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10. CHALLENGES FOR SURGICAL RESIDENTS' PRACTICE-BASED LEARNING

This chapter explores the practice-based learning of surgical residents. We concentrate on the challenges encountered and experienced by the residents during their clinical practice. In line with Billett (2010), we understand learning through practice as a process that arises through the exercise of occupational activities. For the surgical residents this means that they learn through participating in various kinds of hands-on surgical practices and interactions in clinical wards and units.

Recent discussion has indicated a need to enhance workplace learning, highlighting such aspects as the haphazardness of the learning situations, the quality and quantity of supervision, and the pedagogical skills of the supervisors (Billett, 2010; Billett, Harteis, & Eteläpelto, 2008). The aim of the study reported here was to investigate residents' experiences of their practice-based learning in a surgical clinic. By looking at the challenges we aim to show how occupational practice as a learning environment may be developed. The study focuses on how learning takes place in a clinical setting. We ask the following questions: (1) What kinds of activities and interactions do residents engage in during their occupational practice? (2) What kinds of challenges do residents experience in their practice-based learning?

THE SETTING

To contextualise the practice-based learning of surgical residents a brief description of surgical residency within the Finnish medical specialisation system will be useful. After 6 years of basic education physicians are entitled to practise medicine as independent practitioners. Specialisation in medical subspecialties (5–6 years) mostly takes the form of clinical training in hospitals. All the various surgical subspecialties share the same basic-level stage, which lasts 3 years. There is a framework governing the duration of employment in the various surgical subspecialties and the procedures to be learned. Furthermore, it is required that during the initial 3 years residents should gain practical experience in rapid decision-making and logical deduction.

During the initial stage, the learning processes are documented on a log, and in a portfolio kept by the resident. The head of the working unit, the Head of Medicine, usually acts as the *person in charge of the training program*. He/she is responsible for the implementation of the specialisation program and assigns *medical specialists* who serve as mentors. Apart from the medical specialists, each resident

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is assigned a *personal tutor*. The tutor is the resident's support person; he/she also supervises the resident in his/her work duties and sees to the appropriateness of the curriculum in terms of both theoretical and practical training. Both specialists and tutors are usually medical professionals with no qualifications as educators. They are responsible for the implementation of the learning program, and they also take part in assessment.

FOCUS AND STRATEGY

This study reported here investigates surgical residents' experiences of their practice-based learning during their initial specialisation program (first 3 years). Ethnography (Hammersley & Atkinson, 2007) was utilised as a methodological strategy in this study. The empirical data for the study were gathered via observations and interviews. Three of the authors shadowed 11 surgical residents for 23 days during a 7-week observation period. The aim was to gain an insight into the residents' everyday work practices. In order to construct the meaning ascribed to the learning in practice, the residents were interviewed. During the interviews, more detailed discussion occurred of significant educative moments, both as observed by the researchers and as suggested by the residents themselves.

The challenges of practice-based learning were discussed from the residents' perspectives. For instance, a concrete case could usually be found as a starting point for discussion. The researcher then asked the resident to reflect on the situation and his/her way of dealing with it. Residents were further asked questions such as "What kinds of support do you have in your work? What kinds of situations in your work are most meaningful for your learning, and for developing your surgical competence? What kinds of obstacles do you see to learning?" All the residents were interviewed individually for approximately 1–2 hours. Some of the residents stated that the interview offered an unusual opportunity to reflect on their learning and training.

Data Analysis

The research plan and ethical guidelines were negotiated and accepted by the ethical committees of the university and the hospital. The audio-recorded interviews were transcribed verbatim, and anonymity of the residents was ensured. Thematic analysis (Braun & Clarke, 2006) was used in the data analysis. The analytical process began with a careful reading and re-reading of the interview data. Reviewing was an ongoing organic process, and it consisted of several phases. First, all the sentences that were relevant to learning and training during the program were identified and copied to another file. Then an initial list of ideas was generated concerning what was identified in the data, and what was interesting from the perspective of challenges to learning. The third phase was semantic coding, in which the data were organised into main categories, including hands-on training, the learning context and supervisory practices. This coding was conducted manually. This phase generated a long list of different codes; these were then

clustered into potential themes according to the research questions. Tables and mind-maps were utilised in this phase. In the process of the ethnographic analyses, two typical working days were constructed to describe the context of practice-based learning and to illustrate how the challenges experienced by the residents were embedded in practical settings.

CHALLENGES ENCOUNTERED IN RESIDENTS' PRACTICE-BASED LEARNING

To answer the first research question (regarding the activities and interactions the residents are engaged in during their occupational practice), two vignettes were constructed to illustrate typical working days. The vignettes also give insights into the main challenges encountered by the residents in their learning environment. The vignettes were compiled by the researchers, and the residents did not read or edit them.

Peter's Typical Working Day

As his first task in the morning, Peter checks the lists of surgical operations, both his own and those of his colleagues. Since Peter feels insecure with regard to a certain procedure on the list, he calls Jack, another resident he knows, and asks him to join him in the operation. However, Jack has his own operation list and cannot promise to help Peter – at least not this morning. Peter next checks the room that Harry (a senior colleague whom Peter knows well) is operating in, so that Peter knows where he can go for help if necessary. As he sips his morning coffee, he checks from the electronic information portal the most important pointers relating to the impending surgery. An incoming call comes from the operating room, and everything is ready for the operation.

Peter makes his way to the operating room. He begins the operation and is pleased that his assistant is an experienced instrument nurse, capable of anticipating and handing over the correct instruments should Peter not remember the name of a particular instrument and thus be unable to ask for it. The operation goes well up to a critical point which calls for very precise knowledge. Peter feels insecure and asks for Harry to be called in from the adjacent operating room. After some time, Harry arrives and Peter gives up his place to him. Peter will now be the assistant, shifting to the other side of the patient. Harry checks the situation and performs the critical phases of the operation, after which he returns to his own operating room and Peter goes on to finish the operation. Peter decides to follow up the health of the patient he has just operated on, visiting the ward, and doing his best to ascertain whether this morning's operation has been successful.

Helen's Typical Working Day

The morning begins with a surgical meeting. Helen is a participant. She has not yet been assigned her own operations on the roster, but she will have plenty of time during the day to follow an operation performed by someone else. Her placement is

in the gastric ward. Since Helen has followed a biliary operation on several occasions, she hopes to be allowed to assist in an operation today. Events work out favourably for her. The operating surgeon suggests that Helen should perform the first stage of the operation, opening the abdominal wall and filling the abdominal cavity with carbon dioxide.

In the operating room, Helen receives hands-on training from the senior doctor standing next to her. The discussion concerns the general risks and difficulties pertaining to the operation. The instrument nurse also participates in the discussion and gives an account of her experiences. Helen completes the first stages of the operation, and is allowed to try to use the instruments to detach the tissues surrounding the gall bladder. After a while, the senior surgeon takes over, as the time slot reserved for the operation is insufficient for Helen to be able to complete the operation. Nevertheless, by standing there beside the patient and holding the forceps, Helen has a grandstand view of the operation. During the lunch hour, Helen sits at the same table as her tutor doctor. The tutor doctor asks how Helen managed with the start-up phase of the operation. Helen has a long list of questions on her mind, but she only has time to bring up a few before the tutor surgeon's phone rings and he has to rush to the operating room.

Our second research question focused on the nature of the challenges experienced by the surgical residents in their practice-based clinical learning settings. The analyses highlighted three challenges: (1) the random and context-bound nature of the learning situations, (2) competing supervisory practices, and (3) difficulties in self-evaluation.

The Haphazard and Context-Bound Nature of the Learning Situations

As we may gather from the description of Helen's day, getting into learning situations seems to be partly a matter of luck, though it is also based on the resident's initiative. The residents emphasised that they must, of their own accord, gravitate towards procedures that can be viewed as learning situations. The learning plan for the residency (as detailed in the log book) is expected to encompass the core elements. It should include the kinds of learning situation that a young doctor is likely to encounter and should hence seek to gain experience of during the training. A resident puts the matter thus:

> You won't get a single operation allotted to you in advance when you come into the hospital. It's entirely dependent on your own initiative and the fact that when you are in a particular ward you have to show that you are interested, and that you want to get somewhere.

As we can see from the descriptions of Peter's and Helen's days, the lack of time available to provide proper instruction constitutes a challenge to the learning process. The job takes longer to finish when done by an inexperienced person. The whole operating room team has to wait, and the training of residents is not necessarily seen as an efficient way of working. However, the residents also had experiences of good "teaching operations," in which the instructional nature of the

situation had been taken into consideration, with thorough and systematic instruction provided. The principle is that one initially gets to do the easiest phases and learn the basic techniques, so that later one is able to perform them independently. When a resident performs an operation only in part independently, instruction and support are offered for the more difficult surgical phases.

Residents were also strongly aware of the differences between the wards in which they were placed, as far as learning was concerned. There was considerable variation in the amount and kind of clinical supervision received, and in the contribution of the supervision to the resident's learning. The residents reported contradictory experiences concerning the opportunity to practise and learn surgical skills. As one resident advised:

> At the moment there is a lot of variation between the wards as to the training you get, and the kind of training it consists of.

On the one hand, the hospital seemed to offer good possibilities for learning, because there were not too many residents employed at the same time, and because they were given a lot of work. That being the case, residents felt that their voices were heard in the workplace and that the atmosphere in the hospital was favourable to new ideas. On the other hand, in some wards residents were not given enough work, the range of patients was limited, and the residents felt that they did not have enough control over their work.

Competing Supervisory Practices

The residents had to deliberately seek out supervision and support for their work, as described through Peter's experiences. This was not an easy task, given the nature of surgical supervisory practices, which seemed to be somewhat impermanent and even haphazard. The point here is that the roles of specialist mentors were not very clear. Furthermore, the roles seemed to be tacit, and thus ideas of supervision were likely to vary between and within different professional groups.

The residents perceived that the best learning situations were those where they worked together with an experienced surgeon. In these situations, the resident operated together with and under the guidance of the senior surgeon. Learning through operating together makes excellent sense, since surgery is a procedure-focused field of medicine. The learning of clinical and invasive procedures (e.g. operations) is seen as an essential part of becoming a surgeon.

The residents liked to act together and to support each other. A resident who had advanced slightly further would instruct a less experienced colleague. The residents indicated that they conferred frequently with each other and shared experiences. Support and information were also provided by other healthcare professionals, such as the operating room's instrument nurse as described in Peter's case. However, the support offered by such professionals tended to be overlooked by residents. In contrast, the importance of peer support was noted by the residents.

All the residents had a supervisory relationship with their personal tutor. Yet the residents did not greatly emphasise the tutor's role in their learning. The tutor seemed to take on a general supportive role rather than helping with specific tasks. As one resident reported:

> Well, maybe the tutor is the first person you come in contact with, especially when you are new in the place, so he or she is the first one you can go and chat to. There will be questions about ways of working and so on … At least there's some designated man or woman that you can go to – that's the way it works.

As expected, the senior surgeons and the more experienced doctors were perceived as the most important people for supervising the newer residents. They provide role models for operations and for work in the clinical wards. Indeed, the more experienced surgeons functioned as role models for the residents all the time, as was mentioned by one resident:

> I'm learning all the time … when I work I get tips and clues and step by step I become more experienced.

More specifically, conducting operations together with a senior surgeon was described as the most important form of supervision and learning. Residents had experienced close guidance and more direct support, especially during operations, when a senior surgeon had assisted the operating resident. The residents' relationships with senior surgeons and other clinical workers seemed to range from feeling like outsiders to feeling almost like equal members of the team.

Difficulties in Self-Evaluation

Difficulties in self-evaluation were highlighted in the practice-based learning of the residents. As the experiences of Helen and Peter indicate, the residents had to evaluate what they could do and what they could not yet do. The evaluation of personal knowledge and skills was based on previous experience, including the success of one's work and the sense of security achieved. For example, it was a feeling of insecurity that steered Peter towards seeking help and support from more experienced colleagues.

The self-evaluation required appeared to be challenging for residents, as there was only limited feedback provided on resident's work. In fact, the feedback provided tended to be problem-based in nature. Resident received immediate feedback only when working, or when something went wrong.

Evaluation was described as something that was continuously carried out in practice, to assist tracking work outcomes. The evaluation and feedback provided by a senior regarding the clinical skills of a resident was concretised in terms of the amount of responsibility the resident was given in clinical work. As one interviewee reported:

> We are doing this work, and we move from one ward to another, so that the senior physicians get some kind of picture of everybody, maybe they chat about it among themselves, about the kind of people we are, but … every senior who is responsible or … every specialising doctor responsible for some matter, he'll decide for himself whether or not some specific individual can be given permission to do something.

Difficulties in self-evaluation arose from the fact that the residents did not have systematic opportunities to follow up their patients after surgery. Treatment relationships between residents and patients could be broken due to changes in the placements of residents in the surgical wards with different subspecialties. To enhance the feedback they could receive, a longer period of working within the same sub-specialty was suggested by the residents.

> We should be in the same place long enough so that it would be possible to see the implications for our work and for the future of the patients.

On the other hand, residents could acquire feedback if they actively sought it. They saw themselves as responsible for their own learning and skills development and for ensuring their learning. A few of them had actually done some detective work: they had obtained information on patients in relation to the operations they had performed.

CRITICAL REFLECTION

This research focused on practice-based learning in clinical settings. Utilising ethnography as a methodology, we analysed challenges experienced by surgical residents in their occupational practices during the first phase of their specialisation program. Our findings showed that the main challenges in surgical residents' practice-based learning include the haphazard and context-bound nature of the learning situations, conflicting and inconsistent supervisory/mentoring practices, and difficulties experienced in self-evaluation.

The haphazard and context-bound nature of learning situations is characteristic of work-based learning, and can also be perceived positively as manifesting the richness of practice-based learning (Collin, Paloniemi, Virtanen, & Eteläpelto, 2008). Seeing and experiencing authentic working life developed the residents' professional identity and their ability to respond to the challenges encountered in working-life situations. Overall, the context-bound nature of the surgical residents' learning environment needs to be accepted. However, it would be beneficial for the residents' learning if the workplace learning program could move to more deliberate guided learning strategies and to a better sequencing of access to activities, including monitoring/participating in operations and clinical work.

As Billett (2010) has demonstrated, individuals who can participate in new activities supported directly and enthusiastically by an experienced co-worker may have better learning outcomes than those who are only able to access routine activities, or who are denied support. In a hectic work environment, supervision

and teaching usually take a back seat to the job at hand. Nevertheless, we argue that it is precisely in such situations that opportunities for instruction in know-how and discussions with residents should be increased (Worthen & Berchman, 2010). Conflicting supervisory practices should be reorganised, for example in the ways in which participatory practices are addressed (see Billett, 2010). This would involve hospital staff gaining a better understanding of the ways in which the workplace includes residents in clinical work, and also of how the workplace offers guidance that is central to residents' practice-based learning.

The residents had difficulty evaluating their own skills and learning outcomes. This may be due to a lack of systematic or direct feedback. The senior surgeons evaluated the residents on their work outcomes and on this basis either enabled or prevented their access to new and more challenging practice-based learning situations. Worthen and Berchman (2010) questioned the legitimacy of such procedures, on the grounds that not everyone will have the same opportunities to enter into learning situations. They underlined the challenge learners face in pursuing learning situations, noting the extent to which this presupposes strong professional agency on the part of the learners. The turnover and temporariness of instructional relationships increases the importance of the learner's own willingness to take the initiative in these matters.

In any case, there appears to be a need for more a more systematic approach to instructing and mentoring in the course of the work if residents are to acquire the skills needed to become competent surgeons in their specialist field (see Silvennoinen, Mecklin, Saariluoma, & Antikainen, 2009). To achieve this objective, the evaluation of the residents' surgical competence needs to be taken seriously. Since there is likely to be considerable variation in residents' previous experience and education, it would otherwise be difficult to know and evaluate what a resident can actually do in practice.

It was also notable how far the notion of "what it is to be a surgeon" guided the learning of residents. Seeing and knowing different senior surgeons enriches this conception, and is beneficial for the development of the residents' professional identity. "Ways of being" provide a sense of agency that guides and directs residents' activities. It provides residents with notions of the real meanings of "what to do" and "what to be" (Dall'Alba & Sandberg, 2010).

On the basis of our findings, it seems appropriate to provide topics for further discussion. Such topics include questions concerning how to promote the agency of residents in the work community and how the entire work community can better contribute to enhancing residents' learning.

INNOVATIONS ARISING FROM THE CHALLENGES IDENTIFIED

Following our identification of the challenges faced by residents, some developmental work has been conducted in the hospital context where our data were collected. The hospital has founded a *Centre of Medical Expertise*, in which residents are provided with facilities to practise their surgical skills in a virtual learning environment. Moreover, residents are required to pass a "driving test"

before they are allowed to take part in certain surgical procedures (Silvennoinen et al., 2009). The challenges identified have been further addressed in that the senior surgeons acting as instructors have been given training in supervision skills. It has been recognised that supervision should be taken into account in the rosters of both the specialists and the residents, so that there will be enough time for goal-directed learning and for inculcating know-how. There have also been attempts to embed teaching within official procedures, making the instruction more overt.

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