
Situated Displays as a Tool to Aid Under-Represented Communities

Stuart Nicholson

Open Lab,
University of Newcastle,
Newcastle Upon Tyne, UK.
s.a.nicholson1@ncl.ac.uk

Abstract

Situated displays are commonly associated with urban environments with their main purpose typically focusing on advertising. Within my research I explore an alternative application of situated displays, investigating how they can be used to bring detached communities together and promote cohesion. Within this paper I discuss my current on-going research as a doctoral trainee and highlight how situated displays can be used to bridge borders as well as relating my own research to potential future work and collaboration.

Author Keywords

Situated Displays; Social Inclusion; Community; Civic Engagement.

Introduction

HCI4D research includes a broad and diverse range of technology related topics ranging from ignored or disenfranchised groups, cultural, demographic, economic, rural and urban communities. My work predominantly focuses on working alongside rural communities in an attempt to overcome a range of different borders. The borders in question stem from the geographically remote community's social, physical

and material disconnect between surrounding and more urbanized societies – borders which might often be seen as 'gaps', 'absences', or even 'decreased flows' in institutional, technological, and political discourses and practices. Specifically, I use situated displays as a tool to impede rural-urban flight (working to retain within borders), raise the profiles of alienated rural youth (working to deconstruct internal borders) as well as overcome problems of disparity associated with rural public transport (working to traverse borders).

Glendale

Within my own doctoral work (first year) as a HCI4D researcher, the focus of my research centered on a small rural community named Glendale. Glendale is a socially and economically deprived community with an approximate population of 6,700 inhabitants living across an expanse of 250 square miles of north Northumberland, United Kingdom. Glendale is surrounded by a number of larger towns and cities including Newcastle-Upon-Tyne and Berwick-Upon-Tweed whose population, services, public transport and education dwarf that of Glendale (Figure 1). In comparison to its neighbours Glendale's infrastructure has developed at much slower pace. One such example is Glendale's recent move towards a more automated techniques for farming and agriculture, techniques which more developed and affluent areas have adopted and utilized for years. Glendale can be seen as a slowly developing community with its problems cascading across localized borders.



Figure 1: Rural area of Glendale with the village of Wooler (Central hub of Glendale) highlighted by an arrow.

Within the past four years, the Glendale community has witnessed a significant increase in aging population as youth leave the area in search of new opportunities within neighboring cities and towns. An emerging intergenerational gap has opened up between that of the ever growing older population and the remaining youth of Glendale. With this trend, rural-urban flight is threatening the future of the UK's smaller and more remote towns and villages. Glendale as a rural community possesses a great number of social, material and institutional gaps which were identified [3] as contributing to young people's social exclusion. These include a lack of:

- *Affordable housing:* A problem for residents regardless of age. The premium placed on rural homes as a desirable location for living makes it increasingly difficult for youth to enter the property market. A large factor contributing to the growing intergenerational gap.
- *Employment opportunities:* Decline of manual industrial employment with a shift towards automation resulting in the decline of long-term and sustainable employment for youth. Again, a large contributing factor to the growing intergenerational gap which is further compounded by older residents who live securely on work pensions.
- *Sports and leisure activities:* Due to the vast area in which Glendale is located, information distribution regarding local opportunities, activities and events is limited due to poor transport links.
- *Reliable transport:* Public transport between individual settlements is sporadic and unreliable at best with many smaller populated locations being excluded from public transport.

- *Higher education:* Post-16 education requires youth to travel to neighboring cities such as Berwick-Upon-Tweed or Newcastle-Upon-Tyne. This rural-urban border results in those few fortunate enough to afford travel being able to commute for further education.
- *Community initiatives:* Little local awareness of youth isolation resulting in a lack of willingness to engage with young people.

The younger population of Glendale feels increasingly side-lined by the shrinking opportunities available to them, reinforcing the perception that they live within a disadvantaged community. Notions of Glendale as a deprived and under-resourced area are only exaggerated by that of neighbouring major cities such as Newcastle and Berwick which offer a far wider range of prospects for youth. It is apparent that there is a significant lack of fair distribution of socially valued resources resulting in spatial injustice [4].

Situated Displays

Situated displays are a ubiquitous part of our environment and have become a common visual attraction within highly populated and centralized urban locations such as towns and cities. More recently, situated displays have spread into more rural areas due to the increasing geographical expansion of internet services and greater accessibility of affordable display technology. Taylor et al. [1] documented his implementation of display technology within a rural context to explore its potential for supporting a declining community that was suffering from 'consultation fatigue' – the frequent consultations about improving the area with little perceived effect [2].



Figure 2: An early prototype of a situated display mounted within a café within Glendale.

In my research, a participatory approach was taken when engaging with a local trust¹ as well as correspondence with local residents and youth to discuss their concerns in greater detail to further identify the more prominent issues facing youth within the area. The overarching problem of social exclusion from the youth's point of view was explicitly linked to localized problems surrounding a distinct lack of awareness about local opportunities due to *poor information distribution*. A number of external considerations had to be taken into account when designing for the new system which included:

- *Sustainability*: A small amount of funding was secured for the purposes of financing the project up to one year however; the project had to be designed so that it was financially sustainable and operational for the foreseeable future.
- *Stability*: Internet services, although greatly improved, still suffer from regular drop outs and poor connection quality so architecture to consistently handle this was incorporated.

Drawing inspiration from previous local efforts and their success (targeting other issues), an improved digital signage approach was chosen as a means to aid information distribution within Glendale. A network of situated displays (Figure 2) was constructed which allowed content to be created via a centralized web authoring system. A volunteer network of citizens were recruited to act as local champions whose purpose was to collect localized information from a variety of far stretching rural locations regarding employment and volunteering, education, leisure, recreation and social

opportunities. Once collected, information was formatted and digitally compiled using the online web authoring system to distribute across the 10 displays within the rural community.

Conclusion

The research is concerned with working alongside rural communities in combatting the problems which stem from rural-urban diversity. More specifically, this research seeks to address: 1) the border of public transport availability between rural and urban environments and how that impacts on young people's ability to reach further education and employment opportunities, and 2) the intergenerational border that has opened up has reduced young people's population within the area which impacts on their presence and perceived importance within the community. Whilst situated displays can have limited impact on many of the problems prominent within the Glendale area, some can be aided by utilizing digital signage as a means for better communicating those small opportunities that do exist within the borders of Glendale. The overall approach of the work involves working across the borders previously identified, with the desired outcome of maintaining youth population within the border of Glendale.

As outlined within this position paper, I believe my research interests surrounding the use of situated displays within rural communities, is directly in line with the core principles of HCI4D; using technology to assist under-resourced communities. I am keen to attend the workshop so that I could potentially discover alternate applications of situated displays as well as meet like-

¹ <http://www.wooler.org.uk/glendale-gateway-trust>

minded individuals with similar interests or ideas about where and how they could be used.

References

1. Taylor, N. and Cheverst, K. (2012). Supporting community awareness with situated displays. *IEEE Computer* 45(5), 26–32, doi:10.1109/MC.2012.113.
2. Taylor, N., Cheverst, K., Wright, P. and Olivier, P. (2013). Leaving the wild: lessons from community technology handovers. *Proc. CHI 2013*, ACM, 1549–1558, doi:10.1145/2470654.2466206.
3. T. Johnston, A. Hilton, P. Healey, C. Nigro and K. Lohfink, "Staying Alive in Glendale", 1st ed. Wooler: Glendale Gateway Trust, 2013, pp. 4-28.
4. Soja, E. Seeking Spatial Justice. University of Minesota Press, Minneapolis, MN. 2010.