftelijke en elektronische bronnen citeren, gebruik makend van geschikte referentiestijlen

Maken van op de juiste wijze opgezette literatuurlijsten

Voldoen aan gedragsnormen voor academische integriteit

Bewustzijn tonen van kwesties met betrekking tot de rechten van anderen, waaronder de ethiek, gegevensbescherming, auteursrecht, plagiaat en andere kwesties m.b.t. intellectueel eigendom

PRESENT - De verkregen informatie kunnen toepassen

De gevonden data en informatie gebruiken om de oorspronkelijke vraag te beantwoorden

Documenten en rapporten verbaal en schriftelijk samenvatten

Nieuwe informatie betrekken in de context van bestaande kennis

Data op de juiste wijze analyseren en presenteren

Synthetiseren en waarderen van nieuwe en complexe informatie van verschillende bronnen

Effectief communiceren door gebruik te maken van geschikte schrijfstijlen in verschillende formats

C. Example format formulating dimensions and descriptions

Plannen

De zoekvraag duidelijk definiëren in geschikt taalgebruik

Een zoekstrategie definiëren, gebruik makend van geschikte trefwoorden en concepten, definiëren en het stellen van grenzen

De meest geschikte zoekinstrumenten selecteren

Identificeren van gecontroleerde woordenlijsten en taxonomieën om te helpen bij het zoeken indien nodig

Geschikte zoektechnieken kunnen herkennen om te gebruiken indien nodig

Algemene criteria	1	2	3	4

D. Concept rubric

	1	2	3	4
	Herkennen			
Inleiding: referenties huidige stand van zaken.	Er is geen beschrijving van de huidige stand van zaken.	Te weinig referenties in de inleiding	De referenties in de inleiding zijn eenzijdig, niet voldoende gevarieerd	In de inleiding wordt voldoende gerefereerd. De referenties geven een gevarieerd beeld van de beschikbare literatuur.
Relatie tussen probleemstelling en literatuur	De probleemstelling komt uit de lucht vallen.	Er wordt wel verwezen naar de literatuur maar de vraag volgt daar niet logischerwijs uit.	De vraag komt wel voort uit de literatuur, maar de literatuur werpt ook nog andere vragen op die door de student niet worden benoemd.	De probleemstelling verwijst op een duidelijke manier naar de hiaten in de literatuur van het vakgebied.
Onderbouwing gemaakte keuzes	Gemaakte keuzes zijn niet onderbouwd.	Er missen belangrijke publicaties om gemaakte keuzes te onderbouwen.	Keuzes worden voldoende onderbouwd met literatuur maar de argumentatie klopt niet altijd.	Overal waar keuzes worden gemaakt, worden deze correct beargumenteerd aan de hand van literatuur of evt. eigen experimenten
Informatie-soorten	Herkent niet het bestaan van verschillende soorten informatiebronnen, die op verschillende plekken terug te vinden zijn. I.e.: buitenaf vastgestelde voorwaarden (normen, patenten, licenties), basisinformatie (vakken uit boeken), wetenschappelijke informatie/artikelen.	Tenminste één cruciale informatiesoort ontbreekt.	De cruciale soorten informatie zijn doorzocht. Bijkomende zaken ontbreken.	Alle benodigde informatiesoorten zijn gebruikt.
Klantbehoefte / gat in de markt	Klantbehoefte/gat in de markt wordt niet benoemd (indien van toepassing: niet onderzocht).	Behoefte wordt benoemd maar niet correct beargumenteerd	Behoefte wordt benoemd en van bron voorzien.	Aandacht wordt besteed aan klantbehoefte/gat in de markt en correct geanalyseerd
Recente ontwikkelingen	Gebruikte ontwikkelingen zijn gedateerd/wezenlijke ontwikkelingen zijn gemist	Gebruik van recente ontwikkelingen is onvolledig, wezenlijke ontwikkeling ontbreekt	Wezenlijke ontwikkelingen worden gebruikt maar gebruik van ontwikkelingen is onvolledig	Aandacht wordt besteed aan laatste ontwikkelingen in het vakgebied
	Kader			

Ontbrekende kennis	Student noemt niets over ontbrekende kennis	Betrekt onvoldoende informatie bij het in kaart brengen van het gebrek aan kennis	Student geeft vanuit één invalshoek correct weer welke kennis ontbreekt, of geeft vanuit meerdere invalshoeken beperkt weer welke kennis ontbreekt	Geeft goed weer, middels bestaande kennis en de hiaten daarin, welke vragen onbeantwoord zijn.
Gebruikte bronnen om kader te stellen	In het product zitten kwalitatief ongeschikte bronnen om het kader te stellen.	Om het kader te stellen heeft de student in het geschreven product te stellen, heeft de student tenminste één zeer ongeschikte soort informatie gebruikt	Voor het kader zijn voornamelijk goede informatietypen gebruikt. Eventuele ongeschikte informatietypen verstoren dit niet.	In het product weet student kader te stellen door bronnen van hoge kwaliteit goed weer te geven
Gebruik van recente informatie	Informatie is: oud/gedateerd terwijl het onderwerp dat wel vereist, of is al is aangeleverd door bv. docent/lecture notes	Weinig referenties, beperkte informatie	Niet alle verschillende typen informatiebronnen gebruikt (scala is beperkt tot een specifiek type bronnen)	Belangrijkste tijdschriften/congressen, recente informatie in de context van het onderwerp, student heeft zelfstandig informatie verzameld
Informatietypes	Geen gebruik van referenties, dus geen informatietypes bekend.	Eén informatietype gebruikt.	Slechts twee informatietypes zijn gebruikt.	Informatietype past bij het discipline en/of de opdracht.
Plannen				
Vraag/thema	Het is niet duidelijk wat de vraag of het thema is	Het thema of vraag is te globaal en breed geformuleerd of het thema of de vraag is te nauw geformuleerd	De vraag is geformuleerd en helder, maar specificiteit en doel zijn nog niet volledig	De onderzoeksvergadering is een open vraag die helder, specifiek en expliciet geformuleerd. Het doel past bij de vraag.
Relatie tussen zoekvraag en referenties	Referenties zijn niet te vergelijken met de zoekvraag.	Referenties zijn te breed of te summier.	Referenties passen bij onderwerp, maar keuze voor referenties zijn niet volledig helder, lijken soms willekeurig.	Referenties passen bij de zoekvraag.
Doel van de informatie	Doel ontbreekt.	Doel is niet helder.	Doel van verkregen informatie is onvolledig, einde van zoektocht is niet helder.	Het is doel is helder: het is duidelijk wat men wil bereiken met de gevonden informatie.
Verzamelen				
Onderzoeksvergadering beantwoorden d.m.v. bronnen	Vindt onvoldoende geschikte informatie om de onderzoeksvergadering juist te beantwoorden, terwijl deze informatie redelijkerwijs goed beschikbaar is.	De onderzoeksvergadering is beantwoord met een zeer beperkte hoeveelheid aan informatie.	Beantwoordt de onderzoeksvergadering redelijk, benut de informatie die hij heeft goed maar heeft een aantal bronnen gemist.	Beantwoordt de onderzoeksvergadering goed. Beschrijft accuraat welk onderzoek nog ontbreekt.

Proces van informatie-verzamelen	Benoemt nergens het proces van informatie verzamelen.	Benoemt summier het proces van informatie verzamelen.	Beschrijft een proces van informatieverzameling dat kwalitatief nog beter kan.	Beschrijft een goed uitgevoerd informatieverzamelingsproces op heldere wijze.
Bronnen	Er wordt geen gebruik gemaakt van (wetenschappelijke) bronnen.	De gebruikte bronnen bestaan uit studieboeken en/of reeds door de docent aangereikte bronnen.	Heeft de aangeboden literatuur uitgebreid met bronnen en - indien aanwezig - wetenschappelijke bronnen, waarvan voldoende passende bronnen. Indien wetenschappelijk bronnen niet aanwezig: reflecteert op afwezigheid.	Maakt -indien beschikbaar- gebruik van passende wetenschappelijke bronnen zoals te verwachten aan de hand van de vraagstelling. Indien wetenschappelijk bronnen niet aanwezig: reflecteert op afwezigheid.
Bronnen	Gebruikte bronnen zijn verouderd	Er wordt gebruik gemaakt van een paar recente bronnen, maar niet zoveel als je zou verwachten	De belangrijkste recente bronnen worden gebruikt	De meest recente en actuele bronnen zijn gevonden, zoals te verwachten is op basis van het gekozen onderwerp
Evaluieren				
Bronnen	Maak gebruik van Wikipedia waar wetenschappelijke bronnen worden verwacht	Verwijst naar bronnen die betrouwbaar zijn, maar die niet relevant en/of passend zijn of verwijst fout naar een samenvattende tekst in plaats van de oorspronkelijke bron	Gebruikt voldoende relevante en passende bronnen voor tekst en doelgroep	Gebruikt enkel relevante en passende bronnen voor tekst en doelgroep
Bronnen	Maakt gebruik van de eerst aangeboden bron.	Gebruikt weliswaar documenten van een wetenschappelijk signatuur maar geen topmateriaal.	Gebruikt documenten van een wetenschappelijk signatuur.	Doet een gedegen analyse van de relaties tussen de verschillende documenten.
Bronnen: inhoudelijk geschikt	Vragen en conclusies zijn gebaseerd op inhoudelijk ongeschikte bronnen.	Tenminste één belangrijke vraag of conclusie is niet gebaseerd op inhoudelijk geschikte bronnen.	De belangrijkste vraag en conclusie is gebaseerd op inhoudelijk geschikte bronnen.	Vragen en conclusies zijn volledig gebaseerd op inhoudelijk geschikte bronnen.
Controlieren / waarborgen aannames	Aannames worden gedaan en niet gecontroleerd.	Tenminste één cruciale aanname is niet gestaafd/geborgd.	Cruciale aannames zijn gecontroleerd, onbelangrijke zaken ontbreken nog.	Gedane aannames zijn gecontroleerd en gewaarborgd.
Conclusie	Conclusie is gebaseerd op onbetrouwbare informatie.	Er wordt deels gebruik gemaakt van onbetrouwbare informatie voor tenminste één cruciaal onderdeel.	Er wordt gebruik gemaakt van onbetrouwbare informatie voor de conclusie, maar dit is geen cruciale informatie.	Alle voor de conclusie gebruikte informatie is betrouwbaar.
Stoppen met zoeken	Stopt zonder te overleggen met opdrachtgever.	Overlegt te laat, waardoor een dwingende situatie ontstaat	Zoekt langer dan volgens opdrachtgever nodig was geweest.	Maakt duidelijk dat in overleg met de opdrachtgever op tijd en in

				redelijkheid gestopt is met de zoektocht.
Beheren				
Referenties in referentielijst: Bron achterhalen	Referentie is zodanig dat de oorspronkelijke bron niet te achterhalen is	Elementen ontbreken, bron is daardoor slecht te achterhalen	Elementen ontbreken, de bron is wel te achterhalen maar kost tijd	Referenties zijn volledig: de oorspronkelijke bron is eenvoudig te achterhalen
Referenties in referentielijst	Referenties ontbreken volledig, het overgrote deel van de referenties mist informatie of de fouten genoemd bij twee vinden in grote getallen plaats	Referentielijst is niet volledig en daardoor zijn de bronnen niet zonder meer vindbaar (bv. DOI of referentie ontbreekt, bron niet te achterhalen) OF Referenties zijn niet opgenomen in de referentielijst maar wel in de tekst of vice versa: referenties uit de referentielijst worden niet gebruikt in de tekst	Referentielijst klopt voldoende, enkele typefout/omissie wordt vergeven. De stijl van de referenties wordt niet consequent aangehouden. De bronnen zijn wel volledig traceerbaar.	Referentielijst is volledig en correct volgens de richtlijnen van het domein geformateerd
Referenties in de tekst	Referenties zijn weggelaten waardoor er indrukken van plagiaat ontstaan OF Referenties worden geciteerd, maar het is duidelijk dat de student deze bron niet heeft gelezen (bv. bij verwijzing naar oorspronkelijke bron die ze zelf niet hebben gelezen)	Er zitten fouten in de referenties waaruit blijkt dat de student het doel van het refereren niet begrijpt (bv. systematisch verkeerd plaatsen van referenties, citaten niet onderbouwen, figuren niet onderbouwen) Maakt gebruik van andermans formuleringen (te herkennen aan stijlbreuken, te moeilijke woorden etc.)	Referenties zijn niet perfect (bv. chronologische volgorde klopt niet, meerdere referenties van dezelfde auteur zijn niet van elkaar te scheiden), maar er worden geen fouten gemaakt waaruit blijkt dat de essentie van het refereren niet is begrepen. Gebruikt eigen woorden	Verwijst correct naar bronnen, ideeën, inspiratiebronnen, analogieën, getallen, figuren, etc.: In de tekst wordt op de juiste manieren geciteerd of gerefereerd naar de bronnen die gebruikt zijn om het argument of een idee te hergebruiken in de tekst.
Presenteren				
Antwoord op de onderzoeksraag	Het antwoord komt uit de lucht vallen.	De informatie die niet is gebruikt was cruciaal voor het mogelijke antwoord op de gestelde vraag.	Niet alle informatie is gebruikt om tot het antwoord op de gestelde vraag te komen.	Het antwoord op de gestelde vraag volgt logisch uit de gevonden informatie.

Discussie	Er wordt in de discussie niet verwezen naar de context van de bestaande kennis	In de discussie wordt de context van de bestaande kennis niet genoemd.	In de discussie wordt verwezen naar nog niet eerder genoemde literatuur.	Verwijst in de discussie duidelijk naar de beschrijving van de huidige situatie (inleiding)
Schrijfstijl	De schrijfstijl is duidelijk verschillend binnen het product, het verschil tussen feiten en meningen is niet duidelijk.	Een enkele keer wordt een mening als een feit gepresenteerd.	De schrijfstijl is niet helemaal/grotendeels consequent.	De gebruikte schrijfstijl is consequent over het hele product, sluit goed aan bij de beoogde doelgroep en feiten en meningen worden duidelijk onderscheiden.
Schrijfstijl en opbouw	Schrijfstijl en opbouw contrasteren met de opdracht	Schrijfstijl en opbouw zijn inconsequent	Schrijfstijl en opbouw zijn consequent maar niet volledig passend	Schrijfstijl en opbouw kloppen met de opdracht
Structuur	Het stuk heeft kop noch staart	Onderdelen ontbreken, kopjes kloppen niet met de inhoud	Alle onderdelen zijn aanwezig maar de onderlinge relatie tussen de onderdelen is niet helder	Opbouw is logisch, het stuk heeft een kop en staart. Student heeft inzicht in wat hij/zij gedaan heeft en dit wordt duidelijk tijdens het lezen.
Referenties: compleet en correct	Geen citaties en referenties	Er wordt gebruik gemaakt van citaten en parafrases, maar zonder referenties of andersom	Citaties en referenties zijn in verschillende stijlen, onzorgvuldig	Citaties en referenties zijn correct en in de juiste stijl
Referenties in de tekst	Bij het overgrote deel van de referenties is niet duidelijk waar deze op slaan.	Er missen enkele referenties of er wordt in de tekst niet duidelijk op welk gedeelte van de tekst een referentie slaat.	De stijl van de referenties wordt niet consequent aangehouden.	Er wordt op correcte wijze in de tekst verwezen naar de literatuur.
Referenties in de tekst	Er wordt te veel gebruik gemaakt van exacte quotes.	Er wordt gebruik gemaakt van enkele quotes, maar deze worden niet becommentarieerd.	De literatuur wordt op goede wijze geparafraseerd. Er is een goede balans tussen citaten en samenvatting.	De literatuur wordt op goede wijze geparafraseerd. Er is een goede balans tussen citaten en samenvatting. De informatie wordt correct becommentarieerd en er is duidelijke inbreng van de student zelf.

E. Final rubric

	Herkennen - In staat een persoonlijke informatiebehoefte te herkennen			
	1	2	3	4
1. Inleiding: referenties huidige stand van zaken.	Er is geen beschrijving van de huidige stand van zaken in de inleiding.	De beschrijving van de huidige stand van zaken is te summier: te weinig referenties in de inleiding.	De referenties in de inleiding zijn eenzijdig, niet voldoende gevarieerd.	In de inleiding wordt voldoende gerefereerd. De referenties geven een gevarieerd beeld van de beschikbare literatuur.
2. Relatie tussen vraagstelling en literatuur	Er is geen relatie zichtbaar tussen de vraagstelling en de literatuur.	Er wordt wel verwezen naar de literatuur maar de vraag volgt daar niet logischerwijs uit.	De vraag komt wel voort uit de literatuur, maar de literatuur werpt ook nog andere vragen op die door de student niet worden benoemd.	De vraagstelling verwijst op een duidelijke manier naar de hiaten in de literatuur van het vakgebied.
3. Onderbouwing gemaakte keuzes	Gemaakte keuzes zijn niet onderbouwd.	Er missen belangrijke publicaties om gemaakte keuzes te onderbouwen.	Keuzes worden voldoende onderbouwd met literatuur maar de argumentatie klopt niet altijd.	Overal waar keuzes worden gemaakt, worden deze correct beargumenteerd aan de hand van literatuur of evt. eigen experimenten
4. Informatiesoorten	Herkent niet het bestaan van verschillende soorten informatiebronnen, die op verschillende plekken terug te vinden zijn.	Tenminste één cruciale informatiesoort ontbreekt.	De cruciale soorten informatie zijn doorzocht. Bijkomende zaken ontbreken.	Alle benodigde informatiesoorten zijn gebruikt.
5. Klantbehoefte/gat in de markt / wetenschappelijke / maatschappelijke relevantie	Klantbehoefte/gat in de markt wordt niet benoemd (indien van toepassing: niet onderzocht).	Behoefte wordt benoemd maar niet van bron voorzien en/of niet correct beargumenteerd.	Behoefte wordt benoemd en van bron voorzien.	Aandacht wordt besteed aan de behoefte. Deze is volledig en wordt correct van bron voorzien en geanalyseerd.
6. Recente ontwikkelingen	Gebruikte ontwikkelingen zijn gedateerd/wezenlijke ontwikkelingen zijn gemist.	Gebruik van recente ontwikkelingen is onvolledig, wezenlijke ontwikkeling ontbreekt.	Wezenlijke ontwikkelingen worden gebruikt maar het gebruik van ontwikkelingen is onvolledig.	Aandacht wordt besteed aan laatste ontwikkelingen in het vakgebied.
Kader - Huidige kennis kunnen beoordelen en hiaten kunnen herkennen				
	1	2	3	4
7. Ontbrekende kennis	Noemt niets over ontbrekende kennis.	Betreft onvoldoende informatie bij het in kaart brengen van het gebrek aan kennis.	Geeft vanuit één invalshoek correct weer welke kennis ontbreekt, of geeft vanuit meerdere invalshoeken	Geeft goed weer, middels bestaande kennis en de hiaten

			beperkt weer welke kennis ontbreekt.	daarin, welke vragen onbeantwoord zijn.
8. Gebruikte bronnen om kader te stellen	In het product zitten kwalitatief ongeschikte bronnen om het kader te stellen.	Om het kader te stellen heeft de student in het geschreven product te stellen, heeft de student tenminste één zeer ongeschikte bron gebruikt.	Voor het kader zijn voornamelijk goede bronnen gebruikt. Eventuele ongeschikte bronnen verstoren dit niet.	In het product weet student kader te stellen door bronnen van hoge kwaliteit goed weer te geven.
9. Informatietypes	Geen gebruik van referenties, dus geen informatietypes bekend.	Eén informatietype gebruikt.	Slechts twee informatietypes zijn gebruikt.	Meerdere informatietypes gebruikt, die passen bij het discipline en/of de opdracht.
Plannen - Strategieën voor het lokaliseren van informatie en data kunnen bepalen				
	1	2	3	4
10. Vraag/thema	Het is niet duidelijk wat de vraag of het thema is	Het thema of vraag is te globaal en breed of te nauw geformuleerd.	De vraag is geformuleerd en helder, maar specificiteit en doel zijn nog niet volledig.	De onderzoeksvergadering is een open vraag die helder, specifiek en expliciet geformuleerd is.
11. Relatie tussen zoekvraag en referenties	Referenties zijn niet te vergelijken met de zoekvraag.	Referenties passen niet bij de zoekvraag: te breed of te summier.	Referenties passen bij de vraag, maar keuze voor referenties is niet volledig helder, lijken willekeurig.	Referenties passen bij de zoekvraag, keuze voor referenties is helder.
12. Doel van de informatie	Doel van de informatie ontbreekt.	Doel van de informatie is niet helder.	Doel van informatie is onvolledig, einde van zoektocht is niet helder.	Doel is helder: het is duidelijk wat men wil bereiken met de gevonden informatie.
Verzamelen - De benodigde informatie en data kunnen lokaliseren en benaderen				
	1	2	3	4
13. Onderzoeksvergadering beantwoorden d.m.v. bronnen	Vindt onvoldoende geschikte informatie om de onderzoeksvergadering juist te beantwoorden, terwijl deze informatie redelijkerwijs goed beschikbaar is.	De onderzoeksvergadering is beantwoord met een zeer beperkte hoeveelheid aan informatie.	Beantwoordt de onderzoeksvergadering redelijk, benut de informatie die hij heeft goed maar heeft een aantal bronnen gemist.	Beantwoordt de onderzoeksvergadering goed. Beschrijft accuraat welk onderzoek nog ontbreekt.
14. Proces van informatie-verzamelen	Benoemt nergens het proces van informatie verzamelen.	Benoemt summier het proces van informatie verzamelen.	Beschrijft een proces van informatieverzameling dat kwalitatief nog beter kan.	Beschrijft een goed uitgevoerd informatieverzamelingsproces op heldere wijze.
Evalueren - Het zoekproces kunnen evalueren en informatie en data kunnen evalueren en vergelijken				
	1	2	3	4

15. Bronnen: wetenschappelijk	Er wordt geen gebruik gemaakt van (wetenschappelijke) bronnen.	De gebruikte bronnen bestaan uit studieboeken en/of reeds door de docent aangereikte bronnen.	Heeft de aangeboden literatuur uitgebreid met bronnen en - indien aanwezig - wetenschappelijke bronnen, waarvan voldoende passende bronnen. Indien wetenschappelijk bronnen niet aanwezig: reflecteert op afwezigheid.	Maakt -indien beschikbaar- gebruik van zelf verzamelde, passende wetenschappelijke bronnen zoals te verwachten aan de hand van de vraagstelling. Indien wetenschappelijk bronnen niet aanwezig: reflecteert op afwezigheid. Doet een gedegen analyse van de relaties tussen de verschillende documenten, betreft hierbij voor- en tegenstanders van het eigen standpunt.
16. Bronnen: recent	Gebruikte bronnen zijn verouderd.	Er wordt gebruik gemaakt van een paar recente bronnen, maar niet zoveel als je zou verwachten.	De belangrijkste recente bronnen worden gebruikt.	De meest recente en actuele bronnen zijn gevonden, zoals te verwachten is op basis van het gekozen onderwerp.
17. Bronnen: relevant en passend	Maakt geen gebruik van bronnen.	Verwijst naar bronnen die niet relevant en/of passend zijn	Gebruikt voldoende relevante en passende bronnen voor tekst en doelgroep	Gebruikt enkel relevante en passende bronnen voor tekst en doelgroep
18. Bronnen: inhoudelijk geschikt	Vragen en conclusies zijn gebaseerd op inhoudelijk ongeschikte bronnen.	Tenminste één belangrijke vraag of conclusie is niet gebaseerd op inhoudelijk geschikte bronnen.	De belangrijkste vraag en conclusie is gebaseerd op inhoudelijk geschikte bronnen.	Vragen en conclusies zijn volledig gebaseerd op inhoudelijk geschikte bronnen.
19. Borging aannames	Aannames worden gedaan en niet geborgd.	Tenminste één cruciale aansname is niet geborgd.	Cruciale aannames zijn geborgd, bijzaken ontbreken nog.	Alle gedane aannames zijn geborgd.
20. Bronnen in de conclusie: Betrouwbaarheid	De conclusie is gebaseerd op onbetrouwbare informatie.	Er wordt deels gebruik gemaakt van onbetrouwbare informatie voor tenminste één cruciaal onderdeel van de conclusie.	Er wordt gebruik gemaakt van onbetrouwbare informatie voor de conclusie, maar dit is geen cruciale informatie.	Alle voor de conclusie gebruikte informatie is betrouwbaar.
21. Stoppen met zoeken	Stopt zonder te overleggen met opdrachtgever.	Overlegt te laat, waardoor een dwingende situatie ontstaat.	Zoekt langer dan volgens opdrachtgever nodig was geweest.	Maakt duidelijk dat in overleg met de opdrachtgever op tijd en in redelijkheid gestopt is met de zoektocht.
Beheren - Informatie professioneel en ethisch kunnen organiseren				
	1	2	3	4
22. Referenties in referentielijst: Bron achterhalen	Referentie is zodanig dat de oorspronkelijke bron niet te achterhalen is.	Elementen ontbreken, bron is daardoor slecht te achterhalen.	Enige elementen ontbreken, de bron is wel te achterhalen maar dit kost tijd.	Referenties zijn volledig: de oorspronkelijke bron is eenvoudig te achterhalen

23. Referenties in referentielijst	Referenties ontbreken volledig, het overgrote deel van de referenties mist informatie of de fouten genoemd bij twee vinden in grote getallen plaats	Referenties zijn onvolledig en/of niet correct <u>of</u> referenties zijn niet opgenomen in de referentielijst maar wel in de tekst of vice versa.	Referentielijst klopt voldoende, enkele typefout/omissie wordt vergeven. De stijl van de referenties wordt niet consequent aangehouden.	Referentielijst is volledig en correct volgens de richtlijnen van het domein geformatteerd
Presenteren - De verkregen informatie kunnen toepassen				
	1	2	3	4
24. Antwoord op de onderzoeksraag	Het antwoord op de onderzoeksraag volgt niet logisch uit de informatie.	Informatie die niet is gebruikt was cruciaal voor het mogelijke antwoord op de gestelde vraag.	Niet alle informatie is gebruikt om tot het antwoord op de gestelde vraag te komen.	Het antwoord op de gestelde vraag volgt logisch uit de gevonden informatie.
25. Discussie	Er is oorspronkelijk (inleiding) niet verwezen naar de context van de bestaande kennis.	In de discussie wordt de context van de bestaande kennis uit de inleiding niet besproken.	In de discussie wordt verwezen naar de context van bestaande kennis, maar er wordt gebruik gemaakt van nog niet eerder genoemde literatuur.	Verwijst in de discussie duidelijk naar de beschrijving van de huidige situatie uit de inleiding).
26. Schrijfstijl: onderscheid tussen mening en feit	De schrijfstijl is duidelijk verschillend binnen het product, het verschil tussen feiten en meningen is niet duidelijk.	Een enkele keer wordt een mening als een feit gepresenteerd.	Feiten en meningen worden duidelijk onderscheiden. De schrijfstijl grotendeels consequent.	De gebruikte schrijfstijl is consequent over het hele product, feiten en meningen worden duidelijk onderscheiden.
27. Relatie tussen schrijfstijl en opdracht	Schrijfstijl en opbouw contrasteren met de opdracht	Schrijfstijl en opbouw zijn inconsequent.	Schrijfstijl en opbouw zijn consequent maar niet volledig passend.	Schrijfstijl en opbouw zijn consequent en kloppen met de opdracht
28. Structuur	Structuur ontbreekt.	Onderdelen ontbreken, kopjes kloppen niet met de inhoud	Alle onderdelen zijn aanwezig maar de onderlinge relatie tussen de onderdelen is niet helder.	De structuur is logisch. Student heeft inzicht in wat hij/zij gedaan heeft en dit wordt duidelijk tijdens het lezen.
29. Referenties in de tekst: gebruik van exacte quotes vs. parafrase.	Er wordt te veel gebruik gemaakt van exacte quotes.	Er wordt gebruik gemaakt van enkele quotes, maar deze worden niet becommentarieerd. Maakt gebruik van andermans formuleringen (te herkennen aan stijlbreuken, te moeilijke woorden etc.).	De literatuur wordt op goede wijze geparafraseerd. Er is een goede balans tussen citaten en samenvatting.	De literatuur wordt op goede wijze geparafraseerd. Er is een goede balans tussen citaten en samenvatting. De informatie wordt correct becommentarieerd en er is duidelijke inbreng van de student zelf.
30. Referenties in de tekst	Referenties zijn weggelaten waardoor er indrukken van plagiaat ontstaan <u>OF</u> bij het overgrote deel van de	Er zitten fouten in de referenties waaruit blijkt dat de student het doel van het refereren niet begrijpt (bv. systematisch verkeerd plaatsen	Referenties zijn niet perfect (bv. chronologische volgorde klopt niet, meerdere referenties van dezelfde auteur zijn niet van elkaar te	Verwijst correct naar bronnen, ideeën, inspiratiebronnen, analogieën, getallen, figuren, etc.: in de tekst wordt op de juiste

	referenties is niet duidelijk waar deze op slaan. OF referenties worden geciteerd, maar het is duidelijk dat de student deze bron niet heeft gelezen.	van referenties, citaten niet onderbouwen, figuren niet onderbouwen)	scheiden), maar er worden geen fouten gemaakt waaruit blijkt dat de essentie van het refereren niet is begrepen.	manieren geciteerd of gerefereerd naar de bronnen die gebruikt zijn om het argument of een idee te hergebruiken in de tekst.
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F. Compressed rubric

	1	2	3	4
Herkennen – Kader – Plannen				
Relatie tussen vraagstelling en literatuur	Er is geen relatie zichtbaar tussen de vraagstelling en de literatuur.	Er wordt wel verwezen naar de literatuur maar de vraag volgt daar niet logischerwijs uit.	De vraag komt wel voort uit de literatuur, maar de literatuur werpt ook nog andere vragen op die door de student niet worden benoemd.	De vraagstelling verwijst op een duidelijke manier naar de hiaten in de literatuur van het vakgebied.
Recente ontwikkelingen	Gebruikte ontwikkelingen zijn gedateerd/wezenlijke ontwikkelingen zijn gemist.	Gebruik van recente ontwikkelingen is onvolledig, wezenlijke ontwikkeling ontbreekt.	Wezenlijke ontwikkelingen worden gebruikt maar het gebruik van ontwikkelingen is onvolledig.	Aandacht wordt besteed aan laatste ontwikkelingen in het vakgebied.
Ontbrekende kennis	Noemt niets over ontbrekende kennis.	Betreft onvoldoende informatie bij het in kaart brengen van het gebrek aan kennis.	Geeft vanuit één invalshoek correct weer welke kennis ontbreekt, of geeft vanuit meerdere invalshoeken beperkt weer welke kennis ontbreekt.	Geeft goed weer, middels bestaande kennis en de hiaten daarin, welke vragen onbeantwoord zijn.
Gebruikte bronnen om kader te stellen	In het product zitten kwalitatief ongeschikte bronnen om het kader te stellen.	Om het kader te stellen heeft de student in het geschreven product te stellen, heeft de student tenminste één zeer ongeschikte bron gebruikt.	Voor het kader zijn voornamelijk goede bronnen gebruikt. Eventuele ongeschikte bronnen verstoren dit niet.	In het product weet student kader te stellen door bronnen van hoge kwaliteit goed weer te geven.
Vraag/thema	Het is niet duidelijk wat de vraag of het thema is	Het thema of vraag is te globaal en breed of te nauw geformuleerd.	De vraag is geformuleerd en helder, maar specificiteit en doel zijn nog niet volledig.	De onderzoeksraag is een open vraag die helder, specifiek en expliciet geformuleerd is.
Verzamelen – Evalueren				
Onderzoeksraag beantwoorden d.m.v. bronnen	Vindt onvoldoende geschikte informatie om de onderzoeksraag juist te beantwoorden, terwijl deze informatie redelijkerwijs goed beschikbaar is.	De onderzoeksraag is beantwoord met een zeer beperkte hoeveelheid aan informatie.	Beantwoordt de onderzoeksraag redelijk, benut de informatie die hij heeft goed maar heeft een aantal bronnen gemist.	Beantwoordt de onderzoeksraag goed. Beschrijft accuraat welk onderzoek nog ontbreekt.
Bronnen: wetenschappelijk	Er wordt geen gebruik gemaakt van (wetenschappelijke) bronnen.	De gebruikte bronnen bestaan uit studieboeken en/of reeds door de docent aangereikte bronnen.	Heeft de aangeboden literatuur uitgebreid met bronnen en - indien aanwezig - wetenschappelijke bronnen, waarvan voldoende	Maakt -indien beschikbaar- gebruik van zelf verzamelde, passende wetenschappelijke bronnen zoals te verwachten aan de hand van de

			passende bronnen. Indien wetenschappelijk bronnen niet aanwezig: reflecteert op afwezigheid.	vraagstelling. Indien wetenschappelijk bronnen niet aanwezig: reflecteert op afwezigheid. Doet een gedegen analyse van de relaties tussen de verschillende documenten, betreft hierbij voor- en tegenstanders van het eigen standpunt.
Bronnen: recent	Beschreven bronnen zijn verouderd.	Er wordt gebruik gemaakt van een paar recente bronnen, maar niet zoveel als je zou verwachten.	De belangrijkste recente bronnen worden gebruikt.	De meest recente en actuele bronnen zijn gevonden, zoals te verwachten is op basis van het gekozen onderwerp.
Bronnen: relevant en passend	Maakt geen gebruik van bronnen.	Verwijst naar bronnen die niet relevant en/of passend zijn	Gebruikt voldoende relevante en passende bronnen voor tekst en doelgroep	Gebruikt enkel relevante en passende bronnen voor tekst en doelgroep
Bronnen: inhoudelijk geschikt	Vragen en conclusies zijn gebaseerd op inhoudelijk ongeschikte bronnen.	Tenminste één belangrijke vraag of conclusie is niet gebaseerd op inhoudelijk geschikte bronnen.	De belangrijkste vraag en conclusie is gebaseerd op inhoudelijk geschikte bronnen.	Vragen en conclusies zijn volledig gebaseerd op inhoudelijk geschikte bronnen.
Bronnen in de conclusie: Betrouwbaarheid	De conclusie is gebaseerd op onbetrouwbare informatie.	Er wordt deels gebruik gemaakt van onbetrouwbare informatie voor tenminste één cruciaal onderdeel van de conclusie.	Er wordt gebruik gemaakt van onbetrouwbare informatie voor de conclusie, maar dit is geen cruciale informatie.	Alle voor de conclusie gebruikte informatie is betrouwbaar.
Beheren – Presenteren				
Referenties in referentielijst: Bron achterhalen	Referentie is zodanig dat de oorspronkelijke bron niet te achterhalen is.	Elementen ontbreken, bron is daardoor slecht te achterhalen.	Enige elementen ontbreken, de bron is wel te achterhalen maar dit kost tijd.	Referenties zijn volledig: de oorspronkelijke bron is eenvoudig te achterhalen
Referenties in referentielijst	Referenties ontbreken volledig, het overgrote deel van de referenties mist informatie of de fouten genoemd bij twee vinden in grote getallen plaats	Referenties zijn onvolledig en/of niet correct <u>of</u> referenties zijn niet opgenomen in de referentielijst maar wel in de tekst of vice versa.	Referentielijst klopt voldoende, enkele typefout/omissie wordt vergeven. De stijl van de referenties wordt niet consequent aangehouden.	Referentielijst is volledig en correct volgens de richtlijnen van het domein geformatteerd
Antwoord op de onderzoeksraag	Het antwoord op de onderzoeksraag volgt niet logisch uit de informatie.	Informatie die niet is gebruikt was cruciaal voor het mogelijke antwoord op de gestelde vraag.	Niet alle informatie is gebruikt om tot het antwoord op de gestelde vraag te komen.	Het antwoord op de gestelde vraag volgt logisch uit de gevonden informatie.
Discussie	Er is oorspronkelijk (inleiding) niet verwezen naar de context van de bestaande kennis.	In de discussie wordt de context van de bestaande kennis uit de inleiding niet besproken.	In de discussie wordt verwezen naar de context van bestaande kennis, maar er wordt gebruik gemaakt van	Verwijst in de discussie duidelijk naar de beschrijving van de huidige situatie uit de inleiding).

			nog niet eerder genoemde literatuur.	
Schrijfstijl: onderscheid tussen mening en feit	De schrijfstijl is duidelijk verschillend binnen het product, het verschil tussen feiten en meningen is niet duidelijk.	Een enkele keer wordt een mening als een feit gepresenteerd.	Feiten en meningen worden duidelijk onderscheiden. De schrijfstijl grotendeels consequent.	De gebruikte schrijfstijl is consequent over het hele product, feiten en meningen worden duidelijk onderscheiden.
Relatie tussen schrijfstijl en opdracht	Schrijfstijl en opbouw contrasteren met de opdracht	Schrijfstijl en opbouw zijn inconsequent.	Schrijfstijl en opbouw zijn consequent maar niet volledig passend.	Schrijfstijl en opbouw zijn consequent en kloppen met de opdracht
Structuur	Structuur ontbreekt.	Onderdelen ontbreken, kopjes kloppen niet met de inhoud	Alle onderdelen zijn aanwezig maar de onderlinge relatie tussen de onderdelen is niet helder.	De structuur is logisch. Student heeft inzicht in wat hij/zij gedaan heeft en dit wordt duidelijk tijdens het lezen.
Referenties in de tekst: gebruik van exacte quotes vs. parafrase.	Er wordt te veel gebruik gemaakt van exacte quotes.	Er wordt gebruik gemaakt van enkele quotes, maar deze worden niet becommentarieerd. Maakt gebruik van andermans formuleringen (te herkennen aan stijlbreuken, te moeilijke woorden etc.).	De literatuur wordt op goede wijze geparafraseerd. Er is een goede balans tussen citaten en samenvatting.	De literatuur wordt op goede wijze geparafraseerd. Er is een goede balans tussen citaten en samenvatting. De informatie wordt correct becommentarieerd en er is duidelijke inbreng van de student zelf.
Referenties in de tekst	Referenties zijn weggelaten waardoor er indrukken van plagiaat ontstaan. OF bij het overgrote deel van de referenties is niet duidelijk waar deze op slaan. OF referenties worden geciteerd, maar het is duidelijk dat de student deze bron niet heeft gelezen.	Er zitten fouten in de referenties waaruit blijkt dat de student het doel van het refereren niet begrijpt (bv. systematisch verkeerd plaatsen van referenties, citaten niet onderbouwen, figuren niet onderbouwen)	Referenties zijn niet perfect (bv. chronologische volgorde klopt niet, meerdere referenties van dezelfde auteur zijn niet van elkaar te scheiden), maar er worden geen fouten gemaakt waaruit blijkt dat de essentie van het refereren niet is begrepen.	Verwijst correct naar bronnen, ideeën, inspiratiebronnen, analogieën, getallen, figuren, etc.: in de tekst wordt op de juiste manieren geciteerd of gerefereerd naar de bronnen die gebruikt zijn om het argument of een idee te hergebruiken in de tekst.