Voices from Sudan: The use of electronic puzzles in an adult refugee community learning program.

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Abstract

This research highlights the use of electronic puzzles in an online learning environment, which was part of an adult refugee community learning program for Sudanese women who were uneducated and largely illiterate. The aim of the research project was firstly to introduce the women to the use of electronic games and secondly, to improve their elementary English language ability in order to support them to resettle in the community. In this study, an electronic puzzle game became a powerful instructional teaching tool. Due to cultural differences and the disadvantaged background of this focus group, the teaching strategies adapted as the study unfolded. The proverb 'a picture is worth more than a thousand words, was exemplified through the study with this specific group. This also inspired the researchers to listen to the voices that matter, and focus specifically on pictures and puzzles during specific sessions. Although time consuming and less comprehensive, the researchers gathered 'rich' qualitative data through interviews and questionnaires. Sensory curiosity stimulated by sight, motivated students to learn. If a game is enjoyable, students will be aroused through curiosity, thus promoting a sense of satisfaction in performance encouraging further participation.

Introduction

There are only a few research papers written specifically on women refugees learning language skills in Australia. The opportunity to work with a group of Sudanese women (with limited English language skills), endeavouring to settle in a rural city, gave us the chance to use electronic puzzles to enhance learning. These women had spent many years in refugee camps in Africa with basically no formal education in their first language, or any other. In 2006 census data revealed that there were 19 049 (7.7%) Sudanese born residents in Australia (Australian Bureau of Statistics, 2008). Nationally, "the Humanitarian program offers resettlement to refugees and to displaced persons who have suffered discrimination amounting to gross violations of their human rights" (Australian Bureau of Statistics, 2008). During the 10 years to 30 June 2007, Sudan accounted for most settler arrivals from Africa under the Humanitarian Program. Sudan has experienced desolation by natural disasters and civil wars; these impacted on the refugees' education (Awulian Community Development Association Staff, 2010). During the time of this study, there were 800 Sudanese migrants in the city where the program was offered. English proficiency was overall low for the Sudanese migrants, where Arabic is the official language of Sudan (Australian Bureau of Statistics, 2008).

From a literature search, only one Australian research paper focussed on English as a second language (ESL) and computer literacy skills of refugees could be found. To respond to the voices that matter, this paper describes a section of a community program offered for adult female Sudanese refugees in a rural Queensland city. We investigated ways to introduce the

women to the use electronic games, specifically puzzles, in order to improve their elementary English language ability and help them to resettle in the community.

Background

Education in Sudan was difficult to achieve due to the lack of basic needs; refugees often only received one meal a day (Awulian Community Development Association Staff, 2010). This source also indicates that resources were limited; teachers used whatever curriculum that was obtainable, students being taught under trees or sometimes in classrooms that had been constructed from grass. Quite often, children were taught the alphabet by drawing on the sandy ground, and could repeatedly sing the letter for the rest of the day (Awulian Community Development Association Staff, 2010). Education was challenging under these conditions, due to the continuing possibility of military attacks. In Sudan, school attendance was seen as an indication of weakness; wealthy families provided for their children and did not value formal education (Awulian Community Development Association Staff, 2010). In Africa, girls are considered to be a source of wealth due to the payment of a dowry (also referred to as *labola*). Furthermore, girls are traditionally bound to contribute to household tasks such as cleaning, cooking, washing, carrying water and milking cows. Girls learn from their older female family members and this traditional teaching method is seen as a community effort.

This Study

The aim of the study was to introduce electronic games, specifically puzzles, to female Sudanese refugees in order to improve their elementary English language ability. We also wanted to look at the effectiveness of an adult refugee program offered in the community to assist them with resettling in a new environment. Mitchell, Kaplan and Crowe (2007) agree that community programs could support the settlement of refugee groups. Data from questionnaires and interviews were collected and analysed to look at the viability of using electronic puzzles as an instructional teaching tool.

Miller, Mitchell and Brown (2005) state that many Sudanese refugees spent numerous years in refugee camps where they had interrupted schooling, and limited or no opportunity to develop their literacy skills. van Rensburg and Son (2010) mention that these Sudanese refugees need help and support to resettle in a new community.

According to Tobias and Fletcher (2007), there are more than 200 academic organizations across the world, that integrate games in their related programs. It has been suggested by Pelletier and Oliver (2006) that "strategic thinking and problem solving could be developed through game play" (p. 330). Gee (2006, as cited in Pelletier and Oliver, 2006) has outlined the "theory of learning embedded in computer games" (p. 330). He further states that, while learners are playing games, they are unconsciously learning a new "social literacy" (p. 330). Thorne, Black and Sykes (2009) imply that the Internet can provide rich practical grounds for different forms of L2 engagement, improvement and socialisation. This echoes Sandvik's (2006) view that computer games have become a major player in the realm of cultural consumption. He also states that computer games play a significant role in the cultural life of adults.

Games and foreign language teaching can complement each other and prove a valuable teaching tool for students with special educational needs (Macedonia, 2005), such as

refugees. The unemotional repetition provided by the game/puzzle, goes beyond anything that can be accomplished with written exercises. In addition, games provide entertainment and the repetition does not become boring.

Squire's Activity Theory model (2002, as cited in Pelletier and Oliver, 2006) was adapted and used in the methodology for this research. This theory has evolved from Vygotsky's psychological study into learning (Pelletier and Oliver, 2006). The following figure illustrates this model.

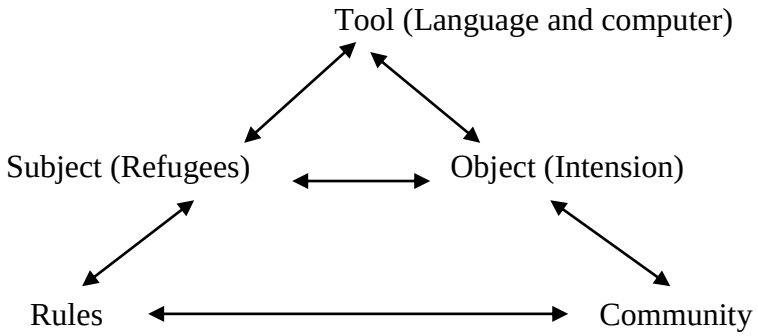

Figure 1. An adapted Activity Theory model from Squire

In this study, this model has been applied to group of female Sudanese refugees (subject). They interacted and engaged through computers and electronic puzzles, where language became the tool, with the intension, through mental processes, to communicate and resettle within the community. Squire (2002, as cited in Pelletier and Oliver, 2006) emphasises the fact that "the Community is related to the Subject only through Rules." (p. 331). In this study, rules also applied through the subject to tools (rules of the computer as well as electronic computer puzzles). Webb (2006) reports that computer based learning is a valuable way of minimising the exclusion of minority groups in society, due to their inability to fully understand the second language.

The methodology used in this learning situation focused around the cultural, language and other social issues of the women in the group, while the researcher introduced learning through puzzles that were authentic and uncomplicated in terms of learning.

Subjects

Five adult female Sudanese refugees, with very limited English language skills, volunteered to participate in this community program. These women varied in age from 19 to 56 and have been in Australia for more than one year. They were identified by the local community centre staff as having limited English language skills. English was their second language and they were not computer literate. Previously in Sudan, they all lived in refugee camps where education was not a priority.

Table 1. Snapshot of participants' background information, adapted from van Rensburg and Son (2010)

Pseudonyms	Age	Home language	Years in Australia	Years in school in Sudan	Qualifications	Previous computer use
Rita	30	Acholi	3	0	None	None
Ellie	56	Dinka	4	0	None	None
Marie	19	Arabic	7	4	None	Listened to music once
Claire	24	Dinka	1	2	None	None
Dina	45	Dinka	1	0	None	Little; once when her child was working on the computer

Materials

During the adult refugee community learning program, electronic puzzles were used as educational tools in order to meet the needs of the participants, maintain their interest and keep them motivated. Schutter (2011) indicates that adult players consider that games containing a puzzle element, are valuable learning tools and are motivational. Females older than 18, are generally the most numerous game players in the game-playing population; and adult gamers prefer to use personal computers for this activity (Schutter, 2011; Bonanno & Kommers, 2008).

Procedures

The use of electronic puzzles in an adult refugee community learning program, was part of a broader program that was offered over a period of twelve weeks. The following table provides an overview of the weekly sessions, as described by van Rensburg and Son (2010, p. 72):

Table 2. Weekly sessions and activities

Session	Activity
1	Personal information questionnaire and interview
2	Introduction to the computer and a computer pre-test
3	Introduction to the mouse - Puzzles
4	Language proficiency pre-test - Puzzles (Repeat)
5	The use of the mouse - Puzzles (Repeat)
6	The use of the mouse - Cross word puzzles
7	Food Game
8	Introduction to the Internet
9	Creating and saving a document in Open Office
10	Introduction to the Internet and a computer post-test
11	Language proficiency post-test
12	Final interview

Results

During the first session, the participants were asked to complete a personal information questionnaire. In an informal discussion between the researcher and the participants, the program was explained and concerns were addressed. The women were very eager to learn how to use the computer. They realised that they needed to be computer literate, in order to gain entry to the workforce in Australia. Gardner and Lambert (1972) as cited in Engin (2009), support this view to build skills and assimilate into a new culture.

For the duration of the following two weeks, the women were gradually introduced to the basic computer functions after attempting a pre-test about basic computer terminology. This test proved that they had no understanding of fundamental computer related words. They expressed their desire to have hands on experience with the computers.

They were introduced to easy electronic puzzle games in week three in order to gain skills with the use of the mouse. Even with a clearly detailed worksheet, they found it difficult to type in the web address to gain access to the puzzles. Their lack of previous knowledge of using keys such as the forward slash and *colon*, was a hindrance to their progress. The researcher gave the women directions on how to build a six piece puzzle. The strategy was to look for a *top right, top left, bottom right* and *bottom left* piece. These directions did not make sense to the participants and the researcher realised after a conversation with centre manager, that they never played games in the refugee camps. The need for survival was foremost in the minds of the women. This correlates with Maslow's hierarchy of physiological needs (Urwiler & Frolick, 2008). The researchers realised that a different strategy needed to be implemented in the next session to meet the planned outcomes. Once access to the puzzles was gained, they displayed amazement by looking at the colourful pictures of flowers. This experience encouraged their enthusiasm them to gain entry to the web site and play with the puzzles.

At the beginning of the next session, the students were introduced to three dimensional six piece wooden puzzles. They were asked to look at the picture, then once again look for the appropriate shaped pieces and build it on top of the picture on the box. This involved students being required to use their pre-existing knowledge to understand what they were seeing, the top-down or knowledge based process, as well as quickly decoding the linguistic instructions identified as bottom-up processing (Tsui and Fullilove,1998). During the last phase of this session, the participants undertook the language proficiency pre-test. They expressed their dissatisfaction with writing the pre-test, they just wanted to move on to the electronic games (puzzles) and practise their newly acquired skills.

The objection of the following session was to reinforce the use of the mouse by repeating the electronic puzzles exercises. Now that they had mastered this skill, they found it easier to understand the rationale behind building the electronic two dimensional puzzles. By clarifying and simplifying the puzzle building for these novice users, they became fully motivated and displayed excitement towards learning that was not evident in previous lessons. This attitude is supported by Engin (2009) who identifies the readiness and eagerness of learners to acquire more information. They discussed the beautiful pictures among themselves, and were very eager to assist each other. The women begun to use the keywords that had been introduced during the previous sessions, for example "look for the top left piece". Incidental language learning was taking place while participants reinforced learning

strategies. The same results were found by Elvin, Maagero and Simonsen (2007) in their study with children. By introducing games and pictures, the students acquired many English words and expressions. Sensory curiosity stimulated by sight, motivated students to learn. If a game is enjoyable, students will be aroused through curiosity, thus promoting a sense of satisfaction in performance encouraging further participation. Students were now able move on to more difficult 12 and 24 piece puzzles.

During the following five sessions, they progressed to cross word puzzles, more electronic games and internet searches. All participants expressed the view that they prefer engaging with the puzzles much more than any of the other activities. This inspired the researcher to listen to the voices that matter, and include puzzle games as part of each session. Students were rewarded on successful completion of an exercise to play a puzzle game. They were very excited with this arrangement. Sensory curiosity stimulated by sight, motivated students to learn. This position is supported by Carrio Pastor (2007) who claims that students enjoy using new technologies in practical classes.

The second last session consisted of a language proficiency post-test where students were asked to label pictures by matching computer-related words. Unlike the results from the pre-tests, the outcomes here were very positive with all participants scoring full marks. Through language repetition combined with computer games, they mastered the necessary basic literacy and computer skills.

Individual interviews with all the participants were conducted during the final session. A Sudanese interpreter was present to assist with the language translation so that accurate information could be gained. For the women to be able to speak in their first language, allowed for more flexibility of expression. Some examples of students' comments are given below. To summarise, all the participants were very positive about their learning outcomes in the program. They realised how important English language is as a way of communication worldwide (Carrio Pastor, 2007).

> Yes, it is good. I am enjoying it. Because…I don't know … because I don't know how to work on the computer yet. But I can work it now … a little bit. I want to learn more to have computer skills. I want to talk English fluently. (Marie)

> I need to operate the computer. That's why I enjoy it very, very much. I like all of them most, I like everything most. (Ellie)

> I like them all, to learn about the computer itself and English as well. I like the games and the internet. I enjoyed the pictures. (Clare)

They indicated that their English language had developed during the sessions.

> I am improving, I am not like the way when I started…long, long time. I am now improving. I know some other things that I did not know, yes. (Rita)

> No, not much, I am getting just a little bit. My English is improving, it is not like before. (Ellie)

Likewise, their responses to questions on computer skills indicated that they were aware of improvement. Chaffin and Harlow (2005) realise that technology in the form of the computer, can enhance the lives of adult learners.

> You are the first person to give me a computer lesson. Since we started with you, I am progressing and I am getting knowledge of the computer because of you. (Ellie)

> Yes, I have. It is not the same like the time I have started. I am now progressing and improving. (Clare)

Undertaking a program such as this, is the beginning of overcoming barriers and obstacles experienced by women in their daily lives (Warriner, 2004). It offers them the opportunity to engage in social mobility, and become knowledgeable in English language and computer literate. The women realised that this was just the beginning of their learning journey and were hopeful that similar programs would be offered in future.

Discussion

The potential for game-playing through the medium of the computers, to teach language skills, has proven to be successful with this group of students. There was a marked improvement in their English language proficiency along with computer literacy skills. The interactional opportunities created through electronic game-playing provided the students with the means to make use of both written and oral instructions. This experience created a situation where the players spoke the new English words and this "game language" became the central resource for actions where the players made sense of the game (Piirainen-Marsh, 2009, p.179) This inter-personal experience was evident in conversation within the group and we could expect that it was shared with the wider communities of family and friends.

The methodology used in this situation allowed for learning in action, where unskilled players with no previous experience with the concept of puzzles in any form, could transfer a set of rules from simple wooden puzzles and apply them to electronic puzzles on computers. Some rules did not apply and this lead to problem solving, where to students level of skills became evident.

As these lessons were conducted for women only, the facilitators were aware that it was important to provide a confidential and safe place for them to explore the new experiences. The Refugee and Migrant Support centre is away from any reflection that came from cultural or economic conditions before settling in this rural environment. As they became more familiar with the environment, they became more relaxed and keen to explore the electronic puzzles and apply new language skills. Carrio Pastor (2007) has expressed the need to integrate the computer functions into not only classroom situations, but also into aspects of daily life. Therefore it is a combination of practice and theory through the internet.

All the participants enjoy looking at, and selecting the pictures. This finding is supported by Schutter (2011) that adult game players have a stronger inclination to games with imaginative features and contributes towards social contact. Sandvik (2006) echoes that computer games is a global phenomenon that play a prominent role in the cultural and daily life of adults. These female refugees benefited from this engaging activity. Bonnano and Kommers (2008)

echo that "digital games can prove to be an enriching experience… if they should lead to a deeper knowledge of one's own cognition and motivation" (p. 37). Thorne, Black and Sykes (2009) state that, "online gaming has the potential to propel language learners beyond the confines of the institutional identity of student" and breaks down the barriers between language study and community use (p. 814-5).

Conclusion

You cannot judge a book by its cover, or in this case, a puzzle. The puzzles were not meant to be used in a conventional sense to provide entertainment, but rather as an instructional educational tool to scaffold foreign language learning. Macedonia (2005, p. 139) argues that "positive emotions stimulate the dopamine systems, which controls motivation and rewards effects". This proved to be the case in this community program. It was evident that learning a foreign language can be pleasant, and that fun moments can occur in a learning environment. Warriner (2004) claims that in resettlement programs, little thought is given to the distinctive experiences and needs of women. She further argues that women need to be trained in order to be empowered in their new situation and can acquire a new language in three months. This gives them the ability to gain employment.

The introduction of computer games into formal education cannot be underestimated (Martin and Murray, 2006). Development costs have hindered the development of computer assisted language learning (CALL), but the low cost of free internet software opens new prospects to engage low skilled level learners (Peterson, 2010; de Freitas, 2006).

The proverb "a picture is worth more than a thousand words" is exemplified in this research as the puzzles, in this case the pictures, told the students more than words on a page could convey to those who were generally uneducated and illiterate. The voices from Sudan had begun to take shape and gain confidence in a new and exciting environment.

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