



## ORIGINAL ARTICLE

## Views on the Effectiveness of a Google Jam Session for Interdisciplinary Collaborative Brainstorming to Solve Clinical Issues on a Geriatric Dementia Unit

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### Abstract

**Background:** Dementia is a leading cause of death, disability and hospitalization in Canada and globally. A partnership between Ontario Shores Centre for Mental Health Sciences and Ontario Tech University, both located in the Durham Region in the province of Ontario, Canada was established to create a space of technological innovation in front line dementia care on a Geriatric Dementia Unit (GDU). Our goals are to improve patient quality of life and recovery, enhance the health and well-being of patients with dementia and their caregivers, and allow front-line health and social care providers to practice to their full scope. A jam session is defined as a collaborative brainstorming and service prototyping event that does not have to be technology related, but occurs in a condensed timeframe. Currently, little is known about the effectiveness of jam sessions, especially in regards to interdisciplinary problem solving related to dementia care in health care settings.

**Methods:** A collaborative jam session employing Google jam technology between Ontario Tech University and Ontario Shores Centre for Mental Health Sciences was held to engage in problem solving for clinical challenges identified on a GDU. Focus groups were first held to identify the dementia care needs currently facing patients, their caregivers and clinical staff on the GDU (N = 27 total). Thematic analysis of the qualitative data responses collected from the focus

groups resulted in the identification of three major themes: (i) Communication and responsive behaviors; (ii) physical environment, and (iii) activities/stimulation. The themes identified aligned with a subsequent comprehensive review of both grey and white literature conducted by members of the research team. The survey consisted of three Likert-type closed-ended forced response questions, and three open-ended questions; where participants were free to answer in their own words.

**Results:** A total of 19 individuals (100%) completed the evaluation survey administered at the end of the jam session. There were 373 ideas total generated during the jam session, and the specific number of idea generated for the three themes of communication and responsive behaviours, physical environment, and activities/stimulation were 127, 132 and 114, respectively. Overall, the majority of participants felt that the jam session was an effective and innovative way to generate ideas for clinical solutions related to dementia for the GDU.

**Conclusion:** To our knowledge, this is the first report to examine the effectiveness of Google jam technology to engage in interdisciplinary problem solving for clinical challenges for a GDU. Innovative co-production during the jam session was evidenced by the vehicle of co-creation by all stakeholders involved. These preliminary results suggest that the jam session was an effective method for engaging in

interdisciplinary and inter-professional creative thinking and problem solving related to challenges faced by patients with dementia, their family, and clinical staff who administer care to patients with dementia.

### Keywords

Dementia, Jam session, Google Jam technology, Brainstorming

## Background

Dementia is defined as a chronic and often progressive neurological disorder that results in a deterioration of mental processes, and is a leading cause of death, disability and hospitalization in Canada [1]. The Alzheimer's Society of Canada predicts that by 2038, over 1.5 million Canadians will have dementia, and the cumulative economic burden will be in excess of \$872 billion. It is notable that approximately 9.9 million cases of dementia are diagnosed each year, or 1 new diagnosis every 3.2 seconds globally [2]. Currently, there is no cure for dementia and improving the quality of life for patients and their family is the primary health care goal in Canada and abroad.

A partnership between Ontario Shores Centre for Mental Health Sciences (Ontario Shores) and Ontario Tech University, both located in The Durham Region in the province of Ontario, Canada was established to create a space of technological innovation in front line dementia care on a Geriatric Dementia Unit (GDU) located at Ontario Shores. Our goals are to improve patient quality of life and recovery, enhance the health and well-being of patients with dementia and their caregivers, and to allow front-line health and social care providers to practice to their full scope. It is anticipated that the GDU will become a benchmark for national and global comparators in dementia care excellence.

A jam session is defined a collaborative brainstorming and service prototyping event that does not have to be technology related, but occurs in a condensed timeframe [3]. A jam session may include a variety of individuals from a range of backgrounds, expertise, disciplines and life experiences who partake in an innovative and creative problem solving and decision making process workshop [4-6]. Jam sessions seek to encourage "out of box" group thinking, brain storming and problems solving activities within a defined time period, and they have been employed since the 1980s [6-8]. Nonetheless, little is currently known about the effectiveness of jam sessions, especially in regards to interdisciplinary and inter-professional problem solving in health care settings. Accordingly, a collaborative jam session employing Google jam technology between Ontario Tech University in Oshawa, Ontario and Ontario Shores Centre for Mental Health Sciences in Whitby, Ontario was held to engage in problem solving for challenges identified on a GDU. In brief, Google jam boards are electronic whiteboards with many collaborative and innovative technological

features including the ability to post sticky notes anonymously, built in wide angle cameras and microphones, 16 simultaneous touch points, and handwriting and shape recognition software (see link for detailed specifications:

[https://static.googleusercontent.com/media/gsuite.google.com/en//files/Jamboard\\_Specs.pdf](https://static.googleusercontent.com/media/gsuite.google.com/en//files/Jamboard_Specs.pdf)).

## Methods

Our research approach entailed a two-step process consisting of focus groups sessions to elicit themes, and a written survey conducted after a jam session was conducted with stakeholders. Stakeholders in this investigation are defined as clinical staff and patients on the GDU; their families, and faculty researchers interested in dementia research from Ontario Tech University who have no financial obligations or requirements to Ontario Shores Centre for Mental Health Sciences or Ontario Tech University. We shall describe the steps that were taken to mount a Google jam session to engage participants in clinical problem solving to support dementia patients on the GDU, their caregivers and clinical staff. As well, we critically reflect upon the experiences to identify both the benefits and challenges of organizing and conducting a jam session.

We first defined clinical problems that currently face our geriatric patients with moderate to severe forms of dementia (e.g., Alzheimer's disease, vascular dementia, mixed dementias), their caregivers and clinical staff on the GDU. Specifically, focus groups were held with the aforementioned stakeholders (N = 27 total) to highlight current clinical challenges faced by patients and staff on the GDU. The following questions were asked by a single experienced facilitator to ensure consistency, and responses were also recorded verbatim and transcribed.

### Questions for clinicians

1. What are the complex issues on the unit that require innovative solutions?
2. To create new and innovative practice, how can technology be employed to improve your practice and improve patient care on the unit?
3. How do we enable top of license practice of all disciplines?
4. What are innovative ways of partnering with patients and families?

### Questions for families/caregivers

1. What are the complex issues on the unit that require innovative solutions?
2. To create new and innovative ways of providing patient care, how can technology be used to improve the care provided to your loved one?
3. What are innovative ways of partnering with patients and families?

Thematic analysis of the qualitative responses obtained from the focus groups were distilled into the following three major themes: (i) Communication and responsive behaviors; (ii) Physical environment and, (iii) Activities/stimulation. The researchers subsequently conducted member checks with the stakeholders to ensure that all major themes as identified were, in fact, suitable and correct. The themes identified also aligned with a subsequent comprehensive review of both grey and white literature conducted by members of the research team. Lastly, the three major themes identified were employed as the basis for the Google jam session.

Our research approach employed participatory action research, which is a characterized by the systematic study of the reported needs of stakeholders and the empowerment and implementation of a planned change to mutually and cooperatively solve real-life problems [1]. The jam session event began by dividing the participants into three focus group teams, each comprised of approximately 6 to 8 members total from university faculty researchers, clinical staff from the GDU, family members, and graduate and undergraduate students in the health sciences. Each focus group had their own Google jam board to post ideas anonymously. Each team spent approximately 15-20 minutes on each of the following three identified clinical challenges: (i) Communication and responsive behaviours on the GDU; (ii) Physical environment on the GDU, and (iii) Activities/stimulation on the GDU.

Three research questions guided the feedback sought for the survey component of our study that was completed after the Google jam session, and are detailed below:

1. Is a jam session an effective method for engaging in interdisciplinary creative thinking and problem solving related to challenges faced by patients with dementia?
2. Is a jam session an effective method for engaging in interdisciplinary creative thinking and problem solving related to challenges faced by family members of patients with dementia?

ing related to challenges faced by family members of patients with dementia?

3. Is a jam session an effective method for engaging in interdisciplinary creative thinking and problem solving related to challenges faced by clinical staff who care for patients with dementia?

Participants in the jam session were comprised of faculty members from various faculties on campus and disciplines (e.g., nursing, public health, kinesiology, software development, business and information technology, engineering), front-line health care professionals and staff (e.g., nurses, recreational therapists), family members and students. At the end of the jam session participants were asked to complete a written pencil and paper-type survey to evaluate the Google jam session and their experiences. The survey consisted of three Likert-type closed-ended questions and three open ended questions, which are detailed below.

## Results

A total of 19 individuals (100%) responded to the feedback survey administered at the end of the jam session. There were a total of 373 ideas generated during the jam session, and the specific number of ideas generated for the three themes of communication and responsive behaviours, physical environment, and activities/stimulation were 127, 132 and 114, respectively. The first half of the survey consisted of three Likert-type closed-ended forced response questions (Table 1), the second half consisted of three open-ended questions (Table 2) where participants were free to answer in their own words. Table 3 details some of the major solutions derived from the jam session for the three identified themes. Some of the major solutions under the theme of communication and responsive behaviours were the use of a patient portal to communicate with family members such as daily activities on the GDU and progress reports. Moreover, the use of tablets to communicate with patients using real face time (e.g., WhatsApp, Skype) was also suggested. In regards to the physical

**Table 1:** Likert- type survey questions.

Questions	Not At All Effective	Slightly Effective	Fairly Effective	Quite Effective	Very Effective
Q1: Overall, I believe that the jam session format was an effective <i>method or approach</i> to engage in interdisciplinary problem solving related to dementia	0%	0%	10.5% (N = 2)	42.1% (N = 8)	47.4% (N = 9)
Q2: I believe the jam session was an effective and constructive approach for the identification of possible <i>solutions</i> for the three noted themes examined today?	0%	0%	21% (N = 4)	42.1% (N = 8)	36.8% (N = 7)
Q3: I believe the ideas clustering session at the end of the jam session on the board was an effective and practical way to <i>visualize and prioritize items</i> .	0%	5% (N = 1)	42.1% (n = 8)	26.3% (N = 5)	26.3% (N = 5)

**Legend:** The first half of the survey consisted of three Likert-type questions.

**Table 2:** Open-ended survey questions.

<p><b>1. In your opinion what worked well during the jam session and WHY?</b></p> <ul style="list-style-type: none"> <li><input type="radio"/> Getting/seeing multiple opinions</li> <li><input type="radio"/> Introductions/background, Jam board session (brain storm)</li> <li><input type="radio"/> Group discussions while looking at the notes created learning</li> <li><input type="radio"/> Sticky notes time worked extremely well because anyone could post ideas comfortably</li> <li><input type="radio"/> I enjoyed the sticky notes aspect, the discussion afterwards. It really helped to outline everyone's thoughts and their perspective</li> <li><input type="radio"/> Opportunity to share ideas freely, mixed group to share ideas</li> <li><input type="radio"/> Use of sticky jam board to gather ideas</li> <li><input type="radio"/> Flush out ideas</li> <li><input type="radio"/> Mix of frontline staff, faculty and family members very valuable in idea generation. Lots of posts-it's.</li> <li><input type="radio"/> Meeting discussions</li> <li><input type="radio"/> New Google board is a cool way/organizing ideas</li> <li><input type="radio"/> The interaction with each other</li> <li><input type="radio"/> Jam board, able to provide ideas effectively, able to summarize ideas effectively</li> <li><input type="radio"/> Well organized, well planned</li> <li><input type="radio"/> Working in groups to organize ideas using sticky was useful because there was no pressure and it was anonymous</li> <li><input type="radio"/> Enjoyed the use of Google jam, idea process, going over different ideas, sorting as a team</li> <li><input type="radio"/> Idea generation</li> <li><input type="radio"/> Group communication was really great during the quadrant session</li> <li><input type="radio"/> Collaborating idea at the end discussing the post it's</li> </ul>
<p><b>2. In your opinion, what did not work during the jam session and WHY?</b></p> <ul style="list-style-type: none"> <li><input type="radio"/> Some of the tech was acting up</li> <li><input type="radio"/> Tricky to there (physical space) on board</li> <li><input type="radio"/> Probably a better transition moving around</li> <li><input type="radio"/> Prioritizing because it goes back to competitive conversation</li> <li><input type="radio"/> I think a little more time would have benefited more to outline their thoughts</li> <li><input type="radio"/> Trying to categorize themes/ideas at end of session</li> <li><input type="radio"/> Need some time to clarify some of the posts</li> <li><input type="radio"/> Too many conflicting opinions</li> <li><input type="radio"/> Felt rushed- not a lot of time</li> <li><input type="radio"/> Hard to find ERC room from parking lot, bigger room would be better (too narrow)</li> <li><input type="radio"/> Categorizing at the end was tedious, possibly do it after the brainstorming</li> <li><input type="radio"/> It was all great</li> <li><input type="radio"/> Nothing in particular</li> <li><input type="radio"/> The last part where we had to put sticky notes in themes. Too much to keep track of.</li> <li><input type="radio"/> A lot of time sorting themes, trying to ensure themes are no/as generalized, more focused was challenging</li> <li><input type="radio"/> Too many sticky notes, can categorize with fewer data</li> <li><input type="radio"/> We run out of time, during the summary, 10 min + subgrouping</li> <li><input type="radio"/> More time, we love to talk about ideas</li> </ul>
<p><b>3. Any additional comments or suggestion for improving future jam sessions?</b></p> <ul style="list-style-type: none"> <li><input type="radio"/> Jam was fun, smooth for tech based jam</li> <li><input type="radio"/> Great Start</li> <li><input type="radio"/> More comfortable chairs like the arm chairs with laptop table, space always an issue</li> <li><input type="radio"/> Uncertain of value provided when clustering themes</li> <li><input type="radio"/> Hence a facilitator that is effective in facilitating discussions among the group. Also provide discussion at the beginning</li> <li><input type="radio"/> More time</li> <li><input type="radio"/> Instructions were not clear enough in the beginning (causes delays), but eventually it all made sense</li> <li><input type="radio"/> More sessions in the future</li> <li><input type="radio"/> Some instructions on the Jam</li> <li><input type="radio"/> Perhaps grouping into teams right after brainstorming</li> <li><input type="radio"/> More ways to collaborate, nice interactive</li> <li><input type="radio"/> Should have more time to summarize</li> <li><input type="radio"/> Great idea</li> <li><input type="radio"/> Longer more discussion of ideas</li> </ul>

**Legend:** The second half of the survey consisted of three open-ended questions.



**Table 3:** Possible solutions derived from the Google jam session for each of the three major themes.

Major Themes	Solutions generated by the Idea Jam
Communication and Responsive Behaviours	<ul style="list-style-type: none"> <li>Tools to support translation/communication – AI to translate, translation apps; iPad for non-verbal patients to write their needs/wants</li> <li>Use of patient portal to communicate with family members regarding ADL's and activities on the GDU</li> <li>Remote video communication tools and apps (e.g., WhatsApp and Skype)</li> <li>Bio monitoring sensors to predict agitation or falls risk</li> </ul>
Physical Environment	<ul style="list-style-type: none"> <li>Customized music during ADLs, sleep routine and/or personal care routines</li> <li>Use of Snoezelen® multi-sensory environments and rooms and calming section of the main room - specially designed to deliver stimuli to various senses, using lighting effects, colour, sounds, music, and aroma therapy</li> <li>Technology for wayfinding</li> <li>Mood/customized lighting - Soft lighting (dimmer switch) in bedrooms, when a patient wakes up (e.g., help mood turned on); lighting technology to mimic sunrise/sunset, multicolour bulbs that can be changed in each room to suite patient preferences</li> </ul>
Activities/ Stimulation	<ul style="list-style-type: none"> <li>E-Companion - AI companions for patients/family; avatar asks questions, feedback to families</li> <li>Interactive gaming consoles (e.g., Xbox One, PlayStation 4) and AI games with personalized avatar guide</li> <li>Visual screens/projections - calm environment; simulated visual boards, i.e. moving scenery (train); projector from the ceiling; Video picture frames on walls in pt.'s bedrooms</li> <li>Make large digital screens look like windows; landscapes or calming projections (e.g., fish swimming, surf on a beach) on slide show or live stream</li> <li>Interactive boards/projections that are personalized; something projected on the walls that patients can interact with; projector games that can be used within a group setting</li> <li>Creative/Activity rooms (i.e. train, bus, plane setting); rooms that encourage multiple participants (reduce social isolation);</li> </ul>

**Legend:** Note AI = artificial intelligence; ADL = activities of daily living; see [https://sensory.flaghouse.com/snoezelen/?gclid=EAlaQobChMI\\_p2q4LfQ4glViJyzCh3IHghyEAAAYASAAEgJNyfD\\_BwE](https://sensory.flaghouse.com/snoezelen/?gclid=EAlaQobChMI_p2q4LfQ4glViJyzCh3IHghyEAAAYASAAEgJNyfD_BwE) for description of Snoezelen® multi-sensory environments and rooms.

environment, some of the major solutions suggested included altering the lighting on the unit; use of projected images (e.g., beaches, fish swimming) to create a calming environment, and use of Snoezelen® multi-sensory environment rooms. Under the activities/stimulations theme, some of the major solutions to decrease negative responses (e.g., hitting, biting behaviours) was the use of music therapy during procedures (e.g., while providing personal care). It was also suggested to use interactive consoles (e.g., Xbox One, PlayStation 4) to encourage patients to engage in physical activity and stimulation (Table 3).

Question 1 stated: "Overall, I believe that the jam session format was an effective method or approach to engage in interdisciplinary problem solving related to dementia". No participants (0%) responded that it was *not effective* or *slightly effective* to this question; whereas 10.5% (N = 1) of participants responded that it was an *effective* methods, 42.1% (N = 8) responded that it was *quite effective*, and 47.4% (N = 9) that it was *very effective*. Hence, these results suggest that the jam session was an effective method/vehicle for engaging in interdisciplinary and inter-professional problem solving activities related to dementia.

Question 2 stated: "I believe the jam session was an effective and constructive approach for the identification of possible solutions for the three noted themes

examined today?" No participants (0%) responded that it was *not effective* or *slightly effective* to this question; whereas 21% (N = 4) responded it *fairly effective*, 42.1% (N = 8) responded it was *quite effective*, and 36.8% (N = 7) responded it was *very effective*. Taken together, these preliminary results suggest that the jam session was an effective method/vehicle for finding potential solutions for the three noted themes critically examined.

Question 3 stated: "I believe the ideas clustering session at the end of the jam session on the jam board was an effective and practical way to visualize and prioritize items." No participants (0%) responded that it was not effective, 5% (N = 1) responded that it was slightly effective, 42.1% (N = 8) felt it was only fairly effective, 26.3% (N = 5) responded that it was quite effective, and 26.3% (N = 5) that it was very effective. It is noteworthy that the majority of respondents (N = 8) felt that clustering of ideas on the jam board at the end of the session needed some work to increase its effectiveness. This is also echoed in the open-ended questions detailed below in terms of time constraints and some noted problems in using the technology (Table 1).

Question 4 stated: "In your opinion what worked well during the jam session and WHY?" The specific feedback statements are detailed in Table 2. In brief, participants reported that the jam session was well

organized and planned. The use of technology for the posting of “sticky notes” and its anonymous nature was appreciated by all. Participants reported that the mixing of frontline workers, staff, faculty members and students was an effective method for generating ideas.

Question 5 stated: “In your opinion, what did not work during the jam session and WHY?” The specific feedback statements are detailed in [Table 2](#). In brief, participants reported that the technology acted-up at times or were not working properly for the entire session. Time limitations placed for problem solving for each of the 3 themes was deemed as inadequate by some participants. Lastly, trying to categorize the themes and ideas at the end of the session was reported to be difficult and/or frustrating by some participants.

Question 6 stated: “Any additional comments or suggestion for improving future jam sessions?” The specific feedback statements are detailed in [Table 2](#). In brief, participants reported that the jam session was a fun/enjoyable way to engage in problem solving activities. It was also suggested that the specific time limitations for problem solving for each theme be increased. Lastly, better instructions and facilitator training was also noted as areas requiring improvement/refinement ([Table 2](#)).

## Discussion

In sum, participants enjoyed posting and exchanging their ideas using Google jam technology boards without any noted constraints or pressures. Notably, participants appreciated the fact that their postings on the jam boards were anonymous in nature, which also helped prevent bullying or domination by a single team individual. The strategy of bringing frontline staff, faculty, and family members and putting them into mixed teams was critical for the generation of novel and unique ideas and solutions. Overall, the jam session event itself was found to be well organized, planned and executed. Thus, there was a request for more jam sessions to be held in the future by participants.

Although jam sessions have been employed in the context of reconnecting musicians, artists and dancers for creative expression for patients with dementia [9-12], to our knowledge this is the first report to examine the effectiveness of Google jam technology for engaging in interdisciplinary brain storming to solve clinical problems on a GDU. Although there has been growing interest in the use of electronic assistive technologies for dementia care to help support patients and families living with dementia in their homes, little is currently known about the use or effectiveness of these technologies in clinical settings involving patients with dementia [13-15]. Information Communication Technology (ICT) devices designed to support patients are usually referred to as Assistive Technology (AT) or Electronic Assistive Technology (EAT) [16,17]. It may be argued that the low

costs and wide availability of electronic devices makes it an attractive option for the benefit of patients with dementia and front-line clinical staff [15-17].

## Limitations

We acknowledge that our sample size was limited (N = 19), which could affect the power of the study, total number of ideas identified, and outcomes achieved. Nonetheless, it is critical to note that the space to conduct the jam session was also limited to a single room and that only three working Google jam boards were available for use. Although some participants indicated that more time on each of the three themes would have been desirable, we were also cognizant of fatigue setting in, as the total session was approximately 3.5 hours in duration from start to finish. Organisers of a jam session should consider and weigh whether or not the “problems” and potential “solutions” are, in fact, worth the effort, time, resources, planning, costs, and stakeholder willingness for engagement [6,8]. Our working group plans to subsequently examine each idea and solution generated and view it through the lenses of impact, effort and feasibility. It will also be determined whether the ideas and solutions generated are supported by both white and grey literature related to dementia care [13-17]. Further research is warranted to examine the effectiveness of Google-based jam technologies for collaborative interdisciplinary and inter-professional idea generation related to dementia care between research-based universities and health care centres for dementia.

## Conclusion

The future of healthcare must be transformed from discrete processes to integrated interdisciplinary services; from curative and rehabilitative to promotive and preventive one, and from primary clinician focused to patient-centred care in a unified continuum of care [18,19]. Running an effective jam session requires organization and planning, the willingness of participants to surrender personal control, skill in terms of the use of jam technology, and structure themes to work on and find innovations solutions to. It may be argued that collaborative problem solving during a jam session is a form of “participatory culture” where formal and informal teams work together to co-create, problem solve, prioritize and plan for potential clinical challenges faced by patients with dementia, staff, and family members. Moreover, innovative co-production during the jam session was evidenced by the vehicle of co-creation by all stakeholders involved. In conclusion, these preliminary results suggest that the jam session was an effective method for engaging in interdisciplinary creative thinking and problem solving related to challenges faced by patients with dementia, their family, and clinical staff who administer care to patients with dementia.

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All authors have contributed to the conception, collection of data, and writing of this manuscript.

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