Review article

Eliciting debriefing experiences: A scoping review

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ARTICLE INFO

ABSTRACT

Debriefing is a process in physical or online learning that encourages learners to reflect on their own learning experiences. Effective questioning techniques and evoking positive experiences are methods for regulating and guiding students toward an environment that promotes mental health. The purpose of this scoping review is to identify effective debriefing questioning techniques and experiences for addressing the three presences in the Community of Inquiry framework, namely social presence, cognitive presence, and instructor presence, among learners in an educational or occupational setting. The result of the synthesis provided a comprehensive picture of which question types and experiences are present for the projection of each or a combination of the three presences. On Google Scholar, Education Resources Information Center, ResearchGate, and ScienceDirect, a search pertaining to debriefing strategy and questioning techniques was performed. From 2002 to 2020, 265 articles on debriefing strategy and questioning techniques were eliminated, leaving only 60 articles that were largely relevant. Results indicated that open-ended questions that are oriented toward higher-order thinking with the purpose of stimulating, following up, and clarifying are prevalent. Based on the Debriefing Experience Scale, the majority of the learners' experiences involve Learning and Making Connections with Learning, followed by Appropriate Facilitator Guidance, Facilitator Skill in Conducting Debriefing, and then Analyzing Thoughts and Feelings. Questioning is a relevant aspect of facilitating experiences in different types of presence, and the types of questions used can influence the quality of those experiences.

1. Introduction

In educational settings, debriefing occurs when instructors facilitate learners' guided reflection, which is typically conducted after instruction to consolidate knowledge and comprehension. The process is useful for assisting instructors in highlighting key learning points for learners to relate to their experience. Debriefing produces a more effective and memorable teaching session. As the purpose of debriefing is to assist learners in reflecting on their learning experiences, questioning techniques are crucial. Through reflective questions, it is possible to enlighten students and raise their awareness of their surroundings.

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2. Background of the study

2.1. Debriefing

Debriefing occurs in both educational and occupational settings when instructors facilitate learners' guided reflection. This is usually implemented post-instruction to assist learners' comprehension, which leads to meaningful learning. In this process, reflective questioning techniques are relevant to stimulate learners' critical thinking and enlighten their learning.

Recent studies have demonstrated the significance of debriefing [1–3]. Experience plays a significant role in enhancing one's knowledge, abilities, and expertise. When students comprehend their learning experience, their prior knowledge is enhanced through experience and reflective practice. Consequently, learning activities allow students to engage in debriefing or review and to gain an in-depth understanding of their professional behaviours [1,2]. Other studies highlighted that debriefing is closely associated with academics, reflection, and performance [4]. Although debriefing occurs in traditional physical classrooms, the COVID-19 pandemic has resulted in more educators turning to web-based videoconferencing for virtual debriefing in language learning [2,5].

Although the term debriefing is used across many disciplines, it is quite surprising that there are only a limited number of studies on debriefing in the areas of education and other disciplines/professions. Notably, debriefing is widely used in medicine, nursing, and other health-related practice-based sciences [4].

Focusing on social presence, instructor presence, and cognitive presence as conceptualized by the Community of Inquiry (CoI) framework, the present scoping review examines empirical and theoretical research on debriefing in relation to reflective questioning techniques in three presences: social presence, cognitive presence, and instructor presence. This study should add value to the field of study. The emphasis is on adult learners in both the postsecondary and occupational settings.

2.2. How the CoI and debriefing are related

The CoI framework has three interconnected components: social presence, cognitive presence, and instructor presence. Social presence is the extent to which students feel connected to others in the learning community [6]; cognitive presence is the extent to which students can construct meaning through sustained inquiry; and instructor presence includes the design, facilitation, and direction of the learning experience [2]. Overall, these three elements foster critical thinking and in-depth knowledge by fostering a collaborative, supportive learning environment.

Both debriefing and the CoI framework are designed to promote in-depth learning through reflection and analysis, so there is a close relationship between the two. In fact, the CoI framework includes reflection as a crucial element of cognitive presence, recognizing the significance of learners' ongoing self-evaluation and feedback as they engage in sustained inquiry. By providing learners with structured opportunities to reflect on their experiences, ask questions, and receive feedback from peers and instructors, debriefing can be seen as a way to support the cognitive presence element of the CoI framework. By incorporating debriefing into the learning process, instructors can help students develop the essential skills for success in any learning environment: critical thinking and self-awareness.

2.3. Relationship between debriefing, CoI, and questioning types

Learning-related concepts, including debriefing, the CoI framework, and questioning types, are interconnected. Debriefing and the CoI framework are intended to promote deep learning through reflection and analysis. By contrast, questioning types facilitate this process by encouraging instructors to ask questions that challenge assumptions and encourage higher-order thinking (HOT).

By providing learners with structured opportunities to ask and answer critical questions about their experiences, debriefing can be seen as a way to support the questioning types identified in the CoI framework.

Both debriefing and the CoI framework involve reflective processes with the goal of enhancing learning outcomes. Debriefing is an application of the CoI framework in practice. By structuring debriefing sessions using the CoI framework, educators can assist students in reflecting on their experiences, identifying areas for improvement, and developing strategies for future learning and performance. In this way, debriefing can be viewed as a tool for fostering the social, cognitive, and instructor presences that are essential components of the CoI framework.

This scoping review thus discusses the regulation of students' meaningful experiences through questioning techniques within the three presences: cognitive presence, social presence, and instructor presence.

2.4. Reflective questioning techniques

In the past decade, classroom questioning techniques have received considerable attention. Skill in questioning is a requirement for professional instructors. Tania, Sada, and Sumarni listed additional skills required to master teaching, including questioning skills, explaining skills, variation skills, reinforcing skills, set induction and closure skills, and classroom management skills [7]. As debriefing is an interactive process in which facilitators ask questions to guide learning and use the responses to continue and develop their understanding [8], reflective questioning techniques are crucial to the success of the debriefing procedure. Instructors may use debriefing techniques to ask triggering questions that encourage learners to reflect on what they have learned, exploration questions that encourage learners to delve deeper into the concepts and ideas covered in the activity, integration questions that encourage learners to connect what they have learned to their prior knowledge and experience, and resolution questions that encourage learners to synthesize and evaluate the learning experience. Thus, there is an urgent need to analyze existing research on how to ask questions

during debriefing to create positive social presence, instructor presence, and cognitive presence. During the pandemic, a critical need arises from the essential transition from face-to-face classroom interaction to online or virtual settings. Debriefing as a process of guiding learners is closely connected to reflective questioning. The present study analyzes debriefing, specifically questioning techniques, through the lens of the CoI framework.

3. Method

A scoping review procedure by Arksey & O'Malley was used as the overall step to analyze and synthesize the questioning techniques during debriefing in education. The methodology comprised five stages: (1) identifying the research question, (2) identifying relevant studies, (3) study selection, (4) charting the data, and (5) summarizing and reporting the results [9]. All these stages were observed in this scoping review, and as a result of the process, the summaries of the reviewed studies are reported in Table 2 and Table 3.

3.1. Scoping review research question

This scoping review aims to synthesize the use of debriefing questioning techniques and students' experiences in learning by examining experiential question types, hedging on the CoI framework of creating positive social, cognitive, and instructor presences. The research question outlined a starting point to delineate the study parameters, and the concepts learned in the research question were defined to clarify the subject matter [9]. The preliminary guiding research question was as follows: "What are the reflective questions and experiences during debriefing for enhancing social presence, cognitive presence, and instructor presence?" The general concepts of "debriefing," "reflection," "experiential learning," "questioning techniques," and the CoI framework elements guided the research to define the strategies broadly from the instructors' perspectives. The review highlighted three themes: debriefing questioning in social presence, debriefing questioning in cognitive presence, and debriefing questioning in instructor presence. The review followed Arksey & O'Malley's broad approach to the search criteria to capture the research scope in the knowledge area, and decisions on how to set parameters for the retrieved articles were made after examining the general volume and literature scope.

3.2. Identification of relevant studies

Using relevant keywords in article searches from the databases in Google Scholar, the Education Resources Information Center, ResearchGate, and ScienceDirect. The databases are open-access, well-established, and credible databases that have been extensively used in other review studies published in WOS SSCI-indexed journals. By extension, these databases comprise methodologically sound research articles.

Articles from 2000 to 2021 were selected. Time-span decisions are usually necessary from a practical standpoint in scoping literature reviews [9]. The search strings were "debriefing" + "reflection," "debriefing" + "experiential learning," "debriefing" + "questioning techniques," "debriefing" + "CoI framework."

3.3. Study selection: inclusion and exclusion criteria

All the retrieved studies were reviewed to ensure the relevance of the topic to the current scoping review, as depicted in the PRISMA flow diagram (Fig. 1). After exporting all studies from databases, the reviewers will make decisions on which articles to include and exclude based on the inclusion and exclusion criteria. In the prescreening stage, the reviewer records the number of results from each database or source. Subsequently, the reviewers will scan titles and abstracts to see if they match criteria or have some value to the scoping review. The full texts were reviewed if the abstracts lacked information to answer the research question in the scoping review. This is done by each reviewer separately to minimize bias. The results are then compared until a consensus is reached. Finally, reviewers examine the full text of the included articles to fine-tune the final collection of articles for the scoping review.

For inclusion selection, the articles must be retrieved from indexed journals between 2000 and 2021. Another inclusion criterion is the article format, which could be theoretical articles (literature reviews, recommendations based on cited research, informal classroom descriptions) or empirical studies (original quantitative or qualitative research).

Exclusion criteria were developed during the article filtering process to exclude irrelevant articles from answering the research questions. The exclusion criteria are (1) articles that are not published within the designated period and (2) articles that do not examine debriefing, reflection, experiential learning, or questioning techniques in teaching and learning contexts.

Table 1
Subscales of experiences.

Subscales of experiences	Theoretical studies	Empirical studies	Total number of studies
Analyzing Thoughts and Feelings	9	9	18
Learning and Making Connections (through learning)	19	9	28
Facilitator Skill in Conducting Debriefing	10	13	23
Appropriate Facilitator Guidance	10	14	24

Table 2
Theoretical studies.

Authors	Participants/target group	Context	Findings		
			Questioning techniques	Experiences	Types of presences
Deason, Howell, Efron, Kaufman (2013) [8]	Teachers and students	Classroom debriefing	Open-ended questions/ follow-up questions/ clarifying questions	Analyzing Thoughts and Feelings	Social presence
Capogna & Capogna (2020) [12]	Healthcare practitioners in a high-fidelity scenario	Common debriefing structure has at least three phases; this study describes "strategic debriefing"	Open-ended questions		
Dreifuerst (2009) [18]	Nursing students	Debriefing in clinical situations			
Boggu (2016) [13]	60 undergraduate students	EFL context			
Loughran (2002) [14]	Student teachers	Classroom debriefing			
Hail, Hurst & Camp (2011) [15]	629 graduates from masters' program	Educational debriefing (peer debriefing)			
Hawker (2015) [16]	Workers	Debriefing manuals for humanitarian workers (volunteers, peacekeepers, consultants)			
Martin (2006) [17]	25 informants	Debriefing questions			
Fatemeh & Hamidreza (2012) [20]	Teachers	Language learning context	Stimulating questions	Learning and Making Connections	Cognitive presence
Akella (2010) [19]	Undergraduates	Classroom debriefing	Open-ended questions		
Nicholson (2013) [21]	Students, educators, software creators	Explore models of debriefing and present educational software for experiential educational Games	Follow-up questions		
Hanif, G.H., Sopandi, W., & Nahadi,N. (2018) [25]	38 elementary students	Conducted at one of the state universities in Indonesia	HOTs questions		
Woods & Bliss (2016) [24]	Online educators	Discussing best practices for online educators to improve discussion in online courses			
Johns, Moyer & Gasque (2017) [26]	Teachers	Health education setting	Debriefing phase questioning (e.g., combination of question types; dominantly open-ended questions; HOTs questions)		
Jaye, Reedy &Thomas (2015) [27]	Facilitators	Professional work settings			
Hartup & Cossentino (2019) [28]	Any school/ organization	Face-to-face debriefing			
Nashruddin (2009) [29]	Teachers and students	Rehearsal, Performance, Debriefing as a sequence of teaching and learning speaking			
AFS Intercultural Program (2014) [30]	Facilitators and participants	General debriefing (e.g., for training, workshops, classroom debriefing)			
Reeds, Andrews, Ravert (2013) [31]	Nursing students; debriefing with video (n = 32); debriefing alone (n = 32)	Evidence regarding best debriefing practices from the standpoint of a student nurse participant is minimal.			
Afida Safriani (n.d.) [32]	Teacher and students	English language teaching context			
Sawyer, Epich, Brett-Fleegler, Grant & Cheng (2016) [33]	Healthcare students	Healthcare simulation setting			
Sharlanova (2004) [34]	Teacher and students	Educational debriefing setting (in Bulgarian education)			
Kohonen (2006) [35]	Teachers and students	Second language learning context			
Secheresse & Nonglaton (2019) [36]	Healthcare practitioners	Simulation-based learning in healthcare education			
Ross, Wright, Arikawa (2021) [5]	One undergraduate class in the nutrition and dietetics program at a public university		Online questioning		

Table 2 (*continued*)

Authors	Participants/target group	Context	Findings		
			Questioning techniques	Experiences	Types of presences
Sahin, G. & Basak, T. (2021) [1]	Nursing students	Nursing education—reflection on simulated clinical experience	Debriefing question design (combination of question types)	Facilitator Skills in Conducting Debriefing & Appropriate Facilitator Guidance	Instructor presence
Shanmugavelu, Ariffin, Vadivelu, Mahayudin, Sundara (2020) [42]	Teachers and students	Questioning techniques in the classroom			
Levy & Kennedy (2004) [37]	Language learners and teachers	Language learning context			
Crookall (2010) [38]	Academic practitioners	Classroom debriefing (game/simulation)			
Favero, T.G. & Hendriks, N. (2016) [39]	Teachers, students	Student exam analysis (debriefing) promotes positive changes in exam preparation and learning.			
Fanning & Gaba (2007) [40]	Adult professionals	Professional work settings			
Richards & Casumo (2015) [22]	Students, educators	Debriefing in simulation game (educational setting)			
Mongan-Rallis (2006) [23]	Not stated	Comparing face-to-face course versus an online course			
Griffiths (2000) [41]	Student teachers	Teacher education setting (in British and North American)			
Cheng, Kolbe, Grant, Eller, Hales, Symon, Griswold, Eppich (2020) [2]	Educators, learners	Educators facilitating conversations through web-based videoconferencing platforms	Open-ended questions, clarifying questions, follow-up questions	Analyzing Thoughts and Feelings, Learning and Making Connections, Facilitator Guidance	Social presence, cognitive presence, instructor presence

3.4. Charting the data

After completing the selection process, each included article was "charted" or sorted based on the main issues and themes of the review [9]. The main goal of charting the data in a scoping review is to create a descriptive summary of the studies to match the objective of the scoping review and to answer the research questions of the review. The full texts of the selected citations were examined and analyzed by two independent reviewers on the basis of the inclusion criteria to determine their subject and ensure relevance for the scoping review [10]. As illustrated in the PRISMA flow diagram (Fig. 1), the articles were initially identified and screened, and duplicates were removed. After screening 523 articles, 60 articles met the criteria. The resulting 87 articles were subjected to the exclusion and inclusion criteria, culminating in the inclusion of 60 articles. The articles were then categorized into theoretical and empirical studies. Each article was tabulated with key information such as authors, participants/target group, context, and findings for theoretical studies. For empirical studies, the articles were tabulated with key information such as authors, participants, context, objective, study design, dominant presence type, and findings.

4. Result

In general, the synthesis tables provide information about the relationship between dominant presence types, question types, and experiences analyzed in various debriefing studies. The tables demonstrate how different debriefing strategies can have different effects on participants' experiences, depending on the presence types and question types used.

Using the Debriefing Experience Scale, the findings were further categorized in Table 1 based on the learners' experiences [11]. There are two scales measuring a) the learner's experience during debriefing and b) the learner's perception of the significance of those experiences. For a), the two subscales are Analyzing Thoughts and Feelings, Learning, and Making Connections, and for b) Facilitator Skill in Conducting Debriefing and Appropriate Facilitator Guidance, these experiences relate to those of the learner.

"Analyzing Thoughts and Feelings" refers to the debriefing-related reflections of learners on their emotional, psychological, behavioral, and environmental competence. By contrast, "Learning and Making Connections" focuses on aspects of debriefing that enhance learners' debriefing learning experiences. Facilitator Skill in Conducting refers to the debriefing facilitator's skill in managing the time and structure of the debriefing session, as well as the importance of having a facilitator who is an expert on the learner's experience. "Appropriate Facilitator Guidance" emphasizes the skill of the facilitator in guiding the debriefing session. The final two learner experiences are from the learners' perspectives and are related in that they both involve the instructor.

The review presented 60 articles, comprising 24 theoretical studies (n = 24) and 36 empirical studies (n = 36). Research on the three themes is presented in Sections 5.1, 5.2, and 5.3. The articles were categorized into three emergent themes: experiential questioning in social presence, experiential questioning in cognitive presence, and experiential questioning in instructor presence.

Table 3
Empirical studies.

Authors	Participants	Context	Objective	Study design	Dominant presence type	Findings	
						Questioning types	Experiences
Reyes-Chua (2018) [43]	English teacher	Classroom debriefing (English language context)	To study the effectiveness of debriefing strategy	Qualitative study (descriptive)	Instructor presence	Reflective questions —Conceptual	Analyzing Thoughts and Feelings, Facilitator Skill in Conducting Debriefing
Cohen & Globerson (2015) [44]	40 professional workers	Debriefing for project planning (professional work setting)	To test the hypothesis that a recommended standard debriefing for project planning improves performance as compared with a free-style analysis	Quantitative study (experiment)	Instructor presence	Open-ended questions —Factual	Facilitator Skill in Conducting Debriefing, Facilitator Guidance
McMahon, S.A. & Winch, P. J. (2018) [45]	Researchers (for interview purpose)	Debriefing in the research context (qualitative data collection and mechanisms)	To define and discuss the process for systematic debriefing in qualitative data collection	Qualitative study	Instructor presence	Open-ended questions	Facilitator Skill in Conducting Debriefing, Facilitator Guidance
Dieckmann, Friis, Lippert & Ostergaard (2009) [46]	70 respondents	Practice of debriefing based on interactions between instructors and training participants	To discover the ideal debriefing for different simulator courses	Mixed method	Instructor presence	Open-ended questions	Facilitator Skill in Conducting Debriefing, Facilitator Guidance
Verkuyl, Atack, McCuloch, Liu, Betts, Lapum, Hughes, Mastrili, Romaniuk (2018) [47]	First-year nursing students in the health assessment course	Healthcare education context	To examine various debriefing methods	Quantitative study (experimental)	Instructor presence	Open-ended questions	Facilitator Skill in Conducting Debriefing, Facilitator Guidance
Liu (2019) [3]	7 graduates (3 males; 4 females)	Online reflection and questioning, an online graduate class at a midwestern public university in the USA	To examine how the author's weekly use of reflection and questioning instructional methods affected learners' learning in an online class	Mixed method (action research)	Instructor presence	Stimulating questions	Facilitator Skill in Conducting Debriefing, Facilitator Guidance
Chereni, Sliuzas & Flacke (2019) [48]	1000 questionnaire respondents	Conducted in Kampala	Debriefing techniques	Qualitative study	Instructor presence	Open-ended questions	Facilitator Skill in Conducting Debriefing, Facilitator Guidance
McCambridge, Kypri & Wilson (2012) [49]	11,943 participants	Online debriefing	To evaluate the debriefing approach in relation to different methods of participants' accessing additional information indicative of successful engagement with debriefing	Quantitative study	Instructor presence	Open-ended questions	Facilitator Skill in Conducting Debriefing, Facilitator Guidance

Table 3 (*continued*)

Authors	Participants	Context	Objective	Study design	Dominant presence type	Findings	
						Questioning types	Experiences
Murugaiah & Siew (2010) [50]	ESL instructor	Online learning context	To describe an English instructor's attempt to foster interactive and reflective learning among distant tertiary learners	Action research	Instructor presence	Open-ended questions	Facilitator Skill in Conducting Debriefing, Facilitator Guidance
Pivec (2011) [51]	300 third-year nursing students	Healthcare education context	To design a debriefing tool and process to be used in simulation activities to enhance student learning	Mixed method	Instructor presence	Open-ended questions	Facilitator Skill in Conducting Debriefing, Facilitator Guidance
Stuhr & Sutherland (2013) [52]	44 undergraduate students, 86 journal responses, 18 small group interviews, 13 individual interviews	Conducted at a university in the Southwest region of the US	To determine insight into the use of the Sunday afternoon drive debrief model that was created for facilitators to maximize the effectiveness of the student-driven debrief	Qualitative study	Social presence	Open-ended questions	Analyzing Thoughts and Feelings
Shea (2015) [53]	Nursing students and educators	Debriefing in a nursing course	To compare two debriefing methods: traditional method and Debriefing for Meaningful Learning (Dreifuerst, 2012)	Mixed method	Social presence	Open-ended questions	Analyzing Thoughts and Feelings
Verkuyl, Lapum, Hughes, McCuloch, Liu, Mastrili, Romaniuk & Betts (2018) [54]	24 students	Self-debriefing, virtual debriefing, and in-person debriefing in virtual gaming simulation (nursing and health professions education)	To explore self-debriefing, virtual debriefing, and in-person debriefing methods after a virtual gaming simulation	Qualitative study	Social presence	Online questioning, Open-ended questions	Analyzing Thoughts and Feelings
Basjerteh & Moghadam (2014) [55]	5 female teachers	Questioning techniques used by teachers in classroom interaction	To shed light on the types of teacher questions, questioning strategies, and students' responses to teacher questions in a private English language institute	Qualitative study (experimental)	Cognitive presence	Open-ended questions, HOTs questions	Learning and Making Connections
Pearce, Mulhem, Watson & Viney (2019) [56]	70 respondents	Debriefing questions used in health economics	To explore how debriefing questions are used in the health Discrete Choice Experiment and the answering	Qualitative study	Cognitive presence	Open-ended questions (need to be reliable and valid)	Learning and Making Connections
Tannenbaum & Cerasoli (2013) [57]	46 learners	Difficulties in ascertaining debriefing effectiveness and how to enhance its effectiveness	To unify a fragmented literature and assess the efficacy of debriefing	Quantitative meta-analysis	Cognitive presence	Open-ended questions, Clarifying questions	Learning and Making Connections

Table 3 (*continued*)

Authors	Participants	Context	Objective	Study design	Dominant presence type	Findings	
						Questioning types	Experiences
Uz-Bilgin, Park & Baek (2015) [58]	62 fourth-graders (32 boys; 30 girls)	Classroom debriefing (game)	To study the effect of different debriefing strategies	Mixed method (explanatory)	Cognitive presence, social presence	Open-ended (EIAG) model of questioning —Stimulating —Factual	Analyzing Thoughts and Feelings, Learning and Making Connections
Odo (2016) [59]	5 teacher candidates	Conducted at a large urban university in the US	To describe preservice teachers' perceptions of assessment literacy and the process of the individualized tutoring component	Qualitative study (exploratory)	Social presence (student and facilitator), instructor presence	Open-ended questions —Stimulating —Factual and Conceptual	Analyzing Thoughts and Feelings, Appropriate Facilitator Guidance
Maska (2014) [60]	1 (researcher)	Self-study of the researcher's use of language and communication during debrief, after classroom walkthroughs, when coaching each on literacy practice	To conduct a self-analysis of language and communication used with four literacy teachers during debrief	Autoethnographic intrinsic case study	Cognitive presence, instructor presence	Open-ended questions —Factual	Learning and Making Connections, Appropriate Facilitator Guidance
Dreifuerst (2010) [18]	238 students	Students from Midwestern University School of Nursing	To investigate the effect of the simulation teaching strategy	Quasi-experimental (exploratory)	Social presence, Instructor presence	Open-ended questions —Stimulating —Factual and Conceptual	Analyzing Thoughts and Feelings, Facilitator Skill in Conducting Debriefing
MacPhee & Belcher (2019) [61]	All stakeholders; teachers, administrations, support staff	K-3 elementary school in a suburban school district (3600 students, kindergarten through grade 8, in the Midwestern United States)	To understand how participants used language during debriefing conversations; to identify the focus of debriefing conversations	Mixed method	Social presence, cognitive presence, instructor presence	Open-ended questions —Stimulating —Clarifying —Factual	Analyzing Thoughts and Feelings, Learning and Making Connections, Facilitator Guidance
Mete, D.E. (2019) [62]	Students from the English Language and Literature Department, Turkey	Higher education institutions (postsojourn debriefing workshops)	To study the effect of a postsojourn debriefing workshop	Qualitative study (case study)	Social presence, cognitive presence	Open-ended questions —Clarifying —Factual	Analyzing Thoughts and Feelings. Learning and Making Connections
Winchester-Seeto & Rowe (2019) [4]	35 WIL practitioners	Work-Integrated Learning (WIL) context (in Australia, New Zealand, Canada)	To explore the concept of debriefing for 35 WIL practitioners located across a range of disciplines, professions, institutions, and countries	Qualitative study	Cognitive presence, instructor presence	Open-ended questions, HOTs questions	Learning and Making Connections, Facilitator Skill in Conducting Debriefing, Facilitator Guidance
ThiHuongLan, Huyen & Huong (2017) [63]	55 students (age 18–21)	Experiential learning theory for learners' speaking skills (Thai Nguyen University)	To determine the effectiveness of using experiential learning activities in improving students' speaking skills	Quantitative study	Cognitive presence, instructor presence	Open-ended questions, clarifying questions, follow-up questions	Learning and Making Connections, Facilitator Skill in Conducting Debriefing, Facilitator Guidance

Table 3 (*continued*)

| Authors	Participants	Context	Objective	Study design	Dominant presence type	Findings	
						Questioning types	Experiences
Aylwin, C. (2019) [64]	Postgraduate doctors	22 participants (London University)	To examine the characteristics of the CoI across online masters courses	Case study	Cognitive presence, instructor presence	Open-ended questions, clarifying questions	Learning and Making Connections, Facilitator Skill in Conducting Debriefing, Facilitator Guidance
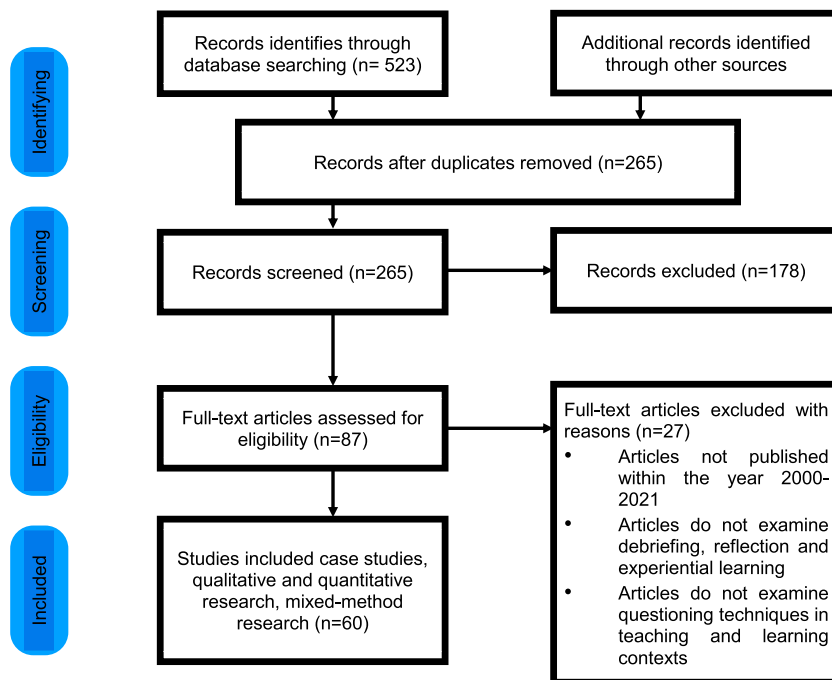
Fig. 1. PRISMA flow diagram.

4.1. Theoretical studies

Table 2 depicts 35 retrieved theoretical articles discussing the types of questions, and these are categorized into the three core CoI elements. Nine types of descriptions were identified, and open-ended questions for different purposes were most commonly used in debriefing. Eight articles describe social presence through open-ended questions [8,12–18]. By contrast, one article explained cognitive presence through open-ended questions [19]. A good, clear, and open question allows responses that unlock many avenues of discussion and create new perspectives and solutions proposed by the debriefing participants.

It is suggested that stimulating questions act as the impetus or stimulus, facilitating learners to reflect on their learning experience [20]. Additionally, follow-up questions aimed at analyzing how participants summarized their learning based on their gained experience [8,21]. Clarifying questions are used to explain meaningful points provided by participants [8]. Meanwhile, higher-order thinking skills (HOTs) questions were discussed in four articles [22–25], including Bloom's Taxonomy elements in questioning participants.

Eleven articles [26–36] described questioning according to the various debriefing phases in different debriefing models, such as the Reaction–Descriptive–Analytical–Application phase, Recall–Rethink–Ready phase, and Kolb's experiential learning cycle. Two articles explain that online questioning is highly in practice during the pandemic [2,5]. Nine articles discussing questioning design [1,22,23, 37–42] are categorized under instructor presence.

4.2. Empirical studies

Table 3 describes the 25 empirical studies, with the majority looking at instructor presence as the dominant category (10 studies) [3],[43–51], followed by social presence (3 studies) [52–54] and cognitive presence (3 studies) [55–57]. There are 9 studies with overlapping categories of cognitive and social presence, cognitive and social presence, social and instructor presence, or cognitive and instructor presence [18],[58–60],[62–64].

With regard to experiences in both theoretical and empirical studies, overall for Analyzing Thoughts and Feelings, there were 18 studies; for Learning and Making Connections, there were 28 studies; for Facilitator Skill in Conducting Debriefing, there were 23 studies; and for Appropriate Facilitator Guidance, there were 24 studies. There were some studies with a combination of two types of experiences.

5. Discussion

The findings indicate that the relationship between experiences and questioning varies depending on the type of presence under consideration. Different types of presence (i.e., social, cognitive, and instructor presence) are associated with different types of questioning (i.e., open-ended, stimulating, clarifying, factual, conceptual, and HOT questions), which can lead to a variety of experiences (i.e., Analyzing Thoughts and Feelings, Learning and Making Connections, Facilitator Skill in Conducting Debriefing, and Appropriate Facilitator Guidance). Overall, the synthesis tables demonstrate that questioning is a crucial aspect of facilitating experiences in various types of presence and that the types of questions asked can affect the quality of those experiences.

Social presence, cognitive presence, and instructor presence all contribute to positive learning experiences, as well as higher levels of critical thinking and higher-order learning [64]. Higher-order questioning types in the form of open-ended questions appear to be more closely associated with cognitive presence and instructor presence. By contrast, affective experiences, such as satisfaction and motivation in "Analyzing Thoughts and Feelings," appear to be more closely associated with social presence.

The most commonly used types of questioning in debriefing are open-ended questioning, which is HOT-oriented, with the intention of stimulating, following up, and clarifying things. There were three emergent themes from the synthesis of the past studies: Theme 1: experiential questions in social presence; Theme 2: experiential questions in cognitive presence; and Theme 3: experiential questions in instructor presence.

5.1. Theme 1: experiential questions in social presence

Higher levels of affective experience are correlated with greater levels of social presence. The dominant experience is "Thought and emotion analysis." Additionally, the experience is positively associated with higher levels of critical thinking and higher-order learning, which are components of cognitive presence. To establish a positive social presence during debriefing, open-ended questions with the intent of stimulating are most prevalent. Other types of questions included clarifying and follow-up inquiries. Social presence occurs when both students and teachers are socially present during the debriefing session. Individuals are permitted to reveal their identity and personal characteristics and to contribute to the conversation. Social debriefing requires students to collaboratively reflect, analyze, and synthesize their learning and focuses on three primary components: open communication, emotional expression, and group cohesion [2].

Generally, open-ended questions in social situations seek subjective rather than objective responses. Therefore, asking pertinent, open-ended questions encourages participants to reflect on and evaluate their own learning. The open-ended questions reflected the three main components of social presence: open communication seeking participants' subjective responses; emotional expression, in which the instructor leads participants to express their feelings about the session; and group cohesion, which allows participants to feel integrated into the debriefing process.

In social presence, clarifying questions are used to gain additional points and enhance comprehension [8]. Examples of clarifying questions are: "What do you mean by this?" and "Would you mind elaborating?" In particular, clarifying questions typically involve negotiation experience and connecting theories and points, which prepares participants to apply their new knowledge in other contexts. After the debriefing session, social presence includes follow-up questions to probe participants' reflections on real-world events relevant to the learning experience. In follow-up questions, participants must develop conclusions [8].

A study presented insights on debriefing in online escape rooms via online learning platforms such as Zoom Video Conferencing (2021) [5]. The questions asked during virtual debriefing are intended to evaluate the overall escape room process and encourage participants to critically reflect on how to apply the sessions to their future endurance. Another study addressed strategies to enhance social presence in virtual debriefing, where instructors are encouraged to ask learners an open-ended question in a virtual simulation [2]. Learners who are explicitly addressed by name are more likely to feel welcomed, acknowledged, and secure throughout the entire session.

According to research, social presence is enhanced and developed when questions are open-ended and evoke the experience of "Analyzing Thoughts and Feelings." Learners are free to provide subjective responses to such questions, enabling open communication. Instructors who observe proper questioning techniques would have led their students to a secure environment for interaction. As humans are inherently social, the ability to communicate freely is liberating and promotes mental health, as the need to speak freely is not only to express one's opinion but also to maintain good rapport with others.

5.2. Theme 2: questions in cognitive presence

High levels of cognitive presence are associated with the use of higher-order questioning types and experiences, including critical thinking, creativity, and problem-solving. The experiential subscale for cognitive presence focuses primarily on "Learning and Making Connections with Learning." During the debriefing and reflection processes, learning occurs.

Open-ended questions in the form of HOT questions predominate in the process of establishing a positive cognitive presence in debriefing. The practice of asking stimulating questions in group discussions is the impetus or stimulus to elicit participant responses. Therefore, instructors resisted the temptation to provide participants with answers and instead focused on asking questions until participants responded [20].

Widespread use of open-ended questions to improve learners' cognitive abilities. A study proposed that repeatedly asking learners in-depth, open-ended questions related to subjective material and personal experience facilitates the formation of thought connections that lead to the development of meaningful lessons [19]. The open-ended questions adhered to the debriefing structure convention established by Hartup and Cossentino [28]. Among the 3Rs questioning stages are Recall—"What did we learn?" Reconsider—"What does this mean?" and Prepare for the Future—"What will we do with this information?"

The HOTs questions are the most commonly used method in cognitive presence questioning. The questions are based on Bloom's Taxonomy's six levels of thinking: recall, comprehend, apply, analyze, evaluate, and create [25]. Each level contains specific question types. For example, remembering level questions include "What did you learn from the lesson?" and "How do you feel about the events?" The comprehension level includes questions such as "How would you generalize … ?" and "What can you infer from … ?" to help participants interpret, illustrate, and classify their learning. The application level, meanwhile, targets participants' execution and implementation of the lesson, with questions such as "How would you develop … ?" and "What steps would you take to execute … ?"

In analyzing the question levels, instructors would pose questions such as "How can you compare … ?" and "What are the benefits and drawbacks of … ?" that require learners to demonstrate their ability to differentiate, organize, and attribute. Several possible questions at the evaluating level include "What would happen if … ?" and "What alternative would you recommend for … ?" Finally, the creating level of Bloom's Taxonomy requires generating, planning, and producing skills, with questions such as "What criteria would you use to evaluate … ?" and "What would you suggest for … ?"

5.3. Theme 3: experiential questions in instructor presence

For instructor presence, according to the Debriefing Experience Scale, there are two experiential subscales: "Facilitator Skill in Conducting Debriefing" and "Facilitator Guidance." These are the students' experiences that they have about their instructors.

Low-order questioning types are associated with high levels of instructor presence (e.g., factual, conceptual). To enhance positive instructor presence, a variety of question types were used, but open-ended questions designed to elicit facts and concepts predominated. The differences between in-person and virtual debriefing do not diminish the significance of emotions, reflecting on actions, collective engagement, differing opinions, shared comprehension, and identifying solutions as the essence of the debriefing process. Preparing debriefing questions and connections prior to a lesson assists instructors in maintaining lesson focus [1]. Instead of assuming it was an automatic process, the questions posed linked the planned activities. By contrast, a study argues that debriefing is frequent and almost daily [38]. Therefore, instructors rarely evaluate actions that do not qualify as debriefing.

A research study on questioning techniques and teachers' role in the classroom listed five elements of questioning techniques differently: (1) attention, (2) voice, (3) pause, (4) question content, and (5) question levels in open-ended questions [41]. These questions were designed to assess the abilities and knowledge of the learners. Another study provided several examples of open-ended debriefing questions to enhance instructor presence, including the following: (1) "What are the three most significant aspects of the project?" and (2) "Give three suggestions for how the project could have been executed more effectively." [42]. The questions enabled instructors to comprehend and record the perspectives of students regarding the learning experience [60]. Similarly, it is also argued that the open-guided approach determines the direction of the discussion and that instructors play a catalytic role for deeper thought during the session [4].

Notably, debriefing is conducted in a question-and-answer format, either verbally or in writing [43]. The instructors ensured the significance of the session by posing reflective questions, such as (1) "What have I done?" and (2) "How does everything I've done affect one another?" (3) "How can I improve my previous work?"

When both cognitive presence and instructor presence are high, students are more likely to engage in stimulating, conceptually factual, reflective, and exploratory questioning. "Learning and Making Connections," "Facilitator Guidance," and "Facilitator Skill in Conducting Debriefing" were also emphasized. Examining the findings of these studies, it is also clear that debriefers must make a conscious effort to use questioning techniques related to instructor presence, as they are based on facts and concepts. The purpose of the procedure is to enlighten students; if conducted successfully, it will enable them to dispel any doubts and confusion. The procedure serves as a foundation for reflection beyond the classroom, which is a key objective for instructors who seek to cultivate lifelong and independent learners.

5.4. Implications of the study—similarities between the three presences

A common factor is the significance of the facilitator's direction. The facilitator's role in all types of presence is to guide learners through the learning process and assist them in achieving their learning objectives. This may involve employing appropriate questioning techniques, providing feedback, and establishing a safe and supportive learning environment.

The second is reflective practice. Learners are encouraged to reflect on their experiences and consider how they can apply what they have learned in the future in all types of presence. The CoI may include reflecting on what went well and what could be improved, as well as considering how to incorporate new knowledge and skills into their professional practice.

Learner-centeredness is another characteristic of all types of presence, questioning, and experiences. In all types of presence, the learner is the focal point of the learning experience, and the facilitator's role is to support and guide the learner as they advance through the learning process. This learner-centered approach acknowledges that learners have unique needs, goals, and experiences, and that effective learning necessitates a personalized approach that takes these elements into consideration.

5.5. Limitations

A possible drawback of a scoping review is that it prioritizes providing breadth over depth of knowledge on a given subject. This review is not intended as a systematic review, but it still needs to be carried out with strict attention to detail and open communication in order to produce reliable results. Finding relevant studies that can both fulfil the scoping review's goal and significantly advance knowledge is challenging for this analysis. However, this approach has been successfully carried out with precision by filtering abstracts and full articles by two reviewers. Usually, a scoping review comes before a systematic review. Where the goal of the review is to uncover knowledge gaps, scope a body of literature or explain ideas, scoping reviews are preferred rather than systematic reviews.

6. Conclusion

This review identified a body of literature focusing on debriefing and questioning techniques and experiences that can be applied to create a positive and conducive social, cognitive, and instructor presence. Without an effective reflective phase for students to adjust to the learning environment, teaching will fail. The basic objectives of teaching are to help learners reach their academic goals and develop their knowledge. To achieve the objective, learners need to specifically know what they have learned. Reflection is the key element in debriefing, and it is crucial that learners are made aware of and enlightened about what they are learning. As instructors assist in the reflective phase, they also need to think and reflect on their practices to formulate suitable methods for teaching and design appropriate strategies for students to learn. A careful "concoction" of questioning techniques and the elicitation of appropriate experiences are possible solutions.

Complex and interdependent relationships exist between presence types, questioning, and experiences. Different types of questioning are better suited to various types of presence and can have a substantial impact on the learning experiences of students. Instructors and facilitators can help learners engage more deeply with the material and create a more meaningful and productive learning experience by using the appropriate questioning strategies. In conclusion, future policy and research should be conducted to clarify how effective debriefing is conducted and to identify the challenges inherent in the formulation of experiential questions during the debriefing process.

In addition to informing future research by identifying gaps in the existing literature, the scoping review results can also be used to determine which domains may have sufficient literature depth to warrant a systematic review. Validating the efficacy of debriefing inquiry techniques in settings other than education contexts, as well as with participants of varying ages and genders, will significantly benefit the pertinent sectors. This future direction not only highlights the debriefing intervention techniques but also significantly advances the body of knowledge on debriefing experiences.

CRediT authorship contribution statement

Kim Hua Tan: Writing – review & editing, Writing – original draft, Validation, Supervision, Methodology, Formal analysis, Data curation, Conceptualization. **Shanty Carmelie Rif:** Writing – review & editing, Writing – original draft, Formal analysis. **Fazal Mohamed Mohamed Sultan:** Validation, Funding acquisition. **Nazri Muslim:** Validation, Funding acquisition.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Acknowledgements

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