This is the published version of a paper published in *Journal of Vocational Education and Training*.

Citation for the original published paper (version of record):

Supporting roles in live simulations: how observers and confederates can facilitate learning
*Journal of Vocational Education and Training*
https://doi.org/10.1080/13636820.2018.1522364

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To cite this article: Oscar Rantatalo, David Sjöberg & Staffan Karp (2018): Supporting roles in live simulations: how observers and confederates can facilitate learning, Journal of Vocational Education & Training, DOI: 10.1080/13636820.2018.1522364

To link to this article: https://doi.org/10.1080/13636820.2018.1522364

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Published online: 01 Oct 2018.
Supporting roles in live simulations: how observers and confederates can facilitate learning

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ABSTRACT
Live simulations in which students perform the roles of future professionals or act as confederates (i.e. student actors) are important training activities in different types of vocational education. While previous research has focused on the learning of students who enact a professional, secondary roles in scenario training, such as student observers and confederates, have received inadequate attention. The present study focuses on student observers and confederates in order to examine how these roles can support the learning of other participants in live simulations and to determine how the experience of performing these roles can become a learning experience for the performers. A total of 15 individual interviews and 1 group interview of students attending Swedish police training were conducted. The study findings indicated that the observer role is characterised by distance and detachment, and the confederate role by directness and sensory involvement. Both roles can support as well as inhibit intentional learning for primary participants and offer learning experiences for those playing the roles. The study theorises these roles and lists practical implications for planning live simulations in vocational education and training.

Introduction
This study investigates how educational live simulations actualise learning for students acting in various roles with respect to each other in a simulated training environment. Live simulations and scenario training (these terms are used interchangeably in this paper) are prominent educational features in several types of professional and vocational education such as medical and health care education (Gough et al. 2012), emergency service education (Blondin 2014), and police education (Sjöberg 2016). These training activities are generally considered to be important and fruitful methods for learning and creating relevant occupational experiences for participants (Issenberg, Barry et al. 2005; Crookall 2011).
Although live simulations are generally highly valued as educational activities, research has also highlighted the need to theorise and critically engage with the use of live simulations in educational settings (Abrandt Dahlgren, Fenwick, and Hopwood 2016). Live simulations can be conceptualised as ‘hybrid’ settings because, while being a part of education, they also mimic occupational practice wherein a student acts in the role of a future professional, often interacting with peers who perform other roles in the same setting (Linell and Thunqvist 2003; Sjöberg 2014). Studying how to facilitate learning in these training activities has been a central issue for research on live simulations. Attempting to answer this question, several studies have indicated that learning does not occur automatically by participating in simulations and scenario training, but rather has to be designed for purposively (Dieckmann 2009; Hopwood et al. 2016; Sjöberg 2016). Furthermore, when designing for learning in live simulations, educators tend to design the set-up of training activities in order to contribute to the learning of only the students who are imitating their future roles and not for the students in other supporting roles (Rystedt and Björn 2012). Examples include a medical student who performs a medical diagnosis or a police student who makes an arrest. However, widening this perspective and considering the learning of participating students other than those in the primary role, when planning and conducting live simulations (e.g. a simulated patient), also entails experiences that can generate insights and learning for students (Mavis et al. 2006). The present study roots itself in this observation, particularly given that studies on scenario training have demonstrated that confederates play a vital role in successful live simulations, as their performances in various scenarios aid in keeping simulations ‘on track’ (Dieckmann et al. 2010; Nestel et al. 2014). Similarly, while the observer role can be socially and materially separated from the simulations (for instance, when student observers view a scenario on screen), training observation has been indicated to have potential for the observers’ own learning. This is because it provides an opportunity to watch others act and also because observers can provide feedback to primary participants and thereby impact their peers’ learning (Chi, Roy, and Hausmann 2008).

Therefore, the objective of the present study is to examine how and what students learn from participating in live simulations when they partake in other roles than that of the primary participant. More specifically, we examine the roles of student observers and student confederates. The study findings are expected to contribute towards further developing knowledge about how supporting student roles can contribute to enhanced learning for peers and the learning experiences offered by supporting roles themselves.

Student roles and learning in live simulations

In the present study, learning is understood as an emergent phenomenon that occurs in situations wherein individuals engage in ‘...gap-bridging, meaning
making and coordination of actions and perspectives...to be able to carry on with ongoing activities’ (Mäkitalo 2012, 61). This understanding locates learning in the ongoing interactions between individuals and the social practices they encounter (Billett 2014). When individuals engage in practice, learning arises as they experience the ‘world beyond them’ and continuously construe meaning to make sense of experience in response (ibid).

In the context of live simulations, such an understanding of learning means that a student’s learning in a training activity is the result of interactions between participants in the specific social and material context constituting the training scenario (see Berragan 2011; Rystedt and Björn 2012). While students learn from all experiences, the full potential of live simulations is realised when the simulated situation becomes relevant for the students in relation to the learning objectives of the activity (Dieckmann 2009; Rystedt and Björn 2012). Thus, for directed learning to occur, simulations need to transcend a ‘mirror logic’ whose grounding idea is that an adequately realistic simulation or scenario will fulfil the learning objectives (cf. Beaubien and Baker 2004; Hopwood et al. 2016). Instead, live simulations need to be set up and designed to provide relevant experiences of difficulty, and affordances for learning, in relation to the training objectives. As proposed by Hopwood et al. (2016, 175), an integral part of achieving such relevancy is that the participants who are performing in the scenarios are sufficiently prepared and given room to ‘act and react through their bodily doings and sayings’.

As this discussion indicates, scenario training is a complex social activity that is dependent on various student interactions. The ‘supporting roles’ in scenarios that are often performed by peer students are important for regulating how the scenario training unfolds.

The confederate participant
The confederate in live simulations is often a secondary actor who performs in a supporting role to aid the primary participant in training. In medical education, a confederate is often referred to as a ‘simulated patient’. The role of a confederate can be played by someone from outside the educational context (for instance, recruited professional actors), but usually, peers or senior students or faculty members perform confederate roles. Thus, live simulations are based on rounds in which a scenario is repeated, and students can act in various capacities (Mandrusiak et al. 2014; Mavis et al. 2006). By modifying their social interactions, confederates have a unique opportunity to regulate tempo, difficulty, and focus of scenarios such that they meet the primary participant’s level of proficiency and help participants to focus upon the learning objectives of the activity (Dieckmann et al. 2010; Sanko et al. 2016). While some studies have indicated how the confederate role contributes to the learning of the primary participants of a live simulation, the learning potential of the student in the confederate role itself is currently largely unexplored (for an exception, see Mavis et al. 2006).
**The observer role**

Students routinely play the role of an observer in live simulations, as scenario training is often collective in nature and is based on various rounds of performing the role. Thus, it is not unusual for students to be observers when their peers are performing in simulations, in addition to playing the roles of primary participants or confederates. The observer role in live simulation has previously been studied mainly from a learning perspective (see Ahn et al. 2015; Nyström et al. 2016), wherein it has been concluded that active observation, which may be scripted or prompted, has the potential to serve as a learning experience if the simulations are pedagogically designed to incorporate the observer and if the observers are adequately prepared (Nyström et al. 2016; Okuda et al. 2014).

To summarise the discussion above, confederates and observers are common participants in live simulations, and some studies have indicated that it is essential to consider both roles when organising live simulations, as they contribute to the learning from, and performances in, scenario training. The present study adds to existing literature on the topic by examining student experiences of confederate and observer roles in live simulations in order to build knowledge about how these roles support the learning of primary participants and offer learning experiences to the performers themselves in live simulations.

**Study context**

Empirically, our study is located in the context of Swedish police training, which uses simulation and scenario training involving social interaction between actors and primary participants for purposes such as training of critical incidents (Sjöberg, Karp and Söderström 2015; Sjöberg, 2014); and emergency service collaboration training (Andersson 2016). In this context, senior students often act as confederates and observers in addition to playing their future police role as primary participants. Currently, Swedish police basic training extends over two and a half years, with approximately six months of field training in the latter part of the educational programme. Generally, live simulation of various kinds are repeated and practiced continuously from the first term of the educational programme onwards. Swedish police education is guided by problem-based learning (PBL) philosophy; it is characterised by group-based education and attempts to complement theory with practical training (see Lauritz and Hansson 2013; Rantatalo and Karp 2016). This impacts the use of live simulations as these are often designed around groups of students (approximately 5–6 students), where some act in the role of primary participants (often a ‘police patrol’ of 2–3 students) while others observe or act as confederates such as perpetrators, victims of crime, witnesses, or members of the public (see Sjöberg, Karp and Söderström 2015).
Participants and sampling

A total of 15 individual interviews and 1 group interview (a focus group with six participants) were conducted in the spring of 2016, with a total number of 21 participants, who were police students in their third term of police education. In terms of gender distribution, eight of the individual interviewees were female, and seven were male, while the focus group contained three male and three female students. In total, 11 (52.4%) of the participants were female, and 10 (47.6%) were male. Compared with the total population of police students in Sweden, this implies an overrepresentation of female students in the sample, as the distribution in the general population is approximately 30–35% female and 65–70% male (SOU 2016). Age distribution ranged from 23 to 33 years (mean = 26.8).

The sampling for the study was voluntary (Robinson 2014) and drawn from a class of police students in their third term of police training. Students from the third term were selected because these students had accumulated experience of live simulations, but not yet completed their field training. As such, their outlook and attitudes towards police practice were largely based on live simulations and scenario training.

Procedure

The students who volunteered to be interviewed signed consent forms prior to the interviews and were also informed about terms of participation and anonymity prior to conducting the interview. Individual and group interviews were conducted face-to-face, recorded using a voice recorder, and later transcribed verbatim for the analysis. Interview length spanned from 45:28 to 72:14 min and revolved around ‘sensitising concepts’ (Bowen 2006) such as students’ experiences of police education and reflection and experiences of live simulations in different roles. Two topics were particularly focused upon in the analysis, namely: (1) students’ own learning experiences pertaining to different roles in live simulations and (2) students’ experiences of enacting live simulations in what we call ‘secondary roles’, meaning either contributing to the live simulation as a student observer overseeing a live simulation from the periphery or performing as a confederate counterpart to the primary participant of a live simulation (examples of student confederate roles could be those of a suspect, perpetrator, victim, or a bystander).

Analysis

The interviews were analysed inductively and based on the grounded theory approach specified by Gioia, Corley, and Hamilton (2012). This method of analysis
is based on a first- and second-order analysis, where the first stages of analysis are relatively ‘informant-centric’ and focused upon informants’ first-hand experiences (i.e. how they perceive, frame, and/or discuss a phenomenon). This is followed by a second and third step of analysis using ‘researcher-centric concepts, themes, and dimensions’ (Gioia, Corley, and Hamilton 2012, 18), wherein codes and concepts derived in the first-order analysis are grouped and ultimately theorised in light of each other. In the present study, the analysis began with a systematic description of the stated first-hand experiences of the student observers and student confederates in live simulations. Interview transcripts were analysed using open coding where quotes regarding ‘doings and sayings’ (see Nyström et al. 2016) in live simulations were organised using basic codes (nodes). Based on this initial overview, the analysis later moved into a more researcher-centric phase in which the authors constructed themes describing characteristics of the confederate student role and observer student role, respectively. In this step of analysis, the researchers arranged concepts from the first-order analysis in a hierarchical tree structure. In constructing this structure, themes were assessed based on cohesiveness and overlaps. Next, a third step of analysis focused upon identifying overarching commonalities in how the different roles (observer as well as confederate) supported and impacted interactions from the point of view of a primary participant. Combined, these steps resulted in a data structure indicating first-order concepts (i.e. students’ experiences of these roles) and second-order themes (categorisations on a higher level of abstraction that connected several concepts) that aimed to draw theoretical insights from the empirical material (see data structure in Figure 1). To structure the data, the qualitative data analysis software NVivo 10 was used.

Findings

Analysing how students in confederate and observer roles experience interactions in live simulations suggested two main differences between the roles, revolving around the linked notions of proximity and engagement. In this context, proximity refers to a student’s perceived distance from a performed scenario. Where the confederate role entailed direct experience of the scenario (i.e. close proximity), the observer role was described as more withdrawn and distanced, which allowed the students to have a ‘bird’s eye view’ of the scenario. Engagement, on the other hand, refers to how students experienced immersion and presence in relation to the scenario. In this regard, the confederate role was described as intense and stressful, with short time frames and heavy demands, while the observer role was described as more relaxed and disengaged. Figure 1 displays a data structure summarising the characteristics of these roles as well as their potential impact on live simulations.
**Student observers in live simulations**

In the interviews, the observer role was largely described as distanced and relaxed in the sense that observers experienced less pressure to perform than those in other roles in live simulations because they were not the focus of the simulations. The retracted role of observers was described by the students as having potential for the observer to both focus on details (i.e. ‘zoom in’) that otherwise could be easily overlooked by participants, and to access the ‘total-ity’ of the situation (and in this sense ‘zoom out’) and see the primary participants in their interactions with confederates. The scenario development was commonly described as unfolding more slowly and with low levels of difficulty from an observer position than when acting as the primary participant in scenarios. One informant expressed the following sentiments:

> It is considerably easier to be on the sidelines and have opinions such as ‘There he should have done this, or he should have said that’ rather than being ‘down there’ [i.e., in the live simulation]. When acting in a scenario, so many things are going on at the same time. (Male student, Interview 2)

Another characteristic of the observer role was that this position, in contrast to that of a primary participant, permitted students to experience repetition during live simulations, as observers could sequentially watch several peers be positioned in identical scenarios that could develop differently, depending on the course of action taken by the primary participant in their performance of a situation. Thus, by observing repetition, observers stated that they could access a range or a repertoire of potential outcomes, and use these to assess scenarios.

Several police students expressed how the observer role could support and inhibit the learning experience of the primary participants. As indicated in Figure 1, students expressed that in terms of support, observers were a potential resource for the primary participant. For instance, observers often engaged in summarising courses of events and providing feedback to participants after the occurrence of a scenario or during short breaks in the scenario. Observers could detect errors, watch for cues, summarise information, and provide primary participants with interpretations. In this capacity, observers often aided primary participants in clarifying the doubts or ambiguities they encountered when working in a dynamic setting. One student commented on this benefit of having observers nearby (when acting in live simulation training for interrogation techniques), as follows:

> In this case, we are in a room conducting an interrogation with a suspect [played by a confederate], and the rest of my group is in another room observing the interrogation as it unfolds. I can ask them to provide feedback on my performance, by commenting on small things such as ‘Do I place my fingers up in front of my face my fingers on my face when I am doing the interrogation?’ or ‘Am I repeating or overusing any choice
Figure 1. Data structure presenting characteristics of secondary roles and impact on interactions in live simulations.
of wording when interrogating? Could you check up on that please?’ I would like to identify these types of small tics. (Male student, Interview 4)

This quote exemplifies how the primary participant can actively prompt the observers to look for certain cues in the live simulation, in order to provide feedback. This type of prompting could also be more structured, for instance, when observers were following protocols that specify certain aspects of the simulation to observe more closely.

The informants also acknowledged that observers could be obstructive and hinder learning from live simulations. A major issue raised in interviews was the risk of losing the experience of ‘realism’ if observers where overwhelmingly present in the line of sight or if they unintentionally disturbed the live simulation in other ways. This was considered to be problematic, as it impacted the primary participant’s immersion in a scenario, ultimately causing a ‘break’ in the sense of immersion. In brief, if observers are too intrusive, it impacts the performing students’ awareness of being observed, which could potentially decrease their experienced realism in the scenario. One of the informants highlighted this issue as follows:

In some scenarios, for instance, when a confederate is really comical, you think, ‘I am not going to be able to solve this situation, I am going to start laughing’, and you can see from the corner of your eye how everybody [the observers] was laughing on the sidelines, or at least trying really hard not to laugh. In those cases, it’s really hard to ignore that you have like eight people standing there watching the situation. (Female student, Interview 12)

These types of examples were commonly raised in interviews and often referred to as an aspect that could be addressed through training and experience; the informants emphasised that increased student familiarity with the process of live simulation led to fewer problems such as laughter or loss of perceived realism.

In addition to situations when observers were impeding scenarios, another problem was that of observers giving away the cues to a scenario. One example of this was when observers wilfully revealed scenario-related information that the primary participant was not supposed to know about beforehand, such as scripted twists and turns in a live simulation. However, the problem of disclosing cues could also play out in more subtle ways such as when observers would unintentionally give away cues (through their bodily positioning, gaze, or in other non-verbal ways) about what would happen next in a scenario, to the primary participants.

**Student confederates in live simulations**

In contrast with the withdrawn character of the observer role, the informants described the student confederate role as more challenging, direct, and intensive.
The directness of the confederate role meant that by being directly involved in evolving events, students recognised their potential to co-create situations and outcomes. A student confederate could make a scenario too difficult, or conversely, too easy, based on reactions and adjustments ‘in-the-moment’.

Regarding the issue of difficulty, interviewees mentioned that preparation was limited and was an often-overlooked aspect of live simulations. This was in turn put forth as a factor that added difficulty and stress for student confederates. Examples of how preparation briefings are conducted include the training instructor’s verbal directions immediately before a live simulation or the use of so-called ‘role cards’ outlining a character that was to be played. A female student commented on the preparations as follows: ‘Before training begins, it can be like “now we need someone to play a mentally ill person and we need it to be like this and this”… “furthermore, if they [the primary participants] do this, you need to be conformable”’ (Female student, Group interview)

With relatively limited time to prepare, the ability to improvise and the ability to remain calm and be ‘present’ in the moment were highlighted as important to be able to adjust to the difficulty and to not get ‘carried away’ or start acting ‘off-script’. Another student expressed the following sentiments on the risk posed by confederates who act in unexpected ways:

How to act in detail is a lot about improvising. I used to think it’s really hard, or I still think it’s hard. Some people are really dedicated to the role, and it can lead to ‘over-playing’ – it’s almost impossible to have anything to do with them. Others are more introverted and limited in how they play. These things – acting – is not something we are trained in, but rather something we have to improvise […] Personally, I think I tend to be a bit withdrawn; I am not so comfortable with screaming and making noise if it is not called for. (Female student, Interview 11)

In addition to difficulties with estimations of appropriate levels of difficulty, the student confederate role was also discussed as direct and intensive in the sense of being experienced as fast-paced, with a partial overview and a feeling of contracted time-space experiences. In brief, successful confederate performances relied on an ability to ‘think on one’s feet’ quickly and in front of other people. This type of decision-making capability was furthermore complicated by the fact that the confederate was seldom fully informed about scenario development outside the immediate social context.

With regard to how student confederates support learning in live simulations, two tendencies were emphasised in interviews. First, students repeatedly talked about how student confederates, when performing proficiently, had the potential to bring tension and ‘nerve’ to live scenarios, thus bringing scenarios to life by adding naturalistic reactions and behaviours into the training setting. When students contrasted live simulations involving peer confederates with other educational activities, the ‘realism’ of the simulations was talked about as
having a motivational impact on students. In general, realism was highlighted by students as a desirable feature of simulations, and an important facet of the realism component was deemed to depend on the confederates’ ability to perform.

A second benefit of the student confederate role was the ability of peer students to provide feedback based on experientially acquired sensory and tactile experience. This type of feedback was valued highly by students as it originated from the first-hand experience from an individual facing a situation. Interestingly, with regard to the quality of feedback, the interviews revealed examples of when feedback from peer confederates was valued more highly than feedback from either the instructor or external confederates (i.e. using actors from outside the training context). One male student expressed the following sentiments:

When in a confederate role, I can provide feedback on the one doing the scenario like, ‘I think you were to aggressive’ or ‘You were a bit slow’ or ‘hold on tighter there’, so that we learn from each other...For instance, when we do self-defence training, it’s a lot easier for me because I have training to feel things like ‘This is wrong’ or ‘good’ or ‘bad’ and so on. But someone who comes from the outside would have no clue.

(Male student, 9)

This quote raises the question of student versus external confederates. In this regard, the interviews were somewhat mixed. On the one hand, students expressed a general consensus that it was preferable to act with external confederates, but simultaneously, several benefits of working with peer confederates were also highlighted. In addition to the example above on feedback quality, other mentioned benefits included several learning affordances that the confederate role offered for students (this is discussed further below) as well as the possibility of conducting more live simulations with student confederates, as this form of training is fairly parsimonious compared to the use of external confederates.

In addition to the benefits, the interviews also indicated several challenges in the process of engaging student confederates. Several examples of when confederates delimit the learning affordances of live simulations were related to under- or overplaying the confederate role, and completely breaking character and ‘corpsing’. Often, the issue of underplaying the character was talked about as related to feelings of nervousness regarding some aspect of the role and feelings of ‘stage-fright’ due to the fact that several people were looking at the performance. Similar to how comical situations could impact the observer, the risk of breaking character as a confederate was also often related to the risk of ‘breaking out in laughter’ due to feelings of embarrassment or banter from watching classmates. Students thought that these issues could be resolved by working with external confederates. One student commented:

Student: It’s pretty hard. Especially in the beginning, it was hard to disregard the following thought: ‘Yes, these are my close friends and I am here screaming things at
them’ […] In this regard, it is more worthwhile with external confederates because it makes it more ‘real’ in a sense. It is pretty hard to disregard the fact that these are my friends and that it can easily become playful when we perform against each other.

(Female student, Interview 8)

In contrast to underplaying, examples of overplaying mentioned in the interviews included instances when students would offer up more resistance than what primary participants could handle, such as physically resisting arrests or using specific legal knowledge (acquired through police training) to argue in length against primary participants in the scenario setting. These examples were problematic as they posed a risk of tweaking a scenario from the learning of predefined objectives towards other types of experiences.

As a way to overcome issues of under- or overplaying and to aid students to adjust the level of difficulty, both preparation and opportunities to repeatedly train in a confederate role were discussed as being vital. The respondents commonly commented that with experience, they became used to performing. Thus, initial feelings of embarrassment and problems with ‘breaking’ were often described as decreasing over time, and as issues that could be resolved. Accordingly, several students highlighted how sufficient preparation and detailed directions on how to perform confederate roles were important for their adaption to live simulations.

Learning affordances for students in secondary roles

While the findings hitherto have pertained to students’ experiences of assuming secondary roles and how these roles impact live simulations for primary participants, it can also be concluded that a central facet in assuming observer or confederate roles is how they are associated with the students’ own learning experiences. Table 1 summarises some distinguishing features of different roles and the corresponding differences in learning experiences.

As indicated in Table 1, themes that impact the learning of the primary participant often also play a role in defining the learning experience of

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<th>Table 1. Learning affordances of secondary roles.</th>
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<td>Learning described as</td>
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<td><strong>Student confederate role</strong></td>
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students enacting secondary roles. Examples here include how different modes of preparation inform what can be done and focused upon by students in secondary roles. Similarly, differences in spatial proximity to activities in a scenario impact students’ focus areas.

Overall, both these secondary roles bring about some possibilities for learning that might otherwise be inaccessible for students in live simulations: Regarding the observer role, a main feature is that it allows students to see the scenario from a broader perspective (i.e. ‘zoom out’), and in addition, watch repetitions over time as several peers undergo the same scenario. Students discussed the possibility of viewing repetition as an opportunity to reflect on how different approaches might lead to different outcomes in scenario training. Even when the same operational procedures are actualised in simulations, repetitive observation of a scenario from a ‘bird’s-eye’ perspective can showcase subtle differences in how these are enacted and offer opportunities for students to ‘pick up’ on ideas and approaches. One student commented on this possibility of learning from peers as follows:

It’s definitely [a learning experience], seeing everything from another viewpoint. When I am in a scenario, I’m so focused upon the situation that the possibility to reflect is not always there. But from the sidelines, I can easily see the whole context, everything. So there is this possibility to think, ‘Oh well, this is what I would have done if it were me in that situation’, or to sometimes get impressed, ‘Wow, that was a great approach to solve the situation, I’ll have to remember that’. So it is really rewarding to observe as well. (Female student 12)

In contrast, learning affordances in the confederate role were to a greater extent described in terms of quite detailed ‘insights’ that were based on embodied or sensory cues picked up by students through their close proximity and connection to the primary participant. In this way, the confederate role can be described as embedded in a situation and affording learning through subtle triggers for sensemaking through this embeddedness. Often, certain actions by the primary participant in a situation can impart insights to the student confederate via different emotions, such as feelings of inferiority; uncertainty; or conversely, psychological safety:

Student: You learn a lot, things such as how the police treats you and how certain actions make you feel, how it is to be the person who is exposed...for instance, by experiencing a hard grip.

Interviewer: So it’s about insights regarding the physical side?

Students: Yes partially physical, but also psychological, such as how they behave against you and how that feels, how it feels like when you are dejected, or whatever. It’s a learning experience. (Female student, Interview 14)
Other examples more directly referred to physical insights such as pertaining to pain:

...For instance, we may do self-defence techniques and train with each other. In that case, I will quite literally learn what hurts a person, you know, what it takes to really hurt someone. What happens is that you become more careful, you get it into perspective. (Male student, Interview 4)

**Discussion**

Overall, the findings of the current study indicate how observer and confederate roles during live simulations are of significance for primary participants’ learning experiences, as they support in upholding and enacting the scenario. The findings also indicate that the roles have a largely unexplored potential for learning for those who perform them.

Regarding the ‘supporting’ function of observer and confederate roles, our findings indicate similarities to previous research, as we demonstrated how confederates are crucial for producing realistic and relevant scenarios for the primary participants to act in, for keeping the simulations on track (Dieckmann et al. 2010; Nestel et al. 2014), and for adjusting difficulty and thus contributing to the learning outcomes of simulations (Dieckmann et al. 2010; Sanko et al. 2016). Observers, on the other hand, played a crucial role in providing insights and feedback for primary participants about the actions undertaken in the scenario (Nyström et al. 2016).

The findings also add to an emergent scholarly discussion on how supporting roles themselves have the potential for learning and developing professional knowledge (Mavis et al. 2006; Sjöberg 2016). The current study demonstrated that the observer and confederate roles are subjectively experienced and described in different ways by the participants based on the level of engagement of the student who perform the roles and the proximity from the centre of a scenario that the participants experience.

Based on these conclusions, we described how the linked concepts of proximity and engagement can be used as continuums that describe how observer and confederate roles hold different affordances for learning for the ones performing them and for peer students in the scenario. For example, a distanced and relaxed position enabled observers to see various approaches to problem solving that their peers enacted. The observer could, due to the social and material conditions of the role, see the scenario from a ‘bird’s-eye view’. These findings are in line with previous studies of observers that have demonstrated how observer roles make others’ experiences available to participants for their own processing, i.e. learning by observing others’ learning (Chi, Roy, and Hausmann 2008; Nyström et al. 2016).
In contrast, the close proximity and high engagement associated with the role of confederates meant that learning in this role unfolded largely through interactional scenarios, and embodied first-hand insights that were drawn from interactions in live simulations (see Table 1). As such, the student confederate role was described as offering emergent learning related to the performed situations; however, such learning was offered from a different perspective than that of the primary participant who enacted a future professional role. Rather, the student confederate role appeared to bring about an oft-neglected perspective to vocational education, namely that of those who are in contact with representatives of a profession or occupation, such as a patient, a crime victim, or a citizen. As highlighted in Figure 1, proximity and engagement entail two continuums that explain several characteristics associated with the observer and confederate roles.

**Implications for designing live simulations**

Based on discussions by Ahn et al. (2015) and Sjöberg (2016), we conclude that there is largely unexplored potential to also incorporate observers and student confederates into live simulations and work with directed learning for these roles in addition to the primary participant. Currently, this potential is often not realised in practical set-ups of live simulations, which too often tend to focus on the primary participant in isolation.

We argue that proximity and engagement can be used as guiding metaphors for educational providers when planning how to more actively involve learning for observers and confederates in scenario training. For instance, the proximity variable can be manipulated to enable different types of observations of live simulations. As proposed by Nyström et al. (2016), positioning an observer closely in the same room prompts observers to be receptive to subtle doings and sayings in the situation depending on what the observer picks up, while a more distanced position prompts observations that are more structured but can be directed more easily. Being mindful about different proximal set-ups for observers enables an educational provider to more easily script and prompt observations so that these target the learning objectives of a simulation (Okuda et al. 2014).

Similarly, the engagement component of a live simulation can be organised to support learning for secondary participants. For example, the current study as well as previous research have indicated that direct and intense engagement in a scenario entails more stress and complexity for confederates. As concluded by Rystedt and Björn (2012, 794), simulations are highly interactive as simulated situations ‘…continuously [are] sustained, breached and reinstated through the situated interactions of the participants’. Thus, the manner in which simulated scenarios unfold depend on the potential of confederates to participate and improvise in
the situations. More stress and intensity are not always preferable then less, as it might cloud the learning objective of a simulation. Thus, to mindfully design live simulations, it is important to consider the level of engagement and intensity of confederates. Our findings indicated that one way to support confederates who are expected to be highly engaged in scenario development is increasing their experience – i.e. training to perform with peers on a regular basis. Similarly, if a more withdrawn scenario is the objective, students must be prepared beforehand, with role direction.

Moreover, with regard to performing, our findings suggest that students in confederate roles experience embodied sensory and social interactions through engagement. However, to transform these experiences into learning, debriefing and reflection after action become important (Billett 2014). This is not visible when students frequently need to decompress and disentangle confusing events that emerge in an improvised performance. In the literature on live simulations, the need to review live simulations afterwards through debriefings is widely recognised as important in the context of primary participants and their sense-making of praxis (see Dieckmann et al. 2012). However, this step is often overlooked with regard to how student confederates should be engaged. These are some examples of how the concepts of proximity and engagement can sensitise our understanding of the possibilities and limitations for affording own and others’ learning that comes with observer and confederate roles.

Overall, these concepts illuminate how a single scenario can be experienced in qualitatively different ways by students depending on their positioning and performance expectations. Furthermore, these empirically grounded concepts entail a starting point to theorise the added value of simulations for observers and student confederates. Given that live simulations are often costly in terms of time, resources, and planning, an improved understanding of how learning can be supported for these student roles is an important basis for the development of practice.

Declaration of Interest

None

Funding

This work was supported by the Swedish Research Council for Health, Working Life and Welfare [grant number 2014-1980].

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