Identifying Factors that Influence Workplace Learning in Postgraduate Medical Education

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A B S T R A C T

Context In their postgraduate educational programs, residents are immersed in a complex workplace. To improve the quality of the training program, it is necessary to gain insight into the factors that influence the process of learning in the workplace.

Methods: An exploratory study was carried out among 56 nursing home physicians in training (NHPT) and 62 supervisors. They participated in semi-structured group interviews, in which they discussed four questions regarding workplace learning. Qualitative analysis of the data was performed to establish a framework of factors that influence workplace learning, within which framework comparisons between groups could be made.

Results: A framework consisting of 56 factors was identified. These were grouped into 10 categories, which in turn were grouped into four domains: the working environment, educational factors in the workplace, NHPT characteristics and supervisor characteristics. Of the factors that influence workplace learning, social integration was cited most often. Supervisors more often reported educational factors and NHPTs more frequently reported impediments.

Conclusion: The educational relationship may be improved when supervisors explicitly discuss the learning process and learning conditions within the workplace, thereby focusing on the NHPT needs. Special attention should be paid to the aspects of social integration. A good start could be to answer the question regarding how to establish a basic feeling of 'knowing where you are' and 'how to go about things' to make residents feel comfortable enough to focus on the learning process.

Keywords: medical education, postgraduate education, workplace, learning environment.

Introduction

Most postgraduate medical education programs involve a great deal of learning while working in medical practice with a much smaller specifically theoretical component. Therefore, knowledge about the factors that influence workplace-learning is important for curriculum designers and all those involved in postgraduate medical training.

Workplace-learning in general has attracted much attention. Various authors (Billett, 2001; Doornbos et al, 2004; Engeström, 1998; Eraut, 2004; Simons & Bolhuis, 2004; Woerkom, 2003) stress the importance of workplace-learning through participation in social practices.

Van Woerkom (2003) elaborates on employees' workplace-learning in more detail. She describes several aspects of the working environment, such as workload and task autonomy and defines motivational factors, such as experience of social integration and balance between security and challenge. Both the working environment and motivational factors influence critically reflective work behavior, which consists of such aspects as reflection and asking for feedback.

Some studies (Jarvelä, Lehtinen & Salonen, 2000; Oosterheert, 2001) focus on students' different emotional orientations that affect their learning needs. They distinguish between different types of learning behavior, varying from defensive styles (avoiding conflicting or new information) to explorative styles. Teachers should adapt their programs to their students' specific learning needs.

Boendermaker (2003) studied the characteristics of a competent GP-trainer. He found that feedback skills, a critical attitude towards the postgraduate student, communication skills and an attitude of respect towards the student are all important. Gordon et al. (2000) present strategies to improve the learning environment in clinical settings. Their study stresses the importance of equipping students with survival skills, in order to help them integrate into a community of practice. There are several other studies that support this view (Le Maistre & Pare, 2004; Seabrook, 2004). Seabrook (2004) shows that the transition to the hospital environment is difficult for students who feel that they are in the way and are unsure of what is expected of them.

The studies mentioned above offer relevant characteristics of workplace learning from different perspectives. However, it still remains unclear which of these factors are relevant to the process of workplace learning for postgraduate physicians.

Context

All Dutch medical specialties recently agreed to improve the postgraduate education programs and to pay more structured attention to supervision during workplace learning (Borleffs & Cate, 2004). The Dutch training for Nursing Home Physicians had already anticipated this development and a program was designed as a two-year vocational education program, with a theoretical course of one day a week at the University Department of Nursing Home Medicine with a practical component in a teaching nursing home, supervised by a senior nursing home physician (Hoek, Penninx, Ligthart & Ribbe, 2000). The Department provides an educator preparation course and classes on teaching for all supervising physicians.

However, we still perceived that there was a lack of understanding regarding the full impact of the workplace. Therefore, we studied factors that influence the workplace learning of participants in the postgraduate educational program for nursing home

physicians. The study was carried out at the Radboud University Nijmegen Medical Centre, the Netherlands. In the following text, nursing home physicians in training will be referred to as NHPT.

The study addressed the following questions:

1. Which factors influence workplace learning of NHPTs as perceived by them and their supervisors?
2. Which factors are perceived as an impediment to the workplace learning of NHPTs?
3. Is there a difference between NHPTs and their supervisors with regard to these factors?

Methods

Respondents

We undertook our exploratory study in the period January-February 2004 and all NHPTs (*n*=56) and supervisors (*n*=62) who were engaged in education programs on the days of data collection, agreed to participate. Their usual classes (10 to 12 persons) were split up at random into smaller groups of three or four persons. In total there were 14 groups of NHPTs and 16 groups of supervisors with their usual teachers who had been instructed to perform the interviews.

Design

Each group discussed the following questions in semi-structured group interviews:

1. What can be instructive to NHPTs in the teaching nursing home?
2. Who do postgraduate physicians learn from in the teaching nursing home?
3. What is experienced as stimulating and what as restricting for the learning process?
4. What makes a teaching nursing home a good educational environment?

For each of these questions, each group received ten minutes of discussion time after which they were asked to submit their written answers. The aim of the assignment was to report as many factors as they could in as much detail as possible. The usual classes then discussed the content of each paper screening them for clarity, and these sessions were recorded on audiotape. The total exercise took 60 minutes and the data studied consisted of the written answers with any additional verbal remarks reported on the audiotapes.

Specific considerations determined the choice for this particular interview method. Firstly, exploratory research benefits most from interviews when the respondents are considered to be experts on the subject of the study. Because there was a large number of subjects, a semi-structured design was chosen (Gillham, 2000; Hoek et al., 2000; Singleton & Straits, 2002). Secondly, small group interviews establish an adequate amount of anonymity, which may be important for NHPTs. Finally, the small group interview ensures the possibility for discussion, which is believed to generate more ideas (Morgan, 2002; Warren, 2002).

Analysis

The qualitative analysis consisted of the following four steps. First, the first author (LS) delineated factors by reading through the

data. Secondly, these factors were grouped into categories. The definitions of the factors 'task variation', 'task autonomy', and 'task clarity', were adopted from the study of van Woerkom (2003), because of their practicability. Thirdly, the categories were grouped into domains and the definitions of the factors, categories, and domains were elaborated. The fourth step consisted of filing the interview data for each of the groups into the framework of factors, categories, and domains that had been established. Two colleague researchers repeated part of this procedure in order to improve the reliability. Each of them categorized the same set of 100 of the written data, and agreed upon 93 items. Compared with the author, they agreed upon 98 and 94 items.

Subsequently, the number of recordings of each of the factors and categories was counted. These were dichotomized for the 30 groups where an item was either mentioned or not mentioned. Any differences between the groups of NHPTs and supervisors were tested by means of the 2-sided Fisher's Exact Test. A probability of $\leq .05$ was used to determine statistical significance.

The interview questions 1, 2, 4 and the first part of question 3 (what is experienced as stimulating) were used to address the first research question. In order to answer the second research question, part of interview question 3 (what is experienced as restricting) was used and comparison between the groups served to answer research question three.

Results

Which factors do participants perceive to influence workplace learning of NHPTs?

The analysis of the interview fragments of 30 groups resulted in the identification of 56 different factors that influence workplace learning. We grouped them together into 10 categories, which in turn we grouped into 4 domains. The first domain, 'the working environment', was defined as a collection of all of the factors regarding medical practice within a health care organization, where the provision of care is organized in an interdisciplinary fashion. The second domain, 'educational factors in the workplace', was defined as being all of the factors involving the organization of learning activities and educational conditions. The definition of the third domain, 'NHPT characteristics', was composed of the personal aspects of the NHPT and learning activities by NHPT. Finally, the domain of 'supervisor characteristics' was defined as: the aspects regarding the qualities of supervisors and supervising skills (see Table 1).

This framework proved to be appropriate for the following positively formulated questions: "What can be instructive?", "From whom do NHPTs learn?" and "What is experienced as restrictive for workplace learning?" But, in the latter case, either too much or too little of the factor is present.

Comparing the domains, the 'workplace' is mentioned most often (39%) and the domain 'supervisor' the least (12%). At the level of categories, 83% of the groups reported emotional experiences as an influence on workplace learning, 64% cited material conditions and 53% factors regarding working in an organization. At the level of factors, as many as 90% of the groups reported experiences of social integration. Social integration was defined either as a sense of belonging in the workplace or as a good atmosphere in which students felt integrated. The need for a good workplace, like a private room or private desk, was reported by 87%. Interdisciplinary team meetings, workload, access to the Internet or library, and learning from successes and mistakes were each reported by 77% of the groups. Finally, 66% reported task variation as a characteristic of workplace learning and 60% reported a good supervisor.

Table 1: Domains, categories and factors that influence workplace learning.

Domain: Working Place	39%	Domain: Educational factors in the Workplace	29%
Working in an organization	*53%*	*Material conditions*	*64%*
Workload and work pace	77%	A good workspace	87%
Task variation	66%	Access to library / internet	77%
Open communication	63%	Sufficient time to study	60%
Teamwork	60%	Sufficient medical facilities	33%
Task autonomy	53%		
Task clarity	53%	*Educational conditions*	*38%*
Conflicts	33%	A good educational climate	73%
Participation allowed	16%	A good education contract	43%
		Mistakes are something to learn from	30%
Medical practice	*30%*	Back-up by senior/supervisor	26%
Interdisciplinary meetings	77%	Being encouraged to develop a personal	
Medical cases	50%	work style	16%
Patient/family contacts	33%		
Consulting medical specialists	30%	*Arranged learning Activities*	*31%*
Being on shift	23%	Supervising sessions	56%
Keeping medical files	13%	(Mutual) observation	53%
Working according to specific method		Specific classes / training	26%
taught in nursing home	13%	Obtaining instructions	16%
Patient management tasks	3%	Practice with supervisor	16%
		Provide classes for others	13%
Organization characteristics	**27%**		
Good employment conditions	43%		
An innovative organization	33%		
Practical support (secretary)	30%		
A steady organization	30%		
Possibilities to contact professionals			
outside organization	26%		
Good position of doctor in			
Organization	13%		
Good organizational structure for			
patient care	10%		

Table 1: (cont'd)

Domain: NHPT	20%	Domain: Supervisor	12%
Emotional experiences	*83%*	**Qualities of the supervisor**	**33%**
Experiences of social integration	90%	Supervisor is good: an expert, available and accessible	60%
Learning of successes and mistakes 77%		Supervisor establishes a relationship based on mutual confidence	53%
Performing learning activities	*35%*	Supervisor gives adequate feedback	43%
Ask for / receive feedback	50%	Supervisor offers balance between	
To study	50%	challenges and security	30%
To gain experiences / to act	46%	Supervisor offers respect and	
To experiment	26%	appreciation	30%
To formulate learning goals	3%	Supervisor is a good role model	23%
		Supervisor is stimulating and	
Management of learning process	*27%*	enthusiastic	16%
Reflection on experiences	47%	Supervisor stimulates students to	
Take responsibility for learning Process	20%	Manage problems themselves	3%
Self-awareness	13%		

The people present in the workplace were also reported to contribute to workplace learning. Each of the 30 groups presented the following enumeration: patients and their families, nursing staff, the supervisor and other experienced doctors, interdisciplinary team members such as physical therapists and social workers, pharmacists, and managers.

Which factors impede the workplace learning of NHPTs?

Only two characteristics were reported by half of the groups or more: 77% reported that a high workload impedes the learning process and 50% reported an unstable organization as an impediment. In an unstable organization, the management structure is not clear to the student due to, for example, management problems or the mergers of several departments.

Differences between NHPTs and their supervisors

*S*ignificantly more often than their NHPT groups, the supervisor groups reported that 'practicing with the supervisor' (p=.05) and 'the supervisor being a good role model' (p=.03) are important factors of workplace learning. Nearly 70 % of supervisors also reported a NHPT characteristic, 'reflection on experiences', whereas only 21% of the groups of NHPTs reported this themselves (p=.01).

The NHPTs mentioned more impediments than supervising physicians did. Nearly 30% of the NHPT groups reported too many shifts (p=0.04); over 40% indicated a lack of possibilities for teamwork (p=.01); and nearly 30% reported no encouragement for developing one's own personal work style (p=.04). It is interesting to see that none of the supervisor groups reported any of these factors. On the other hand, supervisors reported the absence of a confidential relationship between them and their NHPT, whereas the latter hardly ever reported this factor (p=.03).

Discussion

This study has presented a framework of domains and factors that influence the workplace learning of NHPTs, as perceived by them and their supervisors. Of these factors, social integration (a sense of belonging in the workplace or a good atmosphere in which students feel integrated) was cited most often as a factor in workplace learning. Overall, supervisors more often reported educational factors and NHPTs more often reported impediments, such as too many shifts and a lack of encouragement to develop a personal work style. Although frequencies have been calculated, no valid statements can be made on the relative importance of some factors over others.

It has to be kept in mind that answers were obtained from small groups of people, not from individuals. The discussions in small groups were considered stimulating to the process of reporting various factors. On the other hand, it could be that more assertive individuals influenced this process in a way that was opposite to our research aims.

The emphasis the respondents put on emotional experiences urges us to further investigate aspects of this characteristic, particularly because only two factors were identified to sustain this category.

Only two characteristics that impede workplace learning were reported by 50% of the groups or more: too high a workload and an unstable organization. Interestingly, exactly the same number of groups reported 'workload' as something they learn from as well as a factor that impedes the learning process. This result seems consistent with other findings that demonstrate a reversed U-shaped curve of what is experienced as an optimal workload (Woerkom, 2003).

Supervisors more often reported 'practice with the supervisor' as an influencing factor, whereas none of the NHPT groups mentioned this. It could be argued that supervisors tend to overestimate their role in the learning process, but we also offer another explanation. The teacher-curriculum, in which the supervisors participate, focuses explicitly on teaching skills, such as being a role model and practicing together. Therefore, it could be that the supervisors' answers are based on what they learn in the teacher-curriculum and the NHPT answers are based on their actual experiences.

NHPT groups reported more impediments to workplace learning than supervisors. They reported too many shifts and little encouragement to develop a personal work style, whereas none of the supervisors reported any of these. It is not surprising that NHPTs are the ones to mention these aspects, but it is striking that their supervisors did not seem to be aware. Questions may be raised regarding the contents of the supervising sessions. Apart from exchanges of medical and other work-related information, attention should focus explicitly on the learning process itself. Another explanation may be that NHPTs are reluctant to report these impediments to their supervisors, because they do not like to criticize, nor do they want to present themselves as less capable.

Supervisors more often report that the absence of a confidential relationship between them and their NHPT can be a restriction. This may be explained by the fact that supervisors train various different NHPTs over the years, so they have experiences with several teacher-student relationships. NHPTs participate in the training only once and therefore have less experience regarding this matter.

The findings suggest several questions and points of interest for curriculum developers and others involved in postgraduate education programs. First, a framework containing a rich diversity of factors regarding the workplace learning of NHPTs was

observed. Further investigation is needed to establish the relative importance of each of these factors. Nevertheless, this framework may be useful as a checklist for workplace learning and practicable for future studies of postgraduate education in the workplace.

Second, the fact that social integration was reported so often invokes us to pay particular attention to this aspect of workplace-learning. Answers to the following questions may offer some guidance: "How are postgraduate learners introduced into the workplace?" and "What has been done to equip them with the skills, and the information they need in order to co-operate and to integrate successfully, while being allowed to learn?" Finally, the differences as reported by postgraduate physicians and their supervisors suggest that they may improve their educational relationship if they explicitly discuss the learning process and learning conditions within the workplace.

It will be challenging to focus more on the residents' needs. The question of how to establish a basic feeling of 'knowing where you are' and 'how to go about things' to make postgraduate students feel comfortable enough to focus on the learning process itself, could provide a good beginning.

Acknowledgements

References

Billett, S. (2001) *Participation and continuity at work: A critique of current workplace learning discourses. Context, Power and perspective: Confronting the Challenges to Improving Attainment in Learning at Work*. Available in the Infed informal education archives: http://www.infed.org/archives/e-texts/billett_workplace_learning.htm.

Boendermaker, P. B. (2003). *Mastership. From exploration to recognition of the competent general practitioner trainer*. Maarssen: Elsevier Gezondheidszorg.

Borleffs, J. & Cate, T.t. (2004). Competency-based training for internal medicine (Editorial). *Netherlands Journal of Medicine*, 62(10), 344-346.

Doornbos, A. J, Bolhuis, S. & Simons, R-J. (2004). Modelling work-related learning on the basis of intentionality and developmental relatedness: a non-educational perspective. *Human Resource Development Review*, 3 (3), 250-274.

Engeström, Y. (1998). Activity theory and individual and social transformation. In, Y. M. Engeström & R. Punamäki, R-L (Eds.), *Perspectives on activity theory*. Cambridge: Cambridge University Press.

Eraut, M. (2004). Deconstructing apprenticeship learning: what factors affect its quality? In, R. H. Mulder & F. E. Sloane (Eds.), *New approaches to vocational education in Europe. The construction of complex learning-teaching arrangements*. (pp. 45-57). Oxford: Symposium Books.

Gillham, B. (2000). *The research interview*. London/New York: Continuum.

Gordon, J., Hazlett, C., Cate, O. t., Mann, K., Kilminster, S., Prince, K., et al. (2000). Strategic planning in medical education: enhancing the learning environment for students in clinical settings. *Medical Education*, 34, 841-850.

Hoek, J. F., Penninx, B. W., Ligthart, G. J. & Ribbe, M. W. (2000). Health care for older persons, a country profile: The Netherlands. *Journal of the American Geriatrics Society*, 48, 214-217.

Jarvelä, S., Lehtinen, E. & Salonen, P. (2000). Socio-emotional orientation as a mediating variable in the teaching-learning interaction: implications for instructional design. *Scandinavian Journal of Educational Research*, 44(3), 293-306.

Le Maistre, C., & Pare, A. (2004). Learning in two communities. The challenge for universities and workplaces. *Journal of Workplace Learning*, 16(1/2), 44-53.

Morgan, D. L. (2002). Focusgroup interviewing. In, J. F. Gubrium & J. A. Holstein (Eds.), *Handbook of interview research. Context and method.* (pp. 141-159). Thousand Oaks California/London: Sage Publications.

Oosterheert, I. E. (2001). *How students learn. A psychological perspective on knowledge construction in learning to teach.* Rijksuniversiteit, Groningen.

Seabrook, M. A. (2004). Clinical students' initial reports of the educational climate in a single medical school. *Medical Education*, 38(7), 659-669.

Simons, R. J., & Bolhuis, S. (2004). Constructivist learning theories and complex learning environments. In, R. H. Mulder & F. E. Sloane (Eds.), *New approaches to vocational training in Europe. The construction of complex learning-teaching arrangements* (pp. 13-25). Oxford: Symposium Books.

Singleton, R. A., & Straits, B. C. (2002). Survey interviewing. In, J. F. Gubrium & J.A. Holstein (Eds.), *Handbook of interview research. Context and method* (pp. 59-82). Thousand Oaks California/London: Sage Publications.

Warren, B. (2002). Qualitative interviewing. In, J. F. Gubrium & J. A. Holstein (Eds.), *Handbook of interview research. Context and method* (pp. 83-102). Thousand Oaks California / London: Sage Publications.

Woerkom, M. v. (2003). *Critical reflection at work. Bridging individual and organisational learning.* Enschede: Universiteit van Twente.