The Online Lab: an ‘online-only’ technology club pilot for isolated young people with high functioning autism

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ABSTRACT
The Online Lab is a 2016 pilot project investigating the potential of an online-only version of The Lab, an established network of technology clubs for young people with high functioning autism. Designed for young people who are geographically and socially isolated, the pilot is generating useful new knowledge about what works and what doesn’t in synchronous, mentor-led online technology workshops, including the impact of session structures, technology affordances and mentoring styles.

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Sociality, videoconferencing, high-functioning autism, Asperger’s Syndrome, computer-mediated communication, social distance

ACM Classification Keywords
H5.m. Information interfaces and presentation (e.g., HCI): Miscellaneous.
J.3 Life and Medical Sciences: Health.

INTRODUCTION
The Lab (www.thelab.org.au) was founded in 2011 to provide a weekly social space where young people with high functioning autism (HFA) aged 10-16 could meet, make friends and learn new technology skills from expert IT mentors (Schutt et al, 2015; Wadley & Schutt, 2013). Beginning with one location in inner-western Melbourne, The Lab has since grown into a national network of 15 sites, managed by a not for profit company which now runs 240 sessions per school term. Face to face Labs are predicated on two spaces: a flexible space where participants and mentors interact, and another where parents and guardians meet. Locations are generally sourced for no cost via community organisations, government-run spaces or businesses that wish to ‘give back’ to the community.

This need for dedicated physical spaces raises issues related to accessibility and equity. Firstly, isolated young people living in remote or regional areas, or those living far from existing Labs, are not able to access the opportunities afforded to others more centrally located. Already Lab members have been known to travel up to three hours each way to attend sessions. Secondly, Labs are not always at places of greatest demand. Spaces are sourced on the basis of availability, and on the location and wherewithal of volunteer groups setting up local Labs. And thirdly, existing Labs are not always able to cater for local demand with waiting lists common.

As early as 2014, some Lab mentors enquired about the possibility of running an ‘online only’ version of the Lab. As the section on Differentiated Spaces outlines, Lab participants’ patterns of social interaction involve complex and nuanced combinations of online and face-to-face activity. We wondered whether an online-only version could replicate some or all of the positive impacts evidenced at The Lab (Donahoo & Steele, 2013), a project that had previously been predicated strongly on face to face contact, and in the process produce new opportunities for young people who might otherwise have no access to the kinds of social interaction and skills development offered at The Lab.

In 2015, the Online Lab project team secured funding from the Lord Mayor’s Charitable Foundation to run a pilot Online Lab in 2016 over two terms, involving up to 24 young people. This project is currently underway, with ethical clearance having been received from Victoria University in July 2016.
Full evaluation data collection and analysis will occur at the conclusion of the pilot in December 2016. This evaluation focuses on questions of impact and will be undertaken using a cross-sectional design (Pope & Mays, 2003), with an emphasis on qualitative methods, combined with a limited amount of quantitative data (de-identified web statistics, gathered via the Online Lab platform, on user activity and numbers over time).

Qualitative evaluation methods will consist of:

- online questionnaires with Online Lab participants, undertaken at the conclusion of the pilot
- semi-structured telephone interviews with participants' parents/guardians, undertaken at the conclusion of the pilot
- an Online Lab mentor focus group, undertaken at the conclusion of the pilot
- mentor field notes, written throughout the pilot and collected at the conclusion of the pilot
- online posts and comments by participants, written throughout the pilot and collected at the conclusion of the pilot.

PLANNING THE ONLINE LAB ROLLOUT

The Online Lab began with a documented ‘practice review’ of other online technology projects working in aligned areas, including the technologies used by these projects. The most relevant of these to the Online Lab was the successful Games Net project (https://www.acmi.net.au/education/student-programs/games-net/), run by the Australian Centre for the Moving Image in Melbourne. Games Net runs computer games workshops for 10-16 year old school students, both in person and online. We were fortunate to access the expertise of Games Net manager Vincent Trundle about the Online Lab project, and we concluded by opting for the same combination of communication technologies deployed by Games Net after our review of available options: Zoom videoconferencing and Slack text messaging. This choice was made for a number of reasons, some of which had also been considered by Games Net. These included:

- ease of use
- security: Zoom is encrypted and recognised by US insurers as a safe communications channel
- availability to young people under 13 years of age
- cost
- features that allow participants to retain control over how they communicate (eg turning off video or voice)
- ability to record text conversations.

The project team also decided to commission a selection of online video project tutorials from existing Lab mentors, on topics likely to be of interest to participants. Whereas face to face Labs only introduce IT learning gradually to attendees on topics of personal interest, we were unsure how this would translate to an online-only environment. The practice review suggested that some pre-existing, structured tutorials would be useful to include in our sessions. After discussion with the content creators, these videos took the form of four series of short instructional videos covering games programming, the Unity 3D program, advanced HTML and the creation of light-enhanced clothing and accessories using conductable thread. These videos were uploaded to a public YouTube channel, but were also collated via ‘project pages’ within a customised online portal - built using Wordpress by a Victoria University web developer - that participants are required to log onto when attending sessions. This portal also allows mentors and administrators to upload notes on participants and sessions, and it records who has logged in and for how long. The longer term intention is for this portal to become a project and idea repository for the Lab in general, both for online and face to face versions.

The initial plan for the Online Lab was to run weekly after-school, mentor-run sessions moderated by the Online Lab Coordinator, who is also the Lab’s national coordinator as well as a qualified, experienced educational manager. These sessions would consist of:

- one after-school 30-minute video conference tutorial session using the Zoom videoconferencing system.
- two after-school 60 minute ‘drop in’ sessions using the Slack messaging service. These sessions would be optional for participants.

However, after further discussion both with the mentors and families of potential participants, it was decided that we would instead run three separate weekly sessions of 2-3 hours each based on specific areas of participant interest, matched by mentor expertise.
RECRUITING MENTORS AND PARTICIPANTS

The Online Lab project was predicated on responding to the needs of young people with autism who cannot access a face to face Lab or similar, and who are isolated geographically. To that end, the project team secured in-kind support from the Brisbane School of Distance Education, which circulated information about the Online Lab, including the link to an online application form with details of the project, through its networks. The project press release also generated a number of local media stories in regional Queensland newspapers and radio, plus one media newspaper story in Victoria. Additionally, the project accessed The Lab’s existing networks within regional Victoria, particularly Geelong and Bendigo. As a result, interest was strong and we were able to start with a full contingent of young people in July 2016.

In terms of recruiting mentors, our original plan was for the mentors developing the video content to also undertake weekly online mentoring. The project team’s preference was to retain the same mentors throughout the two school terms of the pilot, based on the importance of developing rapport and trust between mentors and participants – one of the identified factors for the success of the face to face Labs (Donahoo & Steele, 2013). However, a six-month weekly mentoring commitment was only possible for one of the original content creators. The other two mentors were sourced through digital media teaching networks and existing Lab mentors.

CURRENT STATE OF THE PROJECT

At the time of writing, the Online Lab pilot has operated for one of its allocated two terms of operations. Thus far it can be considered a qualified success. Attendance, although variable at times, has held up overall and both mentors and a number of participants’ families have reported that engagement and interest has been reasonably high. However, this was not universal and some participants have dropped out. The evaluation in December 2016 will involve following up with parents of participants who have ceased to attend, as well as those who have stayed. We also elected to remove one participant from the program due to behaviour that resulted in other participants feeling anxious: this occurrence has implications for the choice of video and text communication technologies in online-only projects like the Online Lab, especially in regard to levels and types of user control. All mentors remain motivated and interested, and have agreed to extend their involvement for the second term of the pilot. We will have a clearer sense of the main project issues and knowledge gained by the time of the OzCHI conference, although not all data will have been collected by then.

EMERGING FINDINGS: DIFFERENT TECHNOLOGIES, DIFFERENTIATED SPACES

The term ‘differentiated spaces’, devised by Ng through her doctoral work at The Lab (Ng et al., 2015), recognises online, offline and personal spaces as unique in their own right and capable of facilitating particular forms of communication. However, these spaces do not exist in isolation. In an environment like a face to face Lab, they overlap and interconnect to form distinct cultures of socialisation that extend beyond ableist narratives of sociality (Ng et al., 2015). This draws on notions of space as multidimensional (Gores, 2000), involving personal interaction and the effects of proxemics, as well as technology-facilitated forms of interaction. In an online-only environment, however, the affordances of chosen communication technologies take on greater significance as they are not mediated by, or combined with, proxemics, choice of location and physical interaction. In the case of the Online Lab, we found that a participant’s behaviour can be more disruptive to others in an online-only environment, especially when the technology allows them to dominate through the use of tools such as the activation of screen-sharing. Further, the likelihood of such behaviour may increase in online-only environments, due to frustration caused by technical aspects of the communication not working effectively. Potential technical issues are many and include faulty or ineffective hardware (eg microphones, computer graphics cards), management of the technology during sessions, software limitations or internet lag. Additionally, conferencing technologies designed to focus attention on one speaker at a time may limit the number of parallel social interactions that might otherwise occur within physical spaces during face to face Lab
sessions. At the time of writing, there are moves by some software vendors to introduce multiple screen sharing capabilities: this would be likely to have a significant impact on social dynamics within online-only projects. To date mentors have also highlighted that other improved features would help to facilitate online-only sessions. These include stereo rendering of voices and push-to-talk features that would reduce distracting background noise – a concern both for mentors and young people with autism, some of whom can be very sensitive to noise.

CONCLUSIONS
To date, the Online Lab pilot has generated encouraging results overall. Current indications are that it, and other online-only workshops, could make a positive difference to the quality of the lives of many isolated people, including those with autism. However, there is still a lot to learn about how the affordances of the technologies deployed, human elements and planning may play out to further or hinder success of such initiatives. We have begun to gather insights that will help inform the design of future online-only projects in the future, as well as the further development of the Online Lab itself. The forthcoming evaluation of the Online Lab will expand on these insights in more detail.

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