



School of
Health Professions
Education

The background of the cover is a photograph of a modern building with large windows and a wooden facade. In the foreground, a group of students is walking on a paved path. The image is partially obscured by a large, light-colored diagonal graphic element.

Self-evaluation report 2018-2023



Maastricht University



Maastricht UMC+

Preamble

SHE has engaged in a six-year review process for the years 2012-2017, which led to valuable feedback and concrete actions. Although not mandatory, SHE decided to conduct a mid-term review in 2021, including a virtual site visit, by a review committee on the years 2018-2020. The reasons for organizing a mid-term review were the opportunities it offers to engage in a productive conversation about our research impact and future aims, both within our own organization and with a review committee. Building on the experience and outcomes of the 2018-2020 mid-term review, SHE is excited to engage with the 2018-2023 external review committee to help promote the quality and societal relevance of our research and related activities.



In this self-evaluation report, we have integrated the recommendations of the 2012-2017 full-term review process and that of the 2018-2020 mid-term review. Next to that, SHE's research quality, societal relevance and viability are described and illustrated in line with the SEP 2021-2027 guidelines.

Pim Teunissen

Scientific Director School of Health Professions Education
September 2024

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1 Introduction

SHE in context

The School of Health Professions Education (SHE) was founded as a research unit in 2005 and became a Graduate School at Maastricht University's Faculty of Health Medicine and Life Sciences (FHML) and Maastricht UMC+ in 2014. Currently, it is one of seven research institutes at FHML. Despite being officially established in 2005, SHE's activities have deeper roots: its Master of Health Professions Education (MHPE) program began in 1992, and its research origins trace back to the founding of Maastricht University in the mid-1970s. Significant growth in SHE's research occurred with the launch of an International PhD Programme in the 2000s. In 2012, SHE expanded with global consultancy activities and funded projects to further strengthen our positive impact on educational capacity and innovation in health education. SHE researchers have created five SHE Special Interest Groups (SIGs) that regularly meet to discuss research developments and act as sounding boards.

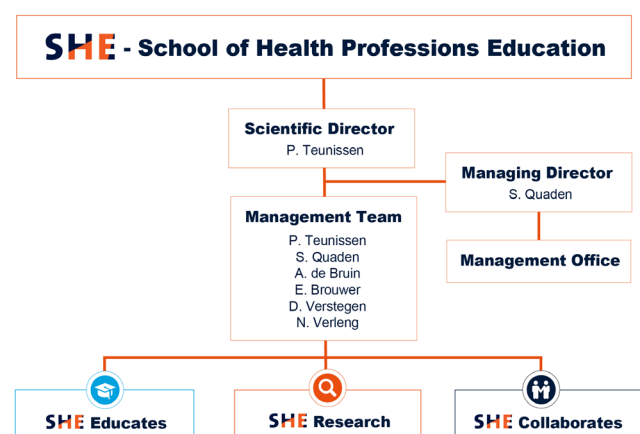
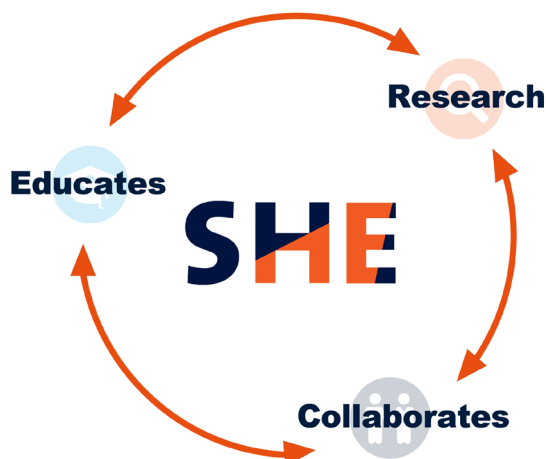
SHE is part of the Faculty of Health Medicine and Life Sciences (FHML), the largest faculty at Maastricht University. FHML has a matrix structure with "departments" and "research institutes". SHE staff are employed across several FHML departments, though primarily the department of Educational Research and Development. SHE works with these departments to align ambitions

and resources. General information regarding Maastricht University Medical Center (Maastricht UMC+) and FHML at Maastricht University, are presented in Appendix 3a. Specific information on SHE's staff and funding are presented in tables E2 and E3 respectively.

Organizational change at SHE since 2018

The organizational structure of SHE follows its main activities. The three core activity domains of SHE are called SHE Research, SHE Educates, and SHE Collaborates. These activities are coordinated by the SHE Management Team (see Figure 1.1). Since the six-year review of 2018 a number of changes have taken place. SHE Bytes, focused on developing educational software, was phased out for financial and strategic reasons, and is no longer part of SHE's structure. An important and anticipated change, already discussed during the review in 2018, was the change in leadership. Until 2020, Prof. van der Vleuten managed overall operations and scientific quality as Scientific Director, while Prof. van Merriënboer oversaw the Research and PhD program as Research Director. In September 2020, Prof. Pim Teunissen became SHE Director, assuming both roles and redistributing some responsibilities within the team. This leadership change led to a restructured management team representing each core activity. SHE's organizational structure, and management team are presented in Figure 1.1.

Figure 1.1 Dynamics and organizational structure of SHE



2 Vision, mission and strategy

Chapter 2 describes (changes in) the vision, mission, strategic aims and strategy of SHE, looking back over the past six years.

Vision, Mission, Values

Since its inception, SHE has focused on impacting healthcare globally through research in healthcare education and translating insights into educational innovation. Research quality, societal relevance and a continuing focus on viability are the focus of SHE's Management Team. In 2020, the renewed SHE Management Team emphasized SHE's ambitions in our vision: "Excellent healthcare requires evidence-informed models for the education of future and current healthcare professionals. Through research, education, and innovation, SHE works towards a world in which all healthcare professionals are well educated and in the best position to contribute to high quality care."

SHE's mission is: "SHE aims to be a leading hub for research and innovation of Health Profession Education (HPE) worldwide. SHE connects HPE research to educational activities, consultancy, innovation and impactful global projects."

The redefined mission resulted from discussions within the SHE Management Team and was discussed at a staff meeting in January 2021. While similar to the 2012-2017 mission, it more explicitly highlights SHE as a central hub in a global network of HPE professionals. The mission underscores the synergy of connecting theory, research, and practice to advance HPE. SHE's core values—open, inquisitive, socially responsible, collaborative, innovative, and ambitious—are crucial to its academic culture, talent development, open science, and PhD training.

Strategy; changes and development

SHE's vision, mission, and values shape its strategy. An important strategic goal is to **increase synergy between SHE core activities** and to support that

our research informs educational practice and vice-versa. Starting in 2021, the SHE Management Team initiated various activities involving all SHE staff, that focus on further developing a shared identity, shared goals and providing guiding principles based on SHE's vision, mission and strategy. This process has been the basis for recognizing opportunities in line with our vision and mission, strengthening collaborations within and outside the research institute connecting SHE activities to FHML, Maastricht University and Maastricht UMC+ educational programmes. An example of synergy is the revised Master of Health Professions Education (MHPE), led by Dr. Daniëlle Verstegen. The program, influenced by insights from SHE's research activities on programmatic assessment, authentic learning tasks and self-regulated learning, is now more flexible and based on individualized guidance and feedback. It launched with its first cohort in May 2021 and received a very positive review from the Accreditation Organization of the Netherlands and Flanders in 2023. Another example focused at synergy is the appointment of Dr. Emmaline Brouwer as lead of SHE Collaborates after completing her PhD on international medical programmes within the SHE PhD programme in 2022.

The 2021 review committee recommended to search for ways in which we could monitor and document success towards our goal of increasing synergy. SHE has used this recommendation to implement changes at the management level. Concretely, as of 2022 the SHE Management Team has started to work with a yearly cycle of four themed XL-sessions (2-hour meetings). In February the theme is 'Future financial planning' based on input from the managing director and financial controller. In June, the SHE MT meets to discuss the output overview of the previous year. This discussion is informed by the draft annual report for the previous year which includes all forms of output recognized in the Strategy Evaluation Protocol 2021-2027. To discuss how this aligns with

prioritized themes, the SHE MT has developed a set of indicators and evaluation measures, as well as a timeline. At the moment, next to synergy, the prioritized themes are: professional development of staff and communication & visibility. In October, an XL-session is dedicated to SHE's impact and visibility informed by a presentation by SHE's communication officer. Finally, in December, the SHE MT reflects on all prioritized themes and related activities and accomplishments in light of the indicators and evaluation measures to consider if prioritized themes need to be adjusted or can be considered as completed, hence creating space for new priorities.

A second strategic choice is to **improve HPE by investing in the interaction between impactful research and the practice of education**. This is exemplified by what is called SHE's double-chain approach (Figure 2.1). The first chain connects research and impact: research covers the spectrum from application-oriented educational research to conceptual contributions to relevant (educational) theories in HPE. These research findings then not only inform SHE's educational activities, but also improve quality and innovation at FHML/MUMC+. SHE Collaborates is vital to help other educational institutes and healthcare organizations apply this knowledge too and, in the process, create new research opportunities. The second chain focuses on impacting individuals and teams: beginning with short courses for those new to HPE, followed by certificate courses on specific topics, then the MHPE program for aspiring academic educators, leaders, or researchers, and culminating in a PhD program for those aiming to become scholars in health professions education. It is not uncommon for students to first take a short course and end up doing research in the PhD programme.

A crucial third aspect to SHE's strategy is the **focus of the content of our research activities**. SHE's 2018-2023 research programme was called 'Task-centered learning environments in the health professions' and covered the breadth of topics being studied by SHE researchers. Late 2021, the SHE Research management team started the process of developing SHE's new research program. This was deliberately started early and as a collaborative process so that the activities resulting in SHE's future research program would also feed into the abovementioned goal of further developing a shared identity and shared goals. The process itself and the various stakeholders involved, are outlined in the research program which is available online. In December 2023, SHE launched its Research Program 2024-2030. The essence of SHE's Research Program 2024-2030 is encapsulated in the acronym H-P-E:

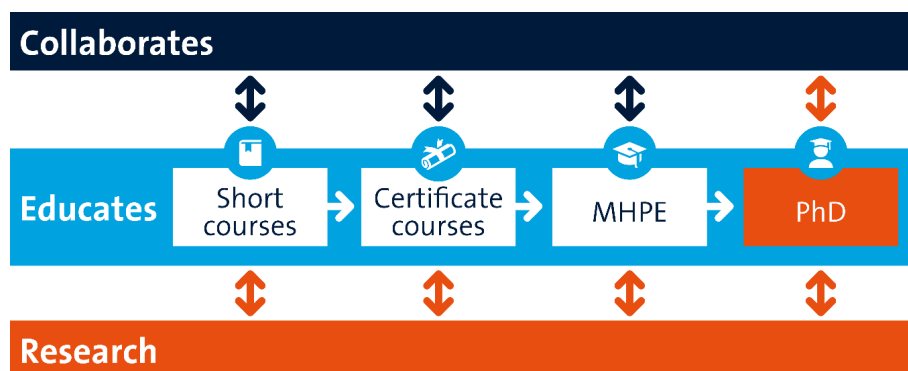
Healthcare environments that foster learning

We aim to create knowledge that enables healthcare environments to support learning and ongoing development of healthcare teams and individual professionals. Research in different areas of health professions education needs to come together to develop theory-based models for fostering learning in healthcare environments. Research lines that are part of this aim focus on how educational approaches, such as curriculum design models, assessment approaches or intercultural education, can optimally support learning from and for practice.

Professionals that are sustainably competent

We aim to enhance understanding of how to prepare future professionals to be(come) competent in line with the specific needs of their work context, and how they can remain so throughout their career. This covers research

Figure 2.1. Double Chain approach of SHE



on how to enable learners to make best use of room for personalized learning plans and the role teachers, coaches, supervisors and peers play in that process. Research is also needed to uncover how, after finishing their formal education, healthcare professionals can be supported to continue ongoing professional and personal development.

Education that is designed for context

We aim to further insights in which educational designs work for which goal, and in which context. Research can help to see how learners can be supported in learning across educational, professional, social, and cultural contexts. Unravelling the essential elements of contexts that ask for adaptation in the design of education, and can be used to adapt or co-create designs with all stakeholders involved, are part of this aim.

The intentional complementarity of the three research aims enables a holistic approach to tackling the globally shared challenge of optimally educating all healthcare professionals. These research aims offer a framework for research-, collaboration-, and policy decisions and as an inspiration for (new) cross-linkages between people, ideas, and investments.

Previous review committees noted that SHE's research quality is excellent. The strategies outlined in this chapter clearly focus on keeping up the high standard of research quality and ensuring societal relevance and impact by integrally connecting practice and research. The strategic goals are supported by the deliberate prioritization at the SHE Management Team level of our academic culture and our people ('human resources' in the words of the SEP 2021-2027) as outlined in chapters 3 and 4.

3 Academic culture

Research is a collective endeavour. It is the diversity of perspectives, contradictions in research findings, and continued curiosity towards ill-understood phenomena that drives the success of SHE. This requires an open, safe and inclusive research environment. SHE continuously works on creating a healthy academic culture and developing human resource policy that supports that, of course within the general policies of Maastricht UMC+ and FHML. Information on Maastricht UMC+/FHML policies with regard to open science, PhD policy and training, academic culture, and human resources policy are presented in Appendix 3b.

SHE has a differentiated approach to human resource and talent management, in which diversity plays an important role. SHE believes that it is important to take all aspects of diversity, both visible and invisible, in consideration. This

starts with current staff feeling they belong and can be who they wish to be, while at the same time feeling safe enough to learn and develop. SHE fosters such an environment and culture by regularly discussing who we are and how we work together, for instance in SHE Academy meetings, supervisor meetings and staff meetings. In doing so, we specifically pay attention to the issue of gender equality and diversity. We believe that with a differentiated human resource policy, all SHE staff members and those who join one of our programs, should be able to flourish and work to their highest potential.

In terms of policy, the focus on synergy between SHE's core activity domains further supports the message that to succeed we need to include a variety of perspectives and activities. All three core activity domains of SHE (Research – Educates - Collaborates) deliberately engage with a wide

Figure 3.1. Nationality of PhD and MHPE students (Maastricht cohort) active in 2018-2023

Europe	East and Southeast Asia	North America
Austria	Cambodia	Canada
Belgium	China	Mexico
Denmark	Indonesia	United States
Estonia	Japan	
Finland	Malaysia	Central America and Caribbean
Germany	Philippines	Barbados
Ireland	Singapore	Trinidad and Tobago
Italy	South Korea	
Luxemburg	Thailand	South America
Netherlands	Vietnam	Argentina
Spain		Brazil
Switzerland	South Asia	Chile
United Kingdom	India	Columbia
	Maldives	Ecuador
	Nepal	Surinam
Middle East	Pakistan	
Armenia		Africa
Iran		Egypt
Oman	Central Asia	Ghana
Qatar	Russia	Kenya
Saudi Arabia		Rwanda
Turkiye	Oceania	South Africa
United Arab Emirates	Australia	Sudan
	New Zealand	

Figure 3.2. Participants course ‘Writing a PhD Research Proposal’



variety of participants and stakeholders around the world, examples of which can be found in the case studies. The diversity of PhD candidates, MHPE students, short course participants and participants within SHE Collaborates activities, are an example of our ability and attractiveness in this regard. For instance, in 2023 there were 133 active PhD candidates in SHE’s PhD program from 34 different nationalities. Over the past 6 years (2018-2023) students from 37 nationalities started their MHPE at Maastricht University.

Especially during the COVID-19 pandemic, when people were forced to work online, feeling connected, valued and part of a community was a challenge. During the COVID-19 pandemic, SHE organized a number of online activities for SHE staff, together with the department of Educational Research and Development of FHML. Moreover, the SHE MT has explicitly stimulated that each team member stayed in touch with SHE staff related to the core activity that they represent and have acted accordingly.

A few recent concrete examples of how SHE promotes an open, safe and inclusive research environment are described here. During the review period, we have organized development sessions for MHPE staff on the topic of ‘decolonizing the

curriculum’. In February 2022, the online gathering for all SHE PhD supervisors consisted of an interactive workshop called ‘Intentionality in Our Mentorship of PhD Candidates’. This workshop was facilitated by Audrea Burns and Hannah Anderson. Their 90-minute workshop discussed shared challenges in mentorship and strategies, for instance around the topic of intersectionality, to strengthen mentoring relationships that foster the professional identity of PhD candidates from all backgrounds. In June 2023, the on-site edition of SHE’s twice-yearly staff meeting centred around what SHE Community means to people and how we can continue to foster an inclusive local and global community. As June is also Pride month, the meeting was kicked-off by Pim Teunissen reminding everyone how important and valuable it is that everyone in our community can be who they are while engaging in an open scientific and educational discussion with each other. To mark the occasion, we created rainbow-colored SHE key cords that were distributed to all SHE staff and that we have taken with us as promotional material - and a clear statement – to the SHE stand at the 2023 and 2024 conference of AMEE, the International Association for Health Professions Education.

4 Human resource policy

Another way to support an inclusive, open and safe academic culture is through talent policy and human resources policy in general. SHE is excited about steps leading to Recognition and Rewards policy changes at a national level and at the level of Maastricht University, FHML and Maastricht UMC+ (see appendix 3b). Given the matrix structure of our organization, all staff are appointed within departments. For their research activities they are embedded within research institutes, such as SHE. The new policies introduced in 2023 are aimed at establishing a more diversified and holistic approach to evaluation and appraisal of staff. Next to the importance of research output, activities in the domains of leadership, impact and education should play a much more important role in formal yearly assessments and promotion decisions. This direction fits very well with the diverse activities of SHE staff. Yet, we also recognize that the current (partial) implementation of these policies may lead to confusion as well as improvements.

Specifically with regard to talent policy, SHE has and will continue to support all its staff. In line with one of the recommendations of the 2021 mid-term review committee to establish a mentorship program for (new) academic staff, the SHE MT developed a policy statement in April 2023 on 'Faculty development program for early career SHE academics'. Developed by prof. dr. Erik Driessen in collaboration with HYPER (a bottom-up initiative of young academics at SHE) and SHE's visiting professor dr. Lorelei Lingard, the SHE faculty development program for early career academics (mainly colleagues at the postdoc and assistant professor levels) offers the possibility to participate in facilitated reflection sessions and workshops on specific skills identified by early career academics themselves.

Next to this, all SHE staff have had annual performance appraisals which will morph into Development Board meetings in line with Recognition & Reward policies. SHE staff and PhD candidates appointed at FHML's department of Educational Research and Development are

offered various coaching options to support them in aligning their research activities with their educational development activities. All other PhD candidates in the international PhD program have progress meetings with their supervisors two times a year (initiated by a reminder email from our PhD monitoring system PhD TRACK). Those meetings are particularly intended to explore career opportunities, agree on performance goals, and to identify candidates who may qualify for personal research grants. Such grants include the Kootstra Talent Fellowship, which is awarded by the FHML to excellent PhD students to bridge the gap between a PhD and postdoc position. The outcomes of a survey among PhD alumni who graduated between 2011 and 2020 shows more recent graduates (2016-2020 cohorts) also perceive that there is explicit attention given to career development (scored a 3.4 on a 5-point Likert scale), although there is room for improvement.

Ways in which SHE is further increasing its focus on professional development, is by giving (junior) staff the opportunity to participate in courses that help them prepare a research proposal for external funding. They can receive intensive guidance from senior researchers and the Grants Office of the FHML while writing these proposals, and are stimulated to spend some time abroad in excellent research groups. Courses aimed at the preparation of research grants are offered by Maastricht University (e.g., "Training grants for individuals"), but SHE also organizes workshops and regular meetings in which researchers who have been successful in obtaining grants share their experiences, such as SHE Grants meetings. The inclusion of PhD alumni in SHE Educates activities (e.g. PhD Writing Course and MHPE) is another way of supporting talent and individuals' professional development. In addition, SHE collaborates with FHML's Institute for Education on the 'Educational Career Track' policy. This policy offers educators from non-educational backgrounds who want to make a career in educational innovation and research the opportunity to develop towards associate and full professor levels.

As mentioned in chapter 3, diversity plays an important role in SHE's approach to human resource policy. Diversity has many different forms and can be expressed in a myriad of ways. Diversity has visible and invisible aspects. SHE researchers understand the complexity of diversity and they engage in research on this topic related to health professions education. Diversity cannot be expressed in simple metrics. Still, to give some insights in quantifiable measures, the diversity in terms of gender is visible throughout all layers of the organization of SHE. The share of women in the total number of research staff ranges from 54-65% in the 2018-2023 period. Diversity in terms of country of origin were represented in figure 3.1.

Results from the 2020 survey among PhD alumni also showed the diversity in background of PhD candidates, with candidates working clinically, in administrative roles, teaching, educational research and educational management.

5 Open Science

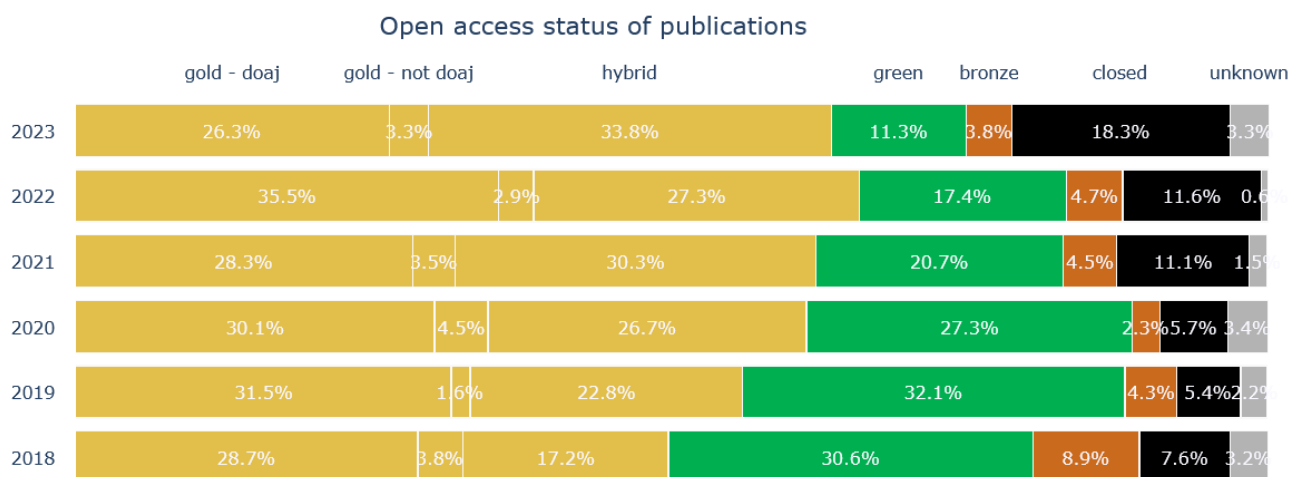
Open science and scientific integrity are of great priority to SHE. SHE's Open Science policy specifically mentions, among others, the importance of preregistration of quantitative research studies, sharing of research materials and data, and open access publishing. The efficacy of SHE's Open Science policy is shown by an increase in open access article publications from 49.7% in 2018 to 63.4% in 2023, see figure 5.1. Data on trends in open access publications in different scientific fields over the past years¹ shows that SHE is a front runner in terms of publishing open access. Since 2016, SHE's research abides by the FAIR data management principles ensuring that data are findable, accessible, interoperable, and reusable. At the start of a research project, SHE researchers draw up a data management plan

(DMP). The SHE website provides information on how to engage in Open Science practices, including Open Access publishing². All SHE research data are stored safely in the data management system Dataverse for at least ten years. In SHE's PhD programme, Open Science receives ample attention. PhD students, for example, participate in workshops on responsible re-search conduct. In addition, all Maastricht University PhD candidates are obliged to take part in a general PhD training consisting of courses on Research Ethics and Integrity, Open Science, and Science Communication.

¹Trends for open access to publications, data from the European Commission. See https://research-and-innovation.ec.europa.eu/strategy/strategy-2020-2024/our-digital-future/open-science/open-science-monitor/trends-open-access-publications_en#open-access-to-publications

²<https://www.maastrichtuniversity.nl/research/she/she-research/scientific-integrity/open-access-publishing>

Figure 5.1 Open access status of peer-reviewed publications, 2018-2023



The open access status of SHE publications, as defined by Unpaywall. A total of 126 publications is shown for 2018, 162 for 2019, 156 for 2020, 164 for 2021, 143 for 2022, and 159 for 2023.

Moreover, Prof. Erik Driessen is editor-in-chief of the Open Access journal Perspectives on Medical Education since 2012. Under his editorship, the journal became one of the top 3 journals in medical education that received attention in social media³ and was added to the Journal Citation Reports list. Since 2021, the importance of Open Science within SHE has materialized into a research line on so called meta-research under prof. Driessen's guidance. Meta-research has a place within SHE through research⁴, faculty development, and education. It focuses on how health professions education researchers perform, communicate, and verify the field's research or how the field rewards research. Within this line of research, prof. Anique de Bruin was awarded a grant within the Open Science Fund of the Dutch Research Council (NWO) in 2021. In collaboration with colleagues at Bina Nusantara University in Indonesia, she studied in this project how open science practices can potentially reduce questionable research practices. The results of this project are currently under review at scientific journals.

Meta-research papers are discussed in the journal club of SHE, the SHE Special Interest Groups (SIGs) and in PhD supervisor meetings. SHE researchers provide workshops and lectures on meta-research for research groups within Maastricht University and on National and International conferences. In 2023, SHE launched its own scientific integrity webpage with practical information and tips for PhD candidates, see the link in appendix 3c. Dr. Renée Stal-meijer leads the group who oversees the guidance offered to SHE researchers. Next to organizing awareness activities, they also developed a Scientific Integrity @SHE Roadmap. Prof. Erik Driessen's role as member of the Maastricht UMC+/FHML Platform Scientific Integrity, and attention to ethical issues in the biannual SHE Academy further exemplify SHE's actions towards enculturating open science and high research integrity.

³Maggio, L. A., Meyer, H. S., & Artino, A. R. (2017). Beyond Citation Rates. Academic Medicine, 92, 1449–1455.

⁴Retraction watch published an interview about one of the SHE sloppy science studies: <https://retractionwatch.com/2018/03/02/ethical-shades-of-gray-90-of-researchers-in-new-healthfield-admit-to-questionable-practices>

6 PhD policy and programme

The PhD programme is a central component of the activities of the SHE. This chapter describes the main characteristics of our PhD programme and our approach to ensure its continued success. Dr. Janneke Frambach is the PhD Coordinator of SHE. Information on Maastricht UMC+/FHML policies with regard to PhD policy and training are available through the link in Appendix 3b. Practical information for PhD candidates and supervisors is available in the PhD Guide for which a link is provided in appendix 3c.

Our PhD candidates learn to independently conduct high-quality educational research in the health professions. They write a PhD thesis containing a coherent body of scholarly work of at least four separate studies. These studies are described in the form of journal articles aimed to be published in peer-reviewed journals. The thesis also includes a general introduction and discussion and, since 2020, an impact chapter. By January 2024, 125 PhD candidates were enrolled in SHE's PhD programme. The programme has two branches. First, it encompasses *an internal PhD programme* which contains PhD projects that are grant funded or, to a much lesser extent, by SHE itself. These PhDs typically work on their research for four years and are located within the research institute. In addition, we offer *an external PhD programme*, which contains PhD projects that are typically submitted by participants from the course 'Writing a PhD Research Proposal'. After formal approval of their PhD proposal, candidates are admitted to the external PhD programme. External candidates outside the Netherlands pay an annual fee for making use of Maastricht University's facilities, coursework and supervision. External candidates typically combine their PhD with a job as a healthcare professional but they are also expected to be able to finish their PhD research within a period of 4-6 years. They are not housed by SHE and typically collect research data in their own institution.

Selection for the internal PhD programme follows standard hiring procedures: vacancies are advertised, candidates are selected based on their CV and motivation letter, and final decisions are made after interviews. For the external PhD programme, selection is mainly through the course 'Writing a PhD Research Proposal', offered twice a year. Admission requires a Master of Science degree and a good-quality Master's thesis or prior peer-reviewed publications. Graduates of the SHE Master of Health Professions Education (MHPE) are preferred for the SHE Scholarship, covering course tuition. Aspiring candidates can also submit research proposals directly to the PhD programme, which are reviewed by SHE staff. All proposals are submitted online and reviewed by two SHE faculty members. Reviewers advise the PhD Coordinator to accept, reject, or request revisions. About 90% of PhD Proposal Writing Course-prepared proposals are accepted after revisions, while the acceptance rate for other proposals is around 50%.

In both the internal and external PhD programmes, each accepted candidate is supervised by a first supervisor (a full or associate professor, called promotor in Dutch) and one or two co-supervisors, including a "daily supervisor." Co-supervisors must have a PhD and are chosen for their expertise and supervisory experience. External PhD candidates often have a second co-supervisor from their home institution. Internal candidates typically meet weekly with their daily supervisor and monthly with their promotor, while external candidates meet monthly with their team, usually online, with email exchanges in between. To keep PhD alumni connected to SHE and the PhD programme, some recent graduates have begun serving as co-supervisors for new PhD students. This allows alumni to continue their research and develop supervision skills while collaborating with a SHE-based first supervisor. PhD candidates benefit from being guided by a near-peer who understands the PhD journey at SHE. Additionally, alumni are participating as faculty in the Writing a PhD Research Proposal course.

A web-based software system, called 'PhD TRACK', helps to monitor PhD candidates' progress. Candidates register and outline their educational goals and courses in a Training and Supervision Plan at the start. Every six months, progress is evaluated with supervisors to determine necessary actions. Effective collaboration is ensured using the "PhD Team Tool," where candidates and supervisors discuss and document their collaboration and communication preferences. Moreover, SHE PhD supervisors meet twice a year in "peer coaching meetings" where they discuss topics such as providing feedback on writing and cross-cultural collaboration. A PhD confidential counselor (Dr. Herma Roebertsen) is available to advise PhD candidates on issues they prefer not to discuss with their supervisory team. All PhD candidates sign the Netherlands Code of Conduct for Research Integrity at the start of their project. Candidates and supervisors are encouraged to consult the FHML webpage on scientific integrity, which includes the MUMC+ Research Code, aligned with national and university integrity codes.

Internal PhD candidates and SHE Research staff participate in the Interuniversity Center for Educational Sciences (ICO) and the Netherlands Association for Medical Education (NVMO). They typically take courses at Maastricht University, ICO, and NVMO, and must fulfill ICO requirements to earn an ICO certificate. External PhD candidates find local courses or join online courses from the FHML. Their training plan, tailored to individual needs, is uploaded to PhD TRACK. There are three online education modules (Research Ethics and Integrity; Open Science; and Science Communication) mandatory for all PhD candidates at Maastricht University. PhD candidates are also supported by methodological and statistical

experts (for quantitative research: Dr. Jeroen Donkers, Dr. Saskia van Laar, Dr. Shahab Jolani; for qualitative research: Dr. Janneke Frambach, Dr. Renée Stalmeijer) and an English language editor (Angelique van den Heuvel, MA).

The 2018 review noted that international PhD candidates could feel disconnected from the local community, prompting SHE to enhance its international PhD network. SHE aims to create a global community of candidates and alumni by expanding special interest group (SIG) sessions, with seven SIGs now organizing regular online meetings. International PhD candidates also participate in hybrid journal clubs, Scientific Integrity meetings, and 'SHE presents' sessions, where new PhD projects are introduced. PhD defence ceremonies are livestreamed, allowing remote participation. SHE Academy, a biennial conference for candidates and alumni, provides an opportunity to meet in Maastricht, though a multi-day online version was held in April 2021 due to COVID-19. The 2023 in-person conference hosted 70 participants, and was organized by both local and international PhD candidates. A regular PhD newsletter and active invitations for international supervisors to SHE events further strengthen the global community. The 2021 Review committee praised SHE's investment in its international community.

In 2020 SHE surveyed all SHE PhD graduates who graduated between 2011 and 2020. In total, 105 graduates were invited by email and 56 graduates responded. Overall, the results indicate the high satisfaction of PhD candidates with SHE's PhD programme and the positive impact it has on their personal and professional careers.



7 SHE's accomplishments during the past 6 years

This chapter provides a narrative description of SHE's accomplishments from 2018-2023. The highlights that we describe below are not meant to be comprehensive, but to provide insight in the breadth and depth of our activities and impact as a research institute in the field of health professions education. This narrative is supported by factual evidence presented here and in the case studies. In line with our vision, mission and strategy (see chapter 2), and following the SEP 2021-2027, this chapter is organized in two sections. Section 7.1 focuses on research quality by referring to overall markers of excellence, as well as highlighting our developments in open science and scientific integrity (also part of our academic culture). This is followed by our research accomplishments within the areas of innovative assessment and learning environments. Section 7.2 focuses on the second part of this strategic choice, that is, our relevance to society and the practice of health professions education, specifically.

7.1 Research quality

The quality of the research done within SHE was rated as excellent by the review committee in 2018. The 2021 review committee agreed and stated:

"SHE continues to be very successful. SHE's research results, the master and PhD programs have a strong impact on the quality of health professions education, and, thus, on healthcare – not only nationally but worldwide." (2021 Review Committee)

Since then, SHE has strived to maintain its excellence by focusing on, among others, high quality peer-reviewed publications (87.3% of research output in 2018-2023), special issues published in scientific journals, invited (keynote) presentations and lectures, and organized conferences. The large majority of the peer-

reviewed articles are published in JCR journals. SHE researchers publish not only in health professions education journals, but also in general education and educational psychology journals, and to some extent, in clinical journals that have interest in educational issues.

SHE researchers contribute to theory construction and theory advancement by engaging in empirical research (through novel data collection and review or meta-analytic research), or by writing conceptual articles that have strong potential to impact health professions education and, ultimately, patient care. The width of themes under study, covering more fundamental theory-building research (e.g., on cognitive load) to application-oriented research (e.g., on problem-based and other forms of student-centred learning) across all levels of health professions education, is exemplified in our case studies.

An important indicator of use of research products by peers is the citation impact of SHE's scholarly work. Here, we use the category normalized citation impact (CNCI), since it corrects for differences in citation frequencies that are attributable to age, document type, and subject area. Data are most reliable 24 months after publication, so publications from 2022 and 2023 were excluded from the analyses. A CNCI of 1.0 indicates that publications receive citations comparable to the world average, while a CNCI higher than 1.0 shows that publications are cited more than the world average. A total of 959 outputs were included in these analyses. In figure 7.1, it is visible that a large share of SHE's output receives more citations than is expected based on the age, document type, and subject area. Moreover, 2.1% of the total output (23 documents) has a CNCI higher than 8. Only 3.5% of SHE's output is uncited (compared to 16.8% of the field of Social Sciences in 2014-2021). The three items with the highest CNCI are Cognitive architecture and instructional design: 20 years later (2019, CNCI = 63.7), Cognitive load theory:

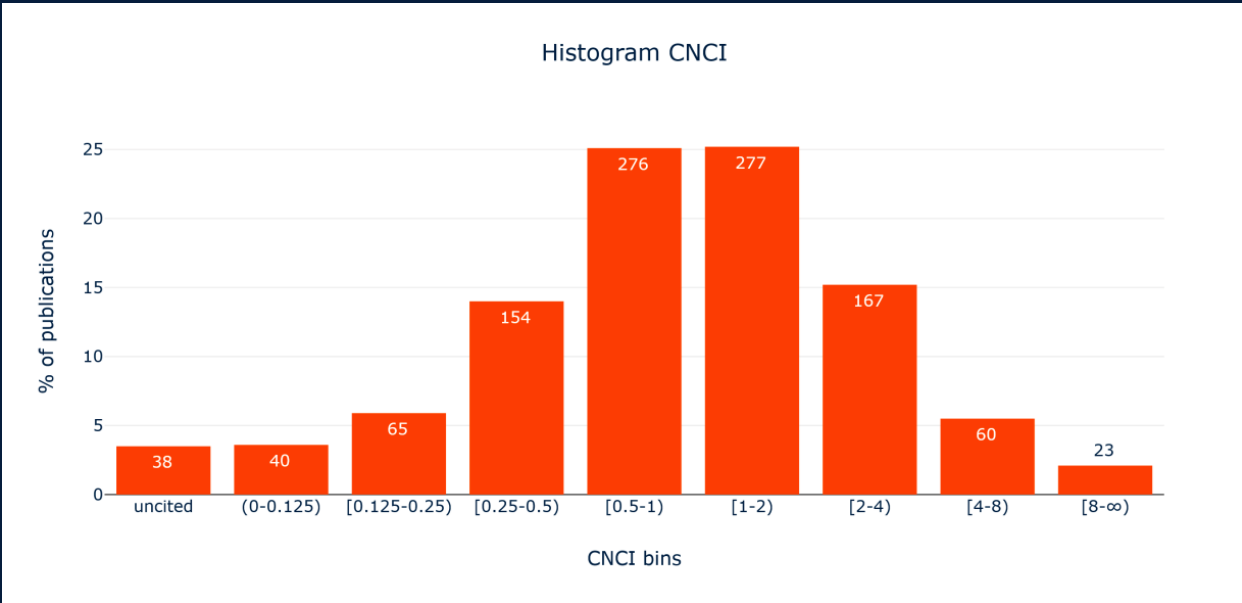
Implications for medical education. AMEE guide no. 86 (2014), CNCI = 23.5), and COSMIN risk of bias tool to assess the quality of studies on reliability or measurement error of outcome measurement instruments: a Delphi study (2020, CNCI = 20.8).

Importantly, 19.3% (212 documents) of SHE’s output ends up in the top 10% of comparable outputs worldwide regarding age, document type and output area, and 2.1% in the top 1%. This indicates that SHE’s scholarly work ends up at least two times more than expected in the top 10% and in the top 1% cited output.

Figure 7.1 and 7.2 show the many (inter)national connections of SHE, based on the number of publications with authors from other institutions.

Internationally, the United States and Canada are home to the institutions with which SHE collaborates most frequently. Looking at the most frequent national collaborative partners for SHE in this period, the University of Amsterdam is on top with 99 documents. The Vrije Universiteit Amsterdam (91 documents) and Open University (86) are the next most frequent collaborators. Also, at a national level, SHE researchers participate in two Sectorplans initiated by the Dutch Ministry of Education, Culture and Science; Sectorplan Medical and Health Sciences and Sectorplan Educational Sciences.

Figure 7.1 Histogram CNCI 2014-2021

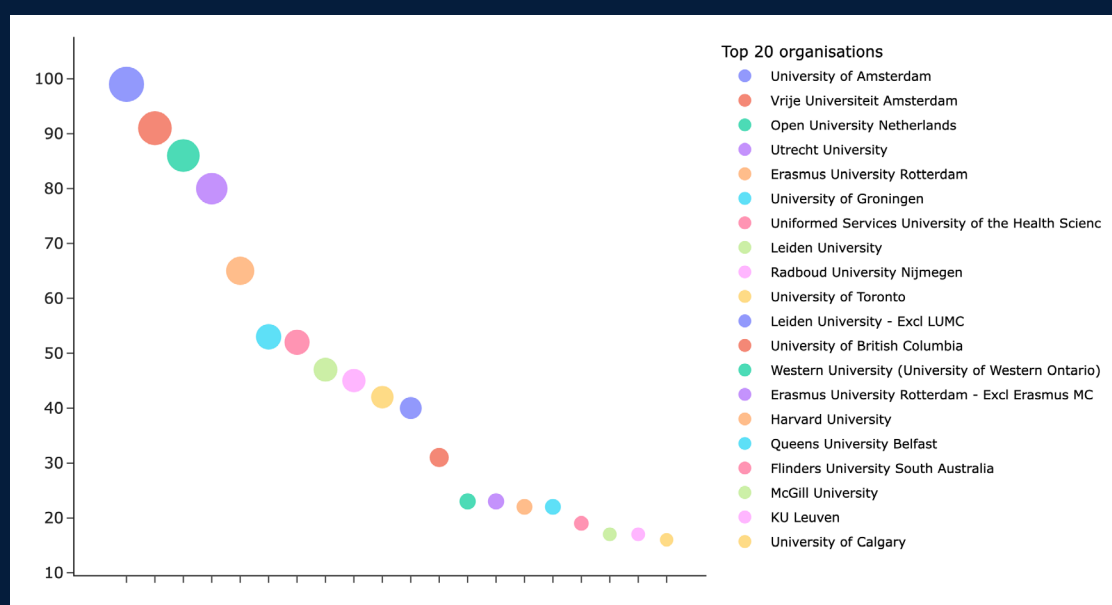


The percentage of total output is plotted against the CNCI bins. 23 publications (2.1%) perform more than 8 times better than the expected citation average for publications of the same age, document type and subject area. 48% of the total output has a CNCI of > 1. Note that given the skewed distribution the mean is not a reliable indicator and is therefore not interpreted.

Figure 7.2 World map of SHE's collaborators (2018-2023)



Figure 7.3 SHE's most frequent collaborators (2018-2023)



The number of documents (articles and reviews, >5 docs. per org.) published in collaboration plotted for the top 20 collaborators for SHE. Note that the accuracy of this data depends on how researchers report their affiliations in publications.

Locally, SHE collaborates with a large number of partners as well. SHE has a strong connection with FHML's Department of Educational Research and Development and the Institute for Education. FHML and the Maastricht UMC+ offer unique contexts for implementing and investigating innovations in education. An example is SHE's partnering with FHML's Skillslab and Maastricht UMC+'s Simulation Centre in 'TRI-SIM' to join forces and become an international leading research and development institute for simulation-based education in healthcare and continuous professional development for simulation instructors. In collaboration with Maastricht UMC+'s Academy, SHE has invested in a collaboration with the

traumatology department on interprofessional collaboration. SHE Research, SHE Educates and SHE Collaborates all have close ties to various clinical departments at Maastricht UMC+. Also, SHE works in close collaboration with other FHML research institutes. For instance, SHE and the Care and Public Health Research Institute (CAPHRI) currently share 5 PhD students. At the university level, there is a strong connection with Maastricht University's Center for Teaching and Learning 'Edlab', SHE staff has been the driving force behind a study on the current state of education at Maastricht University called the EDview project (see <https://edlab.nl/edview/>). SHE staff have led or collaborated in

various education innovation projects at Edlab, and has obtained two Edlab research grants, and one educational research fellowship.

Having provided a general summary of the scientific impact of SHE's scholarly work, we now turn to specific achievements regarding research products for peers and use of these products by peers. We have highlighted two broad areas; innovative assessment and innovative learning environments.

Innovative assessment - SHE is the birthplace of theorization on programmatic assessment (see [case study 2](#)). In short, programmatic assessment theory describes how a shift from assessment of learning to assessment for learning is paramount in education and can be accomplished by viewing learning and assessment tasks as providing information on both learning and competence levels, but also as ways to improve learning and competences. Recent seminal articles within SHE on programmatic assessment include *Where the rubber meets the road – An integrative review of programmatic assessment in health care professions education*⁵ and *Understanding the influence of teacher-learner relationships on learners' assessment perception*⁶. Programmatic assessment is gaining attention globally and researchers within SHE are invited across the world to discuss programmatic assessment theory and applications. For instance, in Kuala Lumpur in 2020, Dr. Suzanne Schut and Prof. Erik Driessen, together with other international colleagues, organised a symposium during the Ottawa conference on the challenges of implementing programmatic assessment. Prof. Sylvia Heene-man presented a keynote on 'Programmatic assessment – Principles and Implementations worldwide' at Ribeirão Preto International Conference on Assessment in Health Professions Education, Brasil, in November 2020, and Dr. Marjan Govaerts presented a keynote on 'Pro-grammatic Assessment' at the Education day of the Erasmus Medical Center Rotterdam in

March, 2021. The impact of SHE's programmatic assessment research is also measured by implementations, for example in Universities of Applied Sciences in the Netherlands, and in curricula in the United States, Canada, Thailand, Australia and New Zealand. Moreover, this has led to several marks of recognition from peers, for example, Prof. Cees van der Vleuten becoming Presidential Chair (2018-2019) at the School of Medicine, University of California, San Francisco.

SHE is also an international hub for research on innovation and implementation of cross institutional progress testing. In this form of testing, students are tested regularly on all subdomains of their educational programme. It provides insight into development of students' knowledge and serves as feedback about subdomains that are underdeveloped. The medical progress test is used by all Dutch universities. Dr. Jeroen Donkers provides the technical support and psychometric evaluation. In recent years, the progress test has moved online and is now adaptive to students' test responses emanating in an even more reliable measure of students' knowledge. Research on this development is leading to publications with involvement of, for instance, Dr. Jeroen Donkers and Prof. Cees van der Vleuten⁷. The adaptive international progress test is currently being applied in several universities worldwide, including the University of Helsinki, the University of Algarve, and Freiburg University.

Innovative learning environments - A further scientific landmark at SHE, specifically within the research theme 'Approaches to instruction' is research on optimizing design of education, including but not limited to the four-component instructional design model (4C/ID). Central to optimizing design of education is SHE's research on gaining a better understanding of why an approach works, in which contexts, and for which type of learners. SHE's seminal research of note in this area is both domain-specific (e.g., workplace

⁵Schut, S., Maggio, L. A., Heeneman, S., van Tartwijk, J., van der Vleuten, C., & Driessen, E. (2021). Where the rubber meets the road – An integrative review of programmatic assessment in health care professions education. *Perspectives on Medical Education*, 10(1), 6-13.

⁶Schut, S., van Tartwijk, J., Driessen, E., van der Vleuten, C., & Heeneman, S. (2020). Understanding the influence of teacher-learner relationships on learners' assessment perception. *Advances in Health Sciences Education*, 25(2), 441-456.

⁷Van Wijk, E. V., Donkers, J. et al. (2024). Computer Adaptive vs. Non-adaptive Medical Progress Testing: Feasibility, Test Performance, and Student Experiences. *Perspectives on Medical Education*, 13(1), 406.

learning⁸, simulation training⁹), and directed at generic competencies (e.g., communication skills¹⁰, self-regulated learning skills¹¹). In June 2019, SHE organized the 12th International Cognitive Load Conference in Maastricht, chaired by Prof. Jeroen van Merriënboer. Of specific mention is that a worldwide bibliometric analysis of workplace learning research undertaken in 2020 revealed that Maas-tricht University is number 4 in the world in terms of number of publications, with specific focus on work-based learning¹² and with Prof. Pim Teunissen ranked 4th worldwide in terms of most cited publications (i.e., publications with at least 45 citations).¹³

Similar to programmatic assessment research, SHE's research on design of education is continuously and cyclically used in educational innovation initiatives within and outside of Maas-tricht University. Ongoing innovation of the bachelor curriculum in Medicine is done in accordance with SHE's research insights on programmatic assessment and self-regulation of learning. The redesign of SHE's Master of Health Professions Education that is implemented in 2021 is a hallmark of impact of SHE's research on peers. Combining state of the art insights on 4C/ID curriculum development, competence development, programmatic assessment, coaching and feedback, a holistic, authentic-task, student-adaptive master programme was developed. Moreover, SHE research on interprofessional

education and collaboration, including the research on leadership in health professions education, has developed substantially over the last years. Seminal papers in this domain are *The wolf you feed: Challenging in-traprofessional workplace based education norms*¹⁴ and *Enhancing Team Learning through Leader Inclusiveness: A One-Year Ethnographic Case Study of an Interdisciplinary Teacher Team*¹⁵. Together with colleagues Dr. Simone Gorter from Maastricht UMC+ and Dr. Alber-tine Moser from Zuyd University of Applied Sciences, prof. Jascha de Nooijer provided a key-note lecture on this topic at the annual meeting of the Dutch Medical Association (NVMO) in 2023 titled "Hitchhiking into the interprofessional galaxy". Noteworthy marks of recognition on innovative learning environments are the award of an NWO-Vidi grant to Prof. Anique de Bruin in 2019 on self-regulation of learning, and the ZonMW HGOG grant to Dr. Esther Giroldi and colleagues, also in 2019, on innovating communication skills training for general practitioners. The NWO-Vidi grant has already resulted in a guest-edited special issue in a seminal journal, *Educational Psychology Review*¹⁶, introducing a theoretical framework on monitoring and regulation of learning efforts. In 2023, Prof. Anique de Bruin was appointed as project leader of the NWO-NRO research grant "SELFLEX: Towards Evidence-informed Support for Self-regulation of Flexible Learning" (€388.233).

⁸Klasen, J.M. et al. (2020). 'Whatever you cut, I can fix it': clinical supervisors' interview accounts of allowing trainee failure while guarding patient safety. *BMJ Quality & Safety*, 29(9), 727-734.

⁹Tremblay, M. L. et al. (2023). Task complexity and cognitive load in simulation based education: A randomised trial. *Medical Education*, 57, 161-169.

¹⁰Wilby, K. J. et al. (2019). Assessors' interpretations of narrative data on communication skills in a summative OSCE. *Medical Education*, 53(10), 1003-1012.

¹¹Rovers, S. F. E. et al. (2019). Granularity matters: comparing different ways of measuring self-regulated learning. *Metacognition and Learning*, 14(1), 1-19.

¹²Dolmans, D.H.J.M, & Schmidt, H.G. (2010). The problem-based learning process. In H. van Berkel, A. Scherpbier, H. Hillen, & C. Van der Vleuten, Eds., *Lessons from Problem-based Learning*, (pp. 13-20). Oxford, UK: Oxford University Press.

¹³Bezerra, J. et al. (2021). A worldwide bibliometric and network analysis of work-based learning research. *Higher Education, Skills and Work-Based Learning*, 11, 601-615.

¹⁴Stalmeijer, R. E., & Varpio, L. (2021). The wolf you feed: Challenging intraprofessional workplace based education norms. *Medical Education*, 55, 894-902.

¹⁵Meeuwissen, S. et al. (2021). Enhancing Team Learning through Leader Inclusiveness: A One-Year Ethnographic Case Study of an Interdisciplinary Teacher Team. *Teaching and learning in medicine*, 33, 498-508.

¹⁶de Bruin, A. B. H. et al. (2020). Synthesizing Cognitive Load and Self-regulation Theory: a Theoretical Framework and Research Agenda. *Educational Psychology Review*, 32(4), 903-915.

7.2 Relevance to society

SHE achieves its societal impact through its engagement with and influence on students in health professions, healthcare professionals, and those involved in health professions education (e.g., teachers, programme directors, student advisors). The impact on peers and our societal stakeholders enables our impact on patient care, patients and thereby society at large. SHE's relevance to society is achieved through direct use of its research products, but also through SHE Educates and SHE Collaborates activities.

An important element to SHE's societal relevance is a focus on not just medical education but on other professions as well, such as nursing, physiotherapy and para-medical professions. SHE continues to invest in this, for instance through collaborations with the Maastricht UMC+, and Zuyd University of Applied Sciences. This has led, for instance, to the appointment of Saskia Brand-Gruwel as endowed professor at SHE in the chair of 'Design of personalized learning arrangements.' She combines this role with her duties as a member of the Board of Directors of Zuyd University of Applied Sciences. Another example is the appointment of Piet Leroy, a pediatric intensive care specialist at Maastricht UMC+, as professor of 'Procedural Sedation and Analgesia (PROSA) in children' at Maastricht University. This chair combines the fields of pediatrics, interprofessional education and implementation of change.

Loco-regionally and nationally, SHE led the ZonMW-funded Pasemeco project (see [case study 4](#)) and researched palliative care education in undergraduate medical curricula in collaboration with all medical schools in the Netherlands and Dutch expertise centres for palliative care. The Pasemeco project has emanated in an educational toolbox for implementation in medical curricula and has led to a list of professional tasks in the field of palliative care that should be covered in the undergraduate curriculum. Another impactful achievement that SHE contributed to was the publication of the 'Handbook selection higher education' (2023). This handbook offers guidance for education institutions who need to use selection procedures to regulate entry into their programs. The handbook is open access and already being referred to often in discussions

on selection in higher education. Another highlight is the Interreg funded SafePAT project, which researches development of excellence in patient safety in cross-border regions. In this project, SHE was responsible for the needs analysis and conducted three studies to uncover opportunities and challenges in cross-border healthcare with healthcare professionals and patients in the Euregio Maas-Rijn (in Germany, Belgium and the Netherlands). Subsequently, SHE developed and evaluated two trainings for healthcare professionals. Of note, Prof. Jascha de Nooijer received a Comenius Leadership Grant in 2023 that aims to innovate education to support the role of interprofessional identity in collaborative and sustainable practices in health care (€521.360). The NRO Comenius funded Study Smart project has resulted in an evidence-informed learning strategy training for undergraduate students, that is implemented across all faculties at Maastricht University, the Open University in Heerlen, and the Universities of Applied Sciences Zuyd, Amsterdam and Utrecht. Study Smart is gaining interest from higher education institutes worldwide with implementations now, e.g., in Portugal, New Zealand, and the US ([see StudySmartPBL.com](https://www.study-smartpbl.com)). Research on the implementation of Study Smart receives considerable [social media attention](#) and the dissertation by Felicitas Biwer on the effects of Study Smart on students' learning received the Maastricht University Impact Prize in 2023.

Internationally, SHE Collaborates is creating impact through numerous consultancy and development projects. The vast range of SHE Collaborates activities is showcased on the [SHE website](#). SHE Collaborates engages in long term educational development projects based on requests from education or healthcare institutes abroad. Due to SHE's worldwide reputation, new requests reach us frequently. In case the partners are in the Global South, SHE Collaborates not only assists in developing a project plan to address their needs in capacity development in the area of health professions education, but also tries to attract donors and acquire the resources to execute these projects. SHE Collaborates staff coordinates these partnerships (project and financial management) and contributes as educational facilitators in the capacity building activities. Depending on the needs

and expectations the SHE Collaborates team members involve other consultants from SHE, Maastricht UMC+, other Dutch institutes for Higher Education, NGO's, local partners in the Global South, etc. Through their wide (inter) national network of educational and/or health experts SHE Collaborates can address the capacity development needs in a contextualized manner. One particularly striking example of SHE's societal impact is described in [case study 5](#), which describes a project focused on improving sexual and reproductive health and rights (SRHR) services and campaigns for students and staff of Universidade Católica de Mozambique (UCM) and Instituto Superior de Ciências de Saúde. After a cyclone hit Beira, Mozambique, on March 14th 2019, SHE Collaborates initiated a media campaign called

'[Care for Beira](#)' to help collect funds for rebuilding some of the damage.

Finally, SHE's internationally renowned MHPE and PhD programme contribute to the development of a growing group of health professions education experts with a state-of-the-art scientific knowledge base who contribute, each in their own way, both locally and globally to societal challenges in education and training of healthcare professionals to improve patient care. Examples of this can be found in the results of the PhD Alumni survey 2020, particularly the open comments. Another poignant example is the way in which the international PhD candidate Will Bynum uses his research on shame in medical education to help open up conversations about this taboo topic through a website called www.theshameconvo.com

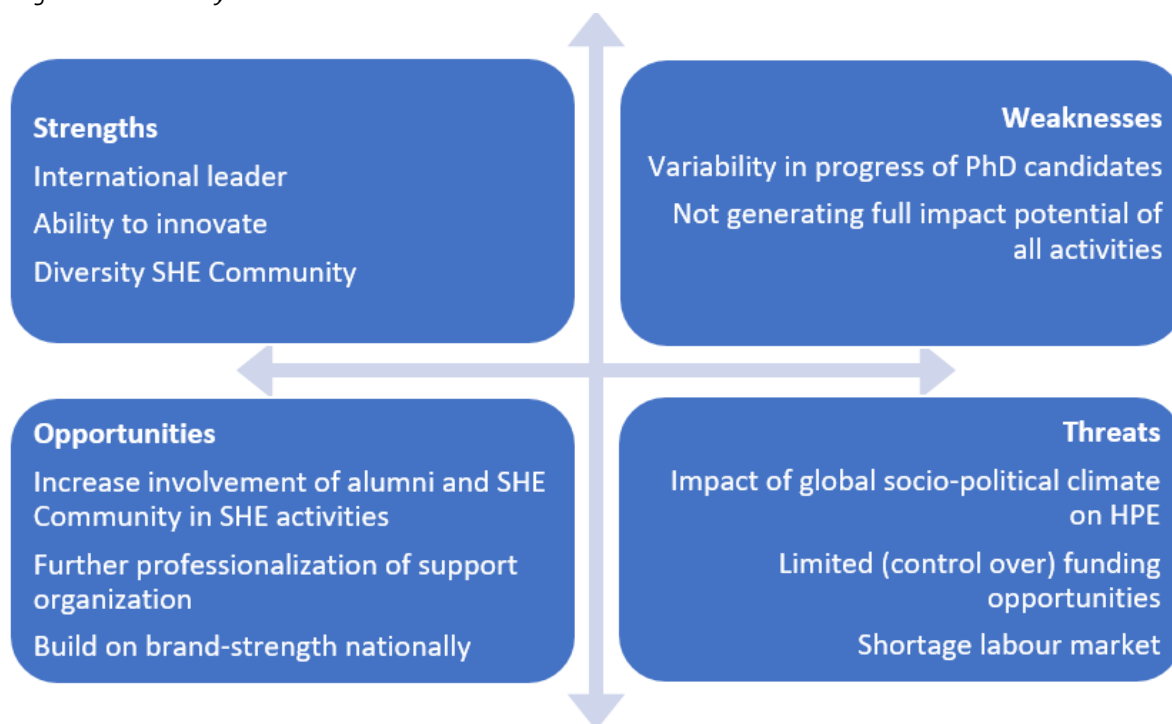
8 Future strategy and viability

The 2018 review committee judged our viability as 'very good'. One specific comment from the 2018 review committee regarded succession of the two SHE directors. With the appointment of a new scientific and managing director in 2020 and 2019 respectively, and subsequently a revision of the SHE management structure and management team, SHE has ensured continued viability at the management level for the foreseeable future. SHE has planned ahead and filled the opening for a professorial post resulting from the retirement of prof. Cees van der Vleuten early in 2023. Prof. Desirée Joosten- ten Brinke, joined the SHE as Professor of Learning and Assessment on September 1st, 2023. She was formerly dean of the faculty of Educational Sciences at Open University in Heerlen. Together with the department of

Educational Research and Development, the SHE management team has also started planning for succession of the professorial post of Jeroen van Merriënboer. Moreover, several new assistant professors have started working at SHE in the past couple of years. The 2021 review committee recognized our ongoing investments in a viable and sustainable workforce. They mentioned that "a new management team is in place, and has taken, amongst others, proactive steps for human resource planning." (2021 Review Committee)

On the next page, we describe the SWOT-analysis for SHE based on discussions within the SHE management team.

Figure 8.1. SWOT analysis SHE



Strengths that we identified are in line with the evidence of our research excellence and impact as presented in this review report. SHE has an excellent international reputation, which is evidenced by its many international PhD candidates, its large and strong network of collaborators, high research output and the signs of recognition it receives. SHE has also proven its ability to continue to develop and innovate informed by theory and scientific research, both as a research institution and in the educational innovations that we have initiated. Lastly, SHE's activities in Maastricht can be seen as the central hub in a large, global and diverse network. That is the result of deliberately engaging with a variety of individuals and institutions around the world.

We recognized two weaknesses. First, despite a number of initiatives to stimulate and monitor progress, there remains significant variability in the progress of international PhD candidates as can be seen in tables E4a/b. These PhD candidates typically combine their PhD research with a job in the health professions. PhD TRACK offers ways to monitor their progress and PhD candidates and supervisors have received instructions on how to use the progress meetings and report them in PhD TRACK several times. The COVID-19 pandemic, obviously, also impacted PhD completion times. A second weakness is that we do not yet capitalize enough on the potential of our (global) community and activities. Our activities could generate even

more impact if we would have more time and resources to, for instance, pro-actively and strategically invest in research to link up with new educational developments.

The threats identified are first and foremost the impact of the changing socio-political climate globally. We have witnessed how after the COVID-19 pandemic and due to the increasing conflicts in the world, attention in many countries has started to shift away from investments in education research and healthcare workforces to focus on, amongst others, defence, (cyber) security and technology. This has led to direct consequences for SHE, such as less opportunities for SHE Collaborates projects and a decrease in applications for some of our courses. It is also leading to and/or coinciding with budget-cuts in research funding at a national and university level. A third threat we identified is a shortage on the labour market, especially where it concerns scientific personnel, for instance at the associate professor level.

Finally, we want to highlight three opportunities. As we gradually continue to grow our SHE Community, collaborators across the globe and alumni of our diverse programmes are an asset whose potential we can and should tap into more. In the near future we plan to develop policy to further support this. In order to capitalize on this opportunity, and to address the identified

weakness of not generating the full impact potential of our activities, we need to strengthen and further professionalize SHE's support organization. With support organization we mean the team that is responsible for our internal (back-office) work processes, marketing, communication and finances. Being able to back-up new initiatives with the support of this team will enable SHE to build new alliances and strengthen existing ones, such as regional hubs for alumni. Finally, we could use the strength of SHE as a leading research institute in health professions education on a national level to engage in research collaborations with other social scientific research groups that want to make an impact on healthcare and to work more with institutes in general educational sciences to share insights and improve education.

During the first three years of this evaluation period, SHE has been re-focusing on core activities and has seen a slight decline in total staff. This has coincided with financial restrictions. A positive financial balance was again achieved as of 2021. The organization of SHE has been strengthened, a new scientific director and managing director started. The SHE leadership (including the teams involved in the three SHE core activities) is ready for the future and jointly work to take advantage of the opportunities ahead and deal with challenges along the way. For the coming six-year period, the focus will be on capitalizing on our strengths and managed growth. We have summarized the **strategic plans for the next six years as:**

SHE further increases the impact of its activities (inter)nationally and loco-regionally. Building on the strengths identified in the SWOT and our ongoing investment in a healthy academic culture, research ethics, and an open and inclusive workplace, we strive to create the foundation for impactful research and innovation in the domain of health professions education. We aim to continue to increase the publication of our work in open science databases and to use our website and LinkedIn page to further share our work. With the recent launch of SHE's 2024-2030 research programme our attention is now on implementing the research programme. The foundation for the continued success of SHE is a combination of strategic recruitment of people who will continue to build our research institute through their scholarly work and investments in

the SHE Community. This requires creative ways to tackle the identified threat of labour market shortages.

SHE considers strengthening the synergy between its three core activity domains - SHE Research, SHE Collaborates, and SHE Educates - as a process that will require ongoing attention.

The value of this synergy is evident and supported by our 'double-chain approach'. It is, however, a relatively new part of the culture of SHE and needs continued attention, for instance through our communication strategy. We also see this is instrumental for increasing the involvement of alumni and the larger SHE Community in our activities and building on our national brand strength. By creating synergy we can exemplify how research, education and capacity building, strengthen each other. Investing in our support organization is a requisite to achieve these ambitions. Furthermore, we aim to attract new staff members who further increase diversity (in terms of both disciplinary background and nationality) and who can contribute to building bridges between our SHE Research, SHE Educates, and SHE Collaborates activities.

SHE intends to gradually grow in terms of research output and impact. This growth is enabled in part by investing in SHE staff and in part by investing in the SHE Community. We are increasing the number of completed PhD projects to 15 per year. With the step-wise increase in the past years of the total number of active PhD candidates, achieving a steady 15 completed PhD projects per year should be feasible. SHE Educates and Collaborates have specific challenges in terms of growth. For Educates, sustaining the new MHPE curriculum and moving to a more demand-driven offer of (online) education will be key. SHE Collaborates has a track record of successfully obtaining funding. Yet, external funding is always temporary, and with the changing socio-political climate (see SWOT) the level of uncertainty regarding mid to long-term funding is more uncertain. We have to invest in a variety of approaches to maintain and where possible increase our ability to secure external funding. This is linked to the funding received through the university. Together with a range of partners, such as other faculties at Maastricht University, other research institutes at FHML, clinical departments at Maastricht UMC+, universities

of applied sciences, regional structures (i.e., care institutes/hospitals and educational institutes in Limburg and the Meuse-Rhine Euroregion) and with international partners (both individuals and institutions) we will apply for funding for our core activities (for instance ZonMW projects, NWO Comenius, NWO practice-oriented research in higher education, Nuffic, European grants). It is clear that an important strategic focus should be to address the threat of limited (control over) funding opportunities.

As we explained in previous chapters, SHE achieves its societal impact through a connection between our research activities and engagement with students in health professions, the professionals themselves, and those involved in education (e.g., teachers, programme directors, student advisors).

The impact on peers and our societal stakeholders enables our impact on patient care, patients and thereby society at large. Our unique combination of expertise creates the opportunity to continuously learn in the cycle between research, practice and theory development. Important foundations for these plans are continued focus on open science, investing in educating future HPE educationalists and researchers through our short courses, MHPE and PhD programme, and nurturing the academic culture that enables motivated, inquisitive people with diverse backgrounds and outlooks on life to contribute to a shared vision: **through research, education, and innovation work towards a world in which all healthcare professionals are well educated and in the best position to contribute to high quality care.**

9 Summary

The School of Health Professions Education (SHE) at Maastricht University conducted a comprehensive self-evaluation for the period 2018-2023, building on prior reviews and aimed at assessing the quality, societal relevance, and future viability of its research and educational activities. This evaluation aligns with the SEP 2021-2027 guidelines and includes reflections on previous reviews to inform ongoing and future strategies.

SHE's vision is centred on enhancing global healthcare through evidence-based education for healthcare professionals. The institute's mission is to be a leading hub for research, education, and innovation in Health Professions Education (HPE) worldwide. SHE's strategy over the last six years has focused on increasing synergy between its core activities – SHE Research, SHE Educates, SHE Collaborates – to ensure that research informs educational practices and vice versa. Another key

strategy has involved investing in the interaction between impactful research and the practice of education, for instance through the “double-chain” approach, which integrates research and education within SHE.

SHE places a strong emphasis on fostering an inclusive, safe, and open academic culture. This includes a differentiated approach to human resource and talent management, with a specific focus on diversity and inclusion. Efforts have been made to further stimulate a supportive environment where all staff and students feel valued and can thrive. Initiatives like workshops on mentorship and inclusive supervision, reflect SHE's commitment to a healthy academic culture.

SHE's research programme from 2018 to 2023 focused on “Task-centered learning environments in the health professions,” which has set the

foundation for the new research programme (2024-2030). This new programme emphasizes creating learning-supportive healthcare environments, ensuring healthcare professionals' sustainable competence, and designing education tailored to specific contexts. These aims are encapsulated in the acronym H-P-E.

Key markers of achievement during the review period include maintaining a high research standard, with the vast majority of SHE's output published in high-quality peer-reviewed journals generating an citation score (CNCI) higher than global averages. SHE's research on programmatic assessment and innovative learning environments has gained international recognition, influencing curricula and practices worldwide. Notable projects include the adaptive progress testing initiative and the pioneering work in both undergraduate and postgraduate education for various health professions. The institute's dedication to integrating research with societal relevance continues to shape health professions education and improve patient care globally.

Looking ahead, SHE aims to maintain its leadership in HPE by continuing to integrate research with educational practice, fostering global collaborations, and ensuring that its activities remain socially relevant. The development of the Research Program 2024-2030 marks a strategic move towards addressing global challenges in healthcare education through innovative and context-sensitive research.

In conclusion, SHE has successfully navigated organizational changes, enhanced its research and educational offerings, and fostered an inclusive academic culture. These efforts are aimed at ensuring the institute's continued excellence and relevance in the field of Health Professions Education globally.



Appendices

Appendix 1. Required tables

Table E2: Input of research staff

SHE Scientific staff ¹ (# / fte)	2018	2019	2020	2021	2022	2023
Assistant professor	12 / 3.2	11 / 3.3	15 / 4.2	14 / 3.3	18 / 3.55	18 / 4.45
Associate professor	8 / 2	11 / 2.7	7 / 2.6	7 / 2.6	8 / 3.2	6 / 2.8
Full professor	15 / 3.6	17 / 3.9	18 / 3.6	17 / 3.45	15 / 3.35	19 / 2.6
Postdocs ²	6 / 3.1	9 / 4.1	7 / 2.4	8 / 4.4	10 / 3.9	6 / 2.0
PhD candidates excl. external	14 / 12.8	14 / 13.6	11 / 9.4	11 / 9.8	12 / 9.89	17 / 14.7
PhD candidates external	64	67	80	91	97	106
Collaborates staff	8 / 5.5	8 / 5.6	8 / 5.65	9 / 6.45	9 / 6.85	9 / 6.85
Total research staff³	63 / 30.2	70 / 33.2	66 / 27.85	66 / 30	72 / 30.74	75 / 33.4
Support staff	17 / 9.07	12 / 5.17	8 / 3.74	14 / 5.99	14 / 6.19	13 / 6.34
Visiting fellows	7	8	9	11	-	-
Total staff	80 / 39.27	82 / 38.37	74 / 31.59	80 / 35.99	86 / 36.93	88 / 39.74

#: Number of persons active on the research unit research activities on Dec 31st

fte: Sum of fulltime equivalents (fte) labelled on the research unit research activities on Dec 31st

Note 1: Comparable with WOPI categories HGL, UHD and UD; tenured and non-tenured staff.

Note 2: Comparable with WOPI category Onderzoeker/Researcher.

Note 3: Excluding external PHD.

Table E3: Funding

SHE	2018	2019	2020	2021	2022	2023
<i>Funding fte / %</i>						
Direct funding ¹	15.3 / 51	17.9 / 54	14.4 / 52	11.3 / 38	12 / 39	15.2 / 45
Research grants ²	5.7 / 19	6.7 / 20	5.1 / 18	7.1 / 24	6.1 / 20	8.6 / 26
Contract research ³	4.7 / 15	3.7 / 11	2.8 / 10	4.2 / 14	6.4 / 21	4.0 / 12
Other ⁴	4.5 / 15	4.9 / 15	5.6 / 20	7.4 / 24	6.3 / 20	5.6 / 17
Total funding	30.2	33.2	27.9	30	30.8	33.4
<i>Expenditure k€ / %</i>						
Personnel costs	3,363.3 / 61	2,745.7 / 68	2,691.4 / 66	2,690.6 / 65	2,975.9 / 69	2,882.3 / 73
Other costs	2,153.6 / 39	1,298.9 / 32	1,372.4 / 34	1,431.8 / 35	1,352.2 / 31	1,042.2 / 27
Total expenditure	5,516.9	4,044.6	4,063.8	4,122.4	4,328.1	3,924.5

Note 1: Direct funding (basisfinanciering / lump-sum budget).

Note 2: Research grants obtained in national scientific competition.

Note 3: Research contracts for specific research projects obtained from external organisations.

Note 4: Funds that do not fit into the other categories.

Tables E4a and E4b in show the enrolment and success rate of PhD candidates at SHE.

Table E4a covers all the FHML categories of 'standard PhD-candidates', who are PhD candidates with FHML employee status that conduct research with the primary aim to obtain a PhD degree. The majority of SHE's internal PhD candidates fall within this category. FHML or Maastricht UMC+ employees whose primary role is in education or healthcare and who are also working on a PhD do not fall within this category. Neither do international scholarship students, such as the China Scholarship Council (CSC) PhD candidates.

Table E4b provides information on all SHE PhD candidates.

Table E4a: PhD candidates excluding External PhDs

Enrolment				Success rates					
Starting year	Male	Female	Total	Graduated in year 4 or earlier	Graduated in year 5 or earlier	Graduated in year 6 or earlier	Graduated in year 7 or earlier	Not yet finished	Discontinued
2015	1	7	8	0	3	3	0	1	1
2016	1	2	3	0	0	2	1	0	0
2017	1	5	6	0	5	1	0	0	0
2018	0	1	1	0	0	0	0	1	0
2019	1	0	1	0	0	0	0	1	0
Total	4	15	19	0	8	6	1	3	1

PhD-candidates with employee status (AiO, promovendus)

Table E4b: all PhD Candidates

Enrolment				Success rates					
Starting year	Male	Female	Total	Graduated in year 4 or earlier	Graduated in year 5 or earlier	Graduated in year 6 or earlier	Graduated in year 7 or earlier	Not yet finished	Discontinued
2015	10	13	23	3	7	4	2	2	5
2016	10	11	21	2	2	5	6	2	4
2017	6	16	22	1	8	1	1	8	3
2018	7	9	16	3	0	3	0	10	0
2019	7	11	18	0	1	0	0	14	3
Total	40	60	100	9	18	13	9	36	15

Including PhD candidates from SHE's international PhD programme who usually work part time on their PhD.

Appendix 2. Case studies

We present 5 case studies that highlight different activities of the School of Health Professions Education (SHE) and its scientific and societal relevance and impact.

1. SHE Master of Health Professions Education
2. Programmatic Assessment
3. Study Smart
4. Pasemeco: Improving palliative care education for our future doctors
5. SHE Collaborates Project – Mozambique

1. SHE Master of Health Professions Education

Practice what you preach

The MHPE is an accredited Master of Science with an intake of 50-55 students per year. The programme is part-time and largely online. The programme has been running since 1992 and attracts a global audience of healthcare professionals who are involved in teaching in their own domain. The target group is interprofessional and international, and diverse in back-ground, needs and aims.



EDUCATIONAL DESIGNER



EDUCATIONAL LEADER



EDUCATIONAL RESEARCHER

Redesigning the curriculum: Why?

Regular curriculum revision is good practice. And although student evaluations remained very positive over the years, it was also clear more flexibility was necessary to serve the diverse student population. At the same time, our own vision on education had changed based on new insights from SHE research.

MHPE Mission and Vision

Our mission is to prepare participants to be innovative, educational professionals.

Our vision is to practice what we preach:

- Student-centered learning
- Authentic learning tasks
- Programmatic assessment
- Flexibility in time and content
- Interprofessional and International learning

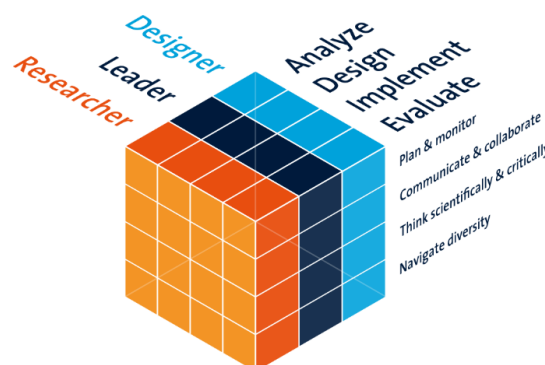
Completing the circle: Researching the new curriculum

Ongoing research by PhD Xian Liu focuses on how programmatic assessment affects self-regulated learning in this online program for a diverse target group. The studies focus on:

- Students' perceptions of programmatic assessment and impact on Self-Regulated Learning;
- Teachers' perceptions of feedback and coaching as enhancing/ hindering Self-Regulated Learning;
- How to train MHPE teachers in providing feedback, and (competency-oriented) feed up & feed forward;
- How to train students in aggregating feedback to monitor and reflect on their competency development.

Redesigning the curriculum: How?

The new curriculum is fully competency-based, uses programmatic assessment and is built around learning tasks derived from authentic practice in health professions education. They address the roles of Educational Designer, Educational Leader and Educational Researcher. Around 60% of the curriculum consists of electives and students can balance their workload by choosing how many electives they take on. Students are guided by an individual coach that they meet 4-5 times a year.



2. Programmatic Assessment

What is programmatic assessment?

Programmatic assessment is an assessment approach that optimizes the learning and decision function of assessment in programmatic assessment, individual feedback and assessment information, called data points, are used to inform learning, not to pass or fail a student. A continuous dialogue with a coach about the data points stimulates the learning process. Decisions are made only after sufficient information has been gathered about the student based on several data points from a deliberate mix of assessment tools. There is a proportional relationship between the number of datapoints and the stakes of a decision. High-stakes decision-making is typically done by an (independent) group of examiners.

Who is using programmatic assessment?

Since Schuwirth & Van der Vleuten's seminal publication in 2011, numerous schools and organizations have adopted programmatic assessment. Maastricht University, where this assessment model was conceptualized, has been among the first to implement it, first in its Master of Medicine programmes (2007 and 2013). These implementations were a stepping stone for implementation of programmatic assessment or related principles of longitudinal assessment in other Maastricht University programmes: Bachelor Biomedical Sciences (2016), Master Health Professions Education (2021), Bachelor Medicine (2022) and Master Health Promotion Innovation Management (2024). A number of Universities of Applied Sciences in The Netherlands have also implemented programmatic assessment. A user group has been formed and a website has been set up: www.programmatischtoetsen.nl with all kinds of supporting information. The user group meets regularly and exchanges experiences and best practices. A Dutch book has been published in 2020, in which nine different programs are reported as case studies on programmatic assessment, followed by a conceptual evaluation. In 2024, an update of the book

appears. The conclusion from these proceedings is that pro-programmatic assessment is an attractive and meaningful conceptual view on assessment and that it can be designed as fit-for-purpose in various contexts. Internationally, programmatic assessment is adopted in training programs in the United States, United Kingdom, Switzerland, Canada, Australia and New Zealand. Programmatic assessment is also abundantly used in postgraduate medical training programs, both in The Netherlands and internationally.

A special interest group has started under the umbrella of the European Board of Medical Assessors (EBMA) and regular meetings are being held. The Association of Medical Education in Europe (AMEE) publishes so-called "Consensus Papers". In 2021 they published the "Ottawa 2020 consensus statement for programmatic assessment – 1. Agreement on the principles" (Heeneman et al., 2021) and "Ottawa 2020 consensus statement for programmatic assessment – 2. Implementation and practice" (Torre et al., 2021). The second paper surveyed 15 medical training programs around the world to identify implementation enablers and barriers.

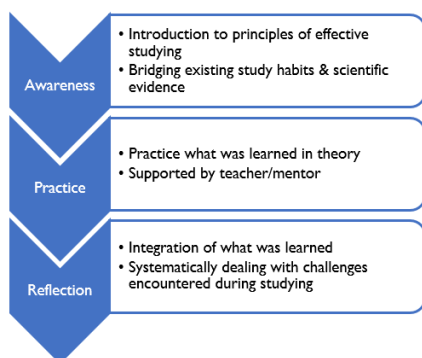
Finally, programmatic assessment has fuelled a lot of research over time since its inception. In 2020 the first literature review of this research has been published (Schut et al., 2020). The conclusion is that programmatic assessment can effectively work, but that certain conditions need to be fulfilled. Successful implementation requires for example engagement of all stakeholders in a curriculum reform process (Torre et al., 2022). Research and practice continue to inform each other and programmatic assessment is increasingly used in higher education. Recently, Baartman and Quilan argued (2024) that programmatic assessment helps to transform higher education because it creates a feedback culture that combines a focus on learning, with assuring standards, and helps students to be better prepared to manage their employability by focusing on aggregating evidence about their own competence development.

3. Study Smart



Study Smart is an evidence-informed training program designed to support students in developing effective learning skills. Founded at Maastricht University in 2017, the program was designed by an interdisciplinary team of educators, scientists, student advisers, and students, with SHE researchers Prof. dr. Anique de Bruin, Dr. Felicitas Biwer, and Niklas Wenzel MSc, at the core. Based on scientific principles of effective learning, Study Smart has been implemented and tested in various contexts, spanning different study programs, universities, and continents. At its core, it consists of three training sessions: 1) Awareness, 2) Practice, and 3) Reflection. Each session comes with its own

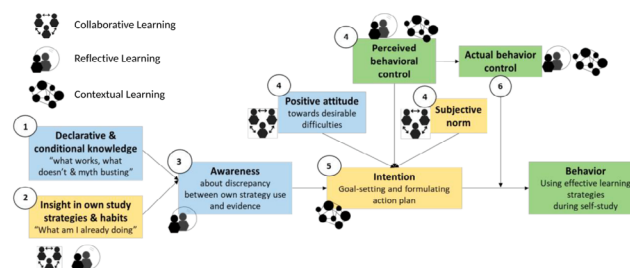
slide deck, tutor manuals, and student workbook and is accompanied by short instructional videos.



Evidence-Informed

The development of Study Smart is grounded in rigorous research. Dr. Felicitas Biwer's PhD dissertation, awarded with the Impact Prize of Maastricht University in 2023, serves as a cornerstone of the program. The research highlights key design principles which are translated to the Study Smart Model. See, for instance, Biwer, F., & Bruin, A. B. H. (2023). Teaching

students to 'Study Smart' – A training program based on the science of learning, in 'Society for the Teaching of Psychology': <https://teachpsych.org/ebooks/itow>. The Study Smart Model describes students' learning strategy change process:



Impact

Study Smart bridges educational innovation and research. It has been developed through implementation and iterative improvement, informed by scientific design principles. The program's implementation has had significant societal impact by cross-linking research and educational innovation. Study Smart has been implemented in various forms to fit different contexts and educational approaches at all faculties of Maastricht University and by several universities around the world (see Table).

In the Netherlands

Erasmus University Rotterdam
Hogeschool van Amsterdam
Hogeschool Utrecht
Hogeschool Zuyd
Leiden University
MBO Rijn IJssel
Tilburg University
Amsterdam UMC
University of Amsterdam
Utrecht University

International

Binus University (Indonesia)
Hasselt University (Belgium)
Massey University (New Zealand)
Ross University (Barbados)
University Aveiro (Portugal)

4. Pasemeco: Improving palliative care education for our future doctors

The Pasemeco project (2016-2020) aimed at improving palliative care education in the undergraduate curriculum in the Netherlands. A SHE team collaborated with palliative care experts and reached out to all eight medical faculties in the Netherlands. The project was funded by ZonMw, as part of the National Programme Palliative Care.



What is palliative care?

Palliative care is an approach that improves the quality of life of patients and their families facing a life-threatening illness, through the prevention and relief of suffering by means of early identification and impeccable assessment and treatment of pain and other problems, of a physical, psychosocial and/or spiritual nature. (From: WHO definition of palliative care)

Palliative care in the undergraduate curriculum

Key in the Pasemeco vision is to view palliative care as normal care and to integrate palliative care education systematically and longitudinally in the entire undergraduate medical curriculum. A survey among medical students, interviews with stakeholders and an analysis of Dutch undergraduate curricula showed that this is currently not the case: attention for palliative care is fragmented and suboptimal.

Combining research and practice

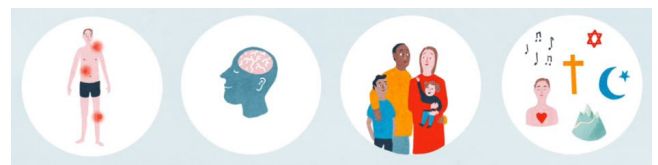
Literature research, a survey amongst medical students, interviews with caregivers, and a Delphi-study resulted in a framework of competencies palliative care that should be covered in the undergraduate medical curriculum.



Further research studies focused on new implementations of palliative care education. The Pasemeco research resulted in a SHE PhD thesis by Dr. Jolien Pieters and presentations at national and international conferences.

Concurrently, the Pasemeco team supported teachers of all eight medical schools in the Netherlands to implement new education about palliative care in their curriculum. Educational materials about palliative care were collected in the Pasemeco toolbox, ranging from video clips and patient cases to elaborated lessons and entire modules. The toolbox allows teachers to search for materials and use them or adapt them to their needs. The toolbox will remain freely accessible after the end of the Pasemeco project at: <https://palliaweb.nl/onderwijsmaterialen>

The Pasemeco team also developed new materials for underserved topics: a set of learning tasks on Communication and the spiritual dimension of care, a set of learning tasks on Advance care planning, a set of learning tasks on Care around the patient's death, and a short movie of five palliative patients sharing their views on the four dimensions of care.



5. Project Mozambique

Capacity building for innovative education and services on sexual and reproductive health and rights in Mozambique

Since 2017, SHE Collaborates has worked with Universidade Católica de Moçambique (UCM), the Instituto Superior de Ciências de Saúde (ISCISA) and Coalizão da Juventude Moçambicana (COALIZÃO) in Mozambique, in the area of sexual and reproductive health and rights (SRHR). The project consortium included three Dutch organisations; Maastricht University through SHE Collaborates, the Royal Tropical Institute (KIT) and Aidsfund.



Capacity building

A series of projects, subsidized by the Dutch government through the Ministry of Foreign Affairs, aimed to improve SRHR services and campaigns. Initial activities addressed students and staff of at both institutions. University teachers received training in topics such as health promotion, gender equality, dealing with sexual harassment. A university wide 'life skills course' has reached over 50,000 UCM students and 2,300 ISCISA students and helped them develop the skills that are needed to deal with challenges and stress of everyday life, with a focus on sexual and reproductive health issues.

Through follow-up projects, Vibrações (<https://www.vibracoes.co.mz/>) has been developed as a SRHR website for young people in Mozambique, based on the Stepped Care Model. Since its launch in December 2022, the website has had over 55.000 page views from more than 21.000 visitors. Via outreach activities alongside all projects, our team has built strong links to other education institutions, policy makers and communities in Mozambique and Southern Africa.

Crowd funding

When cyclone Idai hit Mozambique in March 2019, SHE Collaborates in collaboration with the SWOL University fund, led a Maastricht University wide crowd funding initiative to support the rebuilding of teaching facilities and student accommodation at UCM.

Ongoing spin-offs of the project include two Mozambican PhD candidates in Health Promotion and Sexual and Reproductive Health, and one MSc candidate in Public Health. Maastricht University MSc students in Global Health have conducted field work and thesis projects in the partnership context, most recently exploring the opportunities and challenges for scaling up the Vibrações initiative.

Selection of media exposure

- https://www.limburger.nl/cnt/dmf20190328_00098739
- [Care for Beira - all under one roof! \(umcrowd.nl\)](#)
- [Keihard Abbey Road van The Beatles tegen de angst > Observant Online](#)
- [UM-start-inzamelingsactie-voor-Mozambikaanse-universiteit](#)

3. Optional appendices

Appendix 3a

General information regarding Maastricht University, FHML, and MUMC+

Maastricht University

Maastricht University was founded in 1976 and is the youngest university of the Netherlands. Maastricht University is characterized by its multidisciplinary and thematic approach to research and learning. Maastricht University was the first Dutch university to set internationalisation as a top priority. More than 50% of the students and more than 40% of the academic staff within Maastricht University come from abroad, making Maastricht University the most international university in the Netherlands. Maastricht University has extensive international partnership networks and the university encourages international research collaborations. Students and researchers have many opportunities to study and work abroad, and graduates are eagerly sought in the international labour market and research community. All of this has earned UM the Certificate for Quality in Internationalisation (CeQuint), awarded by the European Consortium for Accreditation in higher education (ECA). Maastricht University stands out for its innovative approach to learning and international outlook. With almost 16,000 students and 4,000 staff, Maastricht University offers a wide choice of bachelor's, master's and PhD programmes, all of which are designed to bring out the best in its students. Maastricht University is renowned for its problem-based learning (PBL) system based on a small-scale and student-oriented approach.

Faculty of Health Medicine and Life Sciences

The Faculty of Health, Medicine and Life Sciences (FHML) is Maastricht University's largest faculty, comprising 35% of the total staff and budget of Maastricht University. The FHML has officially

existed since January 1st, 2007, after a merger of the former faculties of Health Sciences and Medicine. The FHML houses, besides SHE, seven other Research Institutes. Each Research Institute is managed by a scientific director, who has final responsibility for the overall Research Institute policy. The managing director is responsible for the accounting within the Research Institute and heads up the Research Institutes's management office. The department chair is responsible for the quality of the discipline related education and research. Moreover, if it concerns a clinical department the chair is also responsible for the quality of the discipline related patient care. The Institute for Education is responsible for the development, organisation, administration and implementation of all FHML educational programmes, and has to make sure that a solid internal quality assurance system is in place for these programmes. The education spans the entire continuum from bachelor's and master's programmes to post academic education (e.g. specialist medical training in the hospital) from health and healthcare to medicine and life sciences. In the FHML matrix organisation, departments house the human resources: support staff, PhD students and scientific staff. Tasks are provided through labelling in Research Institutes and educational programs. The department chair has the task of acquiring and distributing the tasks over personnel, in concert with the Research Institutes and the Institute for Education. For the research labelling, the policy is that direct government funding research labelling for all tenured research staff is maximised at 0.5fte.

Maastricht UMC+

Maastricht University Medical Centre+ is a partnership between the academic hospital

Maastricht (azM) and the Faculty of Health Medicine and Life Sciences (FHML) of Maastricht University (UM). Maastricht UMC+ focuses not only on restoring people to good health but also on helping them stay healthy and improve their health. In addition to tertiary referral care and top clinical patient care, our core tasks are research, education and training, and valorisation. Maastricht UMC+ also provides basic healthcare services for the city of Maastricht and environs. This means that, in cooperation with our network

partners, Maastricht UMC+ is uniquely equipped to deliver healthcare services from baseline to tertiary level and thus offer precisely the right care where it is needed, but also to investigate the effects of new healthcare models. The mission of Maastricht UMC+ is 'To provide the best possible care and improve health in the region by integrating patient care, research and education' under the motto: Healthy Living. Within this mission, there is a strong focus on integrated care and prevention of disease.

Appendix 3b

FHML/MUMC+ policies with regard to open science, PhD policy and training, academic culture, and human resources policy

Open Science

See for more online information <https://www.openscience-maastricht.nl/> and <https://library.maastrichtuniversity.nl/research/sharing-output/>

In 2019, Maastricht University approved the policy note "Open Science @ UM". Maastricht University endorses the principles of Open Science and offers its academics support to put these principles into practice to make science "as open as possible, as closed as necessary". The Open Science umbrella covers topics such as:

- FAIR data use: Whenever possible, research data must be Findable, Accessible, Interoperable and Reusable;
- Open Access: Promoting free online access to scientific information, such as publications and data. In this model, the author pays, not the reader;
- Encouraging the unconditional right to reuse research data, modify them, and reshare them;
- Recognizing and rewarding scientists in a different way: Scientists are usually judged by their publication output and the research grants they have acquired. Open Science also stands for recognition and appreciation of other issues such as educational activities, leadership qualities and social impact.

The Maastricht University Library commits to the Maastricht University policy on Open Access and Open Access publishing. The University Library has

developed tools for researchers to stimulate open science and to assist them in doing this.

The Maastricht UMC+ also actively stimulates the implementation and practice of Open Science in academia. The Maastricht UMC+ follows the ambition of the National Plan Open Science. The leading principle in this regard is that publicly funded research results should be freely accessible to the public. Within the Maastricht UMC+ there is a library committee that negotiates contracts with publishers (Golden Open Access, Hybrid and Green Open Access). Furthermore, since 2017, publications of Maastricht UMC+ researchers are posted in the public UM research database PURE. Maastricht UMC+/FHML considers it very important to manage data with care and integrity, and to ensure the reuse and verification of research data following principles of FAIR and Open Science. Accurate management of research data is essential in terms of accountability and scientific integrity, but also in terms of better retrieval, sharing, and storage of research data. The 'DataHub' unit offers support and facilities for Research Data Management. The University Library has developed a Research Data Management guide and supports UM and Maastricht UMC+ researchers in Research Data Management (store, archive, retrieve and share data).

PhD Policy and training

See for more online information <https://www.maastrichtuniversity.nl/about-um/faculties/health-medicine-and-life-sciences/phd-fhmlmumc/phd-training-programmes-fhmlmumc>

At the start of their PhD, each Maastricht University (UM) PhD candidate is requested to fill out a Declaration of Scientific Integrity conform the UM Doctoral Regulation, stating they will adhere to the Netherlands Code of Conduct for Scientific Integrity 2018 and the UM Integrity Code of Conduct. They also immediately start composing their Personal Research Plan (PRP) with a publication plan and a Training and Supervision Plan (TSP). The course offer is organized by the Faculty, UM Staff Career Centre, Language Centre, University Library (most of these are paid for by the Faculty). PhD candidates are also free to choose good quality courses elsewhere or online. The training trajectory is tailored to the particular project and individual career path.

Supervision PhD candidates

Supervisors have a key role in coaching and supporting PhD candidates through the phases in the PhD trajectory. Professors, and since 2019 also associate professors, have the *ius promovendi* that gives them the ability to act as supervisors (first promotor) leading a PhD candidate to a successful defense. Each supervisory team consists of at least two supervisors, as laid down in the UM Regulation governing the attainment of doctoral degrees, 2020. Since 2017, FHML offers the four-day course Competence Development for supervisors of PhD candidates. The PhD representatives and PhD coordinator continuously discuss new initiatives at Research Institute and Faculty level to contribute to an increased awareness of the mutual needs and expectations of PhD candidates and supervisors.

Quality assurance and PhD TRACK

To enable PhD candidates to move through their PhD trajectory in a successful way, an online monitoring system TRACK was established. PhD TRACK is a quality management system that actively monitors both the progress of PhD candidates and the quality of the supervision. The aim is to support PhD candidates during their

trajectories by reminding them of important milestones, such as preparing for their annual appraisal interview by reviewing their working circumstances and the quality of the supervision they receive. Supervisors are supported to actively manage and report on the progress of their PhD projects. This enables FHML to timely detect problems and delay.

Selection and admission procedures for PhD candidates

PhD candidates are selected in different ways:

- Internal PhD candidates apply on a vacancy posted at the Dutch main website for academic vacancies (Academic Transfer);
- Supervisors recruit external PhDs from their national and international networks;
- Potential external candidates (sometimes with a Scholarship) contact Schools from all over the world.

Assessment of PhD candidates

The progress of each PhD trajectory is assessed every half year in PhD TRACK by the supervisors. Internal PhD candidates are formally assessed at the end of every PhD-year according to the Dutch Collective Labour Agreement (CAO). The go/no-go interview in the 10th month, in presence of their HR advisor, determines whether the appointment will be extended for the further three years. External PhD candidates should request for an annual evaluation meeting with their supervisors. All types of PhD candidates have to update their TSP and PRP, including the planning, for this annual meeting and are reminded to do so by an email from PhD TRACK

Academic culture

See for more online information <https://www.maastrichtuniversity.nl/research/integrity-ethics/scientific-integrity> and <https://www.maastrichtuniversity.nl/about-um/faculties/health-medicine-and-life-sciences/scientific-integrity> and <https://www.maastrichtuniversity.nl/researchcodeMUMC>

Scientific integrity

The Netherlands Code of Conduct for Scientific Integrity and the UM Code of Conduct for Integrity form the guiding principles for

Maastricht UMC+'s integrity policy. Besides these codes, the Maastricht UMC+ has developed the Research Code Maastricht UMC+. This Code provides those involved in research within the Maastricht UMC+ with a clear description of the rules for ethical and socially responsible conduct in scientific research. Maastricht University has developed a Graduate School Training Programme to prepare young researchers for a future in science. The programme consists of courses on three highly relevant themes, namely: Research Ethics & Integrity, Open Science, and Impact & Science Communication.

The Executive Board of Maastricht University has appointed a counsellor for scientific integrity, who is the contact person for questions or complaints concerning this topic. The counsellor will try to mediate in case of a complaint concerning suspected scientific misconduct. If this is not possible, he will guide the complainant to file the complaint to the Committee for Scientific Integrity, who will then take it further and will advise the Executive Board of Maastricht University.

Within Maastricht UMC+ the Platform Scientific Integrity is installed to create a culture of awareness regarding scientific integrity. Moreover, the goal is to create an approachable and safe environment in which the topic scientific integrity is discussible among all employees involved in scientific activities, including faculty, supportive staff contributing to research, and PhD students, as well as students. The PSI is active since September 2018 and consists of representatives from each Research Institute. Among other initiatives, the PSI developed an online course on scientific integrity (1 ECTS, accessible to internal and external PhD candidates). The online course Scientific Integrity In Depth (SCIIN-ID) will be organised 3-4 times a year. To help all FHML/ MUMC+ members successfully identify the points of contact for any potential issue related to scientific integrity, the PSI has developed roadmaps for staff, PhD candidates and students. Through the roadmaps, points of contact will be clear for all involved.

Human resources policy

See for more online information <https://www.maastrichtuniversity.nl/about-um/diversity-inclusivity> and <https://www.maastrichtuniversity.nl/about-um/recognition-rewards>

Inclusivity is one of the main goals of the Maastricht University Strategic Programme - Community at the Core. The UM has appointed an advisory council on diversity and inclusivity in order to support, challenge and inspire the Executive Board in the realization of the UM's mission and strategy. The Advisory Council consists of UM staff, UM students and members not employed by Maastricht University. The Advisory Council advises the Diversity & Inclusivity Office about policy matters. Constance Sommerey is appointed as the Maastricht University diversity officer. The aim of the UM's D&I Office is 1. diversifying employee and student population and 2. creating an inclusive atmosphere in which all talents and competencies can be mobilized for the well-being of UM community members and for the well-being of the organization itself. In order to achieve these aims, the D&I Office's work covers four core areas: attracting & retaining talent, fostering cultural change, strengthening diversity competencies and making family- and life-phase friendly HR and Education policies – UM Cares. These four core areas structure the efforts of UM's D&I Policy in the upcoming years. This division offers the possibility to focus on different aspects of our organization, including recruitment, academic affairs, teaching development, facility management, student services, employer branding, and HR policies.

Talent policy

Maastricht UMC+/FHML aims to create an environment that enables talented individuals to excel, implementing an overall talent policy to identify and to support talented junior (PhD), middle-career and senior staff. Faculty grants advisors are available for career, CV and grants (Vidi, Vici, Marie Curie, ERC's,...) advice. A specific programme example is the internal MUMC+ Kootstra Talent Fellowship for final-year PhD candidates to facilitate the transition to postdoctoral positions.

Based on the national position paper 'Room for Everyone's Talent', UM created a document for the Recognition & Rewards programme, sharing its vision on the modernisation of recognising and rewarding academic staff. To facilitate the diversification of career paths and talent development, the steering committee and the HR working group have developed new academic profiles for academic positions, which are currently being implemented across FHML. As of January 2023, FHML/MUMC+ has implemented Development Boards for scientific staff. Development boards consist of multiple

colleagues, with whom the academic has annual dialogues on his/her development. In these dialogues a personalised approach (diversification) and a constructive dialogue on options and recommendations for further development are being discussed. This development aims to support academics to take ownership of their own development. The UM Leadership Academy has developed a programme for leadership development regarding the four levels of leadership: leading self, leading others, leading other leaders and leading at faculty or Institute.

Appendix 3c

Links to relevant documents and webpages

- SHE annual reports and previous review reports:
<https://www.maastrichtuniversity.nl/research/she/about-our-school/newsletter-and-reports>
- SHE PhD Guide:
<https://www.maastrichtuniversity.nl/research/she/she-research/phd-programme/information-and-projects/phd-guide>
- SHE 2024-2030 H-P-E Research Programme:
<https://www.maastrichtuniversity.nl/file/she-research-program-2023pdf>
- SHE Research Guidance, including scientific integrity:
<https://www.maastrichtuniversity.nl/research/she/she-research/scientific-integrity>
- SHE overview of completed and ongoing PhD thesis:
<https://www.maastrichtuniversity.nl/research/she/she-research>

A photograph of a modern building with large windows and a group of students walking on a sidewalk in front of it. The building has a distinctive facade with vertical wooden slats and large glass windows. A group of about ten students, mostly young adults, are walking along a paved path in front of the building. Some are carrying backpacks, and one student is sitting on the ground. The scene is set outdoors with green trees in the foreground and background.

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Pictures by Stokvis, Maartje (p. 1, 23, 36) and Harry Heuts (p. 12)
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