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How characteristic routines of clinical departments influence students' self-regulated learning: A grounded theory study

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ABSTRACT

Background: In clerkships, students are expected to self-regulate their learning. How clinical departments and their routine approach on clerkships influences students' self-regulated learning (SRL) is unknown.

Aim: This study explores how characteristic routines of clinical departments influence medical students' SRL.

Methods: Six focus groups including 39 purposively sampled participants from one Dutch university were organized to study how characteristic routines of clinical departments influenced medical students' SRL from a constructivist paradigm, using grounded theory methodology. The focus groups were audio recorded, transcribed verbatim and were analyzed iteratively using constant comparison and open, axial and interpretive coding.

Results: Students described that clinical departments influenced their SRL through routines which affected the professional relationships they could engage in and affected their perception of a department's invested effort in them. Students' SRL in a clerkship can be supported by enabling them to engage others in their SRL and by having them feel that effort is invested in their learning.

Conclusions: Our study gives a practical insight in how clinical departments influenced students' SRL. Clinical departments can affect students' motivation to engage in SRL, influence the variety of SRL strategies that students can use and how meaningful students perceive their SRL experiences to be.

Introduction

In the clinical workplace, students face expectations to learn autonomously and seize appropriate learning opportunities (Kennedy et al. 2009). To do so, medical students should engage in self-regulated learning (SRL) (Butler and Cartier 2005; van Lohuizen et al. 2009; Sandars and Cleary 2011; Teunissen and Westerman 2011; Brydges and Butler 2012; Bjork et al. 2013). SRL is often theorized as consisting of at least three phases, starting with a forethought phase in which goals are set and a strategy is determined to try and achieve that goal (Zimmerman 2002). This is followed by a performance phase where a learner performs a task, actively regulates behavior and emotions during this task and monitors progress (Zimmerman 2002). Lastly, in the self-reflection phase, a learner gathers feedback to self-assess performance, reflects, sets new learning goals to achieve and determines what strategy to use in a future similar task, completing the cyclical SRL process (Zimmerman 2002).

SRL results from a complex dynamic interaction between individual and context (Brydges and Butler 2012; Berkhout et al. 2015). Therefore, students understandably struggle with SRL in a context which is unfamiliar to them, because a context influences all aspects of SRL. Context affects the learning goals that can be achieved, learning strategies that can be used, and the feedback that is available to them (Brydges and Butler 2012; Berkhout et al. 2015).

Practice points

- A clinical departments' approach on clerkships has an important effect on clinical students' SRL.
- Clinical students require professional relationships with clinical supervisors for their SRL.
- Professional relationships between clinical students and supervisors are threatened by high student numbers and frequent rotations.
- Clinical students need to sense effort is invested in their learning to be most motivated to engage in SRL.

Because both individual and context have a profound influence on students' SRL, ideally contexts foster students' SRL to enable students' learning to thrive (Brydges and Butler 2012; Berkhout et al. 2015).

In contexts designed for learning, curriculum pedagogy, possibilities for guided and independent practice and social attributes are known to have an effect on SRL (Turan et al. 2009; Sitzmann and Ely 2011; Zumbrunn et al. 2011; Bjork 2013; Dannefer and Prayson 2013; Lucieer et al. 2016; Thomas 2016). However, clinical learning happens in a more complex context designed primarily for patient care.

Students' clinical learning is organized in clerkships in which students are expected to learn from participating in regular clinical practice in hospital departments and community health settings and from teaching sessions (Dornan et al. 2007; Van Hell et al. 2009; Yardley 2012; Steven et al. 2014). Additional to the aspects mentioned of contexts designed for learning, previous studies have shown that facilities, atmosphere, work load, patient-related aspects and what individuals are present, also influence students' SRL in clerkships (Berkhout et al. 2015, 2016). One study looked at how individuals influence students' SRL in a clinical context (Berkhout et al. 2016). However, how other aspects of a clerkship affect students' SRL and how these aspects are affected by clinical departments has not been systematically studied. This knowledge is vital for clinical teachers and departments to better understand how they can support medical students' SRL, because SRL needs to be supported in context (Butler et al. 2011).

We need to know more about how clinical departments affect the context in which students are expected to self-regulate their learning. We were particularly interested in how faculty of a department collectively approaches student clerkships and how students perceived that such an approach influences their SRL, as such an approach might be most easily adjusted to better suit students' SRL. Approaches that recur are context-dependent, are shaped by history and result in a certain collective behavior are also known as routines (Becker 2004). Departmental routines may for instance involve collective supervision strategies or collective behavior supporting a feedback culture. Students' perceptions of how their SRL is affected by routines of clinical departments has not yet been studied and published in a frame that may guide departments in improving their educational environment. Thus, to address this gap in literature, we performed a focus group study to answer the research question: How do undergraduate medical students perceive that characteristic routines of clinical departments regarding their clerkship influence their self-regulated learning?

Method

Design

We assumed students would become more aware of various routines in how departments approach clerkships and the effects these routines have on their SRL when discussing experiences with peers. Therefore, we used focus group sessions (Barbour 2005) to study how routines of clinical departments could influence medical students' SRL from a constructivist paradigm, using grounded theory methodology (Charmaz 2006). The multidisciplinary nature of our research team provided a variety of perspectives to approach our research question. The first author (JB) is a recently graduated MD and a PhD-student in health professions education with a particular interest in SRL. All other authors have PhD's in health professions education with ample experience in qualitative research and offered insight from both under- and postgraduate medical education and in cognitive as well as socio-cultural perspectives on learning. None of the authors were involved in the participants' education.

Setting

We selected students from a Dutch medical school with entering cohorts of 350 students per year. The medical curriculum includes a preclinical phase (year 1–3) and a clinical phase (year 4–6). The clinical phase consists of rotational clerkships ranging from 3 to 16 weeks in academic and teaching hospitals, as well as community settings.

Final learning outcomes and competencies have been set for the entire medical curriculum by the Dutch medical licensing board. In the medical school used in this study, these learning outcomes and competencies have been used to set general clerkship goals for each specialty. Students themselves are required to set personal learning goals in clerkships, and are frequently asked how they have decided to work on these goals, and whether they attained their goals. Additionally, students are enrolled in longitudinal mentoring groups where they discuss personal issues and decide on additional goals that supersede a specific clerkship. Throughout the clinical curriculum, independence and responsibilities gradually increase until students are able to function as residents after graduation.

Participants

Between December 2015 and June 2016, the first author (JB) approached groups of students during educational meetings that were enrolled in a purposefully sampled clerkships, asking for participation in focus group sessions. Focus groups consisted of 4–9 participants. We initially organized both homogeneous and heterogeneous focus groups regarding current clerkship in which they were enrolled, but we found that students were better able to discuss their experiences with others who understood the clerkship context. Otherwise, students were mainly sharing experiences with each other and not discussing the impact of these experiences on their SRL. Therefore, after one heterogeneous focus group we decided that the remainder of the focus groups would be homogenously sampled based on current clerkship location and year in medical school. To ensure the focus groups consisted of enough participants, this resulted in only clerkships in which routinely enough students were enrolled, were eligible for inclusion in our study.

Data collection

Focus groups were subsequently scheduled, whilst iteratively collecting and analyzing data. All but one focus group were moderated by the second author (IS) who has ample experience in moderating focus group sessions for medical education research. The first author (JB) observed all focus groups, and moderated the last one for practical reasons.

Before attending the focus group, all participants received an email with a one-page attachment explaining how SRL is theorized. Participants were asked to think about departmental routines influencing their SRL before coming to the focus group. At the start of the focus groups we obtained informed consent and some background information regarding the demographics of the participants. Next, the moderator briefly explained the goal and rules of

Table 1. Focus group session characteristics.

Session	Number of participants	Type of focus group session	Enrolled in what clerkship(s)	Participants gender (male/female)	Participants age in years (mean, range)
1	9	Homogeneous	Obstetrics and gynecology, academic hospital	2/7	24.9, 24–28
2	5	Heterogeneous	1: Pediatrics in peripheral hospital, 1: Ear–nose–throat disease in academic hospital, 1: Obstetrics and gynecology in peripheral hospital 2: Surgery outpatient clinic in peripheral hospital	2/3	23.8, 21–28
3	6	Homogeneous	Internal medicine, academic hospital	5/1	23.7, 22–25
4	5	Homogeneous	Obstetrics and gynecology, peripheral hospital	2/3	25.0, 23–27
5	7	Homogeneous	Surgery, academic hospital	5/2	22.9, 22–25
6	7	Homogeneous	Psychiatry, academic hospital	3/4	25.1 24–27

a focus group session. We then facilitated the discussion by subsequently exploring: (1) what clinical context the participants were learning in, (2) what characteristic routines of these departments influenced their SRL, (3) how did these characteristic routines influence their SRL, and finally (4) under what circumstances did these characteristic routines support or hinder their SRL? At the end of each focus group we asked participants which routines needed most urgent attention from the clerkship course director as per having the biggest effect on their SRL. Each focus group session lasted for approximately one hour. The focus groups were audio-recorded and transcribed verbatim. We anonymized all transcripts.

Data analysis

After each focus group session, the moderator and observer shared their initial responses and afterwards the first author (JB) transcribed the transcript. Initial responses and reflections during transcription and at first reading, were noted and used to guide future sessions. Next, the first and second author (JB and IS) started with open coding of the transcripts, followed by axial coding and interpretive analysis based on principles of grounded theory methodology (Charmaz 2006). Analysis was done iteratively, constantly collecting, coding, comparing and interpreting data until no new concepts emerged. We organized one final focus group to help determine that theoretical saturation was reached. To keep track of our reflections, thoughts and interpretations, the first author kept memos and a log to record all emerging ideas and concepts. Data analysis was supported by the use of MaxQDA V11 (Verbi GmbH, Berlin Germany).

We discussed the emerging ideas and interesting findings of the first and second author within the entire research team in four meetings. Differences in interpretation were discussed until agreement was reached.

Ethical approval

Participants were not compensated for participating in this study. The Ethical Review Board of the Netherlands Association for Medical Education (NVMO) approved the conduction of this study, this approval can be found under their file number 613.

Results

We organized six focus group sessions including 39 participants. Extensive in-depth discussions took place about characteristic routines influencing students' SRL. Details regarding the focus group sessions and its participants are given in Table 1.

Two themes emerged from the focus group discussions about characteristic routines regarding their clerkship students perceived to influence their SRL. Students explained: (1) routines could influence their SRL through enabling or hindering the formation of relationships and (2) routines could make them feel a department invested effort in their learning. We will explain these themes in more detail in the coming sections. The letters and digits preceding the exemplary quotes are unique identifiers of participants.

Theme 1: Enabling or hindering the formation of relationships

Characteristic routines could support the formation and maintenance of professional relationships between students and members of clinical teams by facilitating personal attention, informal contact, continued collaboration in clinical activities and participation as part of the team.

Personal attention

Routines that facilitated personal attention included limiting the number of students in a department and offering longer clerkships. Both helped faculty members recognizing new students, know students' names and to get to know each student individually. Students explained knowing one another lowered barriers to ask for help, made feedback from supervisors more meaningful and credible to them, and made a clerkship less stressful.

> F5R1: "I had to introduce myself in my final assessment. I think that is strange […] if you have the assessment with someone who has monitored your progress than, eh, that person can do the assessment much better. Yes, that decreased my motivation a little."

Informal contact

Routines that enabled students to have informal contact with other team members involved regularly having lunch

together, instead of eating in separate groups, and ending a day informally with drinks. Students described having informal contact enabled them to ask questions, increasing the opportunity to involve others in their SRL strategies.

> F5R7: "There [a department in another hospital] the consultants, residents, students, and even administrative staff had lunch together […] here there are separate groups and there it was really one team. […] There you feel much more at ease to ask questions."

Continued collaboration in clinical activities

Routines that enabled students to collaborate with others in clinical activities pertained to the amount of time students and supervisors worked together. Students explained how working with the same person for two or three weeks, instead of having different supervisors frequently, was greatly beneficial to their SRL, because both students and supervisors knew what they could expect from each other. With continued collaboration, students said that they were able to show their capabilities and were motivated to study a case in-depth, because they knew their supervisor might ask questions. Students also described it decreased their stress because they knew what to expect and increased their self-efficacy to engage in SRL. Lastly, they felt it enabled supervisors to determine what students could do independently and thereby increase students' autonomy, responsibilities in clinical tasks and possibilities to engage in SRL.

> F6R5: "Once you get used to all those people [working in a clinical department], you don't have to think about non-essential issues all the time. You know the drill, you know what you are supposed to do, and that way you can focus your attention on learning. […] I notice I always learn a lot more at the end of a clerkship than at the beginning."

Participation as part of the team

Routines that made students feel like a true team member included being invited to participate in clinical activities, being asked questions during clinical activities, being asked for their opinion during meetings, and getting responsibilities when seeing patients rather than just observing. Students emphasized these routines made clinical participation more meaningful. It also increased the effort students invested in their SRL and lowered barriers to make alterations to their learning environment, such as asking for more responsibilities or asking questions. Additionally, students stressed it made them more motivated for actively participating in clinical activities because they felt welcome, appreciated, and valued as an individual. Participating in clinical activities was explained to occur more frequently when students and residents shared a room or had adjacent ones.

> F2R2:"There is much more attention for your position, just, I don't know. For instance you start the day together, prior to a day discussing: what are we going to do today, what will we do, and you end the day together. There is room to discuss with all others: how was your day, do you have any comments? Any suggestions? That was fan-tas-tic."

How enabling or hindering the formation of relationships affects SRL

By enabling the formation of professional relationships, characteristic routines described in the previous paragraphs supported students' SRL through enabling students to engage others in their SRL, increasing their motivation, decreasing barriers to ask questions and by making learning experiences and feedback more meaningful to them. This results in students being able to use a broader variety of SRL strategies to employ in the performance phase of SRL, having an easier time regulating their motivation and emotions during the performance phase of SRL and gathering more and better feedback to aid in the self-reflection phase of SRL.

Theme 2: Investing effort in student learning

Characteristic routines could support students' perception that effort was invested in their learning, by having high-quality teaching sessions, high-quality assessment, a supportive learning environment and asking thought provoking questions.

High-quality teaching sessions

Routines that made students feel that a department invested effort in students through having high-quality teaching sessions included: frequent and structural educational sessions, student presentations and allowing students to participate in all of the educational sessions for doctors. Students explained these routines supported their SRL because it made them feel appreciated and that made students more willing to invest effort in maximizing learning from their clerkship. Because of high-quality teaching sessions students could also identify gaps in their current knowledge, competencies, diagnoses and treatments options, they had not encountered during clinical activities and set SRL goals to work on these gaps. Additionally, students expressed that routines regarding teaching sessions helped them in planning their learning by presenting less-evident learning opportunities to them.

> F3R6: "Patients … like in nephrology, they have a routine program after they had a transplantation […] that means there is relatively little to do for us […]they try to tackle that by scheduling extra educational sessions where, ehm, a patient is presented and the differential diagnosis is discussed."

High-quality assessment

Routines that invested effort in the quality of assessment included the routine of having a weekly faculty meeting where each student's progress was discussed and assessed by all faculty members. It also included the routine of appointing a faculty member to monitor performance and the progress of a small number of students during their clerkship. Students indicated these routines were highly valuable because it leads to personalized feedback and a more informed assessment of performance.

> F6R2: '"I had not seen the consultant a lot during the clerkship, but I know we were evaluated by everyone on a weekly basis. That included consultants, residents, and some nurses. So than you know that the consultant assessing you at least got some information about you from all others.[…] That gives you the idea more thought has been put into the assessment, and then the feedback is more grounded and more useful."

Supportive learning environment

Routines that catered to a supportive learning environment involved discussions about learning goals, observations of

students during clinical activities, responsibilities tailored to students' personal needs, high expectations of students, structured learning activities, autonomy to manage one's own time and adequate resources. For instance, students indicated discussions about learning goals aided their SRL because goals were shared with supervisors which increased SRL opportunities. Students felt that being frequently observed during clinical activities improved feedback quality. Students also reported getting responsibilities tailored to their personal needs enabled them to work on their personal SRL goals on an adequate level. If supervisors articulated high expectations of students, this led to students explaining setting ambitious goals in their SRL. Students also revealed high expectations led to an increase in their self-efficacy when they managed to successfully fulfill a high-expectation task. Students articulated needing to be able to allocate time to engage in SRL activities and work on their personal goals. Additionally, students explained valuing mandatory activities, such as having to attend teaching sessions. These activities enabled students to identify learning opportunities they would not have identified on their own if they had opted for not attending a voluntary teaching session. Lastly, students indicated their motivation for SRL increased by having adequate resources. For instance, having an own room or being supported by a clinical librarian when making a scientific presentation, made students put more effort into SRL.

> F4R5: "Wat I especially like is if there is the possibility to find your own learning goals and to do many things by yourself. But also, when it is unclear what you can and may do, that you are given clues, or support, so you can still have that opportunity."

Thought provoking questions

The routine of asking questions to students was probably one of the most widespread and important ones. Questions were valued in all situations, no matter whether it was during morning rounds, handovers, presentations, consultations or other clinical activities, because students explained it made them feel their learning mattered. Questions could trigger students to study and help them identify gaps in their knowledge and set subsequent learning goals. It also made students aware of the need for practicing clinical reasoning and presentation skills and lowered the barrier to ask questions themselves. Additionally, students voiced feeling like their progress was not only monitored by themselves but also objectified and assessed by others.

> F6R3:" What stimulates me a lot to study, or learn things, or actively look for learning opportunities is what [name F6R2] also said: when people, residents or consultants, ask you questions. They try to motivate you and, ehm, by doing that make you realize: oh, I hadn't thought of that, or: I think I don't know that yet."

How investing effort in student learning affects SRL

By having students feel that effort is invested in their learning, students' SRL was supported through aiding goal setting, increasing learning opportunities catered to the needs of a specific student, enabling monitoring of a student's own progress and high-quality feedback. This results in students being able to set a broader variety of goals personalized to their needs in the forethought phase of SRL,

motivated students to use a broader variety of SRL strategies and enabling more accurate monitoring of progress in the performance phase of SRL, and aids the availability of high-quality feedback, imperative for the self-reflection phase of SRL.

Discussion

Medical students described a variety of characteristic routines and features regarding the medical care supplied by clinical departments that influenced their self-regulated learning. Characteristic routines of clinical departments could support students' SRL by facilitating professional relationships and by showing that effort was invested in students' learning. Routines that facilitated professional relationships most notably affected students' SRL by enabling others to be engaged in students' SRL, increasing students' motivation, decreasing barriers to ask questions and by making learning experiences and feedback more meaningful. Routines that made students feel effort was invested in their learning most notably supported their SRL through aiding goal setting, increasing learning opportunities catered to the needs of a specific student, enabling monitoring of one's own progress and receiving valuable and personalized feedback.

The two themes we found in the routines of clinical departments that influence students' SRL both pertain to relations between students and faculty members. Firstly, it is of great importance for students' SRL to be enabled by routines that form relationships with faculty members. It is known that relationships between faculty members and students are important for learning (Haidet et al. 2008), but this has been getting little explicit attention. Our results demonstrate the importance of enabling students to form relationships, because this affects their use of SRL. It was striking to find that a basic psychological need for a feeling of relatedness (Deci and Ryan 2000; Ryan and Deci 2000) and a need for legitimate peripheral participation (Lave and Wenger 1991) played such an important role in the formation of relationships and thereby stimulates SRL. This implies that satisfying these needs is catered to in varying degrees by clinical departments. Satisfying these needs is predominantly hindered by high numbers of students simultaneously learning in a clinical department, and frequent rotations in both faculty members and students. Therefore, from an SRL and motivational point of view, smaller numbers of students learning in a clinical department where they are regarded as true team members, also in informal contact, is very important for students to engage in SRL in the clinical context. Additionally, allowing for longer lasting clerkships with continued collaboration between student and supervisor, for instance in a mentor-mentee role, is very important to better support individual students' SRL in a clinical context (White et al. 2011; Driessen and Overeem 2013).

Secondly, students also need to sense some form of reciprocity in their relationship with faculty members. Students become motivated when they are supervised by motivated, engaged teachers. Such teachers are required to maximize students' engagement in SRL and to help create the best context for students to learn in (Ramani and Leinster 2008). Likewise, teachers get motivated by

engaged students who invest effort into their learning. Besides motivation, this reciprocity in effort may also facilitate teacher work engagement, which in turn is likely to improve teacher performance and result in an upwards spiral (van den Berg et al. 2015). Other research already showed how student and teacher motivation, engagement and effort are interrelated (Ames and Ames 1984; McLaughlin 1992; Skinner and Belmont 1993). Our findings add to the understanding how clinical departments may facilitate this process, and how educators might instate certain routines to achieve such an upwards spiral, resulting in high teacher work engagement and students engaging in SRL.

Multiple layers of context, including the physical and social context of a clinical department had a considerable effect on SRL in our study. This effect was best visible in the variety of SRL strategies that students could employ and in how meaningful students perceived their SRL experiences to be. Motivation to engage in SRL also appeared to be a key factor in how students' SRL is affected by a clinical department. This is in line with Pintrich's theory on SRL, who emphasized that motivation is important for promoting and sustaining SRL and that this is context-specific (Pintrich 1999). Therefore, our findings emphasize the importance of regarding SRL as a process embedded in context as theorized by Brydges and Butler (2012).

Strengths and limitations

Our findings result from focus groups with students from a single institution, which included multiple teaching hospitals. Therefore, care should be taken when generalizing these results to other settings, especially if these settings have naturally different relationships between students and faculty members. Using focus groups limited us to only include participants from clerkships in which many students were simultaneously enrolled: internal medicine, obstetrics/gynecology, surgery and psychiatry. In these clinical departments, the effect routines had on the possibility to form relationships with others may have been different from other clerkships. One can imagine that professional relationships are easier to be formed and maintained in a department with only a handful of faculty members and a small number of students enrolled in a clerkship.

Students were allowed to talk about all things they regarded to be characteristic routines that influenced their SRL. Therefore, students did not only discuss behavioral routines, but also took certain features characteristics for a clinical department into consideration. Certain features such as highly specialized care, a relative homogeneous patient mix, very short or very long stay departments and departments with heavy time constraints, made students perceive these clinical departments as less suitable for their SRL because these characteristics limited the variety of SRL goals they could work on. This provided us with some insight into how students perceived a departments' patient characteristics to influence their SRL. However, it also provided us with the insight that students mostly talked about their SRL thinking about goals regarding diagnosing and treating a patient. Few students mentioned goals other than those in the domain of medical expert. We are unsure

whether SRL aiming for goals in other domains is influenced similarly.

At some moments, students had difficulty explaining how and when characteristic routines of a specific clinical department affected their SRL and why they believed some routines happened the way they did. We believe this is caused by students' relatively short stay on single departments. A similar study with students enrolled in longitudinal integrated clerkships might have provided more in-depth details regarding department routines and how it affects SRL.

Implications for practice and future research

Our findings give us some leads as to how clinical departments can support medical students' SRL. First of all, it is important that professional relationships arise between students and faculty members. This is facilitated when faculty members know which students are enrolled in their clerkship, involve students in informal activities, actively involve students in daily clinical practice and have frequent interactions with students. This can be encouraged for instance by having lunch with students, actively asking for student opinions during meetings, pairing students and a supervisor for a longer period of time, and by having frequent talks with students about their clerkship learning goals and progress.

Secondly, students need to perceive that effort is invested in their learning. Clinical departments can facilitate this feeling through catering for learning experiences that meet an individual student's objective and by appropriately questioning students in a safe environment. For instance, this can be encouraged by providing students with their own workplace close to a resident, adjusting assessment procedures to include feedback from multiple faculty members and by scheduling observation sessions.

The routines discussed in this paper involve routines that supported medical students' SRL in clinical departments. However, many routines were also mentioned that hindered students' SRL. Most of these originated from a similar problem: having too many students in a department for a short period of time. This made it difficult to cater to students' individual needs as is suggested is required to engage in SRL (Brydges and Butler 2012). Therefore, it would be beneficial for students' SRL to limit the number of students in a clinical department and suggests a source of benefit for longitudinal integrated clerkships (Ogur et al. 2007; Hauer et al. 2012).

In the focus group discussions, students mostly talked about goals regarding the domain of medical expert, and noted how some clinical departments are less suitable for attaining these goals. To overcome this issue, other settings should be considered to enable students to work on their goals, but more importantly, students need to be supported to broaden their ideas on what can be learned in a given clinical department. This is especially valid for goals in the non-medical expert domain as students might be forgetting to work on these competencies in their SRL altogether.

Our findings give an insight in how clinical departments influence students' SRL, but many questions remain. We suggest future research should use a legitimate peripheral

participation (Lave and Wenger 1991; Wenger 1999) focus on how knowledge, skills and attitudes that are learned by students, are affected by routines and characteristics of clinical departments. Some students in our study regarded certain clinical contexts as totally unfit for their SRL and in fact learning in general. It would be interesting to see how students (try to) self-regulate their learning in such contexts, and whether their perception is coloured by only thinking about learning goals regarding diagnosing and treating patients which may be a mismatch with the restricted opportunities offered in these more limited contexts.

Conclusions

Our study provides insight into how a clinical departments' approach to a clerkship influences students' SRL in clinical contexts. Characteristic routines of how a clinical department approaches clerkships could support or hinder the formation of professional relationships between students and faculty and could make students feel to what extent a department invested effort in their learning. Characteristic routines supporting the formation of professional relationships and the perception of invested effort helped students to engage in SRL because it motivated students to engage in SRL, broadened the range of learning strategies that could be employed, and made students' SRL more meaningful to them. Therefore, leaders and teachers in clinical departments should think about how they routinely approach clerkships, what effects these routines may have on students feeling of relatedness and legitimate peripheral participation and ultimately effect students' SRL.

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Disclosure statement

Ethical approval

This study was approved by the Ethical Review Board of the Netherlands Association for Medical Education (NVMO).

Glossary

Self-regulated learning (SRL): Is the modulation of affective, cognitive, and behavioral processes throughout a learning experience to reach a desired level of achievement.

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