The role of mentors in safety and crisis management training exercises

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To sustain professional safety and crisis preparedness in a high-risk context, simulation and training are imperative. Mentors who are specialists and highly experienced in their field are found to play an important role in safety and crisis management training exercises. The exercises span from mass rescue operations to oil spills, hybrid threats, and natural disasters. Students are to play out the roles of crisis management of organizations that should mobilize following the disaster, such as the police, municipalities, and other organizations. The students of the crisis preparedness and management master program at Nord University are already working in safety-critical industries but rarely have practical knowledge of their roles in the exercises and crisis management in general. Exercises are therefore conducted to bridge the gap between the students' theoretical and practical knowledge. The research question is as follows: *How can the role of mentors help optimize learning processes in safety and crisis management training?* Specialists and highly experienced practitioners function as mentors who, in this research, are found to be valuable in bridging the aforementioned gap by supporting the students in their learning process through (1) facilitating reflection, (2) ensuring safe interaction and the students' ability to feel a (3) sense of achievement.

Keywords: safety, mentorship, training, safety management, crisis management, education, safety psychology.

1. Introduction

To sustain maximum safety and crisis preparedness in a high-risk context, simulation and training are imperative. Preparation to handle what may happen must occur in a learning setting that is properly planned and executed so as to achieve an appropriate response to accidents. From a four-year research project, Sætren, Stenhammer, Andreassen et al. (2022) developed a learning process wheel (Figure 1) showing how to carry out simulations and training to ensure maximum safety and crisis preparedness. Their research revealed the stages (1) preparation (2) psychological safety, (Sætren, Stenhammer, Doornich et al., 2022), 3) mentors, (4) learning objectives, (5) context realism, and (6) evaluation as important to obtain an optimal learning process. In this project, we focus on the role of mentors (see Figure 1).
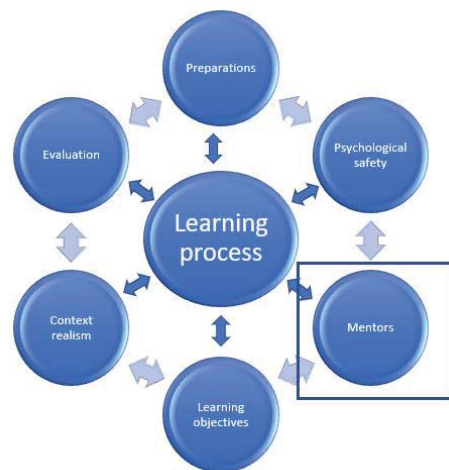
Figure 1. Learning process wheel: factors promoting an optimal simulated learning process in exercises in high-risk and high-sensitivity environments (Sætren, Stenhammer, Andreassen et al., 2022). Use approved by authors.

The model includes the participation of mentors with extensive experience in preparedness in high-risk contexts.

Mentors have been found to be beneficial during training to build high-reliability organizations in times of crisis (Lekka & Sugden, 2011; Liu et al., 2021). However, there is little empirical research on the mentor's role during the planning and execution of training. For this reason, we seek to build novel insights into the mentor's role during training to optimize the learning process. The research question is as follows: *How can the role of mentors help optimize learning processes in safety and crisis management training?*

The theoretical framework will be introduced before the method section and the results. Finally, a discussion and a conclusion sum up the paper.

1.1. Learning

Wenger (2003; 2008) defines learning as the interplay between social competence and personal experience. He adds that it is a dynamic two-way relationship between people and the social learning system in which they participate.

Vygotsky (1981) argues that cultural development appears twice or on two planes. First, it appears between people as an inter-psychological category (the social plane), and then it appears within a person as an intra-psychological category (the psychological plane). Internal activity which arises out of an external, practical activity is not separate from it and does not rise above it; rather, it retains its fundamental and two-way connection with practical activity, such as safety and crisis management training (Leont'ev, 1981).

The "zone of proximal development" (ZPD) (Vygotsky, 1978) is described as the "distance between the actual developmental level as [determined] by independent problem solving and the level of potential development as determined through problem solving under adult guidance or in collaboration with more capable peers" (p. 86). The concept also applies to students and is important for educators and mentors to consider when facilitating learning processes.

1.1.1. Experiential learning

Kolb's (1984; 2014) theory of experiential learning has been widely applied in various settings – including education, business, and leadership development – and it has been particularly influential in the fields of adult education and lifelong learning. It is often used as a framework for designing and evaluating learning programs and initiatives and for promoting personal and professional development.

According to Kolb, experiential learning is a holistic process that involves four interrelated stages: concrete experiences, reflective observation, abstract conceptualization, and active experimentation.

- Concrete experience: This stage involves having a direct experience, such as hands-on activities, observations, and real-life situations.
- Reflective observation: This stage involves reflecting on the experience and observing and analysing what happened and why.
- Abstract conceptualisation: This stage involves synthesizing the information gathered in the previous stages and forming abstract concepts and theories.
- Active experimentation: This stage involves using the abstract concepts and theories developed in the previous stage to test and apply new ideas and to implement new approaches.

1.1.2. Practice-based learning

Practice-based learning is a type of experiential learning that focuses on the acquisition of knowledge and skills through hands-on practice and experience rather than through theoretical instruction or lectures. Effective practice-based learning often involves a combination of structured experiences and opportunities for reflection, feedback, and mentorship, which help to deepen understanding and improve performance over time.

Zigmont et al. (2011) emphasize that effective practice-based learning requires a focus on three areas: the individual, the learning environment, and the students' experience. Regarding the individual, it requires students that are well-tuned for learning orientation and have mental models for practice and analogical reasoning.

The key experiences must be challenging and emotionally charged with mistakes or errors. The key aspects of the learning environment are additional information and skilled mentors.

1.2. Mentorship

Mentorship is a learning process where an experienced person in a given field (the mentor) guides, supports, and gives feedback to a less experienced person (the mentee) to enhance their skills and abilities as well as their confidence and effectiveness in the field (Tong & Kram, 2012). Scholars have found that mentoring can facilitate the learning process by enhancing the mentee's theoretical knowledge and practical applicability (Arnesson & Albinsson, 2017) and stimulating a reflective dialogue for learning conversations (Whitehead & Fitzgerald, 2006).

Scholars have also found that formal mentoring programs in high-reliability organizations improve safety performance through the mentee's enhanced self-expansion and self-efficacy (Liu et al., 2021). However, to our knowledge, there is little empirical evidence of mentorship in simulation and training for safety and crisis preparedness. Given the importance of mentors in the learning process, as documented by Sætren et al. (2022), we seek to contribute to the literature with novel insights about the role of mentors in simulation and training to improve students' skills in crisis and safety management.

2. Method

For this research project, a qualitative approach with an explorative design and individual interviews was chosen. Reflexive thematic analysis was used for the data (Braun & Clarke, 2006; 2019; 2022). This is part of a four-year research project on simulation in safety and crisis management training in higher education: SimSafe.

2.1. Researchers

The researchers have varied backgrounds, specializing in adult learning and e-learning, mindful management and mentorship, and safety psychology, including human–machine interactions and high-risk contexts. They have extensive experience in conducting qualitative data collection and analysis.

2.2. Participants

The four informants were mentors for more than one simulated exercise in safety and crisis management training at Nord University Business School. They are all specialists and highly experienced in their field. Their expertise spans from the police and fire department to safety and preparedness management in a public agency and municipal mayoral work.

2.3. Interviews

For this study, the four experts were interviewed. The interviews were semi-structured and lasted approximately one hour each. The interview guide was developed through overarching themes and gave the informant the opportunity to speak freely about the topics. Questions included the following: 'Can you describe an exercise you mentored?', 'Why did you participate in the exercise?', 'Can you describe your role?', 'How did you prepare?', 'Did you reflect upon the students' learning?', 'Can you reflect on your role as a mentor in the exercise?', and 'How were you involved after the exercise?'

2.4. Context

The context is research on practices at Nord University Business School for the master's program in crisis preparedness and management, a part-time MBA designed to be conducted in addition to a full-time job. The program takes on 70 students who are already working in safety-critical industries. Thus, they are in the process of completing the program during a four-year period. During such education, the students are introduced to several exercises in different courses. Here, they are placed in groups guided by highly skilled mentors prior to, during, and after the exercises.

2.5. Analysis

Reflexive thematic analysis (Braun & Clarke, 2022) is used in this study. This is a framework for analysing qualitative data that is grounded in the principles of constructivism and focuses on the researcher's subjective experiences, biases, and perspectives. Reflexive thematic analysis places a strong emphasis on reflexivity, which refers to the researcher's awareness of their own subjective experiences and how they may influence the research process. Such analysis involves six stages (Braun & Clarke, 2006):

- Familiarization with data
- Coding
- Searching for themes
- Reviewing themes
- Defining themes
- Reporting

Reflexive thematic analysis is a flexible method that can be adapted to suit the needs of different research projects, and this is particularly well suited to studies that aim to explore the subjective experiences of individuals. Therefore, this was chosen as an appropriate method for this project. QSR Nvivo was used for analysing the data (QSR Nvivo, 2023).

2.6. Validity and ethics

According to Yardley (2000), ensuring validity in qualitative research requires careful attention to the research design, data collection methods, data analysis procedures, and interpretation of the results. As researchers, we have thus been mindful of our own biases and perspectives and strived in this paper to be transparent and honest about our role in the research process.

In qualitative research, validity refers to the trustworthiness and credibility of the findings and conclusions of the study. Validity is a crucial aspect of qualitative research as it ensures that the study accurately reflects the experiences and perspectives of the participants and that the conclusions drawn from the data are justified.

Yardley (2000) has described validity in qualitative research as a multi-dimensional concept that encompasses several aspects: (1) sensitivity to context, (2) commitment and rigour, (3) transparency and coherence, and (4) impact and importance.

Ethically, the research project was approved by Sikt — Norwegian Agency for Shared Services in Education and Research, which ensures the GDPR rights of the participants.

3. Results

We found that the main aspects of the mentors' role were related to (1) reflections, (2) safe interactions, and (3) a sense of achievement for the students (Table 1).

Themes	Short explanation
Reflection	The mentors ask questions and provide reflections for the students.
Safe interactions	The mentors are aware of how questions are asked and ensure that all the students feel safe in their interactions and organise for safety.
Sense of achievement	It is important for the mentors to make the students feel competent and build self-esteem.

Table 1. The themes of the mentors' role for the students with short explanations.

The first theme, *reflection*, refers to how the mentors' role is to engage in the students' reflection. All the mentors mentioned that their task is to ask questions and to make the students reflect upon the process of the exercises rather than instruct the students.

'I am asking questions for reflection.'

'My role is not to take control and give . . . solutions but rather to engage in the discussions.'

The second theme, *safe interactions*, refers to how the mentors consider their task of providing a safe learning environment through asking questions and ensuring that the students feel safe in their interactions with them. This also includes an introduction to clarify who the mentor is and what their role is so as to organise for safety prior to the actual exercise.

'I have a few minutes with the group I am mentoring, so I try to explain a bit the roles we have so they do not meet the wall. I asked the leader of the group to organise and delegate some of the tasks just to have some structure before [the] start.'

'It is a balance of not interfering too much [and letting] them try. No one gets slaughtered in an exercise like this. It is only learning, so you must adjust so [it] does not take a wrong turn . . . Does your organisation work when you, as a leader, choose to do these tasks? Do you let your fellow students play yourself good? Could you delegate some tasks? . . . You must do it in a tone that does not come across as criticism.'

The third theme, *sense of achievement*, refers to how the mentors make the students feel competent and build their self-esteem throughout the exercise.

'Then it is to build their self-esteem. To ask questions and use your dialogue to build it . . . Yes, that sounds very good – what you are saying, how [you] would . . . do that in practice, for instance.'

'You must play them good. They should learn something and [have] a good experience from the exercise.'

(The phrase 'to play someone good', which the mentors use often, is Norwegian football jargon where a player should think of how one's own actions make their fellow team players be 'good' – to help one another become better team players.)

4. Discussion

Learning is a complex process and not something one person does by themselves (Wenger, 2008). As we explore the mentor's part of simulated learning in higher education, the research question is as follows: *How can the role of mentors help optimize learning processes in safety and crisis management training?*

We found that the mentors worked along the themes of reflection, safe interaction, and sense of achievement. These themes were found to be in accordance with the theoretical framework of learning and mentorship. As Kolb (1984; 2014) emphasises, the learning must come from the concrete actions of the students. Through simulated exercises, the students attain hands-on experience from concrete functions during crises.

This is also in accordance with the theory of practice-based learning of Zigmont et al. (2011), where skilled mentors are a factor in the external learning environment.

The role of mentors, according to Kolb (1984; 2014), is especially relevant to reflective observation. The mentors are highly aware that their part in the learning process is to make the students reflect upon their own practices and consequences to actions, as described in the theme of reflection.

Reflection is also important in increasing the ZPD (Vygotski, 1978). Mentors function as mediators in this process, where they play an important role by asking questions and providing guidance. This could, on the other hand, be regarded as a challenge as the mentors do not know their students well at first and thus are not aware of their students' potential development. However, by making observations and asking questions, the mentors can gain insights into their students' ZPD.

For the students to experience an effective learning process, Zigmont et al. (2011) describe mentors in the learning environment as important figures to provide effective feedback and support change through reflective observations and abstract conceptualization. Mentors enhancing their students' self-esteem by encouraging them to feel a sense of achievement is also an important factor in the research. The mentors create a safe environment via questioning, signals, and points of reflection, all showing that they care about their students' progress.

Further, these findings are in accordance with Arnesson and Albinsson (2017) concerning the mentors facilitating the learning process by enhancing the mentees' theoretical and practical knowledge. Our findings on reflection and safe interaction are, to a large degree, related to questions and how they are asked, in accordance with the research of Whitehead and Fitzgerald (2006) concerning the mentor's ability to stimulate reflective dialogue for learning conversations.

Regarding safety and crisis management, formal mentoring was found to improve safety performance in high-reliability organizations through the mentee's enhanced self-expansion and self-efficacy (Liu et al., 2021), which relates to our findings of improving one's sense of achievement.

4.1. Implications and further research

This research has implications on how mentors contribute to safety and crisis management education and training. In addition, it provides an important input on how mentors can be trained for such education. Based on our findings, the development of the mentor's role should be further explored, and research on how to make the mentor optimize their work should be analysed.

5. Conclusion

The study finds that mentors are valuable for students' learning process in crisis preparedness and safety management training. They support the students by sharing their practical skills, guiding them, asking questions, and bridging the gap between academia and practice. It is also important to include mentors in the preparation of exercises so as to ensure realism and prepare them for their mentor roles. Lastly, the mentors should be included in the evaluation to further develop the exercises and improve the learning process.

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