
Enroll Me! A Portable Device to Facilitate Homeless Student Enrollment

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Abstract

We are designing an information transfer device to expedite the enrollment of homeless children to schools. Homeless children change schools often, seriously disrupting their educational experience. Our design uses existing, familiar technology to unobtrusively facilitate the enrollment process for both the school staff and the homeless parents.

Keywords

Homeless Education, School Enrollment, Information Transfer

ACM Classification Keywords

H5.m. Information interfaces and presentation (e.g., HCI): Miscellaneous.

Introduction

Homelessness has a devastating impact on homeless children's educational opportunities [8]. The transience of the homeless population creates disruption in these children's education. This disruption has both educational and non-educational impacts for both the child and the schools. The overall goal of our design project is to ensure that homeless children are enrolled in school and receiving the services that they need. Additionally, we aim to help school personnel fulfill their responsibilities to these children.

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CHI 2008, April 5 – April 10, 2008, Florence, Italy

ACM 978-1-60558-012-8/08/04.

Why Homeless Children

In the US, an estimated 1.35 million children are likely to experience homelessness over the course of a year. This group is the fastest growing segment of the homeless population [6]. Homeless children represent two percent of all children in the United States, and ten percent of all poor children in the United States [8].

97% of homeless children move within one year, many up to three times. Within a single year, 40% of homeless children attend two different schools, and 28% attend three or more different schools [6]. 21% of homeless children repeat a grade because of frequent absence from school. 14% repeat a grade because they have moved to a new school [7].

Homeless children are at high risk for falling behind in school due to their mobility. Without an opportunity to receive education and services on time, homeless children are much less likely to acquire the skills they need to escape the cycle of homelessness. It usually takes 4-6 months for homeless children to recover academically after changing schools [1, 8].

Homeless children desperately need to remain enrolled in school. School is one of the few stable, secure places in their lives where they could feel loved, wanted and cared. [9]

Current Situation

From our secondary research, we know that enrollment continues to be an issue for schools and homeless children [3]. Residency requirements, guardianship requirements, delays in transfer of school records, lack of a birth certificate, and lack of immunization records often prevent homeless children from enrolling in

school completely and receiving the education and services they need [2]. An interview with a school social worker revealed that when a child transfers schools within that district, paper records can take up to two weeks to transfer. Even worse, when a child moves from outside the district the transfer can take up to three months.

Laws exist to aid homeless children and protect their educational rights, such as the McKinney-Vento Homeless Assistance Act [5]. However, this act has had limited efficacy.

Receiving appropriate services is particularly problematic for children who are highly mobile as they may not stay in the same school long enough for their records to be transferred. These children have trouble accessing special education, gifted education, and receiving attention to any special physical needs. This is often due to the fact that their records do not move with them and schools are not alerted to their needs [3].

Research Goals

Our research is concerned with how technology can change this situation, and in particular, if a digital record system can be used to bridge this gap in information transfer. More specifically, we want to determine if a portable information transfer device is better than a centralized information system in helping schools enroll homeless children so they can continue their education and receive appropriate services on time while guarding the privacy and security of their information.



Figure 1. Prototype of the device.

Design Process

Concept Formation

Research showed that a lack of documentation was a key stumbling block to enrolling children in schools. We initially considered two different options to expedite this process: a centralized, web-based data storage system and a portable information transfer device.

We chose the information transfer device for two primary reasons. Firstly, it is difficult to advertise a website to all school social workers around the country, but a device carried by a homeless parent and given to a social worker upon enrollment is self-advertising. Secondly, the information being transferred is confidential, so it cannot be made available without authentication. A website would require a social worker to register and provide verification that she should have access to the information. A portable information transfer device, on the other hand, would be given directly to a trusted party at the school.

After developing an initial concept, we conducted a participatory design session with a Monroe County Community School Corporation (MCCSC) social worker. During this session we learned, most importantly, what information is necessary to ensure that a child is fully enrolled in school and receiving the appropriate services. We also were made aware of certain information that is specific to homeless children. For example, homeless parents often do not have phones or addresses of their own. Thus, it is important to note the name of the actual owner of the phone or address.

Concept

Our concept is an information transfer device that stores the records needed for enrollment. This device,

called *Enroll Me*, is carried by parents and given to the social workers when they get to the new schools. The social workers stated that although it can be very hard to contact homeless parents, they almost always come to the school the day they enroll their children.

When the device is inserted into the computer, a login screen appears. After logging in, the first screen shown contains the student's basic information. Any special alerts are visible at the bottom of the screen. By browsing different menus, the social worker can get basic information, the student's scanned birth certificate, immunization records, and contact information. This allows the student to be enrolled immediately and notifies the school of any special needs. The card's surface shows short instructions for use and a phone number of the originating school district.

The first screen also contains a prompt to email the previous school. If clicked, the user's default email program is opened and a new email is started, much like an HTML mailto: link. The email generated automatically fills in the contact information, subject, and a brief message with stating that the student has moved schools. This will spark communication between the old and new schools, and any remaining gaps in information will be filled.

There is also an option to print out all of the information stored in the device. This option can be used to obtain any paper copies that must be kept by the school. Also, this feature can help reassure users who lack confidence in digital devices. Information entered is automatically saved, with a notice appearing

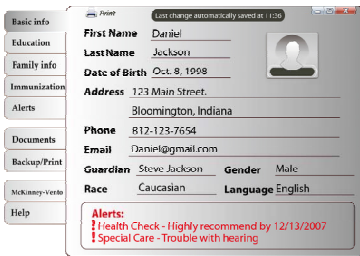


Figure 2. Prototype screenshot of the system.

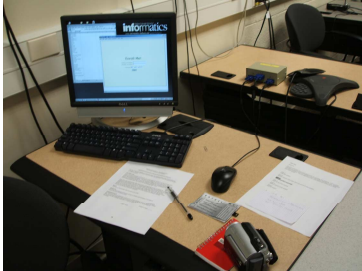


Figure 3. Testing setup.

at the top of the screen for a few seconds to notify the user that the information has been stored.

Enroll Me has a few drawbacks. The most obvious of these is loss. However, our interviews revealed that even though homeless parents leave belongings behind when they move, they tend to bring their children's Medicaid cards with them wherever they go. Therefore, this device can be kept in their wallets with the Medicaid cards and carried when they move.

If an *Enroll Me* is lost or stolen, data recovery is simple. The device can be backed up onto a computer with one click. A new device can later be created just as easily.

To ensure security, the social worker is asked to provide the student's name and birthday at the login screen. Thus, if a card is lost, the information within is not accessible. Technology is also embedded to detect tampering. Any attempts to use the device in unintended ways will render it useless. This also acts as a deterrent to the resale of this device.

The device utilizes pre-existing technology. The interface has the look and feel of a standard webpage. This can be built with standard web tools, such as HTML and Java. The physical device is a credit-card sized USB device with hardware encryption; both are already available. Reliance on existing technology lends itself to fast user learning, provides cross-platform compatibility, and speeds the technical development process.

Evaluation

As we began to evaluate our concept, we turned to the dimensions of fidelity described in [4] as a guide to

take our low-fidelity paper prototype used during the participatory design stage to a mixed-fidelity prototype for usability testing. The concept was shown to subjects who did not have any knowledge of the device or its uses to simulate the extreme case: when a parent moves to a district that has no knowledge of the device.

The prototype consisted of two parts, a model of the device itself and a mock-up of the screens in the device. The model was used to measure users initial trust of the device. The mock-up was used to evaluate the ease of use of the device. As such, it was a digital mock-up that did not store any information or perform lasting functions, such as the "back up" function and the "print all" function.

Method

A group of subjects (n=5) with varying levels of computer experience were recruited to participate in our study. We chose to test five subjects as prescribed by Nielsen [10]. Human Subjects Committee approval was obtained and consent secured for each participant.

Subjects were primed with a scenario that asked them to imagine themselves as one who enrolls students in an elementary school. To further deepen this scenario, the subjects were given the information of the fictitious school they worked at as well as being shown a simple Microsoft Excel spreadsheet on a computer that listed the field required for enrollment. This was not intended to mimic a current school's system, but rather help the subject situate themselves in the scenario. Lastly, a researcher played the role of a parent enrolling a child in the subject's school.

The subjects were first handed a model of the device and asked what they would do with it (*Task 1*). The digital prototype was then shown to the subjects. After logging into the system, they retrieved any pertinent data from the device and update any relevant fields (*Task 2*). Then they printed out all screens and backed up the device (*Task 3*). After logging out, the subjects filled out a post-test questionnaire that evaluated the ease of use of the device.

Results

Task 1 showed that all of the subjects were sufficiently comfortable with the device to begin using it without question. In fact, in our post-test questionnaire, all of the subjects responded that they found the system easy to use and they felt comfortable using it. This was very encouraging as this was one of the main goals of the prototype.

Table 1. Usability test evaluation results

	Subject 1	Subject 2	Subject 3	Subject 4	Subject 5
Trusts device (Task 1)	Yes	Yes	Yes	Yes	Yes
Easy to use	strongly agree	agree	agree	strongly agree	strongly agree
Comfortable to use	agree	agree	agree	strongly agree	strongly agree

During the information retrieval portion of the test (*Task 2*), we found that all five users quickly used copy-and-paste or typed the relevant information into the Excel spreadsheet. There were no questions about navigation between the different screens. The auto-

save feature also worked well, as there were no questions regarding this.

Task 3 showed that the subjects were able to find the “print all” and “backup” features quickly. The subjects completed this task in an average of 38 seconds.

Table 2. Time spent results of tasks in seconds

	Subject t 1	Subject t 2	Subject t 3	Subject t 4	Subject t 5	Avg Time
Task 1	40	37	37	25	33	34
Task 2	394	292	321	380	335	345
Task 3	80	33	31	17	30	38
Total	514	362	389	422	398	417

The users completed all tasks within 9 minutes, well within the amount of time enrollment would take for a parent. In a real life situation, this is enough time for a staff member to use the device and return it to a parent in one sitting.

Our future plans are to create a working prototype of *Enroll Me*. This prototype would be tested with a range of school personnel involved in the enrollment process with varying degrees of computer and school experience. Additionally, though user testing evaluated the speed and accuracy of transferring information already contained on the device to a fictional school’s system, it did not address the issues related to initially entering a child’s information to a new device.

No amount of staged user testing can demonstrate the propensity of parents to lose the *Enroll Me* device. Therefore, though we have anecdotal evidence suggesting that a credit-card size device placed with a child's Medicaid card would not likely be lost, this has not been demonstrated.

Conclusion

Our device facilitates information transfer between schools to more efficiently enroll homeless children and provide them the appropriate services. This will ensure the efficacy and consistency of their education and better prepare them for adult life. This can be done in a small, portable device that can be used with minimal training. Not only will this device add little to the workload of both parents and social workers, it will in fact relieve some of this burden.

Acknowledgements

We would like to thank Dr. Youn-Kyung Lim, Dr. Marty Siegel, Dr. Jeff Bardzell, Nina Perry, and all the individuals who participated in our studies.

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