Learning by doing.

LEARNING BY DOING

Maastricht University

Farewell lecture by Prof. Ide Heyligers

Farewell lecture November 21, 2025.

Mr. Vice-Rector, Dear members of the Supervisory Board, Ladies and gentlemen, colleagues, friends, and family,

Since its foundation in **1976** (50 years ago next year), Maastricht **University** has used **'problem-based** learning' in its programs. This has earned it a reputation both at home and abroad. **'Leading in learning'** is therefore rightly a high priority.

Leading in learning + **learning by doing >** leading in doing

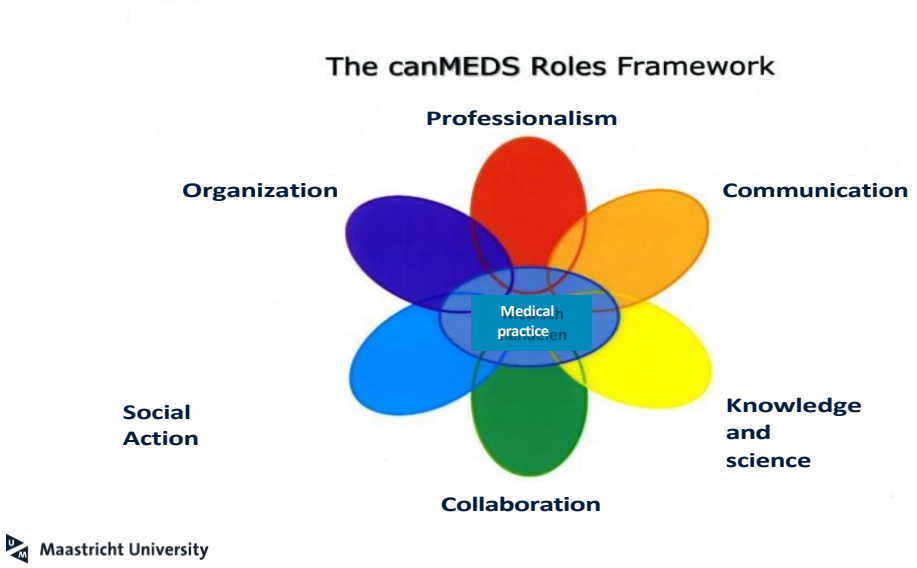
Problem-based learning is education based on questions or problems from real life. Students set to work themselves to find answers and solutions.
They are guided in this process by a **tutor**. As a resident, I really enjoyed doing this at the time. This foundation enables medical students to develop skills that they will later apply in clinical practice during their residency. They are trained to
critically analyze their own development. They record this in an electronic
portfolio containing assessments of their actions. Together with a **mentor**, someone from clinical practice, they discuss their progress. As a mentor, I was impressed by the efficiency of this system. **Critical self-reflection** in particular is an
important tool. This will serve them well when they are later accepted for specialist training.

When I was appointed professor, my teaching assignment was: **"education and training in the teaching hospital."** In other words, learning by doing, based on practice.
“Learning by doing.” With the ultimate goal of producing excellent doctors. In this way, “leading in learning” also becomes **“leading in doing.”**

Training hospitals have a **department** that handles all tasks related to education and training. This department, often called **a learning center** or **academy**, is managed by a medical specialist: a **dean** or a **director**. This is where all activities that determine the content of all training programs, as well as internal and external quality assurance, are organized.

As **dean** of the Atrium, and later of Zuyderland, I was involved in the establishment of the South East Netherlands Education and Training Region, **OORZON.** That was 20 years ago now**.** These regions were established throughout the country within the **partnership** between an academic hospital and the surrounding

training hospitals**.** There was a need to revamp **the entire medical education continuum**, from basic medical training to
postgraduate training to become a specialist. This curriculum was based on the seven **competencies** developed by the Canadian Medical Education Directives for Specialists, known as the **CanMed competencies**.



These competencies are: medical practice, communication, collaboration, knowledge and science, social practice, organization, and professionalism.

In the **OORZON, interdisciplinary courses** were developed for resident physicians. And **teach the teacher** training courses for educators. Support was provided
Some examples of research that I cite demonstrate the cross-pollination between the practice of training and scientific research into it.

The UM supported the development of regional cooperation by appointing so-called **"education professors**." These were medical specialists who, in addition to their clinical work, were involved in education, training, and research. These professors were usually appointed within their **field of expertise**. In my case, that would have been orthopedics. At that time, however, specialists from different hospitals still thought in terms of **competition**. It is thanks to the wisdom of the then **dean, Albert Scherpbier,** that my appointment fell under the
research school SHE, the **School of Health Professions Education**. I have always considered this a **great honor** and felt very much at home there.

I therefore feel like a happy man, a lucky man, a Lucky Luke, my favorite comic book hero and, moreover, a cowboy, my favorite character.

In this **farewell lecture**, I will explain how I **designed** my teaching assignment and account for it. To this end, I will analyze my own actions and learning in relation to the developments that took place. I will illustrate this with research in which I was involved. I will conclude with a few statements.

The training of a single specialist costs approximately 1 million euros **in taxpayer money**. In the 20 years that I was a trainer of orthopedic surgeons and in my position as Dean, I was therefore (partly) responsible for the expenditure of millions of euros of public money. Some accountability is therefore appropriate.

As **a trainer,** I was authorized to supervise the training of resident physicians so that they could be registered in the **orthopedics specialist registry**. As **a professor,** I have the **ius promovendi**. That is the right to award scientists the academic degree of **doctor**. This degree is obtained when a **dissertation** is adequately defended during a graduation ceremony. To this end, the dissertation must be **accepted** for defense. This is done by an **assessment committee**. The committee **ensures** that the doctoral candidate has demonstrated the ability to conduct **independent** scientific research. A dissertation is usually based on a collection of **internationally published scientific articles.** These have been critically assessed by experts from around the world. They assess not only the quality of the research but also its relevance of publishing it. Most of the doctoral candidates I have supervised conducted research in **orthopedics** or in the field of **medical education and training**. They often **combined** this with their training as medical specialists. Nowadays, the question is rightly being asked whether this **enormous effort** is always appropriate. It should certainly not stand in the way of **other** important **areas of specialization**, such as education or management.

. It is wrong to consider a PhD program much more important than, for example, additional training and education in teaching skills. Nevertheless, I believe
believe that assistants who **complete** a PhD program benefit greatly from it. They learn **to think critically** and ask the right questions. They are given the tools to remain involved in research and often pass this on to others.

Looking back, there are a number **of cities** that mark my education and work. I will briefly mention them as a frame of reference. Because I was rejected four times, I first studied physical therapy and then medicine, both in **Amsterdam**.

As a doctor, I spent a year doing research in the **United States.** I was trained in surgery in **Amsterdam** and orthopedics here in **Maastricht**. After that, I worked for almost **ten years** as a staff member at the **VU University Medical Center** in Amsterdam and then for almost **20 years** at the **Atrium** and the merged hospital, **Zuyderland**. Here, I was responsible for orthopedics **training** and became **Dean** of the learning center. I was then **appointed** as a professor at Maastricht University. After my **retirement,** I worked for a few more years in **Utrecht** as secretary of the Medical Specialties Registration Committee Specialisms, the **RGS**. This committee is responsible for specialist registration in the Netherlands, but also, and more importantly, for supervising postgraduate medical training. I will come back to this later.

Last year, I stopped doing this when Sacha rightly pointed out that I didn't really have time to work so much anymore. I still give some training courses, supervise PhD students, and have coffee with former assistants.

Over the past **40 years** that I have been involved in training clinics, a lot has **changed** in the training of medical specialists. I have listed these **changes** for you.

Training in the clinic

Back then	Nowadays
• 1 trainer	• 1 trainer > training group > cluster
• 1 clinic	• > 2 clinics > region
• Master-apprentice. Clone?	• Several short 1-on-1 sessions
• Doing what needs to be done	• Doing what is necessary for training
• No personal training plan	• Personal training plan
• No EPAs, competencies	• EPAs, competencies
• 1 interview/year	• Constant conversations
• Little training	• Training in all competencies
• Little assessment	• Assessment of all competencies/EPAs
• No portfolio	• Personal portfolio
• 5 days + shifts	• Part-time possible
• Fixed duration (6 years)	• Variable duration i.p.

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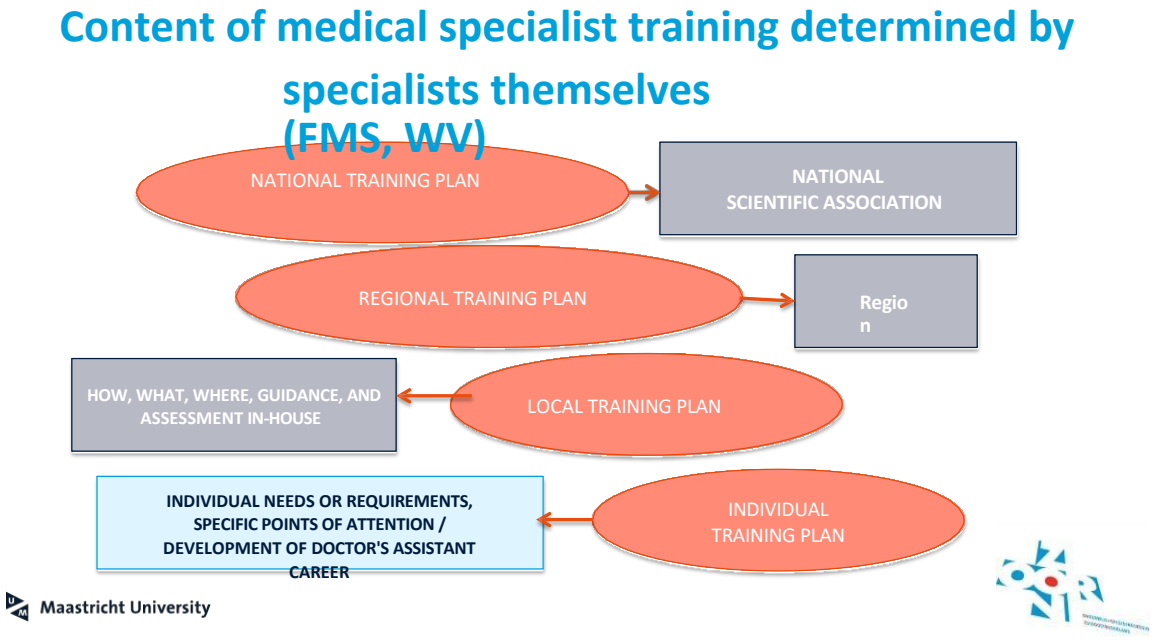
At the time, you were hired by **one trainer**. You worked throughout the entire training program in his (almost always male) **clinic** under his supervision. So you could either be trained in an academic hospital for the entire program, or not. It was a real **master-apprentice** relationship. The content was basically the same for everyone in that clinic. Training took place nationwide and focused mainly on medical practice. Once a year, there was a **brief discussion** about how things were going. You were not systematically observed and
assessed. You did the **work** that needed to be done, and if nothing unusual happened, you were finished after the predetermined training period. You often ended up being a kind **of clone** of the trainer. This could be unfortunate, or fortunate. You
worked full-time: five days a week, supplemented by shifts. There was **no regional cooperation.**

Nowadays, assistants are hired by **several trainers** from different clinics who collaborate in a **training cluster**. The assistant follows
the training in at least **two hospitals**, but often more. Each assistant is placed in an **academic hospital and a non-academic hospital**. The training consists of **EPAs**, Entrustable Professional Activities; completed units of the profession. In these, the assistant can gradually develop independence. Some of these are **mandatory,** but the assistant also chooses a number of them themselves in a **profile**. The training is based on the seven competencies mentioned above. Courses that go beyond the discipline
courses are given. And there is **education** in medical practice in the specialty, usually at the national level. In addition, the members of the training groups
trained through **teach-the-teacher** training courses. The progress of the EPAs is assessed and discussed at various points in time. The members of the training group use various **assessment tools** for this purpose: brief clinical assessment, 360-degree feedback, etc. The assistant has a digital portfolio in which the activities

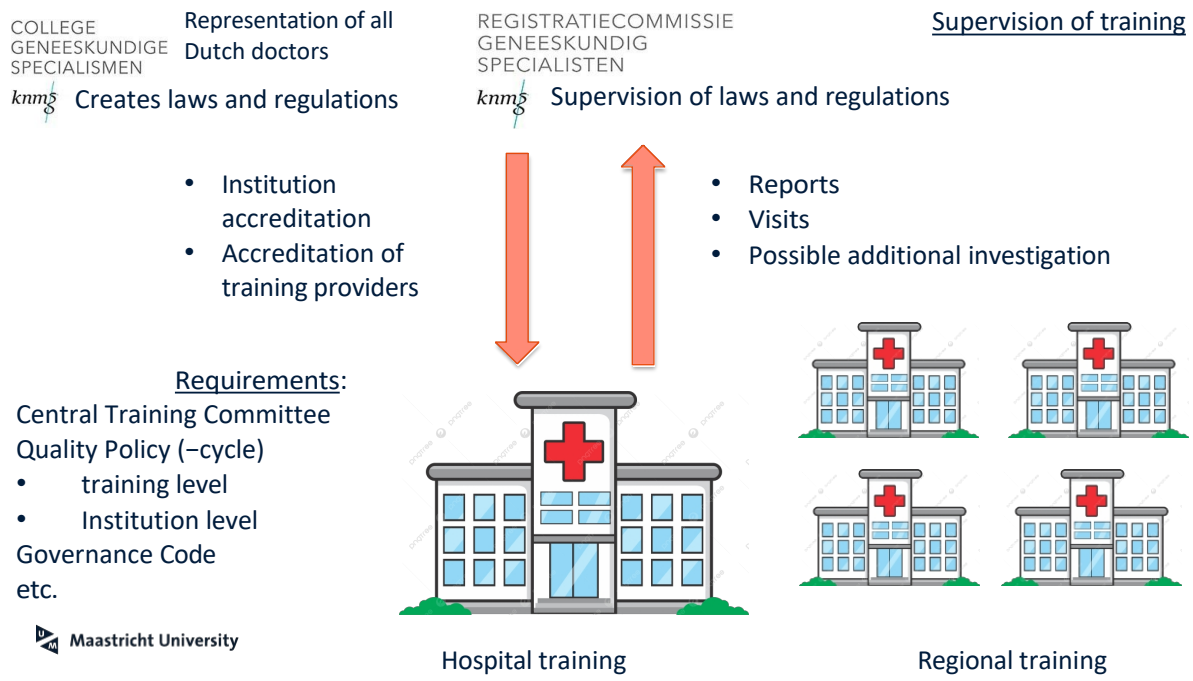
and assessments are recorded. Once all mandatory and selected EPAs have been achieved at the **required level,** the training is in principle complete. This has made the training period **variable**, generally **6 months shorter**. Assistants can choose to do the training part-time. Many work four days a week. Working hours are strictly monitored, including shifts, etc. In principle, the assistant does not do the work that needs to be done, but the work that he needs for his development. **Regional cooperation** has become indispensable. It plays a decisive role in training and **education**. The **OOR** has an indispensable role to play in this.

Funding for the training of medical specialists goes directly from the government **(Ministry of Health, Welfare and Sport)** to the training hospitals. Whether a hospital is allowed to provide training and whether a specialist is allowed to train is determined by the RGS, which issues the relevant accreditation. This funding is an important **source of income** for training hospitals. However, they do have to make significant investments in order to receive it. Hospitals must pay the salaries of assistants who are not in training themselves. There is therefore a trend among training hospitals to take on **as many** assistants in training **as possible**. Even though the **training capacity** (operations, outpatient visits, etc.) is not always in proportion to the number of training assistants. This battle to recruit as many assistants is currently **being won** by the **academic** hospitals. Originally, they also dominated the training of specialists. Approximately **half** of the training assistants in the Netherlands are training in one of the **seven academic** hospitals. The other half is spread across the remaining 46 training hospitals, **27** of which belong to the so-called **top clinical training hospitals**. It is **complicated** for an academic hospital to meet the **requirement for super-specialization** on the one hand, not basic care, for which the hospital is too expensive. And on the other hand, the **desire** to employ as many

training assistants, for whom basic care is precisely what is needed. The question is whether this problem can be solved as long as funding goes directly to the
training clinics. Or whether it would be better to do this via a **training region** or the **scientific association** of a specialty, for example.



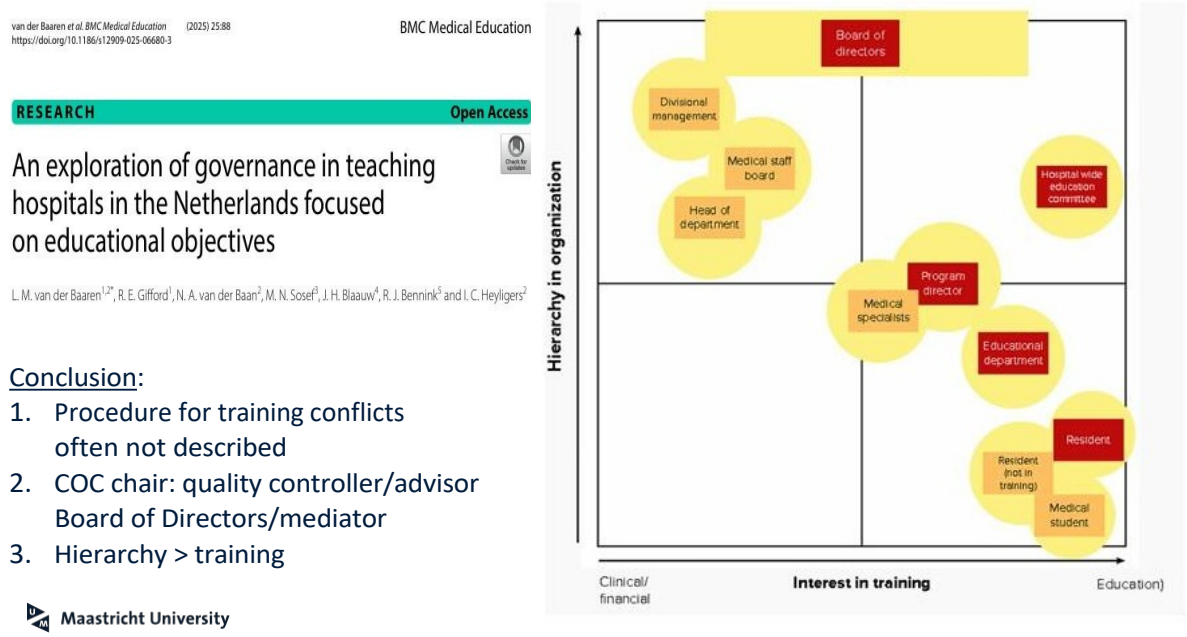
The most important thing in any case is optimal **cooperation** between trainers in the region. Fortunately, this is the case at **OORZON**. And it has to be. At this level, the national requirements for training are translated to the **regional situation**. The **scientific association** for a particular specialty determines what the
training must meet. The hospitals in the region make agreements about where the assistant can do which parts. They ensure that the training fits in nicely when the
assistant moves from one clinic to another. In a **training clinic**, this is then translated to the local situation. What is being taught here? By whom? How is it assessed? Etc. Finally, the assistant has their own **individual training plan** for
his or her specific situation. What am I still missing? Where do I need to pay extra attention? Where do I need more training? etc.



Trainers and training institutions are **formally recognized** for providing training to medical specialists by the aforementioned **RGS**. The RGS assesses whether the requirements are met. These requirements are laid down in a system of laws and regulations drawn up by the **CGS**, the College of Medical Specialists, and approved by the minister. Both the CGS and the RGS consist of **representatives of all groups of doctors** in the Netherlands (**the butcher** inspects the meat, not his own, but fortunately not the baker's). This **unique system** works well.

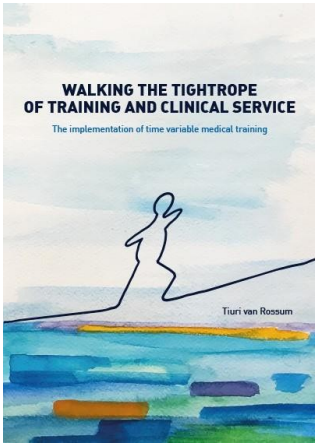
Visits and reports are used to monitor the quality of the training programs and attempts are made to stimulate continuous improvement. A number **of instruments** have been developed for this purpose. For example, every training hospital must have a **Central Training Committee**. This must consist of all the trainers in that hospital. **Assistants** are also part of this. And in this region, **interns** also participate participate in this. This ensures the aforementioned **training continuum**. This COC plays a central role in monitoring the quality of the training programs. Another tool is the **quality cycle**. Both the **training group** of a specialism, **regional cooperation** within that specialism, a **training hospital**, and **regional cooperation** between hospitals all have their **own quality cycle**. This allows improvements to be identified from various sources. An improvement process is linked to this, and after a set period of time, it is assessed whether the goal has been achieved. In this way, continuous quality improvement. Another instrument is the **governance code.** This is used by teaching hospitals to define how the roles in this process are distributed within the organization. Who is responsible for what and who has authority over what? **Enforcement power**? With this system, the RGS places the **responsibility for monitoring** the quality of training courses as much as possible with the trainers and their organizations themselves. This organizational structure

of supervision is fairly **new**. The question is therefore how this works in **practice**.



Rens van der Baaren analyzed all **governance codes** of all 46 teaching hospitals with more than three training programs in the Netherlands.

Three issues stood out in particular: 1. Often, there is no description of the **procedure** to be followed when **conflicts** arise during training, e.g. between assistants and the trainer, or between the trainer and the training group. 2. **Chairpersons** of the Central Training Committee often feel caught between different **roles**: that of **quality controller, advisor to the Board of Directors, and mediator in conflicts**. 3. Specialists who are less involved in training but more involved in clinical and financial matters are higher in the hospital **hierarchy** than specialists who are primarily involved in training. You can see this in the figure here. Horizontally, clinical and financial matters are on the left, education and training on the right. The vertical axis shows the hierarchy from low to high. At the top left are the **medical staff, division management, and department heads**. On the right, from bottom to top, are **assistants, teaching centers, trainers, and COCs**. Based on these results, interviews are now being conducted with COC chairs to investigate this further.



Balancing education and clinical care. Thesis by Tiuri van Rossum (public administration) (with Prof. Fedde Scheele and Dr. Henk Sluiter)

- Fixed duration training (6 years) > Variable duration (complete when you are ready).
- Relationship between business operations and medical postgraduate training
- What are the consequences for the workplace?

- Surprising finding: shorter training is more expensive
- Recommendation to introduce reflective practice at hospital level

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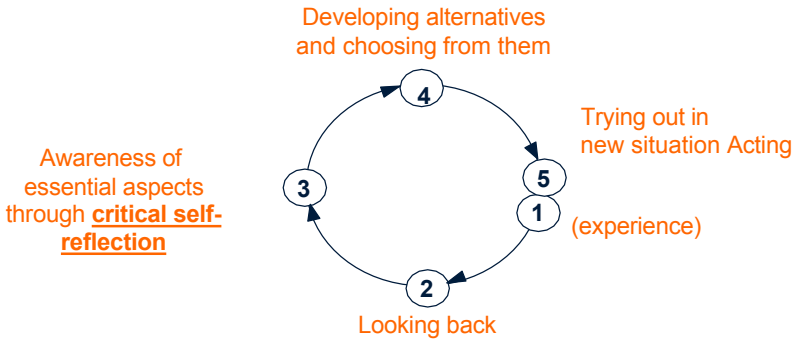
Tiuri van Rossum has written an excellent thesis on the complex **balance between clinical care and training**. He showed that, contrary to expectations, competency-based training with a **variable duration** (which is usually shorter) is ultimately **more expensive** than training for a fixed number of years. One explanation may be that at the end of their training, assistants start working independently.
works and therefore has **earning capacity**. In addition, as a
public administration expert, **he made recommendations** to link the value of training to the hospital's goal of providing high-quality care. Both training and
clinical care benefit from a **reflective culture** in which people take a critical look at their own performance.

Reflection model: learning from experience



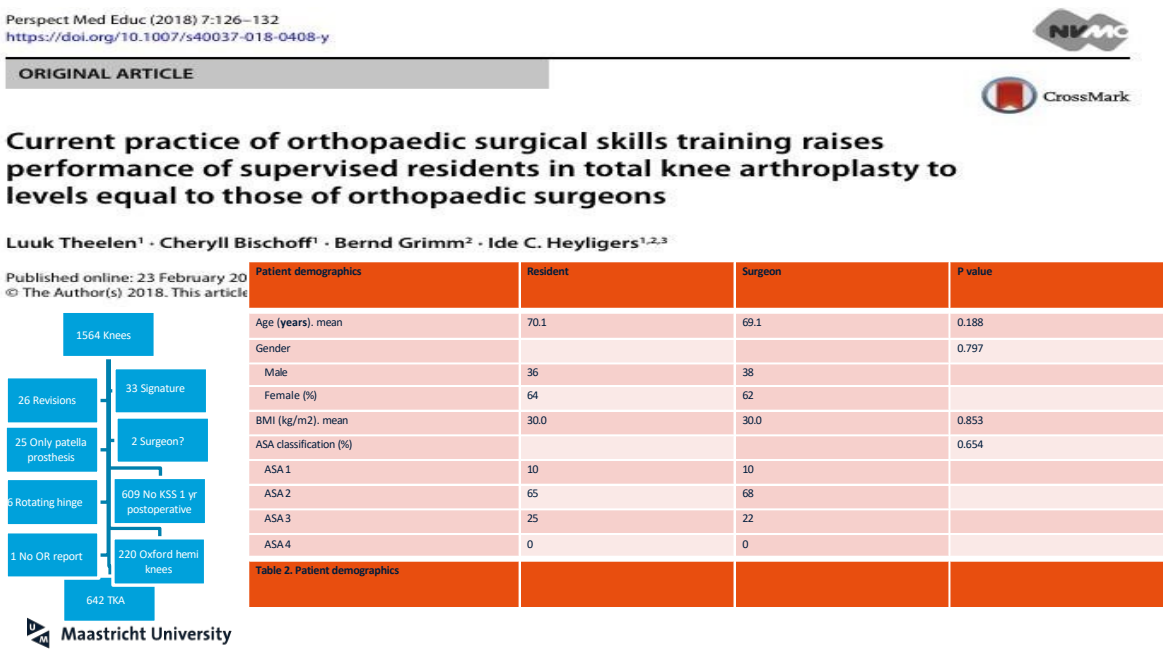
Korthagen, F.A.J. (2002)

Medical students here in Maastricht are trained in such a reflective culture. The **Korthagen circle** is often used in **training courses** for educators. It describes the steps of a learning process. Critical analysis of what happens is **essential** here. Assistants also use this **technique**. If they are unable to engage in critical self-reflection, they lack the **most important tool** for their training. This may result in their training being **terminated**.

Fortunately, **specialists** are also increasingly capable of **critical self-reflection**. Monitoring and organizing this **reflective culture** is an important task for the **COC, the Learning Center, and the trainers**. The **hospital** also benefits from this culture. On the one hand, **the RGS's supervision** is aimed at determining whether the requirements of legislation and regulations are being met. But it is just as important that this is done in such a reflective culture. It is often difficult to get a **good picture of this** on the basis of reports . A **visitation** often provides more information about this.

The assistants are an **important source of information** in this regard. However, because **assistants** also have **an interest** in completing their training and, moreover, often find themselves in a **conflict of loyalty**, it can be difficult to get to the bottom of the matter.

It is a good thing that the **RGS** has now created a **survey** that is being sent to all assistants in the Netherlands. This survey **explicitly** asks about a **safe reflective training culture**. It is just a pity that the survey is not yet mandatory.



Perspect Med Educ (2018) 7:126–132
https://doi.org/10.1007/s40037-018-0408-y

ORIGINAL ARTICLE

CrossMark

Current practice of orthopaedic surgical skills training raises performance of supervised residents in total knee arthroplasty to levels equal to those of orthopaedic surgeons

Luuk Theelen[1] · Cheryll Bischoff[1] · Bernd Grimm[2] · Ide C. Heyligers[1,2,3]

Published online: 23 February 20
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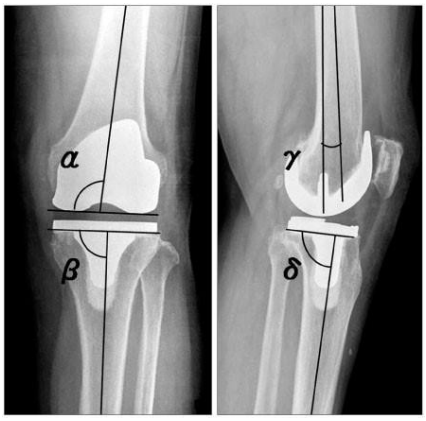
Patient demographics	Resident	Surgeon	P value
Age (**years**). mean	70.1	69.1	0.188
Gender			0.797
Male	36	38	
Female (%)	64	62	
BMI (kg/m2). mean	30.0	30.0	0.853
ASA classification (%)			0.654
ASA 1	10	10	
ASA 2	65	68	
ASA 3	25	22	
ASA 4	0	0	

Table 2. Patient demographics

The **relationship between training and the quality of care is** a relevant question. **Luuk Theelen**, now **an orthopedic surgeon**, has written an interesting article on this subject. He analyzed more than **1,500** patients who received a **knee replacement**. From this group, he selected **two groups of patients.**

. In one group, the primary surgeon was a resident, while in the other, it was an experienced **orthopedic surgeon**. Otherwise, both groups were identical.



RESULTS:

Variable	Resident (95% CI)	Surgeon (95% CI)	P value
Tibial angle	88.4 (84.5 – 92.4)	88.5 (84.3 – 92.7)	0.80
Femoral angle	94.5 (85.8 – 103.2)	94.4 (85.6 – 102.9)	0.87
Tibial slope	86.6 (79.9 – 93.4)	86.6 (79.6 – 93.6)	0.77

Variable	Resident (95% CI)	Surgeon (95% CI)	P value
Operative time, minutes	81.26 (47.9 – 115.3)	71.3 (31.4 – 111.2)	<0.001
KSS, 1 year postoperative	75.5 (46.3 – 104.6)	77.5 (47.1 – 107.4)	0.148

Only significant difference: 10 min operating time.

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OK data, **measurements on X-rays**, **complications**, and the **Knee Society score** (a standardized score for knee function) were **compared up to 1 year after surgery**. The only significant difference between the groups was **10 minutes** of OK time: **71** minutes for the specialists and **81** minutes for the assistants. This difference is not related to more complications in the
literature. This study **illustrates** the quality of this surgery in a teaching hospital, but also shows the **challenges**
. Good training takes **time**, which is **a good thing**. It can be difficult to **claim** this time with the current waiting lists. This is part of the aforementioned **balancing act**.

Nowadays, a great deal of **data** is **recorded** that can be put to good use in further research into the **relationship between quality of care and the training** of doctors and specialists.

From complaint to change: analyzing patient complaints against residents to enhance postgraduate medical education and quality of health care.

A.Z. van Montfoort, L.M. van der Baaren; N.A. van der Baan; M. Sosef; I.C. Heyli ers.

- Analysis of 1,631 patient complaints
- 602 of these involved resident physicians
- Analysis of which CanMeds competencies were mentioned and how often
- Often multiple competencies per complaint (Further subdivision per competency)

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Competency	Percentage of complaints
Communicator	35
Medical expert	34
Professional	20
Collaborator	9%
Scholar	1.5
Health advocate	0.2
Leader	0.2

(submitted to BMC Medical Education.)

Astrid van Montfoort, **lawyer** and orthopedic surgeon in training, examined patient complaints about physician assistants. Of more than **1,600** complaints collected over four years in a large teaching hospital, **602** related to the actions of an assistant. She **analyzed** which CanMeds Competencies were mentioned in these complaints. There could be more than one competency per complaint. **Thirty-five percent of the competencies related to communication**, **34% to the role of medical expert**, and **20% to the competency of professionalism**. These findings show how important it is to develop **all competencies** and not just those of a medical expert.

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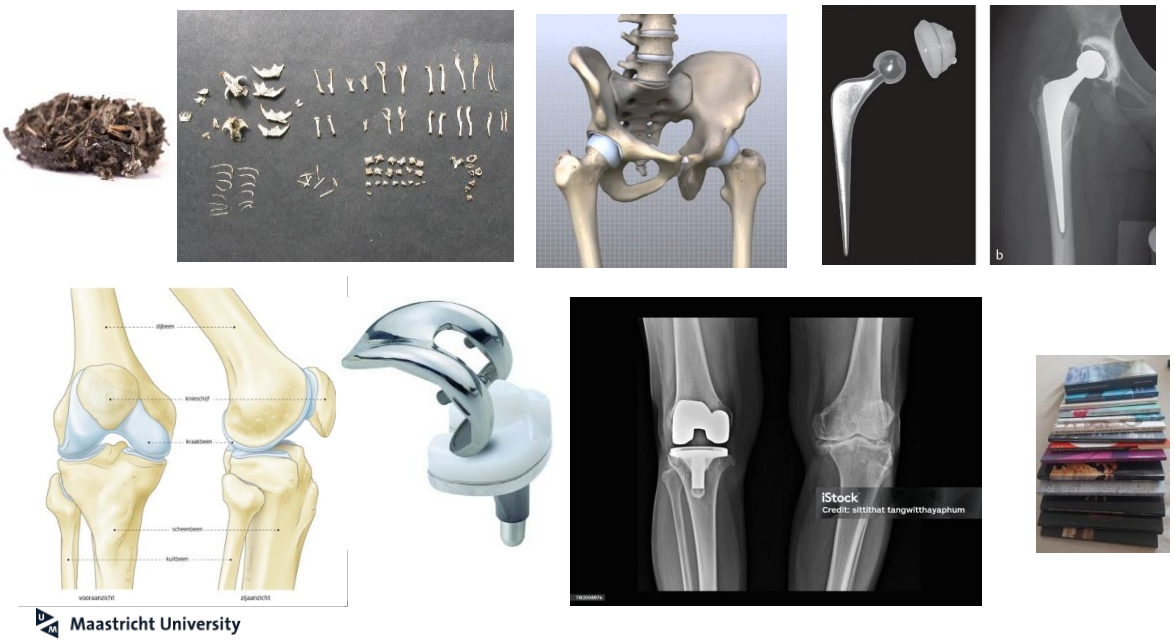
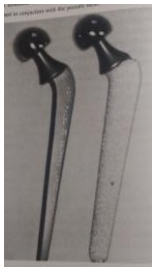
Competencies such as communication, collaboration, professionalism, etc. are wrongly described as **soft competencies**. They are **rock hard**. We have already seen that **critical self-reflection** is an important tool, both for the assistant and for the organization. **Communication** plays an important role in this. The **reflective culture** mentioned earlier requires a level playing field in which people can question each other

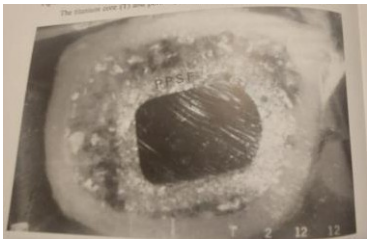
.

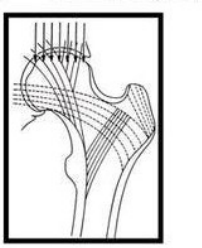
I regularly discussed with interns and assistants how I myself had certain **choices**. I often told the owl pellet story.



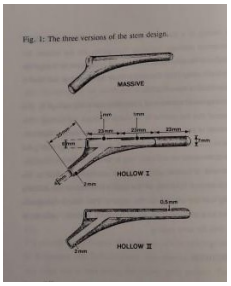
When I was about the same age as our grandson **Sue** is now, we used to go to Petten on the North Holland coast during the holidays. There I collected **owl pellets**. I took them home, dried them, and collected the **bones** inside. That way, I could put together almost an entire **mouse skeleton**. I can still remember how small the **hip joint** was and how it really consisted of a cup and a saucer. I suspect that this is when my interest in the musculoskeletal system was born, especially in the hip joint. Of course, I look back on it with the **knowledge I have now**, but it's too good to be true. The fact is that I have always had **a** great **affinity** for **anatomy** and especially the **hip joint**. This is an important joint in orthopedics. Every year, approximately **75,000 hip and knee joints** are replaced with artificial joints. In **2007**, the **Lancet** called THP placement the operation of the ^{20th}century. I remember seeing the first X-ray of an artificial hip and how **amazing** I thought it was that it could function so well. My main **reason** for studying medicine was my interest in anatomy and physiology.

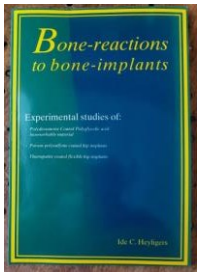


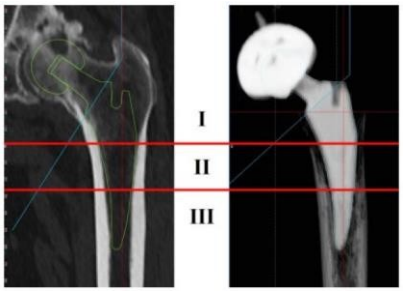




Julius Wolff Act, 1862.







Stress shielding by hip prosthesis

I gained a lot of inspiration when, as a doctor with a **Fulbright** scholarship, I went to do research with **Prof**. **Myron Spector**, first at **Emory University** in Atlanta and then at **Harvard University.** There, I mainly focused on measuring **bone thickness** before and after the implantation of an artificial hip in test animals. That is where I learned about **Wolff's Law**, which states that bone forms in response to stress. And the concept **of stress shielding**. This means that, for example, a hip prosthesis can reduce the load on the surrounding bone, causing bone density to decrease. I later applied this insight when, for my doctoral research, I had **hollow hip stems** made that would be better for bone density due to their reduced stiffness. **Dr. Bernd Grimm**, the engineer who led the research, and I later developed this concept into a design in which a pin could be inserted through the hip prosthesis if a fracture occurred.

I will now give an **example** of **other research** I was involved in. I often mention this experience to assistants as an example of what is needed for research: **curiosity** and a **network** of different disciplines. **Collaborating** with others from different backgrounds is at the heart of research. Because collaboration forces you to step outside your comfort zone, creating a new starting point, a breeding ground for creativity. It is precisely at the intersection of different disciplines. I have also found that living in a border area gives you this same feeling of creativity.


frontiers in Human Neuroscience

ORIGINAL RESEARCH

The Neural Implementation of Surgical Expertise Within the Mirror-Neuron System: An fMRI Study

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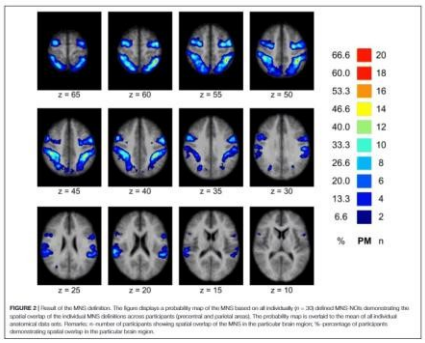


Setup:

- Videos OK and daily activities
- 10 students
- 10 assistants
- 10 orthopedic surgeons
- Watching videos under fMRI

Results:

- No proof of experience = activity
- Non-linear relationship experience and activity

Through **SHE,** I became involved in research into brain activity resulting from the mastery of practical skills.

I often experience the stimulating environment at SHE as a **candy store**.

Our brains contain **motor mirror neurons**. When we see a practical action that we have mastered, these neurons are more active than when we see an action that we have not mastered. The skill is stored in these areas of the brain, as it were. The question was whether this was a **gradual process**, or whether there was a direct relationship between the degree of experience and the degree of associated activity. We investigated this in relation to the skill **of surgery**. I made **videos** in the operating room of the placement of a total hip prosthesis and a total knee prosthesis. These videos
were shown under the **fMRI,** which can visualize the activity of those motor mirror neurons, to **three groups** of people: 10 experienced orthopedic surgeons, 10 assistants in training, and 10 interns. In addition, they were shown videos of activities that everyone could do equally well, such as washing hands, lighting a candle, etc.
lighting a match or locking a door. The results **showed no direct relationship between the degree of expertise and brain activity**. It is, however, wonderful research.

L A N G U A G E

Above the surface:

Seen and known

Consciously (un)skilled

(self)reflection

Below the surface:

Unseen, unknown

Unconsciously

(un)competent

No (self)reflection

Maastricht University

I often repeat what my trainer, **Prof. Ton van der Linde**, said: that making the right diagnosis for an operation is more difficult than performing the operation itself. Medical assistants training for a surgical specialty usually want **to operate as much as possible**. I used to feel the same way. And I understand that; there is something magical and heroic about it, and it seems like the most difficult thing there is. However, good communication is at least as important. That is why I introduced the concept **of verbal surgery** to the residents.
introduced. This teaches you to communicate from a **surgical narrative**. By communicating in the right way, you pave the way for an intervention after which you close the "wound" again, just like in a surgical operation. If you don't do this properly, you can cause a lot of misery. That's why I say "**words are sharper than knives**."

This approach can also be useful when giving **feedback**. It is about developing **self-insight**. To this end, it is important to be honest about **insights that are hidden** from others. Good feedback, in which **questions** are **asked** to identify things that others see but the feedback recipient does not, encourages **insight**.

I often compare this to an **iceberg**. Most of it is underwater. This is unconscious, unknown. Through the right conversation, as much of this as possible can be brought to the surface. **p**ossible. This creates insight.

Language is the most important tool for making unconscious processes conscious, especially through **questions**. That is why trainers and their assistants must be **linguistically skilled**.

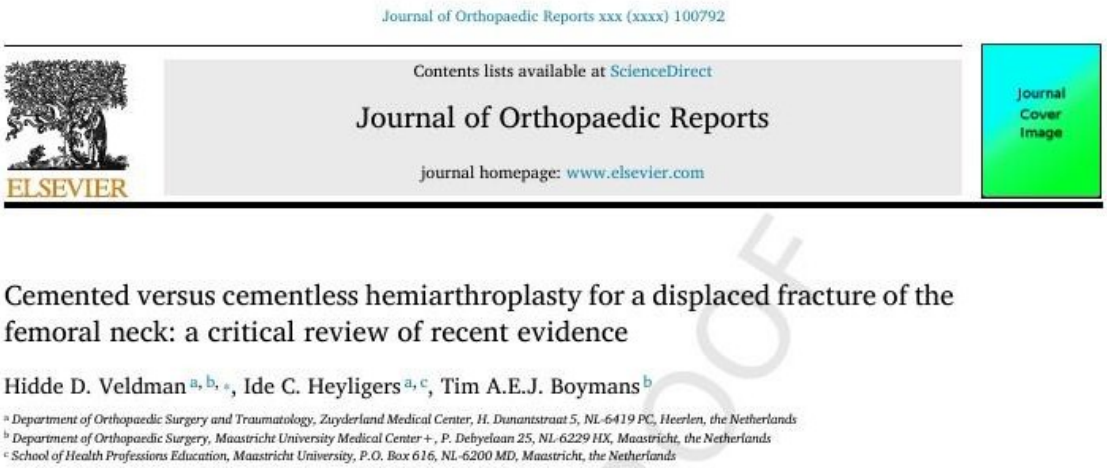
Teaching practical skills step by step.

1. I (surgeon) do
2. I do, I say
3. I do, you (intern/resident) say
4. I say, you do
5. You say, you do
6. You do.

Maastricht University

Language is also important when **teaching practical skills**, such as surgery.
important. There are a number of steps in which you, as the surgeon, perform the operation yourself first, but in which you can gradually **involve** the resident or assistant physician **by letting them explain what is happening or what should happen**. This allows them to **familiarize** themselves **with** the **process**. At the time, the assistants dictated an **operation report** after each operation. This was an additional way of reviewing the operation. This is no longer done because the operating room report is stored in the computer as standard. A few important details are entered and processed automatically. That's actually a shame.

Training is essentially guiding a **journey of discovery** in which the trainee physician asks themselves what they are doing, why they are doing it that way, and how they could do it better.



Journal of Orthopaedic Reports xxx (xxxx) 100792

Contents lists available at ScienceDirect

Journal of Orthopaedic Reports

journal homepage: www.elsevier.com

Journal Cover Image

Cemented versus cementless hemiarthroplasty for a displaced fracture of the femoral neck: a critical review of recent evidence

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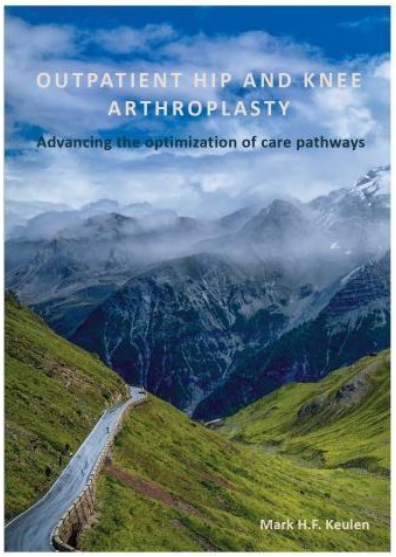
Conclusion: Current evidence supports cemented hemiarthroplasty as the preferred fixation strategy for displaced femoral neck fractures in older adults.

Maastricht University

It is important that **residents** develop a **critical attitude**. Both with in relation to their **own development** as well as their **profession**. New developments are not always clearly better. A good example is the **fixation** of a hip prosthesis. This can be done with bone cement, as was originally the case, or without cement.
The latter technique is somewhat **faster** but also **more expensive**, and the industry probably earns more from it. We are gradually seeing cementless fixation being used more and more. The question is whether this is always the right choice.

Hidde Veldman conducted an **analysis** of the literature comparing these two fixation techniques in the treatment of hip fractures in the elderly. He concludes concludes that cemented fixation is preferable. Uncemented fixation is only recommended in specific cases.



Thesis by Mark Keulen. Hip and knee prosthesis placement in day surgery.
Co-supervisors: Dr. Martijn Schotanus and Dr. Bert Boonen.

- Outpatient hip and knee replacement surgery is safe in pre-selected patients.
- This makes cost savings possible.
- Provided that there is a good protocol and involvement of all chain partners
- The current system in the Netherlands does not encourage this

Maastricht University

Another example of **critical research into new developments** is the recent dissertation by **Mark Keulen.** He investigated the placement of hip and knee prostheses in day **care**. This illustrates the rapid development in medicine.
When I was in training, a patient would stay in the hospital **for at least two weeks** after a **THP**
hospital, and a patient with a **TKP** stayed **until he or she** could bend to **90 degrees**, which often took longer than two weeks. Thanks to better anesthesia and surgical techniques, but above all to experience and critical analysis, this can now be done in one day. Mark demonstrated that this is safe. But he also outlined the preconditions. By conducting research, assistants become critical of new developments.

I experienced the influence of **industry** in a very special way in America. There, medical procedures and implants can be advertised directly. A
patient can therefore ask a doctor for a specific treatment or operation. We are now seeing a similar development with **the internet,** where patients can find all kinds of information that often does not offer them the best solution. How do we deal with this and how do we teach this to the assistants?

Maastricht University

Thesis by Dr. Jeroen Bossen: Shared decision-making in orthopedic surgery. Co-supervisor Dr. Jesse Jansen.

- Assistants experience more resistance when using decision support
- Patients less satisfied with physician assistants
- Outpatients often want surgery and do not want to wait
- Who informs the patient about the surgery, the general practitioner or
  Orthopedic surgeon?

Jeroen Bossen recently obtained his PhD in **shared decision-making**.
This involves the patient using a **decision aid** to make a choice from
different treatment options. This does not go so far as to allow the patient to choose which implant they receive. However, sometimes a choice can be made between surgery or waiting. Jeroen **evaluated**, among other things, a training course in which doctors and specialists learn to apply shared decision-making. It turned out, among other things, that **assistants find** this **more difficult** to do than orthopedic surgeons. Patients were **less satisfied with assistants** than with specialists. There is no explanation for this yet. However, this study does provide grounds for **further research**. The study also raised the question of who informs the patient about a procedure: the general practitioner or the person who may perform the procedure.

Wolff's law also applies to **students, interns, and assistants**: **strength** (knowledge and skill) develops in response to **stress** (exposure to
learning moments). **Overloading** can disrupt this process, the assistant can break down, and too little exposure to learning moments can hinder development. I used to say, **"No one has ever jumped higher by lowering the bar."**
Nowadays, I say, "**If you set the bar too high, you may also end up**
end up going **under it**." The key is to train within the critical window between a bar that is not too low and one that is not too high. That space is different for everyone in training.

Today's assistants clearly work in a **different environment** than we did back then. Often, **both partners** are **in training** and have heavy workloads and such. **Part-time training** has become the norm, whereas this used to be impossible. Many specialists also work **part-time** after completing their training.

Medical Science Educator
https://doi.org/10.1007/s40670-024-02084-y

ORIGINAL RESEARCH

Still Higher Risk for Burnout and Low Work Engagement Among Female Residents After 10 Years of Demographic Feminisation

Maud Kramer[1,2] · Karen D. Könings[1] · Jelle T. Prins[3] · Frank M. M. A. van der Heijden[4] · Ide C. Heyligers[1]

Accepted: 21 May 2024
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After 10 years, burnout is still more common among female surgical assistants in surgery and internal medicine.

Kramer *et al. BMC Medical Education* (2021) 21:253
https://doi.org/10.1186/s12909-021-02694-9

BMC Medical Education

RESEARCH Open Access

Implicit gender-career bias in postgraduate medical training still exists, mainly in residents and in females

Maud Kramer[1,2*], Ide C. Heyligers[1,2] and Karen D. Könings[1]

Maastricht University

More unconscious association of men with careers and women with housework among female medical assistants.

Another change is the **feminization** of medicine. Whereas I used to see the first female assistant being hired for orthopedic training, it is now completely accepted that this happens. And rightly so, of course.
However, orthopedics is the specialty with the fewest female assistants. **Maud Kramer** has just completed her orthopedics training and is almost finished with her dissertation. Maud is conducting research into this **feminization and the training culture**. A number of things **surprised** us in that research: she was able to demonstrate that the risk of **burnout** after 10 years, during which the number of female assistants rose to > 30%, is still still higher among female assistants in both surgery and internal medicine.

An unconscious association test revealed that **gender career** bias, whereby the concept of "man" is unconsciously associated with "work" and the concept of "woman" with "household" is strongest among female assistants.

Maud is a member of the **culture committee** of the Dutch Orthopedic Association. This committee investigates **diversity and inclusion** within orthopedics and makes recommendations for selection and training.

I have experienced firsthand how an organization can react in panic when the **machine breaks down**, due to canceled surgeries, staff shortages, or a dysfunctional doctor. Wolff's law, mentioned earlier, also applies to organizations. As chair of the operating room committee, I saw how every specialist stood up for their patients. But I also saw how financial and organizational factors are considered more important than patient care. And how doctors, especially assistants, can get caught in the middle. When I later became a confidential advisor, these experiences proved very useful.

OORZON KAMPVUUR:
Every second Monday of the month
8:00 p.m. the Tribunal

- Dr. Simone Gorter
- Dr. Meindert Sosef
- Prof. Walther van Mook
- Dr. Liselot Valkenburg
- Prof. Ide Heyligers
- …
- …

Everyone is welcome!
Education, training, research, clinical work.

Maastricht University

Various colleagues regularly indicate during training sessions that they feel the need to **spar** with other trainers. At the time, I would also have liked to talk to an **independent colleague** who knows how **things** work. This is why we recently agreed in this region to meet every second Monday of the month with a number of experienced trainers and researchers at **the Tribunal**, the pub directly opposite this auditorium, but also next to the theater school.

I will conclude with 10 brief statements.

1. It would be good to use the concept of training capacity when allocating assistants to training clinics. Training capacity is not only determined
by the range of care parameters, but also by quantitative and qualitative aspects of the training itself.

2. The RGS survey sent to resident physicians in training with questions about the quality of the training programme should be made mandatory.

3. The position of the COC should be formalized by the RGS. The recognition of trainers in the Framework Decision may offer opportunities for this.

4. Because residents currently mainly do the work they need for their training (EPAs), there is a risk that once they start working as specialists, the difference with practice will be too great.

5. With the current organization of training, in which the supervision of assistants varies greatly in terms of person and location, there is a risk that the master-apprentice principle will disappear.

6. The term negative feedback does not do justice to the often important information that emerges from these conversations.

7. Those who have only learned to use a hammer will also try to hammer a screw.

8. Medical students and resident physicians must always be involved in all new developments in the medical field, including social developments.

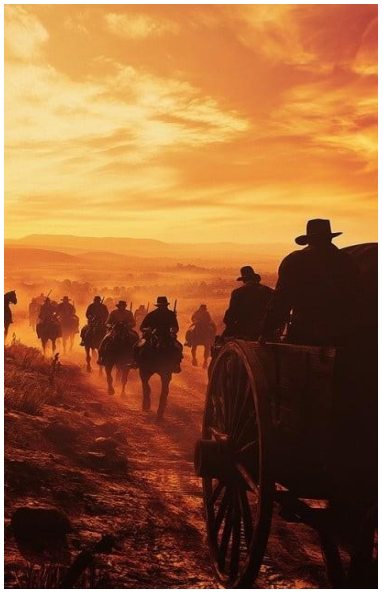
9. The brain is like a muscle; you have to exercise it to make it grow.

10. In Education and Training Region organizations, the chairmanship of important committees should change regularly. All clinics should be involved in this. involved, and assistants must be involved in this. As is the case here at OORZON.

Maastricht University

Infinite thanks

- My teachers, trainers
- Patients
- Students, C0 assistants, Assistants
- Researchers SHE, STEGA, AHORSE,
- PhD students
- Colleagues doctors, teachers, trainers, trainers
- RGS staff
- Nurses, operating room staff
- Support staff, secretaries
- Managers, administrators
- Friends, family
- etc. etc. etc.



Dear audience, I have tried to paint a **picture** of the **fascinating world of education and training in the teaching hospital**. It is precisely the **combination** of clinical work, training, and research that makes this so enjoyable. And highly relevant. I am very grateful for the enjoyable work I have been able to do.

This farewell lecture gives me the opportunity to **thank** everyone I have worked with. You can't achieve anything on your own. Collaboration is everything. I won't mention any names—I'm bad at that, as the assistants know—but I will mention

the staff at SHE, who have always inspired me, to this day.

Guiding doctoral students, assistants, and interns is one of my favorite things to do, and I hope you feel the same way.

Nurses, operating room staff, and support staff, without whom nothing would be possible in the hospital.

Fellow specialists and trainers, fellow teachers. My partnership, which gave me the opportunity to continue my development.

RGS employees, with whom I have enjoyed working and from whom I have learned a great deal.

People who bear responsibility in the faculty, the university, the MUMC, and Zuyderland.

Patients, who are the reason we are all here. Thank you

very much for your cooperation and trust.

Maastricht University

My deepest gratitude and **love** go to my dear wife Sacha, my **rock**, **my constant companion** in life, and a very wise person. Together we experience the **adventures** of our lives. And of course, I am very grateful for our family: our daughter Boudewien and her husband Jeroen, our son Djoeke and his wife Joy and their children, Sue, Djoeke Jr., and Mac.

Maastricht University

At the end of every adventure, Lucky Luke sings a song: "I am a poor lonesome cowboy and a long way from home." I am certainly **not poor**, **nor am I alone**, let that be clear. Even though I have a **horse** (two, in fact), I will never be a **cowboy**.
Initially, we felt **"a long way from home**" here in the Netherlands, in the wild west, compared to this sultry south. That is certainly no longer the case, thanks to the **warm welcome** we received.
we received here and the **wonderful friends** we have met here. We are **very grateful** for that**.**

I have spoken.