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2022 Healthcare Distance Simulation Summit Proceedings

Advancing the Science of Distance
Simulation

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SUMMIT OVERVIEW

BACKGROUND

The 1st Summit - 2020

Amidst the rapid adoption of distance simulation during the COVID-19 pandemic, the first Healthcare Distance Simulation Summit was conducted in August 2020 with the aim to generate consensus around the terminology used in distance education and to identify research priorities. This summit produced active research groups and a research agenda (Gross et al., 2022), including standardized nomenclature pertaining to distance simulation (Chang et al., 2022), pictography practices, and faculty development guidelines. The Healthcare Distance Simulation Collaborative was formed to progress these and other projects addressing an urgent need for quality standards, effective delivery methods, and extensive knowledge generation pertaining to distance education delivery (Duff et al., 2021; Elkin et al., 2022, Palaganas et al., 2022).

After the first summit, an international survey of health professional educators on the state of distance healthcare simulation during the COVID-19 pandemic was conducted. In total, 618 respondents from 32 countries participated. The study found that 82% of respondents indicated long-term plans for continuing distance simulation (Buleon et al., 2022). It became apparent that distance simulation-based education will continue after the return to in-person learning modalities. Considering these findings, the Healthcare Distance Simulation Collaborative team commenced the planning of a global scholars' consensus meeting for the 2nd Annual Healthcare Distance Simulation Summit.

The 2nd Summit - 2021

The success of the first summit prompted the planning committee to continue a deliberate approach to diversifying representation of disciplines and specialties in groups and at future meetings. The second annual summit, conducted in October 2021, aimed to build on the work from the year prior by developing a global shared mental model and more deeply exploring a framework for distance simulation delivery and best practices for faculty development in distance simulation. Experts were separated into tracks and subgroups to identify areas needing further exploration including pictography, faculty development guidelines, safety and acceptability, educational and foundational considerations, and impact.

Review of drafted distance simulation faculty development guidelines uncovered three areas requiring additional input from experts, 1. Technology, 2. human factors, and 3. justice, equity, diversity, and inclusion. These findings further led to the publication of a white paper on Phase 1 of the creation of Healthcare Distance Simulation Educator Development Guidelines (Palaganas et al., 2022) and a Delphi study conducted at the 2022 IMSH preconference (Bajwa et al., 2023). Many areas for future research were identified including the standardized elements for visual depiction of distance simulation design/methods (Walsh et al., in progress), an assessment approach for psychological safety in the distance simulation environment, and a conceptual framework or overarching cognitive tool to approach distance simulation. Additional findings are discussed in detail in the published proceedings from the 2021 summit (Kirkpatrick et al., 2022).

The 3rd Summit - 2022

To continue momentum and progress on the expanding research agenda of the first and second summits, the 3rd annual summit was planned for October 2022 with the aim to focus on scholarship to date, as well as furthering the specific projects and ideas developed during the second summit by bringing interested simulation practitioners from all levels of experience, including novice scholars, to generate actionable plans.

APPROACH

Planning of the 3rd Annual Healthcare Distance Simulation Summit was consistent with the lean approach of the 2nd summit (Kirkpatrick et al., 2022). The structure and agenda of the meeting were developed based-on the set objectives, theme, and mission stated below. An expert invitation list was assembled through iterative discussion and a total of 124 diverse simulation and health professions education experts were invited to attend. They were invited individually via email by summit leadership. To prevent emails from being overlooked or disregarded, follow-ups were sent from committee members with a personal connection to each invitee. Invitees were notified of the potential for authorship or byline authorship resulting from participation in the summit.

A new priority and objective of the 3rd annual summit was to grow junior researchers and support member leadership and career advancements. For this reason, an application process for novice scholar recruitment was created. The planning committee identified pools of potential scholars. Invitations were sent to these identified listservs including: SSH Virtual Scholars, INSPIRE, and MGH Institute of Health Professions PhD students. The planning committee subsequently developed and implemented a review and selection process for these new "Novice Scholars".

To prevent a disruption of work-life balance, the Summit was scheduled on a Friday with a mid-morning time to accommodate as many international time zones of those invited as possible. The summit was also lengthened by one hour to allow for an opening panel discussion and breaks within the tracks. The program, including articles highlighting the work from previous summits, was sent to attendees who accepted the invitation ahead of the event to help establish a shared mental model. Additional pre-work in the form of articles or summarized short videos were sent by leaders of each track.

With two summits and several resulting publications full of rich findings prior to this event, a panel of distance simulation experts was held at the beginning of the summit to help orient attendees to the current state of the work and answer questions. This was followed by a two and a half hour track session in separate Zoom rooms focused on specific research priorities. The event concluded with a 30-minute report-out by track leaders.

There were five goal-oriented track sessions, previously identified as research priorities. To ensure an engaging and generative summit, invited experts and selected novice scholars were divided into five goal-orientated track sessions based on their area of expertise and for varied demographic representation.

These five tracks included:

1. Assessment & Evaluation Track
2. Faculty Development Track
3. Human Factors Track
4. Pictogram Track
5. Psychological Safety Track

Track leaders for each session were recruited by the planning committee and given an outline of roles and responsibilities. Conference planners oriented and trained all track leaders starting with an orientation session and a session guide that included suggested structuring for their session(s). Experienced track leaders and summit co-chairs identified and recruited co-facilitators and assisted in orienting new track leaders by developing a track facilitation guide and providing mentorship before, during, and after the summit.

All conference sessions were video and audio-recorded to assist with this proceedings report and any other potential publications. By participating in the summit, participants granted consent for video/audio recording and dissemination of de-identified output of the meeting. Summit attendees were informed about the potential use of recordings and registration or evaluation survey data for the generation of scholarly output and dissemination in peer-reviewed journals. All recordings and surveys are securely stored on password protected devices.

Following the summit, the planning committee conducted a short debriefing and a follow-up evaluation survey was sent to all participants to collect feedback about the scientific meeting and to determine interest in engaging in future work.

SUMMIT THEME, MISSION & OBJECTIVES	
Theme	Advancing the Science of Distance Simulation
Mission	This 3rd Annual Healthcare Distance Simulation Research Summit will focus on scholarship to date and furthering the specific projects and ideas developed during the second summit by bringing interested simulation practitioners from all levels of experience to generate actionable plans.
Objectives	<ol style="list-style-type: none">1. Connect the global distance simulation community, with scholars of diverse backgrounds and experience, in the ongoing work of the Healthcare Distance Simulation Collaborative.2. Engage in discourse about established research trajectories, reaching consensus and advancing the science of distance simulation in meaningful ways.3. Garner commitment from established and potential distance simulation scholars, leaders, and mentors, allowing for expansion and exploration of new and ongoing research priorities.4. Produce scholarly output for dissemination

FINDINGS

The 3rd Annual Healthcare Distance Simulation Summit convened on Saturday, October 21st, 2022. Seventy-two experts from thirteen countries (see Table 1 below) and 14 disciplines attended, including professionals with backgrounds in anthropology, association management, human-computer interactions engineering, education, learning design, exercise science, nursing, nurse midwifery, pre-Hospital care, physical therapy, medicine, psychology, research, and simulation. Summit attendees were primarily from the United States (n=50; 69%; see Table 1), physicians (n=29) and nurses (n=19).

Table 1. Summit Attendance by Country

Country	Number
Bahrain	1
Belgium	1
Canada	8
China	2
Germany	1
India	3
Mexico	1
New Zealand	1
Saudi Arabia	1
Spain	1
Sweden	1
Switzerland	1
United States	50

A list of track attendees can be found under 'Byline Authors'. Findings of each track were summarized by track leaders at the conclusion of the meeting during the report-out session and are captured in the sections below.

Assessment and Evaluation Track

While distance simulation/assessment may sometimes be seen as an alternative when in-person simulation is not feasible, there may be elements of distance simulation that should be viewed from an assessment perspective as, perhaps, better than in person.

The Assessment and Evaluation track seeks to further explore this from two distinct angles:

1. Unique considerations of distance simulation assessment validity within the contemporary frameworks of Messick and Kane. The team intends to explore how validity evidence and assessment frameworks may need to be adapted for distance simulation. The planned approach will include an examination of common simulation assessment tools, providing worked examples of how these might be used in distance simulation, and exploring the adaptations (if any) that may be necessary, as informed by the validity frameworks of Messick and Kane.
2. Investigating the learner's experience of distance simulation (i.e. What do our learners think about distance simulation? How do learner characteristics and motivation affect assessment?). Proposed work in this area might include examining usability, cognitive load, accessibility, cost, and how these elements impact decisions that educators/assessors make about the type of modality they use.

Planned next steps include in depth review of the literature by sub-group leads for each of the above manuscripts with preparation of initial outline/draft to disseminate to the group. Track

participants will engage in meetings on a semi-regular basis to ensure progress and to incorporate feedback/input of collaborators.

Faculty Development Track

The Faculty Development track team identified three primary areas of interest to be further developed or explored. These include:

1. Digital fluency. Proposed work in this area is determining what is required for faculty to work in distance simulation (i.e. competency vs. proficiency). For example, to achieve digital fluency, just in time training for instructors may be required, as well as flexibility for using different modalities. Key factors for training in digital fluency include:
 - a. Problem solving abilities
 - b. Digital presence for debriefing
 - c. Cognitive load of the facilitator
 - d. Terminology understanding
2. Facilitators and barriers of faculty development. Proposed areas to further investigate include:
 - a. Diversity
 - b. Cost
 - c. Time/Bandwidth
 - d. Training needs
 - e. Research on return on investment for training faculty in distance simulation (focusing on value added elements)
3. Resource needs. Proposed opportunities to address in this area include the development of peer coaching techniques, modules specifically for distance simulation, engagement strategies for faculty, models for novice simulationists, and company partnerships to provide faculty resources/training.

Future directions for the Faculty Development Track include:

1. Establish the needs and create algorithms for the educational challenges that need to be resolved for digital fluency of distance simulation faculty development.
2. Digital presence with debriefing.
3. Uncover resistance among facilitators to learn new techniques.
4. Determine cognitive load of distance simulation on facilitators.
5. Diversity in faculty development in distance simulation: including cost, time and democratizing access to high quality faculty development to facilitators in distance simulation.
6. Determine the return of investment of training faculty in distance simulation to get leadership buy-in.
7. Uncover the utility of distance simulation in interprofessional training including the capabilities of current platforms to support IPE.
8. Develop faculty development programs in distance simulation such as:
 - a. Diploma in distance simulation and mainly in debriefing
 - b. Micro-credentials for facilitators (series of certificates)
 - c. Nursing CME for distance simulation
 - d. Modules for faculty development in distance simulation (similar to MacPFD and simulationpodcast.com/self-development-modules/)
 - e. Engagement strategies for faculty development in distance simulation
9. Partner with companies to support faculty development in technological resources.

Human Factors Track

The Human Factors track identified that there are more human factors efforts that need to be accomplished than there are human factors specialists currently working on distance simulation, resulting in the need for collaborations to advance the science and optimize distance simulation.

The following needs were identified and planned as initiatives:

1. Developing a human factors framework for distance simulation. The framework will be a resource for faculty and facilitators to determine the human factors needs to achieve certain learning objectives, such as the appropriate technology for a certain task. The framework may take the form of a flowchart or checklist.
2. Adaptation of cognitive task analysis methodology to distance simulation. Proposed work in this area includes identifying what parts of the simulation for a particular task need to be modified for distance simulation modalities. This work would assist with developing or modifying assessment rubrics.
3. Creating a solutions document from lessons learned (i.e. identifying overarching solutions to common distance simulation problems).
4. Providing requirements of the technology necessary to meet certain objectives (vendor, facilitator, and learner).
5. Developing a hybrid role for a distance simulation specialist that combines technology expertise with identifying the best type of instructional strategies that can be implemented with the technology available.

Planned next steps include establishing a monthly meeting for collaborators to work on these initiatives, starting with the human factors' framework and the adapted cognitive task analysis.

Pictogram Track

The Pictography/Visual Communication Track reviewed the five themes of pictography identified during a modified Delphi process at the 2nd Summit (Kou et al., 2022; Walsh et al., 2022). These themes were further discussed to identify and define the key elements that should be included in visual depictions of simulation in design/ structure (pictograms). These include:

1. Why: objectives
2. Who: participants
3. What: how do the icons interact with one another; equipment representation (manikins, computers, etc.)
4. Where: location icon (unit of practice)
5. How: simulation type (e.g. AR, VR, etc.)
6. When: timing (spatial lay-out)

Planned next steps include convening small working groups to address action items. A timeline has been created for the development of a "Pictosaurus", starting with addressing style consistency, developing agreement on icons using 'rapid prototyping', and developing alignment with terms in the SSH dictionary that might align with special icons.

Psychological Safety Track

The Psychological Safety Track focused on advancing work for IRB-approval and development of a psychological cognitive framework that encompasses psychological safety in distance simulation. Generative discussion during this track session focused on shaping questions and refining data points, including demographics, that will be collected to narrow in on and to best assess constructs of interest. Using the information derived from the track session, the protocol was finalized and submitted for IRB review. Once approval or exemption is granted the team plans on initiating the first phase of the study: a modified Delphi process designed to further shape the semi-structured questionnaire that will later be used for the interviews. The goal is to complete both phases of the study and have analyzed the data by the next summit.

LESSONS LEARNED

Immediately following the summit's closing report-out, the planning committee and track leaders came together for a debriefing session. An electronic survey was also distributed to all participants to elicit feedback. A second electronic survey was distributed to the inaugural group of novice scholars to collect comments on their experiences and lessons learned.

A total of 39 attendees (54%), including planning committee members, responded to the survey. Responses indicated strong interest (4-5 on a 5-point scale from all respondents) in attending future annual meetings and overall satisfaction with the length and quality of content of the session. Satisfaction with the opening panel discussion was also high with 35 of 39 respondents rating 4 or higher on a 5-point scale. To explore a proposal of providing continuing education credits (CE's) broached by members of the planning committee, attendees were also asked to consider how providing CE's would impact their likeliness to attend future summits. Only 6 of 39 attendees indicated that they would be more likely to attend if CE's were offered. The remaining 33 respondents were either indifferent or thought it would be a nice addition but would not impact their attendance.

Responses regarding what went well (see Figure 1 and Table 2) indicated that the organization of the summit overall and within the tracks was ideal and the collaborative discussions were valuable. Keeping the track groups small, using guided questions within the tracks, and receiving advance communication from track leaders were all helpful. Timing was seen as improved from last year with more time in the tracks, making the discussions feel less rushed.

Suggestions for improvement (see Figure 2 and Table 3) included more clarity on how to follow up with ongoing work, regular updates on work progress from track leaders throughout the year, setting ground rules at the beginning of the track sessions to prevent wordsmithing, and identifying local champions to help represent diverse areas and their unique needs in ongoing work.

Additionally, respondents suggested making the summit an open invitation, including a larger number of educators, holding the meeting twice per year, and allowing involvement in multiple tracks.

Figure 1. What Went Well- Attendee Responses

What Went Well

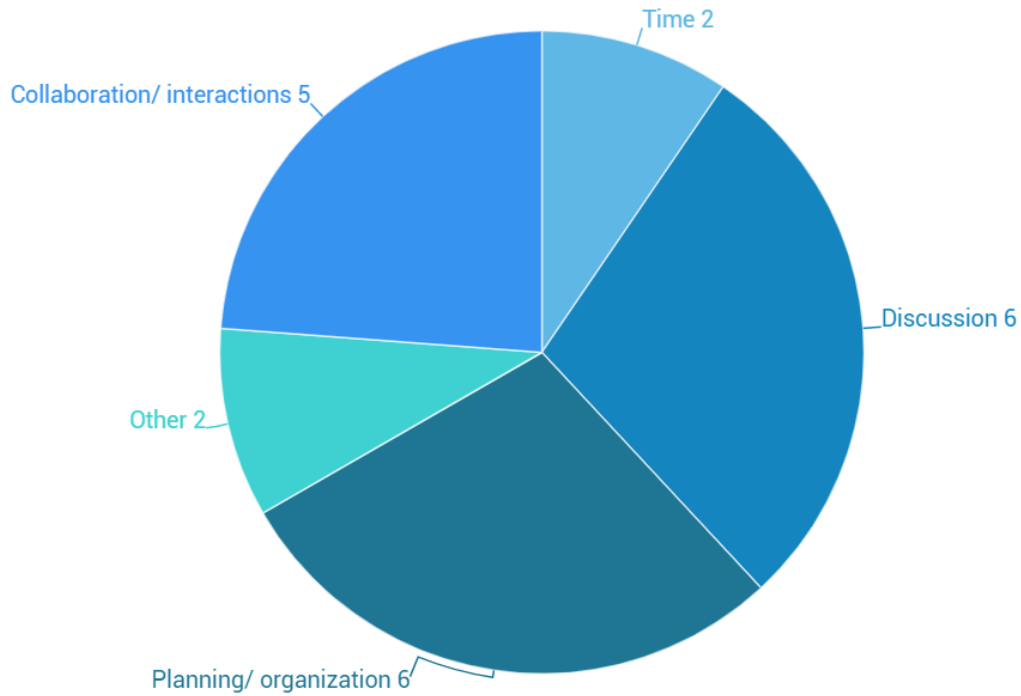


Table 2. Descriptive Comments: What Went Well- Attendee Responses

Discussion	Collaboration/ Interactions	Planning/ organization	Time	Other
Constructive	Talking with experienced simulationists	Overall	Improved from last year	Progress in work/ agenda
Efficient	Collaboration between diverse backgrounds	Track organization/ separation	Not rushed	Size of tracks
Robust		Track leader advance communication	Increased time in tracks	
Important				
Guided questions in tracks				
Panel discussion				

Figure 2. What Could Have Been Improved- Attendee Responses

What Could Have Been Improved

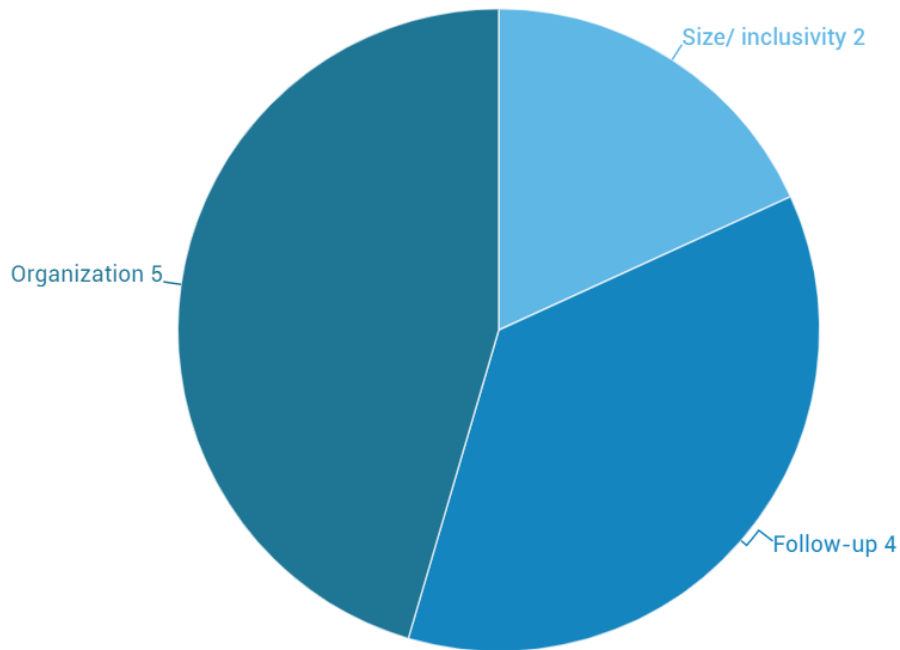


Table 3. Descriptive Comments: What Could Have Been Improved- Attendee Responses

Follow-Up	Organization	Size/ Inclusivity
How to follow-up after	Allow involvement in multiple tracks	Larger number of educators
Communication from track leaders throughout the year on what is being done (too much to digest)	Hold it twice a year	Open invitation
Sharing social media connections with other participants	More detailed/ defined goals	
Local champions with definitive needs	Ground rules for what is addressed in track (no wordsmithing/ micromanaging)	
	Leave with actionable, time-specific items	

The survey sent to the inaugural group of novice scholars received responses from five of the group of nine. All respondents indicated they were very likely to have continued participation, felt their assigned track was a good fit, planned to stay involved in the ongoing work from the track they participated in, and would recommend becoming a novice scholar to others.

Responses as to what went well (see Figure 3) included the collaborative nature of the environment, their inclusion in the discussions, meeting the track leads ahead of time, and being introduced by the track lead as a novice scholar at the beginning of the track sessions. Suggested areas for improvement included the opportunity to participate in multiple tracks and having more specific tasks and directions for the novice scholars within the track sessions.

Figure 3. What Went Well- Novice Scholar Responses

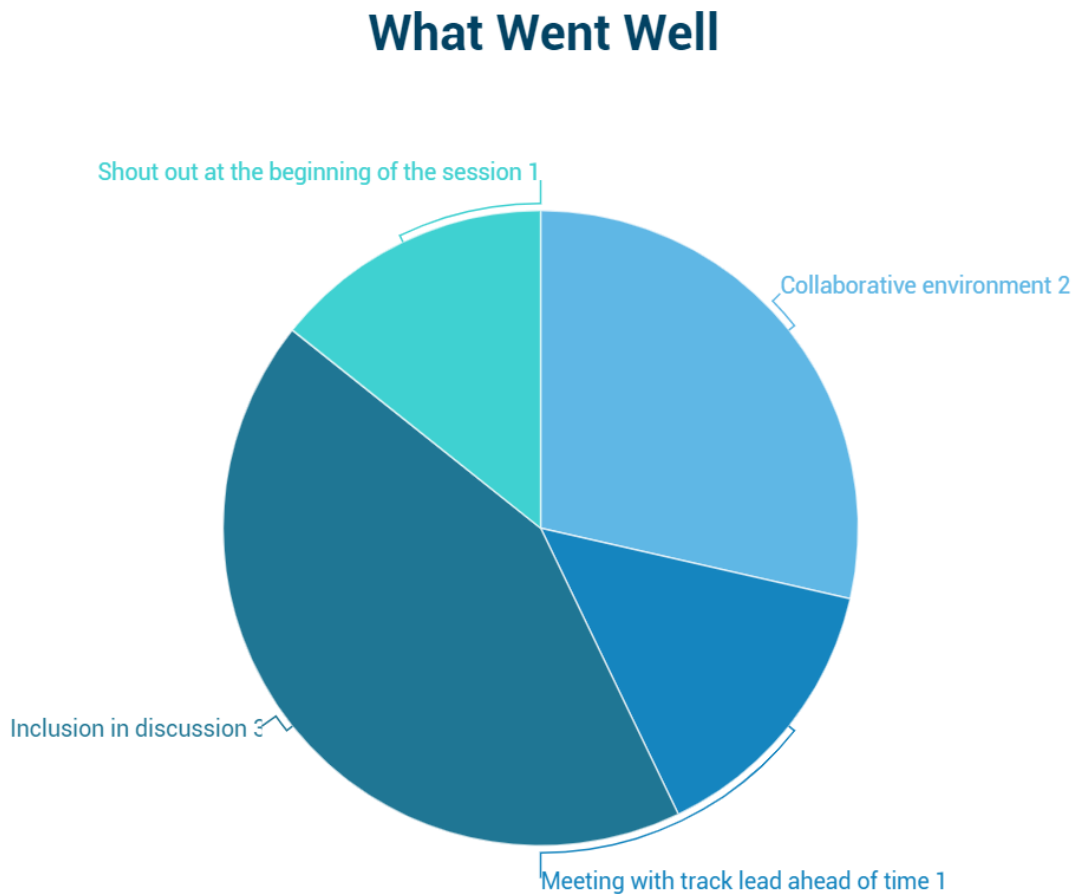
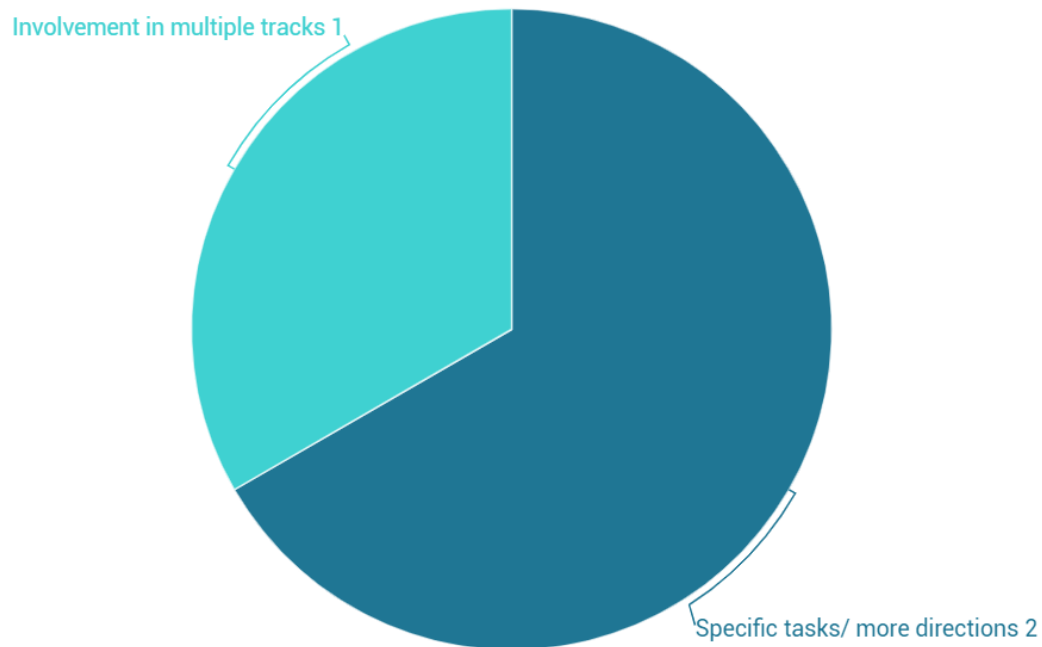


Figure 4. What Could Have Been Improved- Novice Scholar Responses

What Could Have Been Improved



Lessons learned from the 3rd Annual Healthcare Distance Simulation Summit will be used to inform the structure and format of a 4th annual summit in 2023. Interest in being a member of the planning committee for the 2023 meeting was included as an item in the post-summit survey, and the 2023 planning committee was formed from those responses.

A succession plan for summit planning sub-committee structure remains in place to sustain this annual scholarly meeting. Committee members continue to engage in brainstorming and discussion on how to most effectively promote inclusivity while keeping track groups small, regardless of the overall number of attendees. Current planning committee priorities are fostering commitment to ongoing initiatives, thorough post-summit progress reporting, and timely dissemination of scholarly output by the Healthcare Distance Simulation Collaborative.

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