

## ORIGINAL RESEARCH

# Assessment practices and types of knowledge in two clinical examination formats in nursing education

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## ABSTRACT

**Background and objective:** The assessment of nursing students' clinical competencies is a global concern, as different exam formats emphasize different types of knowledge and skills. There is a lack of research that uncovers the linkage between clinical exam formats, assessment practices and types of knowledge tested. This study investigates how two different formats of clinical exams—one based on written assignments (control exam), and one conducted in real patient situations (intervention exam)—influence educators' assessment practices and the types of knowledge they enhance or limit respectively.

**Methods:** The study applied a comparative, ethnographic design, incorporating participant observations, focus group interviews with educators, and grade analysis of 104 nursing students. The analytical framework was informed by Institutional Ethnography (IE) and Donald Schön's concepts of reflection in practice.

**Results:** The control exam is predictable and controlled facilitating assessment of theoretical knowledge and reflection-on-reflection-in-action but is detached from real-life patient interactions. In contrast, the intervention exam is unpredictable and complex emphasizing assessment of knowing-in-action and reflection-in-action but poses challenges in assessing theoretical reasoning and reflection-on-reflection-in-action. Despite these differences, no significant variation was found in students' final grades between the two formats.

**Conclusions:** The findings highlight the impact of exam formats on assessment practices and suggest that nursing education should incorporate diverse assessment methods to balance theoretical rigor with clinical competence.

**Key Words:** Nursing education, Clinical exams, Real-life patient situations, Theoretical reflection, Assessment practices, Types of knowledge, Institutional ethnography, Schön's reflection theory

## 1. INTRODUCTION

The clinical assessment of graduating nursing students is a global concern, and the complexity of assessment has challenged educators for decades.<sup>[1,2]</sup> A recent benchmarking report revealed significant variations in content, structure, and training, despite the requirement for programs to meet

NMC standards of education and training.<sup>[3]</sup>

Although nursing education varies considerably across countries, regions, and institutions, the increasing academization of the field is consistently reshaping the assessment of clinical ECTS. Historically, clinical placements often concluded

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with exams in which students’ clinical knowledge, skills, and competencies were assessed based on their nursing care in a specific clinical practice. Today, nursing schools define general learning outcomes, and the assessment of these outcomes varies across different clinical settings.<sup>[4]</sup>

Currently, nursing students’ performance on clinical learning objectives is evaluated through a variety of examination formats, each emphasizing different types of knowledge.<sup>[5]</sup> These include: (a) traditional individual written exams, which focus on theoretical knowledge;<sup>[6]</sup> (b) simulation-based ‘in vitro’ assessments, such as the Objective Structured Clinical Examination (OSCE), which evaluates students’ clinical skills in standardized scenarios;<sup>[7]</sup> (c) oral case group assessments, which also use standardized scenarios but emphasize contextual dynamics, shared understanding, verified competence, and holistic nursing care;<sup>[8]</sup> (d) case-based learning interventions;<sup>[9]</sup> and (e) ‘in vivo’ exams conducted bedside in real-life settings, primarily assessing students’ non-technical skills, including communication and planning.<sup>[10]</sup>

According to education professor Michael Eraut, assessment plays a crucial role in learning, as one of the most well-documented findings in educational research is that assessment practices strongly influence what students learn.<sup>[11]</sup> The focus of assessment not only shapes learning but also defines the continuous professional development of new nurses, emphasizing the need for constructive feedback and opportunities for reflection between students, mentors, and educators.<sup>[1]</sup> However, assessing students’ clinical competencies remains a challenge for educators.<sup>[12]</sup>

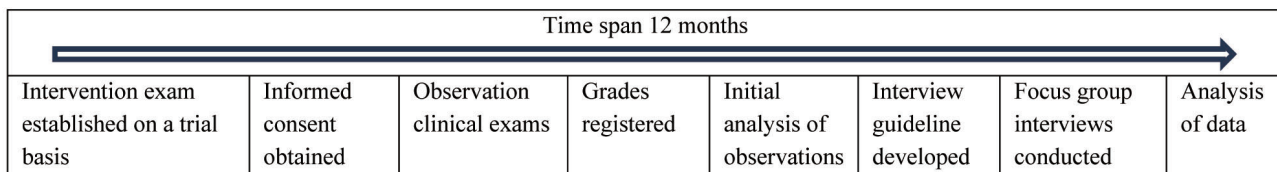
Given these complexities, further research is needed to explore the relationship between the structure and format of clinical exams, educators’ assessment practices, and the types of knowledge tested in nursing students. Therefore, this study aims to investigate how two different formats of clinical ex-

ams in a hospital setting influence educators’ assessment practices and to discuss the types of knowledge they facilitate or constrain.

## 2. MATERIALS AND METHODS

This study employs a comparative design with data collected at an ethnographic level. A new format of the final clinical exam—the intervention exam, which assesses the same learning objectives as the existing version—was tested and compared to the (existing) control exam. Figure 1 illustrates the research trajectory. Data collection included participant observation, focus group interviews, and extraction of grades. The observation guide, interview guide, and data supporting this study’s findings are available from the corresponding author, CB, upon reasonable request.

Methodologically, this study is an educational experiment inspired by intervention studies.<sup>[13]</sup> The outcomes are differences in grades and interactions, experiences, and behavior of participants in the two settings. The study is further informed by Institutional Ethnography (IE), which situates practices within the institutional contexts in which they occur.<sup>[14]</sup> IE is particularly valuable in educational experiments as it reveals how institutional structures shape actors’ practices and experiences.<sup>[15]</sup> A key ontological concept in IE is ‘ruling relations’, which are mediated through institutional texts and communications. The concept of ruling relations provides a perspective on the interaction between regulations and human practices. At one level, both exam formats are subject to the same ruling relations within the broader education system, the same semester and learning objectives, and the clinical setting, which in this case is a hospital. At another level, the institutional context differs because the specific organisation of the exam procedure, as outlined in the semester descriptions, varies in several ways. Consequently, it is expected to generate different assessment practices and to facilitate or constrain different types of knowledge.



**Figure 1.** Overview of procedure

### 2.1 The educational experiment

Both exams are subject to the same learning objectives that guide the assessment of the exams and involve 15 sub-goals: 2 are categorised as knowledge, 1 as skill, and 12 are categorised as competency particularly focussing on the ability

to perform clinical decisions and clinical leadership.

Both exams consist of a practical element in the clinic followed by an oral element, and educators from both educational and health institutions participate (University College teachers (UC-T) and clinical educators (CE). Moreover, both

exams are assessed with the Danish 7-point grading scale equivalent to the European ECTS scale, and the assessment is based on the same learning objectives.<sup>[16]</sup>

As Table 1 shows, the main difference between the exam formats is that the written assignment is central to the control exam whereas the practical nursing care is central to the intervention exam. Another significant difference is the time

span between the clinical practice and the (written) reflection in the control exam as compared to the intervention exam where the oral reflection takes place immediately after the clinical practice. Finally, there is a difference in the presence of the educators: in the control exam, the educators are only present for the oral examination whereas in the intervention exam, the educators are also present during the practical nursing performance.

**Table 1.** Overview of the trajectory of the intervention and control exam for nursing students

	Performance in clinic	Preparation Reflection	Oral performance	Finalisation
<b>Intervention exam</b>	90 min practical nursing care  <u>Present:</u> UC-T and CE		20 min oral examination based on the performed nursing care  <u>Present:</u> UC-T and CE	Receive grade and feedback based on 7-point grading scale and official learning objectives <u>Present:</u> UC-T and CE
<b>Control exam</b>	4 hours nursing intervention/collecting data  <u>Present:</u> CE	2 days writing assignment  Supervision: CE	30 min oral examination based on the written assignment ( <i>1 week after the nursing intervention</i> )  <u>Present:</u> UC-T and CE	Receive grade and feedback based on 7-point grading scale and official learning objectives  <u>Present:</u> UC-T and CE

## 2.2 Participants and recruitment

A total of 104 nursing students undergoing their clinical placement at a hospital consented to participate in the study. 56 of them were placed in wards where the intervention exam was being held and 48 completed their placement in departments where the control exam continued as usual. Students were recruited through information meetings.

Participants needed for observation of their clinical exams were found through written inquiry to all 104 nurse students. 12 students consented to take part in the observations, 6 from the control exam and 6 from the intervention exam. Inquiry was then made to the educators responsible for the assessment of the students – both UD-T and CE. They were informed about the project orally and in writing, and all 24 consented to participate in the study. Following the observations, they were invited to participate in a focus group interview. 11 of them consented to participate in a focus group interview. Due to drop-out on the day of the interview, 3 UC-T and 6 CE participated. In the result section we will write UC-T and CE when marking the specificity and write educators when statements go for both parts.

## 2.3 Registration of grades

Following the clinical assessments, grades were registered for all 104 participants. The grades were then systematized and presented descriptively for the intervention exam and the

control exam. Fisher's exact test was used to analyse statistically significant differences between grades in the intervention exam and in the control exam. Results are presented in Table 3.

## 2.4 Participant observation

12 observations of the oral part of the clinical assessment were conducted, 6 control exams and 6 intervention exams. IE emphasizes that research begins with observation of what people do.<sup>[14]</sup> In the current study, this means that the study began with observation of the oral part of the clinical exams with a focus on the subjects' actions, here, the communication they had with each other. Communication is considered a form of action,<sup>[17]</sup> which is coordinating for other actions – before and after the exam. The observers took on a minimally participatory role by not saying anything throughout the exam and by standing outside of the participants' vision fields. An observation guide directed the researchers' focus on students' presentation, questions and responses between the students and the educators, and fieldnotes were written during the observations, and afterwards elaborated and systematized.<sup>[18]</sup>

## 2.5 Focus group interview

Two focus group interviews were conducted. Focus group interviews present an opportunity to collect data on a collective level,<sup>[19]</sup> in this case from the educators from the UC and the

clinic, respectively. The UC-T and the CE are expected to take different roles in the exam, where the UC-T are expected to be accountable for the linkage to the theory presented at the UC and CE are responsible for the quality of nursing care carried out. Therefore, the UC-T were assembled in one focus group and the CE in another. The aim was to create space for them to freely express their perspectives, while also presenting a unified ‘school perspective’ and a unified ‘practice perspective’. Each interview lasted approximately an hour and was completed a few weeks after the clinical exam. Two researchers participated in each interview, one moderator and one assistant. An interview guide developed based on the themes from the observations directed the moderators’ questions. The interviews were recorded and subsequently transcribed (see Table 2).

**Table 2.** Example of questions from the interview guide

Research theme	Operational question	Follow up question
Types of knowledge present in the two exam formats Assessment practices and logics	Please discuss how the students balance specific patient situations and theoretical reasoning?	Please discuss what you consider important or unimportant?

**2.6 Analytical strategy**

Guided by Institutional Ethnography (IE), a two-step analytical approach was developed. The interview guide for the focus group interview was designed based on an initial analysis of the observations. All researchers who observed the oral part of the exams reviewed the field notes and met to identify patterns, similarities, and differences between the two exam formats.

In line with an IE perspective, the analysis of the focus group interviews aimed to uncover the ‘ruling relations’ embedded in the participants’ experiences. Therefore, the focus was on UC-T and CEs’ experiences, perspectives, and beliefs regarding what is important in a clinical exam—and the factors shaping these perspectives.

All researchers read the transcripts from both focus group interviews before meeting for an initial analysis, focusing on how ‘what is said’ reveals ‘what is being talked about.’ Statements from the interviews were categorized and grouped thematically. No significant differences emerged between the two focus groups, despite participants representing both educational and healthcare institutions. Consequently, data from observations and both focus groups were combined into a unified identification of themes.<sup>[20]</sup>

**2.7 Theory**

To uncover types of knowledge in the empirical themes we make use of Donald Schön’s theory about knowledge and

learning in practice. According to Schön most professional practitioners experience a discrepancy between the issues they are taught to solve with scientific knowledge and theoretical reflection in their degree, and the real-life issues they face in practice. He compares practice with ‘the swampy lowlands’ where the issues are complex, confusing, and difficult to solve. By contrast, the clean, neat, theoretical issues unfold in the ‘high ground’ from where the swamp (practice) can be observed from a distance.<sup>[21,22]</sup>

To better understand the types of knowledge the two exams enhance or limit, we make use of Schön’s concept on ‘knowing-in-action’, reflection-in-action and reflection on reflection-in-practice. Knowing-in-action refers to the spontaneous, tacit knowledge we use when we act and react in specific situations - a ‘know-how’ in the way we carry out activities. ‘Reflection-in-action’ refers to the moment we reflect on our action whilst acting. Like knowing-in-action, reflection-in-action is a process we can engage in without being able to explicitly describe what we do. ‘Reflection on reflection-in-action’, refers to the process where we reflect upon how we acted and reflected during our past actions. This is the process where we can explicitly describe our reflections related to our reflection-in-action.<sup>[21,22]</sup>

**2.8 Ethics**

The project was approved by the Capital Region Knowledge Centre for Data reviews which oversees approval of research and development projects on behalf of the Danish Data Protection Agency, the independent authority supervising compliance with the rules on the protection of personal data. (Project identification: J.NR. P-2021-482 and title: NEW). All participants were informed that participation in the study was voluntary, and their right to withdraw from the study remained throughout all stages of the process. All participants are anonymised in the transcription of the interviews and the fieldnotes, and the data can therefore not be traced back to the participants by the reader. All data is stored and handled according to the General Data Protection Regulation.

**3. RESULTS**

Overview of the distribution of grades assigned to nursing students in their final assessment in the intervention exam and control exam:

Table 4 shows that more students in the intervention group achieved high grades; (14 students (25%) achieved the grade 12/A, 24 students (42%) achieved the grade 10/B) as compared to the students in the control exam where 8 students (17%) achieved the grade 12/A, and 18 students (38%) achieved the grade 10/B. However, no students in the control

exam were awarded the low grade 02/E or failed the exam, whereas one student in the intervention group failed and one student was awarded the grade 02/E. The grades assigned in the intervention exam were higher than grades assigned in the control exam, however, this difference was not significant ( $p = .509$ ).

**Table 3.** Distribution of grades in the final exams

Grades	Intervention exam (n = 56)	Control exam (n = 48)
12 (90-100 or A)	14 (25%)	8 (17%)
10 (80-89 or B)	24 (42 %)	18 (38%)
7 (70-79 or C)	13 (23%)	16 (33%)
4 (60-69 or D)	1 (2%)	3 (6%)
02 (50-59 or E)	1 (2%)	0
00 (0-50 or F)	1 (2%)	0
Dropout	2 (4%)	3 (6%)

Notes. Results from Fisher's exact test = 0.509

The analysis of the twelve observations and the two focus group interviews shows that the two formats of examination cause different assessment practices in several ways.

### 3.1 Assessment practices in real-life-patient situations and written assignments

The analysis demonstrates differences in the patient's role during the exam. In the control exam, the basis for the oral element is the student's written assignment based on a patient case. Observations showed that questions asked by educators were based on the assignment and the learning objectives for the semester, while the answers and reasoning primarily concerned theoretical knowledge at a general level. For example, questions were asked such as, 'Who is that nurse theorist inspired by?' and 'What receptors are affected by opioids?' (Extract from fieldnotes).

Questions were primarily related to specific theories mentioned in the written assignments rather than the specific patient situation. Moreover, based on the students' oral performance, questions reflected the 15 learning objectives one-to-one, asked at a general level. From an IE perspective, the institutional context (meaning the educational formalities relating to the exam and learning objectives) is apparent as the dominant ruling relation and is almost directly related to the acts of communication between students and educators in the control exam.

In the intervention exam the students' professional knowledge, skills and competence emerges through their actions in a complex clinical practice, for example through interaction with patients and their relatives, and during their cooperation within a multidisciplinary setting. The observation showed

that the focal point of the exam was the specific real time patient situation and the nursing care carried out, however the theory was not explicitly articulated by the student.

Questions throughout the exam concerned the specific patient situation, specific knowledge related to the specialized practice and the clinical setting in which the exam took place. For example, questions were asked such as, 'You asked him if he understood what had happened. What were your considerations here?' and 'I noticed that you were standing at the foot end of the bed. What did you consider here?' (Extract from fieldnotes).

As the examples show, the questions concerned the relation between the student and the patient and their relatives and can be said to invite specific answers from the student, where theoretical knowledge is possible to include, but not inherent.

From an IE perspective it seems that even though the educational goals with specific learning objectives are a dominant ruling relation for both exams, there is more elasticity in terms of how they can be interpreted in the given situation in the intervention exam.

### 3.2 Assessment practices in predictable and unpredictable conditions

Observations of the intervention exams show that the process can be seen as unpredictable in many ways.

Inherent to the practice of nursing care is the occurrence of unpredictable and unforeseen situations, which invariably impact and shape the exam. For example, in giving feedback to a student, an educator from UC said, 'but it was unfamiliar to you, and you hadn't experienced it before. However, you succeeded! You had a plan of action, very well done!' (Extract from field notes).

The exam takes shape through the students' actions and is dependent on the specific situation. Occasionally the situations develop in unpredictable ways, where the student's ability to reconsider, adjust, and evaluate how to best apply nursing care practice becomes a key element when assessing them.

For example, a UC-T said to a student, 'Yes, in a last-ditch effort you managed to save the [...] It was professionally well done, but you should not take on a task like that again' (Extract from field notes).

In the intervention exam, the educators could get a sense of the students' ability to adapt their nursing care performance to the specific situation and collaborate with mono- and interdisciplinary collaborators. The unpredictable elements that characterize everyday life in a complex clinical practice thus becomes a part of the assessment of the student's performance.

In comparison, the observations of the control exam show a high degree of predictability. The exam process follows a set structure, which is described in detail in the curriculum, and is in many ways context independent. Additionally, the educators can control and shape the exam, for example by continuously guiding the student. Referring to the control exam, a CE explains, '[...] you talk [with students] about obvious patient cases, the relevant issues and so on. I read the assignment referring to the curriculum, and I formulate questions.'

The educators have a large degree of control in the control exam and can guide the students in the direction they find appropriate. The unpredictable element in the intervention exam means that the student does not have the same opportunity to prepare for the exam. An UC-T explains. 'In the ordinary exam they can prepare in a different way because they have their written assignment to lean on, and they can see if they have met the learning objectives [...] whereas in the intervention exam it is different (...) they don't know what will happen. So, I think they demonstrate more immediate knowledge they didn't prepare for'.

As the quote indicates, the educators can get a sense of the students' immediate knowledge based on how they adapt to a given patient situation. By contrast, the students in the control exam can prepare with reference to their written assignment with a specific focus on the learning objectives. Consequently, the control exam demonstrates a different type of knowledge since the student can plan and shape the exam to a greater extent through preparation.

From an IE perspective, the two exam formats constitute different ruling relations. The intervention exam requires improvisation from all involved actors in an unpredictable exam setting, whereas the control exam demands strict preparation from all involved actors in a predictable exam setting.

### 3.3 Assessing the students' delivery of nursing care

Educators emphasize the significant differences between the two exams. In referring to the intervention exam, a CE explains, 'I also think the difference is that you have just been out there. So, it's very present [...] You were there with the co-examiner [...] So, in a way it's more specific'.

Several educators agree with this point of view, indicating that the assessment practice in the intervention exam is considered present and specific. An UC-T elaborates, 'But I think what's interesting is that anyone can say 'I am using active listening' [...] but that's exactly what we saw! [...] How the student reacted to what the patient said and expressed, in the action, here and now'.

As the quotes demonstrate, educators observed and experi-

enced how the students acted within the clinical practice, which presents the opportunity for assessing the student's dynamic interaction within this multidisciplinary healthcare setting. Several describe the difference between assessing the students' competences when observing them performing within a clinical setting, as opposed to when reading a written assignment. An UC-T states, 'And I think the clinical leadership was more clearly demonstrated in practice than I have observed in the written assignments. It can be difficult to describe in the assignments, but here [in the intervention exam] they can demonstrate how and argue why they acted the way they did. Perhaps they weren't all able to explain the theoretical framework behind it [...] '.

This educator highlights how they perceived the students' ability to demonstrate clinical leadership during the intervention exam, for example specifically when the students prioritize and coordinate their nursing care in practice, as opposed to reading a description of the theoretical framework of clinical leadership in relation to a patient case. Because the control exam is distinct from the clinical practice in both time and place, and the patient is transformed into a 'case,' it can be difficult for the educators to identify what occurred in the real-life situation and how the students performed caring. An UC-T stated, 'yes, because sometimes it is too constructed [in the control exam].' The organization of the control exam thus causes disjuncture because of the detachment from practice in the assessment of clinical competency.

Several educators described how all sensations are activated when they observe the students perform nursing care among patients and their relatives in the intervention exam. For example, an UC-T explains, 'I mean, it becomes specific because we did in fact see nursing care. I mean, I felt as though they leaned on their knowledge of anatomy, physiology, and health care without us specifically asking about it. You could just tell that it was the foundation of their decision-making throughout.'

This indicates that the assessment is also based on the general impression of the actions, a sense or an intuition that was not addressed in the follow-up questions.

### 3.4 Assessing students' reasoning for the nursing care

The two exams generate different possibilities for assessments in terms of the students' theoretical reflections on and reasoning for the nursing care carried out.

Several educators indicated that the students' theoretical justification for and reflection on their nursing care is less apparent in the intervention exam as compared to the control exam. An UC-T explains, 'However, in the clinical exam, I also experienced that there was not as much theoretical

*follow-up reflection [in the intervention exam]*'.

As the quotes show, the theoretical justification for and follow-up reflection on the nursing care carried out is less present in the intervention exam.

Some educators expressed a concern related to whether the students in the intervention exam get the chance to theoretically substantiate their nursing care. A CE stated, *'My scepticism regarding the intervention exam has been [...] to disregard the importance of substantiating the nursing care, also theoretically. That is also a part of being a competent nurse. To have a strong theoretical foundation.'*

The quote indicates a concern related to whether the intervention exam excludes the use of theory. An UC-T emphasized that *'... it is difficult to make that theoretical... because then something happens. Someone jumps in and says something, and it is difficult to fit it into a theoretical framework'*.

Thus, it seems as though theoretical knowledge is unclear and difficult to assess in the intervention exam. Hence, it required extra attention and effort from the educators to clarify the theoretical reasonings behind the actions of the students.

In the control exam, the educators had the opportunity to dive into the theory and nuances of terminology when reading the written assignments, and then ask follow-up questions later during the exam. In addition, several of the educators requested the possibility of assessing the students' ability to reflect on the specific patient at a more general level.

In considering the intervention exam, a CE explained, *'I would say the students did well theoretically and in terms of relating to their specific, individual patients. But it would have been nice to hear them elaborate [the theory] so we can assess their level of competence [theoretically]. I think the students struggled abstracting from the specific patient'*.

This perspective indicates the educators' difficulty in assessing the students' ability to reflect on a general level because the students' immediate reflections remain limited to the specific real time patient situation in the intervention exam. The intervention exam is thus creating another type of disjuncture in which it is difficult to go from observation of the performed nursing care in practice to the exam question that follows educational formalities and encourages theoretical argumentation.

## 4. DISCUSSION

The results show that different formats of clinical exams determine educators' assessment practices even though they have the same learning objectives. This is in line with general knowledge in the field of nurse education, evaluation,

and testing.<sup>[5]</sup> The intervention exam is aimed at a multifaceted and complex clinical practice, and the assessment practice is therefore characterized by the educators' improvisation—using all senses, focusing on the specific patient, and demonstrating flexibility in how learning objectives can be interpreted. As such the disjuncture lies in the difficulty of maintaining a stringent assessment framework dictated by the learning objectives, which in turn reduces the possibility of assessing students' theoretical argumentation. The control exam is a classic 'summative classroom exam' in which the assessment practice is predictable and controllable. The prepared questions focus on the written assignment, learning objectives, theoretical knowledge, and students' ability to systematically analyze generalized issues in nursing care. In this case, the disjuncture lies in how the assessment of students' performance on clinical learning objectives—specifically, the practical execution of nursing care—is excluded from the exam. To further understand the types of knowledge that the two exams respectively enhance and limit, Schön's concepts of reflection are applied in the following analytical discussion.

### 4.1 The intervention exam

With Schön's perspective on practice as a complex, confusing, and messy swamp,<sup>[21,22]</sup> students in the intervention group are assessed based on their ability to navigate this environment of unpredictable challenges that are difficult to manage. 'Real patient situations' cannot easily be solved with theoretical knowledge and technical guidelines alone; rather, they require the ability to improvise in the moment. In these situations, experience, intuition, communication, and the ability to collaborate and adapt are crucial.

The educators' assessment practice involves observing and sensing how nursing students handle these challenges, where theoretical knowledge remains implicit. According to Schön's concepts of reflection, knowing-in-action manifests as tacit knowledge embedded in students' actions, while reflection-in-action occurs as they assess, adjust, and adapt nursing care to specific patient situations. This reflective process is enacted while performing care and may remain unspoken but is revealed through the decisions made in both predictable and unpredictable situations.

However, the analysis shows that students' theoretical knowledge and reasoning are demonstrated less explicitly in the intervention exam. From Schön's perspective, reflection on-reflection-in-action is therefore challenged. This is particularly evident during the oral component of the exam, where the rapid transition from practical performance to verbal reflection creates a disjuncture, making it difficult for students to engage in thorough and theoretically justified reflection.

As a result, they often remain at a situational level rather than engaging in deeper theoretical analysis.

**4.2 The control exam**

In the control exam, the patient is transformed into a case that exists only in what Schön refers to as ‘the highland,’ where problems can be isolated, structured, and solved through theoretical reasoning. In this setting, the exam emphasizes structured, systematic, and predictable approaches, allowing educators to assess students’ theoretical reasoning and argumentation through reading and listening. Theoretical knowledge is prioritized in a purely academic ‘summative classroom’ environment, where students can engage in in-depth theoretical reflection.

The analysis of the control exam reveals that when exams are purely theoretical and based on a written assignment, the assessment process is more strictly guided by learning outcomes related to theoretical argumentation.<sup>[16]</sup> The 15 learning outcomes are explicitly, systematically, and consistently incorporated into the assessment process, shaping the

communicative interaction during the exam as a predominant ruling relation.

In this format, students’ knowing-in-action and reflection-in-action become invisible to educators, as they are not witnessing the students in practice. Instead, competency is evaluated through students’ retrospective theoretical reflection, as conveyed in their written and oral descriptions. According to Schön, such descriptions are always constructed representations, attempting to translate tacit and spontaneous knowledge into a symbolic and explicit form.<sup>[21]</sup>

Thus, the control exam provides a better opportunity for theoretical analysis of nursing care, as the oral exam takes place days or even weeks after the practical performance. Here, competencies related to independent administration, execution, and management of the organisational, instrumental, and communicative dimensions of nursing care—including clinical decision-making, leadership, and patient support—are assessed through students’ written and oral reflections rather than through their direct actions. Table 4 illustrates the main differences between the two exams.

**Table 4.** Overview of differences between the intervention and control exam

Intervention exam	Control exam
<ul style="list-style-type: none"> <li>• The exam is unpredictable and complex (the swamp)</li> <li>• The educators <i>observe and hear</i> the experience, intuition, communication, collaboration</li> <li>• Knowing-in-action and reflection-in-action is notable</li> </ul>	<ul style="list-style-type: none"> <li>• The exam is predictable and controlled (the highland)</li> <li>• The educators read and hear theoretical knowledge, argumentation, and retrospective reflection</li> <li>• Reflection on reflection-in-action is notable</li> </ul>

**4.3 Clinical exams in nurse education – some considerations**

From an educational perspective, the priorities of the exam forms and content and basis for assessment can be discussed. The fact that there is no significant difference between the grades in the two exams suggests that the educators assess the students similarly in considering the learning objectives, despite the different basis of assessment in the two exams. This might indicate that the assessment of the students’ performance on clinical learning objectives is valid even though, roughly put, the control exam lacks practice, and the intervention exam lacks explicit theory.

According to Schön, there is an asymmetrical relationship between theory and practice, where practice often is considered less important than theory.<sup>[22]</sup> When some of the educators in this study, especially the ones from the clinic, encouraged the students in the intervention exam to demonstrate theoretical knowledge and argumentation on a more general level, it can be interpreted as an expression of exactly that. However, it can also be interpreted as a reaction to the difficulty of assessing clinical competence that is subject to educational

formalities as a ruling relation, when the basis of assessment is the student’s action in the clinical practice.

Conversely, the educators emphasise the value of being able to observe the students in action even at the expense of theoretical rigorous argumentation. In that way, real-life situations challenge the asymmetry and invite a more nuanced and multifaceted basis for assessment, although currently a sufficiently nuanced terminology does not exist. It seems the educators accept the complex and dynamic practice as their premise, where learning outcomes must be adapted and where the assessment can be more intuitive in generating an overall impression of the students’ competency.

Referring to the history of nurse education including clinical exams, where the development has gone in a scholastic direction, the intervention exam can be conceived as a ‘practical turn’ with the assessment focussing on practical nursing. However, the institutional context for the intervention exam differs from old exam forms, because the theoretically reflected and scientific clinical decision-making and clinical leadership today is a fundamental requirement, where the

UC is responsible for the overall quality of the education.<sup>[3]</sup> As the control exam is more rigorous, theoretical, and governed by learning objectives the foundation for assessment can seem more transparent and objective than in the case of the intervention exam. However, researchers argue that assessment in nurse education is in general influenced by subjective bias, and that the quality of assessment varies.<sup>[12,23]</sup> For this reason, the importance of having a mutual understanding of how the assessment should be managed is emphasised: ‘there continues to be a need to develop consistent and systematic approaches in assessment along with reliable and valid assessment tools’.<sup>[1]</sup> As both the control- and the intervention exams blindside elements of the clinical learning objectives dialogue on how to approach assessment is recommended.

Considering nursing education in its entirety it is of course essential that curriculum specifics are congruent with the purpose of nursing education.<sup>[12]</sup> Is the goal commitment to the profession and preparing graduating nurses for their future clinical work-life demands,<sup>[24]</sup> or preparing them for higher education?<sup>[2]</sup> or encouraging students’ continuous learning process?<sup>[1]</sup> As the answer is yes to all the above, it is essential to continuously develop different kinds of exams, and an adequate foundation for assessment.

#### 4.4 Discussion of method

Through triangulation, the study provides nuanced insights into how different forms of clinical exams affect educators’ foundations for assessing student nurses’ clinical competencies. However, it is important to consider that the results may reflect the novelty of the intervention exam, which could be influenced by both excitement and frustration.

Due to the qualitative nature of the observations and interviews, the researchers paid close attention to their own subjectivity, particularly regarding the insider position of most researchers within the clinical setting and the implicit understandings associated with it.<sup>[2]</sup> For this reason, the researcher from UC participated in the preparation of data collection as well as in the analytical process. Additionally, it was decided that the four observers should have no prior knowledge of the students or the specific clinic where the exam took place.

A common critique of focus group interviews is that participants may influence each other, potentially leading to consensus based on one participant’s viewpoint. To mitigate this risk, the moderator explicitly asked whether others had similar experiences or different examples from their clinical exams whenever an opinion was stated.

The qualitative data presents a nuanced picture of two context-dependent exams, where making every analytical

decision fully transparent to the reader can be challenging. To ensure as much transparency and credibility as possible, we conducted an empirical data analysis that included numerous direct quotes and field notes. To engage in a critical discussion, an abductive approach was used, allowing for a conceptualization of the findings.<sup>[20]</sup> The combination of IE’s perspective on the relationship between institutions and individuals and Schön’s theory of learning and knowledge in practice—focusing more on the individual—offers a nuanced perspective on how the organization of the clinical exam influences educators’ ability to assess students’ clinical competencies in their final practical placement, based on the established learning outcomes of the nursing degree.

## 5. CONCLUSION

There are clear differences, strengths, and limitations associated with both clinical exam formats, each fostering distinct assessment practices and emphasizing different types of knowledge. The intervention exam takes place in an unpredictable, dynamic, and complex clinical setting (the lowland), promoting an assessment practice that focuses on nursing students’ knowing-in-action and reflection-in-action. In contrast, the control exam occurs in a controlled, predictable, and theoretical environment (the highland), fostering an assessment practice centered on students’ theoretical and retrospective reflection on knowledge-in-action and reflection-in-action.

As there are no significant differences in final grades between the two exams, the key question for educational planners remains: What competencies should the final clinical exam assess?

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## AUTHORS CONTRIBUTIONS

Camilla Bernild (CB), Sofie R. Jessiman (SRJ), L. R. Andersen (LRA), C. Jensen (CJ), T. E. Bertelsen (TEB), A. G. Sørensen (AGS), and N. S. Larsen (NSL) have all made substantial contributions to the article.

Dr. CB and Dr. NSL. were responsible for study design and revising, SRJ, LRA, CJ, and TEB were responsible for data collection. CB, SRJ, LRA, CJ, TEB, and NSL participated in the analysis of data, CB and SRJ drafted the manuscript, AGS conducted literature review and contributed to the discussion, CB revised the article.

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