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How to Facilitate Interaction in Remote Focus Groups: A Practical Guide

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ABSTRACT

There exists a significant knowledge gap in the scientific literature concerning the effective design of remote focus groups, particularly with regard to facilitating interactive engagement among participants. This paper aims to address this gap by presenting a hands-on guide for designing online or remote focus groups, emphasizing approaches to enhance interaction. Our guide is informed by prior works and our recent empirical experiences in conducting remote focus groups. We offer this guide as a resource for researchers, students, and practitioners seeking to conduct remote focus groups and facilitate interactions.

Keywords: Remote focus groups, Interaction, User involvement, Step-by-step guide

INTRODUCTION

The widespread notion in the Human Computer Interaction (HCI) and design fields for user involvement is that the more the merrier when it comes to the number of participants. The standard format involves users interacting with a prototype, co-designing, while a moderator (designer or usability expert) observes and poses questions. On the other end, questionnaires and unmoderated remote usability testing gather data with more participants but lack insight into the details of their participation, e.g., what was meant by a remark/action in the questionnaire or usability test.

Moderated remote co-design and evaluation offer several advantages, such as allowing participants to engage in their natural environment, reducing travel needs, simplifying scheduling, and significantly cutting costs; these methods also have the potential to reduce environmental impact (Gardner, 2007; Smith, 2017; Thompson et al., 2004; Schade, 2013). The presence of a moderator ensures validity and reliability controls, enabling the exploration of unforeseen attitudes, problems, or ideas.

The presence of a moderator is also something that characterizes focus groups. As pointed out by Clark et al. (2021, p. 454), researchers "make use of a group dynamic to obtain more interesting, nuanced, and realistic data". Thus, we get different opinions but not only that, these opinions are vetted from different perspectives. With advancing Internet capabilities and increased connectivity, conducting more focus groups remotely becomes feasible, particularly for stakeholders that are challenging to interview face-to-face due to availability and location constraints.

An encouraging comparison can be made with usability testing: despite criticism that remote testing makes it challenging for moderators to assess participant behavior and body language, comparative studies found no differences in identifying usability issues between in-person and remote testing. (Andreasen et al., 2007; Thompson et al., 2004). However, the less fluent discussion environment provided by video conferencing compared to physical co-located groups is worth taking seriously because this is a point where usability testing and also group interviews differ from focus groups.

USER INVOLVEMENT INCREASINGLY CONDUCTED REMOTELY

In our research and teaching endeavors, we have employed various approaches to tackle challenges and innovations in remote usability testing. Discussions on remote usability testing were gaining increased attention even before the COVID-19 pandemic. For instance, according to a survey by Fan et al. (2020), most practitioners employing think-aloud protocols also utilized them in remote usability testing. Similarly, our experience encompassed both face-to-face studies and exploration of remote possibilities for user involvement. As an example, we have been exploring the possibilities of using Wizard-of-Oz (WOz) co-design approaches. We have gradually engaged in it starting around 2012 when our GUI WOz prototyping tool was re-implemented as a web-based tool (Pettersson, 2020), and no instalment on the test participant's side was necessary. Progressively, the swiftness with which mock-up changes are made in WOz prototypes led to designing a basic prototype for user redesign during test sessions, and finally, to empty screens where the test participants put the GUI elements needed to start interacting with the prototype (i.e., with the Wizard; Pettersson et al., 2018). Thus, complex interactions between one or several moderators (designers) and one or several participants (co-designers) can be conducted remotely, with a clear focus on interaction design being the central element throughout.

The COVID-19 pandemic prompted us to deepen our integration of remote aspects for user studies for the safety of our participants. In the following, we discuss some selections of remote user involvement studies.

REMOTE USER INVOLVEMENT CHALLENGES

In a usability-testing course described by Pettersson et al. (2022), students engage in various evaluation methods, initially in an on-campus format allowing discussions and observations. The course adapted during the COVID-19 pandemic, with some students opting for remote usability testing. Surprisingly, remote testing enhanced student focus on observation and eased participant recruitment, although the pool was often confined to students' circles of friends. While remote testing reduces the likelihood of inexperienced moderators taking the lead, there was no significant improvement in the assignment requiring the demonstration of a video prototype before a group discussion. Many students, unfamiliar with leading formal discussions, often resort to reading questions to their groups, risking groupthink (Baron, 2005) and limiting spontaneous discussion.

This can be compared with a finding from a study on group interaction in online learning: 'the threshold for contacting (or interrupting) other team members was raised' (Sjølie et al., 2022, p. 9). The issue with groups in videoconferencing is that people are hesitant to interrupt each other, leading to silence unless prompted by the moderator. We observed the opposite phenomenon when physically co-located professional crisis response coordinators were discussing a crisis scenario. In that study, discussions within two groups alternated between whole-group and smaller parallel discussions among two or three members. Such spontaneous parallel discussions, where everyone is aware of every sub-discussion, would be more challenging in a videoconference meeting but less difficult in a chat forum (Pettersson & Venemyr, 2021). Conversely, exercises in crisis management meetings conducted via videoconference, as reported by Pettersson (2022), found that expressing opinions in writing before oral discussion was helpful, especially when the moderator took time to review written statements with the crisis management team during the videoconference. Similarly, in Alaqra et al. (2023), which was conducted in 2021, remote focus groups conducted on Zoom were designed for participants to express their initial individual opinions in written form before engaging in roundtable discussions, which had a positive impact on the study despite initial concerns. Thus, individual writing can be an effective add-on in video meetings.

REMOTE FOCUS GROUPS CHALLENGES

Borglund and Granholm (2023) recently reported the initial step in a series of experiments investigating distributed crisis management. Representatives from four municipalities were divided into two small groups, resulting in eight groups simultaneously addressing the same questions. While each physical group functioned as expected, technology did not facilitate the formation of four municipal groups or a common group. During the meeting among all municipalities, a shared common operational picture was developed based on a single node's perspective, specifically the node leading the discussion. Similar isolations have been discussed previously (Bjørn & Ngwenyama, 2009; Olson & Olson, 2000). Thus, the physical circumstances alone, preventing immediate awareness of who wants to speak next, place particular demands on the moderator of remote focus groups.

Having an experienced moderator is crucial for facilitating remote studies, especially for focus groups. In Alaqra et al. (2023), remote focus groups were utilized as a data collection method for the exploratory study. The study's design and conduct involved extensive considerations, including aspects such as the protocol, tools used, privacy and security, technical setups, and more. More importantly, the moderation of the session required piloting and testing with the moderator, an assistant, and a backup assistant to ensure all technical aspects were properly set up. Not only were strong moderating skills essential, but also familiarity with the various technical tools used during the session was crucial. We have already been using these tools in teaching and other research activities, so we possess the necessary experience in managing them effectively.

According to Schneider et al. (2002), in comparing online vs. face-to-face focus groups, online contributions were uniform; however, shorter comments were provided compared to face-to-face sessions. Given that the study is dated, online focus groups were conducted via online chat, limiting participants to that mode of interaction. In Alaqra et al. (2023), we employed oral discussions through Zoom, chat input for comments, as well as Mentimeter (a relatively new interactive presentation software, launched as a full presentation platform in 2018, (Mentimeter, n.d.)) feedback for individual input; the last two served as facilitators for the online discussions which were key to the method's design. The concerns about online focus groups according to Rezabek (2000) relate to the use and reliability of the technology during the study as well as the relationship that participants have with the used technologies. These concerns remain valid now as we still recruit participants who are able to use and handle these technologies as well as have the appropriate devices needed to partake in the remote studies. Online focus groups are gaining popularity with advancements in technology; researchers advocate for the new opportunities of online focus groups (Gill and Baillie, 2018). Researchers are exploring new methods for conducting focus groups; for example, Richard et al. (2021) used Reddit for their online focus groups. In their study, they present the benefits of using Reddit (social forum network) to increase user participation as well as provide safe anonymity for participants (Richard et al., 2021). In Halliday et al. (2021), they used the Zoom platform for their online focus groups as a result of the COVID-19 pandemic, and they report the opportunity to recruit demographically and geographically diverse participants.

Given the opportunities provided for conducting focus groups online, there are practical considerations for researchers interested in future interactive online focus groups. In line with the practical framework proposed by Krueger and Casey (2015), we present our adapted guide for conducting remote focus groups. Additionally, we integrate practical considerations akin to those discussed by Willemsen et al. (2022), drawing on our own empirical experiences.

REMOTE FOCUS GROUPS GUIDE

When conducting remote focus groups, it is important to consider various categories of software and tools to facilitate the process. Video conferencing platforms, such as Zoom or Microsoft Teams, enable virtual face-to-face interaction with features like raising hands, breakout rooms, screen sharing, and recording capabilities. Commonly, chat and messaging tools are integrated within the video conferencing platforms, and they enhance communication and interaction through instant messaging and group chats during the session, with options for chat moderation. Another feature that could be found is the polling and survey tools, sometime independent such as Mentimeter, allow for real-time polling, surveys, and feedback collection during sessions, enabling participants to view results or aggregated form of their responses. Furthermore, collaboration and white boarding tools, like Miro, facilitate brainstorming, idea mapping, and interactive discussions.

Data collection and recording of voice or video are also possible within tools such as Zoom and Microsoft Teams. However, it is important to consider privacy and security; some tools offer end-to-end encryption to ensure the protection of participant data and secure communication channels.

Provided that focus groups is the right method for the foreseeable study, and that remoteness is essential as well, the following is what to consider in the BEFORE (planning and preparations), DURING (conducting and moderating) and AFTER (closing and follow-up) stages. These considerations are arranged as a numbered list under the heading "A Step-By-Step Guide" below.

BEFORE Stage (A)

To facilitate interaction, it is crucial that everything is properly set in place. Thus, preparation is essential for ensuring smoother remote focus group sessions and fostering an interactive environment. In the preparation stage, planning and preparations are conducted before the focus group sessions (cf. A1-7). Planning involves determining various factors related to the study's purpose and design, this involves outlining clear research questions to guide discussions and establishing demographic criteria for participant selection, alongside identifying necessary technical requirements (cf. A2a-b). Selecting a reliable online platform (cf. A3) and considering additional tools to enhance interaction are essential for facilitating effective sessions. Developing a structured discussion guide (cf. A4) with key topics and prompts for deeper exploration ensures thorough coverage of important themes and facilitates clear participant responses. Before conducting remote focus group sessions pilot testing the setup is important (cf. A5a-e), to ensure that all platforms and tools function correctly. Recording capabilities should be verified, with a backup plan in place for technical issues. Ethical considerations should be noted and include obtaining consent for screen sharing, voice, and video recordings, advising participants to use pseudonyms for anonymity (cf. A6a-i). Pre-session, moderators should facilitate private discussions in separate parallel rooms to discuss consent and address any concerns. Finally, recruiting participants (cf. A7a-c) involves confirming they possess necessary technology skills, providing instructions and technical setup guidance, and conducting orientation sessions to familiarize them with the platform and tools.

DURING Stage (B)

At the day of the focus group session, the several considerations and steps during the session are presented below (cf. B1-5). Setup and technical preparations (cf. B1a-c) include testing the tools with co-moderators and participants, recapitulating data privacy and security measures, and introducing security strategies such as pseudonyms and recording clarifications. Conducting the session (cf. B2a-d) involves starting with an introduction, using ice-breakers to ease tension, facilitating discussion to ensure all participants contribute, and leveraging interactive features like polls and breakout rooms. The moderator's role (cf. B3a-c) is essential as

all depends on the moderations and technical skills of the moderator. It is required to have at least one backup moderator for recording, note-taking, and technical support. In parallel sessions, sufficient moderators are necessary, or the main moderator can manage one session at a time. Managing group dynamics (cf. B4) involves ensuring everyone has a chance to speak, allowing text input for key questions, encouraging equal participation, and being mindful of non-verbal cues. Transitioning breaks (cf. B5) include incorporating small breaks for each hour of the focus groups and using these breaks to transition to different topics or prepare other tools like tablets for polling or sharing mock-ups on screen.

AFTER Stage (C)

Once the focus group discussion has concluded, the moderator should leave room for any remarks, comments, and feedback. Afterward, the session can be closed, ensuring all technical aspects are addressed. A follow-up with participants should be planned, either to discuss incentives or to report the results (cf. C1-3).

A Step-By-Step Guide

A. BEFORE stage, preparations and planning

1. Determine the purpose and objectives of the focus group study
    a. Clearly outline the purpose and objectives of the focus group.
    b. Determine the target group.
    c. Develop specific research questions to guide the discussion.
2. Determine the participants of the focus groups
    a. Define the demographic criteria that participants need to fulfil to qualify for participation in the study.
    b. Identify the technical requirements participants need to meet to take part in remote focus groups, including the necessary remote tools for the sessions.
3. Choose a Platform and Tools
    a. Select a reliable online platform for conducting the focus group.
    b. Consider features or additional tools for facilitating interaction.
4. Develop a discussion route
    a. Create a structured guide with key topics and questions to cover during the session.
    b. Include prompts for deeper exploration of important themes and follow-up questions to clarify participant responses.
5. Pilot test the setup
    a. Test the platform and other tools used for the focus groups.
    b. Test the network requirements for the platform.

   c. Test the recording, storage space, and plan for a backup recording for example on zoom, two moderators should record the sessions separately in case of issues.
   d. Consider a backup plan in case of technical difficulties: prepare another zoom room.
   e. Check expire dates and number of simultaneous users allowed for any software licences used (esp. for free-to-use versions).

6. Consent and ethical consideration

   a. Have considerations that are technically specific to remote FGs: Screen sharing and possibility of data leaks, voice and video recordings (need for consent and clearly stated purpose).

      i. Names: Advise participants to use pseudonym on the screen before joining the session.
      ii. During the pre-FG stage the moderator allow participants to join separate parallel rooms before the beginning of the FGs session. Consent and other matters could be discussed privately in this stage. Other moderators/helpers are needed for the parallel sessions.

7. Recruit participants

   a. Ensure participants have the necessary technology and skills to join the remote session. It might be having used the tool before, and if not, allow some time before the pre-session to test and try the tool. Also if they need to use an external device, like their phones or tables for a lightweight polling tool. They should be informed beforehand to bring along such a device.
   b. Send out formal invitations and information about the focus group, including consent form (or information on how they will be giving their consent).
   c. Provide instructions on how to join the session, including any necessary technical setup and offer orientation/practice session to familiarize participants with the platform and tools in addition to the pre-FG mentioned in 6a.

B. DURING stage, conducting the focus groups

1. Setup and technical preparations

   a. Test the tools together with co-moderators (with participants; cf. B2b).
   b. Recapitulate participants about data privacy and security measures and consent.
   c. Introduce security and privacy strategies: pseudonym, voice and/or video recordings, and clarify purposes and other concerns.

2. Conduct the Session

a. Start with an introduction, explaining the purpose of the focus group and setting ground rules.
b. Break the ice with the topic by having introductory questions to start the discussions and ease the tension among participants.
c. Facilitate the discussion, ensuring all participants have an opportunity to contribute.
d. Use interactive features (e.g., polls, breakout rooms) to facilitate individual engagement.

3. Moderator's role

a. Have at least one other moderator who will have a backup of the recording, take notes, and help with technical issues such as co-hosting.
b. For the parallel sessions, either have enough moderators for all parallel sessions, or the main moderator can have one at a time, while the backup moderator waits and answer questions with the remaining participants in the waiting room.
c. Address any technical issues promptly to maintain the flow of discussion.

4. Manage Group Dynamics

a. Make sure to have go around (cf. B2c).
b. Allow participants to input their opinions in text (at least for key questions) before the group discussions (cf. B2d).
c. Encourage equal participation by allowing each participant to have feedback on what has been said in each round.
d. Be mindful of non-verbal cues and use chat functions or follow-up questions to ensure clarity.

5. Transitioning breaks

a. Have at least one smaller break (5-10 minutes) for each one hour.
b. Use the break to transition to a different topic or to prepare for using other tools, such as a tablet for polling or sharing mock-ups on screen.

C. AFTER stage, closing and follow-up

1. Thank the participants

a. Allow room for feedback about the session or for participants to add any additional comments.
b. Follow up on any incentives offered to participants. Check on the recordings, for instance any video recording would require exporting the file after the meeting has ended.

2. Transcribe and analyze the recorded sessions.
3. Ensure the report is accessible to participants involved in the study.

DISCUSSIONS

Number of Participants

When it comes to the focus group size for remote format, Willemsen et al. (2023) recommend aiming for four to five participants for synchronous remote focus group sessions. This recommendation is grounded in their empirical experience, indicating that this number facilitates optimal discussion and ensures each participant has sufficient opportunity to express their opinions, while also accounting for potential no-shows, cancellations, and drop-outs. Based on our own experience, we concur and recommend a focus group size of four to five participants, with three participants also being acceptable as it has proven effective. This number works well for online focus groups, providing a sufficient balance of time per participant and promoting interactivity.

Wibek (2010) argues that a focus group should not have fewer than six participants for face-to-face sessions and warns of the triad dynamic, where one participant may feel caught between the other two in a group of three. Although three participants might be considered too few and could result in a triad dynamic, we believe that discussions in the remote setting work well given the guide we have presented if particular attention is paid to the interactive elements mentioned.

Duration of the Focus Group Sessions

According to Willemsen et al. (2023), they suggest a maximum duration of 90 minutes for remote focus group sessions, arguing that digital conversations can be tiring and challenging to keep participants engaged. However, we contend that their approach of allowing only a five-minute break halfway through may not have been sufficient. We also argue that remote focus groups require additional setup and careful planning to create a conducive environment for discussion. In our study (Alaqra et al., 2023), we planned for two short breaks and allowed for additional brief breaks as needed. Our focus group sessions lasted a total of two hours, with 90 minutes dedicated to discussions. Participant engagement remained consistently high throughout, with no signs of disengagement; on the contrary, momentum was sustained throughout the sessions.

We believe that limiting online focus group sessions to 90 minutes is inadequate. Similarly, Poliandri et al. (2023) also argue against the 90-minute duration, as they initially scheduled for 90 minutes but eventually extended the session to two hours. They contend that the shorter timeframe can be restrictive, hindering participants' ability to respond calmly and articulate their thoughts effectively. Therefore, we recommend scheduling sessions for two hours to accommodate introductions, icebreakers, discussions, and breaks. This approach ensures participants can fully engage without feeling rushed or fatigued.

Focus Group Guide

In the preparation stage, we recommend thorough planning and preparation of the focus group session. One key aspect of designing the session is having a

focus group guide to facilitate the flow of the session and ensure consistency across all focus groups within the study. Following a guide could be seen as a risk of being too structured. As Wibek (2010) warns, there is a risk that participants might focus on asking for the next question instead of engaging in discussion with each other. Given that such concerns might be related to how the study is introduced and how the focus group guide is designed, if the guide is simply a list of questions, similar to interviews, then this could indeed be an issue. However, we do not recommend using a guide in an interview format. Instead, we suggest developing a discussion route (cf. A4), similar to the questioning route, as per Krueger and Casey (2015): have opening, introductory, transitioning, key, and ending questions. However, we would avoid calling them questions, as students performing focus groups, for the first time might end up with the problems Wibek (2010) warned against. We highlight the possibility to use the technology check (testing the tools; cf. B1a) together with the ice-breaking introduction to the topic (cf. B2b).

Interaction

In remote or digital focus groups, verbal communication is reduced compared to in-person meetings. This shift to online platforms can affect participant interaction, making it challenging to discern when to speak, interrupt, or manage mute/unmute functions. Furthermore, it becomes more difficult to anticipate if a participant is about to contribute solely relying on their voice or video image. Therefore, we emphasize the importance of utilizing technological tools, thoughtful design of discussion guide, and effective moderation techniques as key elements to facilitate interaction of online focus group sessions.

Technological tools that allow added functionality to the online sessions are essential to tackle the above-mentioned concerns. Key digital elements to facilitate online communication, such as raising the digital hand—where, depending on the tool used, it places the speaker in a queue to speak—have been found to be essentially helpful in the recent empirical studies (Alaqra et al., 2023; Halliday et al., 2021; Poliandri et al., 2023; Willemsen et al., 2022).

We also employed interactive presentation software, Mentimeter, features for designing the discussion guide of the focus groups. One feature is to facilitate polling of individual responses prior to the focus group discussion. This approach, allowing participants to reflect personally before engaging in group discussions, was found useful in the study of Alaqra et al. (2023) and in the chat during the videoconferencing study by Pettersson (2022). We recommend adopting similar approaches and utilizing software or tools that allow participants to contribute their thoughts before group discussions commence. Furthermore, the tool had a feature allowing for the tuning of the representation of individual participant responses. This meant that we could adjust the visibility of polling results to show them anonymously, in aggregate, or not at all. This flexibility allowed the moderator to focus the discussion on the points raised rather than on who made specific comments. Additionally, we found that anonymity of responses, even if it among a small set of participants, can be useful, as it enables participants

to express points they might not otherwise share (Alaqra et al., 2023). When organizing focus groups, it is important to consider the technological experience of participants. Grouping experienced individuals with those less familiar with the technology can have both advantages and drawbacks. On one hand, reliance on several digital tools may risk embarrassing those who are inexperienced. On the other hand, this diversity in experience can be beneficial if the focus of the discussion is on technology use. Therefore, the composition of the focus group should be thoughtfully considered based on the specific objectives of the study. Balancing the experience levels of participants can either mitigate potential discomfort or enhance the interaction and thus the richness of the discussion, depending on the study's goals.

CONCLUSION

Conducting focus groups remotely and ensuring smooth interactions among participants can be challenging, especially for those who have not done it before. We offer a detailed step-by-step guide targeting future researchers, students, and practitioners. This guide provides a comprehensive approach for conducting remote focus groups with the aim of facilitating interactions among participants. Specifically, we emphasize the importance of careful planning, appropriate use of technology, and thoughtful moderation techniques. Future work could explore tools for facilitating accessibility to create more inclusive focus group participants.

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REFERENCES

Alaqra, A. S., Karegar, F., & Fischer-Hübner, S., 2023. Structural and functional explanations for informing lay and expert users: The case of functional encryption. In *Proceedings on Privacy Enhancing Technologies* (Vol. 2023, No. 4, pp. 359–380).

Alaqra, A. S., (2023). The Power of Live Anonymous Feedback: There are no stupid questions, only spammy ones. In *N. Jakobsson & C. Vikström (Eds.), Bidrag från universitetspedagogisk konferens 2022*. Pages 21–38. Karlstad University.

Andreasen, M. S., Nielsen, H. V., Schrøder, S. O. and Stage, J., 2007. What happened to remote usability testing? An empirical study of three methods. In *Proceedings of the SIGCHI conference on Human factors in computing systems* (pp. 1405–1414).

Bjørn, P. and Ngwenyama, O., 2009. Virtual team collaboration: Building shared meaning, resolving breakdowns and creating translucence. Information systems journal, 19(3), pp. 227–253. https://doi.org/10.1111/j.1365-2575.2007.00281.

Borglund, E. & Granholm, M., 2023. Challenges in work procedures in distributed crisis management. Proceedings of the 20th ISCRAM Conference – Omaha, Nebraska, USA May 2023. J. Radianti, I. Dokas, N. LaLone, D. Khazanchi, eds. http://idl.iscram.org/files/borglund/2023/2561_Borglund\protect$\relax+$Granholm2023.pdf

Clark, T., Foster, L., Sloan, L., & Bryman, A., 2021. *Bryman's Social Research Methods*. 6th edn. Oxford University Press.

Fan, M., Shi, S. and Truong, K. N., 2020. Practices and Challenges of Using Think-Aloud Protocols in Industry: An International Survey. *Journal of Usability Studies*, 15(2), pp. 85–102.

Gardner, J., 2007. Remote web site usability testing-Benefits over traditional methods. *International Journal of Public Information Systems*, 3(2), pp. 63–73.

Gill, P. and Baillie, J., 2018. Interviews and focus groups in qualitative research: an update for the digital age. *British dental journal*, 225(7), pp. 668–672.

Halliday, M., Mill, D., Johnson, J. and Lee, K., 2021. Let's talk virtual! Online focus group facilitation for the modern researcher. *Research in Social and Administrative Pharmacy*, 17(12), pp. 2145–2150.

Kruegar, R. A., Casey, M. A., 2015. *Focus Groups: A Guide for Applied Research*. Fifth edn. Sage publications.

Mentimeter (n.d.). *Investors*. Available at: https://www.mentimeter.com/investors (Accessed: 20 J2024).

Olson, G. M. and Olson, J. S., 2000. Distance matters. *Human–computer interaction*, 15(2–3), pp. 139–178.

Pettersson J. S., Wik M., Andersson H., 2018. GUI Interaction Interviews in the Evolving Map of Design Research. In: *Paspallis N., Raspopoulos M., Barry C., Lang M., Linger H., Schneider C. (eds) Advances in Information Systems Development. Lecture Notes in Information Systems and Organisation*, vol. 26, pp. 149–167. Springer, Cham.

Pettersson, J. S. & Venemyr, G. O., 2021. Engage the engaged to continue crisis training and other lessons learned from two demonstration exercises with LMS. Extended abstract in *Proceedings of the 29th ISD 2021*. https://aisel.aisnet.org/isd2014/proceedings2021/currenttopics/11/

Pettersson, J. S., 2020. The Utility of Digitally Supported Manual Interactive Mockups. In: *Stephanidis C., Antona M. (Eds.) HCI International 2020 - Posters. HCII 2020. Communications in Computer and Information Science*, CCIS vol. 1224. Springer, Cham. pp. 76–84. https://link.springer.com/chapter/10.1007%2F978-3-030-50726-8_10

Pettersson, J. S., 2022. Key Concepts for the Effective Use of Digitally Supported Table-Top Crisis Management Exercises. In *Proceedings of the 19th ISCRAM Conference* – Tarbes, France May 2022. http://idl.iscram.org/files/johnsoerenpettersson/2022/2461_JohnSoerenPettersson2022.pdf

Pettersson, J. S., Olsson, G., & Andersson, H., 2022. Usability Testing of Interactive Systems Conducted by University Students During a Pandemic. In *Proceedings of the 2022 AIS SIGED International Conference on Information Systems Education and Research*. Article 10. https://aisel.aisnet.org/siged2022/10/

Poliandri, D., Perazzolo, M., Pillera, G. C. and Giampietro, L., 2023. Dematerialized participation challenges: Methods and practices for online focus groups. *Frontiers in Sociology*, 8, p. 1145264.

Rezabek, R. J., 2000, January. Online focus groups: Electronic discussions for research. In *Forum Qualitative Sozialforschung/Forum: Qualitative Social Research* (Vol. 1, No. 1).

Richard, B., Sivo, S. A., Ford, R. C., Murphy, J., Boote, D. N., Witta, E., & Orlowski, M., 2021. A guide to conducting online focus groups via Reddit. *International journal of qualitative methods*, 20, 16094069211012217.

Schade, A., 2013. Remote Usability Tests: Moderated and Unmoderated, Nielsen Norman Group, https://www.nngroup.com/articles/remote-usability-tests/

Schneider, S. J., Kerwin, J., Frechtling, J., & Vivari, B. A., 2002. Characteristics of the discussion in online and face-to-face focus groups. *Social science computer review,* 20(1), 31–42.

Sjølie, E., Espenes, T. C. and Buø, R., 2022. Social interaction and agency in self-organizing student teams during their transition from face-to-face to online learning. *Computers & Education*, 189, p. 104580, pp. 1–12.

Smith, C. J., 2017. Getting the Most Out of Remote Research and Testing, *Interactions*, Vol. 24:2, pp. 82–84.

Thompson, K. E., Rozanski, E. P. and Haake, A. R., 2004, October. Here, there, anywhere: remote usability testing that works. CITC5 '04: In *Proceedings of the 5th conference on Information technology education*. pp. 132–137.

Willemsen, R. F., Aardoom, J. J., Chavannes, N. H., & Versluis, A., 2022. Online synchronous focus group interviews: Practical considerations. *Qualitative Research*, 14687941221110161.