

# THE ROLE OF COMPUTER TUITION IN COMMUNITY HEALTH: A GROUNDED THEORY APPROACH

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## Introduction

This study describes the impact computer training has on the health outcomes of older adults at a community centre and its implications for influencing computer training practices. Our objective is to understand and link this group's self-reports of their health arising from attending lessons to improve the content and delivery of computer tuition. In this paper we first discuss our research questions and review the literature on the relationship between computer tuition and health. We then discuss our data collection method using ethnographic practices and our use of Grounded Theory to analyse our data. The theory that emerges – that the way computer tuition is practiced does have a role in community health – is evident from the disclosure of self-reports older adults make, as our results suggest. We then discuss our findings emphasising implications for education policies and practices for older adults undertaking computer training.

## The Research Site and Research Questions

In this section we describe the study's background. The community centre, based in outer Brisbane, has for seven years offered one on one and occasional group training in computer software and hardware issues. This centre is situated in an area where there is a growing ageing population and has achieved the reputation of offering quality tuition and low cost computer training with a high participant involvement rate. The centre's goal is to encourage healthy ageing through organised participant activities, reflecting the World Health Organisation's (1946) definition of health; that it is a state of complete physical, mental and social well being and not merely the absence of disease. The centre offers computer training to encourage healthy ageing through developing familiarity with technology. Computer use can impact on the well being of older adults who may find mastering technology difficult but need to interact with it. Not being able to use many forms of technology is considered a source of stress for older adults (Queensland Health, 2004).

We observed during our study that the older adults we interacted with verbally reported an improvement in their physical and mental health from attending lessons. Australian Governments have developed policies encouraging older adults to gain computer skills, but the effective delivery of computer training to older adults is still a problem. They can feel stressed as their family and peers use technology that they cannot, and they feel bewildered when attempting formal computer training that teaches at a fast pace. Training providers may be unable to teach computer skills effectively because they lack an understanding of the learning needs of older people. It is also difficult for older people to

enter into debates into the education policy-making process (Hearn, Mandeville & Anthony, 1998) and influence training institutions to provide tuition designed for their specific needs.

Therefore, what we are investigating is the presence of a link between self-reports of health and the computer lessons taught at the centre. Health self-reports refer to the individual verbal assessment of one's own overall physical and mental health (Wannamethee & Shaper, 1991). We are interested in the words older adults use to indicate, directly or not, that coming to the centre is having some effect on their health. This is the starting point of understanding the phenomena of the role of computer tuition in community health. Using this concept, our research questions are:

- What is the role of computer tuition in community health?
- How can the self-reporting of health improve training organisations practices and lesson delivery?

From the centre's older adults descriptions of the exact elements of computer tuition practices that cause them to disclose self-reports of health, we can raise awareness of what teaching styles and methods encourage them to continue learning computer skills.

## **Literature Review**

Our study is placed in the field of improving education practices for the ageing. Education as a lifelong learning process can assist in the goal of achieving healthy and successful ageing (Davey, 2002). The demand for computer skill acquisition is growing from older Australians as they increasingly interact with technology. Computer tuition offers a source of increased social support for them through providing access to their interests, such as finding online health information, preserving family photographs and communicating with family and friends (Selwyn et al, 2003). Computers effects on older adult's physical and mental health states have been frequently researched. The gap in the literature we address is how can such research be used to improve the method and delivery of computer lessons?

Studies that report older adults have increased physical and mental health outcomes through learning computer skills exist. An early study by Danowski and Sacks (1980) suggested that computers did reduce feelings of loneliness. They tested a computer messaging system and concluded that by older adults talking online with others in various geographic locations it increased social interaction and reduced feelings of isolation. Danowski and Sacks (1980, p. 132) further suggested the presence of a tutor giving individual instruction in the early stages of computer use was vital to repeat usage of the medium. Relevant and meaningful computer training influences older adult's attitudes to use the medium (Segrist, 2004, p. 568). When older adults gain the benefits of increased social interaction in society, from online sources, other computer learners and with tutors, they tend to report increases in their health. For example, Iida (2000) suggested that internet and email use reduced older adults' psychological symptoms of anxiety. This is because the studied group felt they had social support from family and distant relatives, friends and acquaintances even if they were distant. Other researchers have found

decreased depression rates resulted from internet and computer use because such use encouraged feelings of social inclusion (Alpass & Neville, 2003; White, 2002).

Therefore, this body of research suggests computer teaching does have an effect on the reporting of positive physical and mental health outcomes in older adults. In particular, computer and internet facilitates social contact with a variety of people and reduces feelings of isolation. However, two issues exist with this research. Firstly, researchers often use survey and statistical testing to present results, ignoring participant descriptions of their health. Secondly, applying the knowledge gained in practice from reports of health improvement using computers is scarce. They often do not describe in detail what specific factors of health improvement had an effect on older adults and what consequences this may have for developing effective computer training. Themes found in the literature that indicate computer tuition is ineffective in meeting older adults' needs in the design and delivery of lessons, cover several areas. Mayhorn et al (2004, p. 198), for example, have suggested that older adults experience frustration at computer training courses when absolute beginners are placed with experienced users. White and Weatherall (2000) suggest it is the cost of lessons and actual ownership and access to a computer that is a barrier to obtaining computer skills.

What the literature suggests is disparity between reporting the benefits of the role of computers in health and how these were adopted to improve tuition delivery. Whilst governments and computer training providers may acknowledge the evidence of positive health outcomes from computer tuition, analysing health self-reporting data that links the tuition with health outcomes is scarce. Our research contributes to current understandings of successful training by describing the role of computer tuition practices in health self-reporting and how this information can be used to improve lesson delivery and content. These can be useful in improving training practices by giving a greater depth of information that statistical research may not.

## **Research Framework and Design**

### ***Ethnographic Data Collection***

Our study used ethnographic methods to collect the data. Brewer (2000, p. 10) defines ethnography as studying people in naturally occurring settings where the researcher participates in the setting. We spent three years at the centre observing participants. Two features of contemporary organisational ethnography we used in this research are (Brewer, 2000):

1. Observation: This involves watching the actual practices of the group or individuals at their workplace and unobtrusively recording participant/tutor interactions and;
2. Actual Participation in Work or Social Life of the Site: Performing tasks associated with the running of the site.

Observation involves watching interactions between older adults and tutors during lessons. Interactions were described in detail and conversations between tutor and student

discreetly recorded. Fieldnotes were written to describe scenes of actions and behaviours, describing as much as possible what happened, where, how and for how long. This allowed us to compare behaviours against what was actually said by older adults. It also facilitated formulating the types of questions that would elicit explanations of behaviour from the group that we could ask.

After a long period of observing lessons we began semi-structured interviews. We wanted to elicit older adults views on a number of points observed whilst watching them undertake lessons, but not impose our own researcher-chosen categories on what was occurring (White & Weatherall, 2000). We kept an open view on what, if any, reports of health were connected to the computer lessons. We interviewed fifteen people who undertook lessons at the centre. The requirement for an interview was that they needed to have been coming to lessons for a minimum of three months to obtain a wide range of information. Most of the interviewees had attended classes for much longer than this.

### ***Grounded Theory Analysis***

We analysed our data by using the Grounded Theory method developed by Glaser and Strauss (1967) and Corbin and Strauss (1998) where the discovery of theory from data that is constantly compared against other data, occurs (Glaser & Strauss, 1967, p. 1). Our aim in this section is to concisely explain the way we employed their framework. We began with an area of interest; investigating if there was a link between computer tuition practices and health. Ethnographic data were then obtained by observing the lessons between tutor and learner. This meant that each sampled event, the observation and the interview, continuously added to the developing theory. It allowed what Grounded Theory calls initial categories to emerge, in turn shaping the types of questions we asked the participants (Corbin & Strauss, 1998).

While we continued observations and interviews we started the coding process. To code is to allocate words and phrases to the text that explain, in the researcher's view, the phenomena being observed. Firstly, open coding is an analytic process of reading the data and identifying potential categories, their properties and dimensions (Corbin & Strauss, 1998, p. 101). This is a general process where phenomena are described and a category labelled with properties that illustrate that category. For example, an older adult would tell us how they felt after a lesson. We would devise a category such as 'health' and describe the properties of that category as 'felt better'. Once we formed this list of categories we then employed axial coding. The established category decided upon is an axis (Corbin & Strauss, 1998, p. 123) which other categories and their properties are connected to. Causes, context and the words older adults use to describe their experiences are examined for relationship connections. For example, the 'Well Being' category is linked to the property 'Tutor Style' as the property causes the category to exist. To illustrate, an older adult may be taking an action of coming to classes as they self-report they experience better mental health from the contact. When a category reaches saturation, where no new relationships and properties are emerging, selective coding, integrating and refining the theory, is undertaken (Corbin & Strauss, 1998, p. 143).

Selective coding, Corbin and Strauss (1998) advocate, is where a set of criteria for finding the central categories is used. These procedures are:

- The category is central with everything in some way relating to it;
- The category appears frequently in the data;
- The explanation that evolves by related categories is consistent and logical and;
- The category explains variation as well as the main point made by the data.

Our final procedure was to check for representativeness of categories by examining them across the data. Both fieldnotes and interview were checked for patterns of categories and frequency of the types of words used. The following results emerged from the data using the Grounded Theory method.

## Results of Study

We found that the way computer tuition is practiced at the centre does have a role in community health. Older adults self-report an improvement in their health from attending classes linked primarily to the tutor's lesson delivery and style of instruction. The two categories that emerged from the data to support this were 'Well Being' and 'Persistence'. The categories, properties and their dimensions are displayed in Table 1:

**Table 1: The Role of Computer Tuition in Community Health: Categories, Properties and Dimensions**

CATEGORY	PROPERTY	DIMENSIONS OF PROPERTY
Well Being	Tutor Relationships	<ul style="list-style-type: none"> <li>- Tutor being younger was seen as a positive influence</li> <li>- Duration of relationship did not deter participant if tutor had to leave</li> </ul>
	Tutor Style	<ul style="list-style-type: none"> <li>- Tutors display high amounts of patience</li> <li>- Solving meaningful problems</li> </ul>
	Technology	<ul style="list-style-type: none"> <li>- Technology access allows participant to achieve and problem solve</li> <li>- Technology achieves a goal and causes participant to want to learn more about the technology</li> </ul>
Persistence	Tutor Relationships	<ul style="list-style-type: none"> <li>- Tutor repeats explanations until participant understands</li> <li>- Tutor teaching the software filled a social need in the older adult resulting in repeat lessons</li> </ul>

These will be further explained in the next section. However, to clarify our understanding of the term 'Well Being' in our analysis we needed a formal definition to support the category. We used Davidson et al's (2003) definition because they illustrated what well being is and it matched what we found was emerging from the data:

...a state of successful performance...integrating physical, cognitive, and social-emotional functions that results in productive activities deemed significant by one's cultural community, fulfilling social relationships, and the ability to transcend moderate and psychosocial and environmental problems.

What we draw from this definition is that transcending problems deemed significant by the person will likely produce a positive self-report of their own health.

Overall, the data suggest tutor lesson delivery practices were influential in eliciting positive health self-reports because older adults had their computer problems resolved with a perceived significant amount of patience. Consequently, they reported positive words indicating their mental and physical health had in some way improved as their stress with technology reduced. Our observations of this were supported by the interview process we conducted. The main categories, their properties and dimensions of the properties, are now discussed.

## **Well Being**

The category 'Well Being' was formed because the tutor relationships were perceived as having a positive effect on the health of the learner as problems important to the older adult were solved. With these relationships the data showed that the tutor being younger or having to leave to take up other work did not deter the older adult from reporting a positive experience with the tuition practices. For example, one person stated being taught by a younger tutor was a positive influence encouraged by the actual practice of lengthy explanation that tutor performed:

*And, no matter who it is, young or old, everyone seems to have lots of patience, is very good at explaining things. I think that's what's it all about you know.*

If the tutor had to leave this did not deter the person from continuing with learning computers at the centre or, as this data shows, in their own time. The absent tutor's practices already had a positive impact on the learner's outlook on computers despite the termination of the relationship:

*When ... finished up I finished up because he'd got me to the stage where he said he taught me as much as he could it's now up to me to go ahead get a computer and play around with it.*

This data indicated the learner acquired a sense of confidence with computers. The person had reported being wary of learning computer skills due to the pace of learning offered by external institutions. We noted over time both people in these examples stated that during the lessons they became more confident as they interacted with the tutor. The reported relationships were mostly positive with only one other person stating the tutor seemed to lack empathy by assuming the person knew the software already.

The next property of 'Well Being' that emerged was 'Tutor Style'. Style refers to the actual manner the tutor conducted the lessons. We allocated the dimensions of tutor patience and problem solving to this property. Older adults overall reported that the tutors had an excellent tutoring style that reduced the stress of having to learn computer concepts quickly. Two examples found to support this were:

*You say slow down do that again. So they slow down and do what they consider to be slow but its still not slow enough for a feeble mind like mine to catch up on.*

*You can ask the same question again and again, come back to it at the end just to make sure that you understood what they are trying to teach you.*

We checked Davidson's et al's (2003) well being definition again in relating the category 'well being' to the 'tutor style' property to see if it matched what the data was presenting. These authors stated that transcending moderate environmental problems is central for reporting well being (Davidson et al, 2003). Our studied group suggested their computer problems were being transcended through attending lessons. The tutor's style of teaching, the data suggests, does focus on solving computer problems deemed meaningful by the learners. An illustration in the data was where one person who the tutor assisted with his online family history tree kept striking significant problems in his use of software:

*I used to hit what I call logjams. I use the terminology logjams and I'd walk into the tutor here and say I've just had another logjam can you sort this out for me, and that meant I had problems with some of my early work of drawing up family history charts, their pretty tricky things to try and get onto a computer screen, all the lines, branches and so forth. It was a bit tricky trying to fit all that into a computer screen. That's the sort of logjams I used to have to struggle with coming here to get help with.*

It was meaningful to him to solve the complex problems the software constantly presented. The tutor responded by going over the software procedures until they were correctly performed. In turn the person reported feeling good about this problem being solved.

A third property of 'Well Being' we coded was 'Technology', defined as something practical or useful embodied in implements and artefacts (March & Smith, 1995) used by people to achieve goals. It is a contributor to well being because it results in productive activities that specifically solve personal problems computer software produces. For example, one person was able to solve the problem of producing flyers on the computer:

*Yes, the other day I'm, well I'm the volunteer co-ordinator of a nursing home, and, so I have to send out various flyers. And before now I've always got somebody to do it for me at the nursing home*

*and the other day... showed me how to do one. So I went home and I did one and sent it out and that was very pleasing.*

This person reported feeling happy at solving what they viewed as a complex word processing task the technology presented. Another further dimension to the property of 'Technology' that emerged was that the technology that tutors taught not only achieved a problem solving goal, but also encouraged older adults to want to build on their skills and learn more. One person illustrated this by reporting that he wanted to learn to keep in contact with an overseas country by learning how to use online chat rooms:

*I've got a microphone on my system and I talk to people in Germany, mainly Germany which is great if it's only for the fact one hears the different dialects in different parts of the country. And I was put onto that here by ... through Paltalk, you know, which gave me an insight of the possibilities and joy of it that it can bring...*

In this case, we observed over two years that he continued to explore a few of the internet chat rooms in order to solve the problem of keeping in contact with others overseas. Another example was one person wanted to learn further about repairing computer hardware, which directly resulted from the tutor's practice of discussing hardware topics with him, which was originally not part of the lesson plan:

*Well I'd like to get into doing my own repairs on the computer a bit more. For instance at the moment I've got a small hard drive on my thing and I'd like to put a hard drive in and although I've got a friend to do it for me I'd like to find out how do it myself...*

A further example emerging from the data was that another person's goal was to remain mentally active. This was a result of the tutors discussing with him the various software programs he could potentially learn:

*Well it reminds me to learn more about computer uses and selfishly I would have to admit that I want to keep my mind active you know. I want to keep my mind active and I want to be able to make use of what I learnt because my main aim is to correspond with people and receive mail...*

What emerged from this data is that the ways of doing computer tuition practices do have a role in community health. This is because tutors and the technology they are teaching are taught in ways that effectively promote a sense of well being in older adults rather than discourage them through rushing through material. As a consequence of these particular ways of tutoring they disclose self-reports of feeling better about their physical and mental health states.

## **Persistence**

During category analysis and continuous observations we noticed that older adults were returning constantly for more lessons. A second category to emerge from the data that



reflected this was 'Persistence'. We describe this category as people returning regularly for lessons over a long period of time. We noticed that from September 2002 to June 2005 the same people kept returning for lessons. The data indicated that the same properties for 'Well Being' were emerging in the 'Persistence' category. It became a significant separate category because the data suggested positive health outcomes occur from coming back for more lessons. For example, the relationship between the tutor and older adult was a factor in a continuous return to classes. One dimension of persistence was how the tutors repeated explanations of how to operate software as this example illustrates:

*He's very informative and makes it very simple, um, you know, I can understand what he's talking about and if I don't grasp it then he repeats it for me. He's a very good tutor.*

Additionally, the tutors were reported to be displaying good levels of patience in teaching older adults. One person we observed indicated an eagerness to return because he felt good about the tuition. When we interviewed him about this he confirmed he persisted in undertaking tuition because of tutor patience:

*That is where the one to one tuition is such a big thing in my opinion. You can ask the same question again and again, come back to it at the end just to make sure that you understood what they are trying to teach you. Sometimes I walk out of here like being on cloud in a different environment altogether because of all the new things and possibilities I am shown you know.*

One other person persisted in lessons because the tutor's verbal lesson delivery manner was patient and caring:

*It really appeals to me and, its, tuition is not really based on a very serious note and that's the good part about it, you know you come here on your free will and therefore there's not really any stress attached to it unless its of your own doing.*

The final dimension of the 'Tutor Relationships' property was that teaching software filled a social need. This is because of the older adults' reports of how the tutor made it easier to master certain software through lesson delivery. But it also links to having a need to socially interact with others and overcome isolation as this example suggests:

*But I find its been a big thing for me because as you imagine once you retire life can become a little bit stale and monotonous. Coming here probably most likely changed all that for me.*

We understand social, as a dimension of 'Tutor Relationships' in this analysis to mean some form of physical engagement with others in the community. This learner reported a positive mental health outcome of overcoming a feeling of monotony by coming to the lessons and persisted in having more computer lessons.

The theory that emerged from the data suggests that the tutors' lesson practices have a role in community health. All older adults we observed in some way linked the tutors' delivery of lessons and method of lesson teaching to feeling a sense of transcending their computer problems. All indicated productive outcomes in the disclosed data that made

them feel a sense of well being. Persistence can be linked to well being because older adults indicate that whatever problem they encounter, social or technological their sense of well being is enhanced by consistently coming to the lessons. Therefore, persisting in lessons is significant because older adults described in detail the practices that encourage them to come back. Often those reasons were linked specifically to the tutor's delivery of lesson material, in repetition of instruction and as being someone they could socially relate to.

### **Discussion and Implications for Technology Teaching Policy and Training**

Our study did uncover the reasons why older adults self-report positive health outcomes and why they persisted in attending lessons. The theory that emerges from the data is that it is the actual tuition practices tutors perform at the centre that encourages positive self-reports of health to be disclosed. These factors were found from comparing the data across the group repeatedly as the Grounded Theory method suggests:

1. Well being is illustrated through older adults' computer problems being solved; in turn they self-report positive health outcomes because they have transcended these problems;
2. The tutor relationships have a large effect on the self-reporting of health, with the age of the tutor being a positive influence but if that tutor left the learner did not report any negative effect on their health;
3. The tutor style practices such as problem solving issues and displaying high level of patience, directly influence a positive self-report of health;
4. The technology access at the centre results in positive self-reports of health because its mastery allows problems to be solved and encourages further exploration of other computer topics and;
5. Persistence is linked to tutor relationship practices through repeating explanations and teaching the software in ways that filled a social need to learn and communicate with others.

These findings suggest that the centre's lessons tend to be perceived as useful by older adults because they specifically solve their computer problems. We assert from these findings that tutors and their ways of practicing tuition are a key factor in successful retention of students and positive self-reports of health.

The consequences for training institutions paying attention to self-reports of health can be useful to inform educational policy. Computer training cannot always be designed simply on the basis of general comments from older adults. However, what causes the older adult to self-report being stressed when trying to learn computer material can be found out and addressed in both lesson content and hiring of tutors. Our study suggests one way of finding out the exact elements that cause older adults to shy away from learning. Before they attended lessons those we observed and interviewed tended to view technology as a source of stress, but even more so the way they experience the teaching of technology in formal educational institutions. These institutions seek feedback at the end of each course

but tend not to find out reasons why older adults do not come back for training or what can be done to make such lessons easier.

Our research findings suggest that the role of computer tuition in community health is one of improving the health of older adults if tuition practices take into account their specific needs and concerns. Why the older adults reported in our observations and interviews that some aspect of their health was improving was a phenomenon we wanted to describe. We did not set out to formally assess, as statistical testing can do, or prove a hypothesis. Rather we sought to give an account from the data on why self-reporting of health improves with lessons and why repeat lessons were undertaken. It was in those personal stories that the centre's learners described the exact tutors' practices and the relationship between themselves and the tutor. The validity of the research was assisted by the comparison of observation data with interview data. Interviewees, often the same people we observed, confirmed the tutor practices we saw in lessons.

Therefore, we described these positive self-reports of health arising from the descriptions as a form of well being because productive activities were undertaken in lessons that solved problems. The causes of well being, the category that describes the form of health self-reporting, lay mostly in the tutor's conduct and to a lesser extent the way the technology solved their problems. We recommend that educational institutions discover what facilitates or upsets the well being of the older adult in learning computer material. The value of our research is in the level of detail and specific actions that can be considered by educational institutions in designing and presenting computer lessons.

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