



Teaching to Intellectual Disability Individuals the Shopping Skill Through Ipad

Salih Cakmak *
Gazi University, Turkey

Sibel Cakmak
Ministry of Education, Turkey

Abstract: Because of the importance of intellectual disability teenagers fulfilling the daily life skills by themselves, an animation that shows the intellectual disability and autistic high school students an interactive shopping skill by means of iPad was played and its effect on providing them with the independent shopping skill was analyzed. 3 intellectual disability and autistic students attending The Umit Kaplan Vocational Education Center that offers a High School- Level Training in Ankara have participated in the research in 2013-2014 School Year. The ages of the students range between 17-19 years. The dependent variable of the research is the participants' levels of performing the shopping skills from a supermarket. The independent variable is, however, the animation practices that indicate the interactional shopping skills presented through iPad. The design of the research is the "multiple probe design across subjects" which is one of the single-subject designs.

Keywords: *Intellectual disability teenagers, educational technology, daily life skills, shopping skills.*

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Introduction

Intellectual disability individuals may have difficulty in performing daily life skills and in becoming autonomous in those skills (Westling, D. & Fox, L. 2009). It is very important for the intellectual disability to acquire the daily life skills such as using mass transportation vehicles, preparing meal, personal hygiene and doing shopping (Matson, Dempsey & Fodstad 2009; Matson, Rivet et al. 2009). Different teaching methods are used to teach the people who are intellectual and developmentally slow to acquire the daily life skills. One of those methods is "in-vivo instruction". This method was used by Morrow & Bates (1987), Hutcherson et al. (2004); Stokes & Baer (1977) in teaching the intellectual disability children various daily life skills. Another teaching method is "video-based instruction". This method, too, was used by (Rayner et al. 2009; Sturmey 2003; Rehfeldt et al. 2003; Sigafos et al. 2005 & Norman et al. 2001) in teaching the daily life skills. Another method is the "computer-based instruction". Ramdoss, Lang et al. 2011; Ramdoss, Mulloy et al. 2011; Higgins & Boone 1996; Mechling et al. 2005 used this method in teaching children the daily life skills. In addition to those methods, the "picture-based systems" and "direction instruction" methods were used. Those methods are also used in teaching academic skills as well as daily life skills.

These teaching skills offer opportunities to people who are in need of different learning methods in meeting

their needs in easier and quicker ways in a world where information technologies are developing very rapidly. Such instruction methods present possibilities to the individuals who need different learning styles to meet their needs in easier and quicker ways in such a world. As a result of the developments in technology, countries have reshaped their education systems in accordance with the technological developments. Turkey, as a developing country, has not been an unlooker to using technology in education and The Ministry Education of Turkish Republic took an important step to realize the Fatih Project on November 22, 2010. Within this Project, wise boards were launched in classes and notebooks were given to students. The infrastructure of the project was finished and the project was implemented in pilot schools on February 6, 2012. The project covered all the schools that offered both general and special education.

In recent years, the students who need special education in Turkey have taken their education in the minimally limited environments according to the relevant policies. The negative conditions which the students who need special education may encounter in educational and academic settings can be minimized through the educational technologies (Anderson & Kristin, 2008). The technological instruments used in educational settings are the supplemented systems that are used to increase the hand-eye coordination, attention spans and perceptions of slow learners (Sahin & Cimen, 2011).

* Corresponding author:

Salih Cakmak, Gazi University, Special Education Department, Ankara, Turkey
Email: salih_cakmak@gazi.edu.tr

Table 1. Student Assessment Results

Student	Age	Reading grade level	Disability classification	IQ test	Full scale IQ
Yasin	19	9	ID+Autism	WISC-R	49
Berke	17	9	ID+Autism	WISC-R	49
Murat	18	9	ID	WISC-R	69

Since the instructional technologies make it possible for students to practice frequently, they provide the students needing special education with a great advantage in the learning process. An interactional technology increases the learning processes of students, facilitating their active involvement. The use of interactional technology leads up to the higher concentration, less help, learning by entertainment and the reduced anxiety and fear in the learning processes of the students. The technological instruments employed in the educational environment increase the independence level, learning speed and sociability of the individuals needing special education (Jeffs, Morrison, Messenheimer, Rizza, & Banister, 2003).

One of the technological instruments that are currently used is iPad. Ipad and similar apparatuses have a number of advantages such as quick operation, portability, big memory, physical dimension, wi-fi connection, camera, and accessibility. Various international practices containing both general and special education sessions can be loaded into iPad and similar devices. When the literature on the practices in which iPad is used as a means of teaching is analyzed, the studies aimed at developing the communicative and academic skills of autistic students are generally encountered. However, the studies in which the iPad is used for didactic purposes in the intellectual and visually disability students are also seen in the field in recent years (Malley, Levis & Donehover, 2013).

When the field literature on the effect of technology on the learning processes of students in need of special education is analyzed, the following studies can be cited (Malley, Levis & Donehower 2013). By using "My Choice Board and Go Talk Now for Free" practices in iPad for an autistic student attending pre-school education, a research was done on alternative communication skills and it was concluded that both of the practices could be used by the autistic student by means of an iPad. Hammond, Whatley, Ayeres & Gast (2010), analyzed the efficacy of a video model on teaching 3 participants with medium intellectual disability in using iPod. In the study, it was aimed to teach the participants to take photos, to perform music skills and to use the video by means of iPod. In the research, it was found that a Model Video Management was effective on teaching children how to use iPod. Jowett, Moore & Anderson (2012), did research on the effect of iPad on teaching a 5 year- old kid suffering from autism the skills of reading and writing numbers. In the research, the writing and naming of the numbers between 1 and 7 was shown to the participating

student by means of iPad. It was concluded that the use of iPad was effective in the teaching of reading and writing numbers. Burton, Anderson, Prater & Dyches (2013), did a research on four autistic and intellectual disability students ranging between 13 and 15 years of age. The participants watched a video containing the stages of solving mathematical problems that require monetary affairs and the videos were loaded into iPad, making the participants watch the steps of problems. The ability of the participants to solve the mathematical problems related with money was investigated. It was observed at the end of the study that the participants were able to do the procedures they watched through iPad independently. Malley, Levis & Donehower (2013), did a research with 7 autistic and intellectual disability students between 7 and 13 years of age and they aimed to provide them with basic mathematical equations through iPad. At the end of the research, the participants were able to acquire the basic mathematical problems they had been taught by iPad.

Because of the importance of intellectual disability teenagers fulfilling the daily life skills by themselves, an animation that shows the intellectual disability and autistic high school students an interactional shopping skill by means of iPad was played and its effect on providing them with the independent shopping skill was analyzed.

Methodology

Research Goal

This study aims to provide the intellectual disability and autistic high school students with independent shopping skills by means of iPad.

Participants and their Characteristics

3 mentally- retarded and autistic students attending The Umit Kaplan Vocational Education Center that offers a High School- Level Training in Ankara have participated in the research in 2013-2014 School Year. The ages of the students range between 17-19 years. They are instructed in different classrooms.

In choosing the students who would take part in the research, the prerequisite skills such as receptive and productive language skills, reading and writing double numbers, adding whole numbers with two digits and knowing money concept were taken into account and the participants who had those prerequisite skills were chosen. The performance levels of the subjects in prerequisite skills are given below.

Yasin (Psydonym) can read and answer the comprehension questions of texts containing 100 words and he can do the instructions of 3 or 4 sentences that he has been told. Additionally, he has the ability of expressing himself verbally. He can name the numbers with two digits, he can add a two-digit number to another two-digit number and has the idea of what money is. Berke (Psydonym) can read 100 word texts and can answer the following comprehension questions. He can follow the instructions of 3 or 4 sentences when he is instructed on them one or two times. In addition, he can express himself in eight or ten words. He can name a two-digit number and has the concept of money. Murat (Psydonym) can read 100 word-texts and can answer the following questions. He can follow the instructions of 3 or 4 sentences he has been told and has the skill of expressing himself verbally. He can name two digit numbers, can add a two digit number to another two digit number by calculating and has the concept of money.

Environment and Materials

The research environments are divided into two: One is the environment in which the study is presented to the students and the other is the environment in which they are to practice. The environment in which the students are taught the shopping skill is nearly a 24 square-meter classroom where there are desks, tables and which is empty in the working hours of the day and it is a room with a wi-fi connection in the school where the students are receiving training. The environment in which the students are made to practice is the inside of a "BIM supermarket" that is located nearly 120 meters to the south of the school where the participating students are being taught. Before the study, the market managers were spoken to and permissions about taking photos in the market and making practice were taken. The shopping zone of the market covers an area of nearly 1200 square meters. There are sections in the zone for food, cleaning, vegetables and fruit, delicatessen, personal care and hygiene.

In the study, the applications such as "*Puppetpals HD Little*" and "*Morpho Booth*" which are loaded in iPad 3, an Apple Product, were utilized. *Morpho Booth* is an application that voices 3D face photos. In this study, the face figures of the students were used. The face figure of each student was photographed by the practitioner. After that, the face of each student was voiced by the practitioner and that face figure was made to tell how to perform the shopping skill. *Puppetpals HD Little* is a supplementary practice for making animations. All the departments in the supermarket including products such as the shopping baskets, cashiers, and the corridors between the shelves of the products were photographed from various angles. The photographed squares were combined and the stages of each student's face character while taking the shopping basket, choosing products, putting them into the basket, heading for the case and paying for the bill

were prepared through iPad techniques or by animation practices that could be made possible by touching on the iPad.

Data Collection Forms

In order to determine the levels of the shopping skills of participants, "an assessment scale for fulfilling the shopping skill" was devised by the researchers. This assessment scale was submitted to two instructors in the Special Education Department of Gazi University, Ankara, and was modified in the form of a final draft according to the received feedback. With this scale, the performances of the participants before, during, and after the research were measured.

In addition, feedback was taken by means of a "Social Validity Form" that was applied to the mothers of the participants in order to fix the social validity of the research. The mothers answered the form using the expressions "Yes, I think", "No, I don't think" and "Undecided". In general, the mothers of participating students expressed their gratitude for their children's fulfilling the shopping skills independently.

Limitations

The research is limited to 3 mentally retarded and autistic students receiving education in Umit Kaplan Special Vocational Education Center offering a High School-level education in the school year 2013-2014, Ankara, Turkey.

Sessions

The inspection, the independent application and maintenance sessions of the research were carried out in a market situation which is 120 meters far from the school of participants. The independent variable, prepared and presented by iPad, was, however, applied in an empty classroom in a school attended by the participants. All the stages of the study were practiced between 10:00-11:00 a.m on Mondays, Tuesdays, and Fridays. The sessions such as the inspection, independent application, maintenance and the application of independent variable of the study were realized by the special education teachers who had 11 years of experience in their professions. The reliability findings of the research sessions were made by the two independent observers who were doing their PhD studies in the Special Education Department of Gazi University.

Sample and Data Collection

The purpose of the research is to investigate the effect of the animation showing the shopping skill based on interaction through iPad on intellectual disability students for developing their independent shopping skills. The dependent variable of the research is the participants' levels of performing the shopping skills from a supermarket. The independent variable is, however, the animation practices that indicate the interactional shopping skills presented through iPad. The design of the research is the "*multiple probe design*

across subjects" which is one of the single-subject designs. In the multiple probe design across subjects, the effectiveness of one method one target behavior is investigated on more than one subject in the same environment. In this design, three subjects should be chosen for the least.

They should be similar but independent of each other. The similarity is achieved by the fact that the target behavior can be replaced by the same treatment for each subject and the independence is provided with the fact that a behavior applied to one subject is not effective on the others (Tekin-Iftar, 2012).

In the research, four participants were used in order to implement *"multiple probe design across subjects."* The inspections, beginning levels, and post- training follow up data for the participants were recorded into the video and they were assessed by using a "shopping skills fulfillment scale." This scale was made by the researcher by referring to the opinions of the two specialists of the field. On this scale, the steps of the independent shopping skill were provided. First of all, a session inspection output was taken for all the participants simultaneously. When we began to receive the beginning level in the first participant, the inspection data were received for the second, third and fourth subjects one by one. After the stability was attained in the beginning data for the first participant for at least three sessions successively, the teaching sessions were initiated. While the teaching sessions were applied to the first participant, the beginning level data began to be received for the second participant and the inspection data were taken for the third and fourth participants. The research continued until the process was completed for all the subjects.

The training sessions were held as follows: The participants were shown the applications about how to use the shopping skill prepared by "Morpho Booth" and "Puppets HD Little " systems. The practitioner first shows the student how to switch on iPad by pressing on its button. Later, the screen is slid into the right side leading to the opening position and the student is shown how to open the shopping practice. When the shopping skill is on, the student is able to see on the iPad screen the inside of the BIM market and the products such as food, cashiers, shopping baskets, a character that has his own face and the money that he can use during paying for the bill. On this screen, the practitioner initially shows the student the character in which his own face appears in iPad and says *"look please, this is you and now I am bringing that shopping vehicle to you"* and while saying that sentence, he brings the shopping vehicle toward the character containing his face by his finger and the character holds the shopping carriage. After that, the practitioner says *"now that we have got the shopping carriage, we can begin the shopping"* and wants the student to read the shopping list he is holding. The student reads correctly the products on the list as *"tomato sauce, yoghurt, macaroni, table napkin and bread."* The

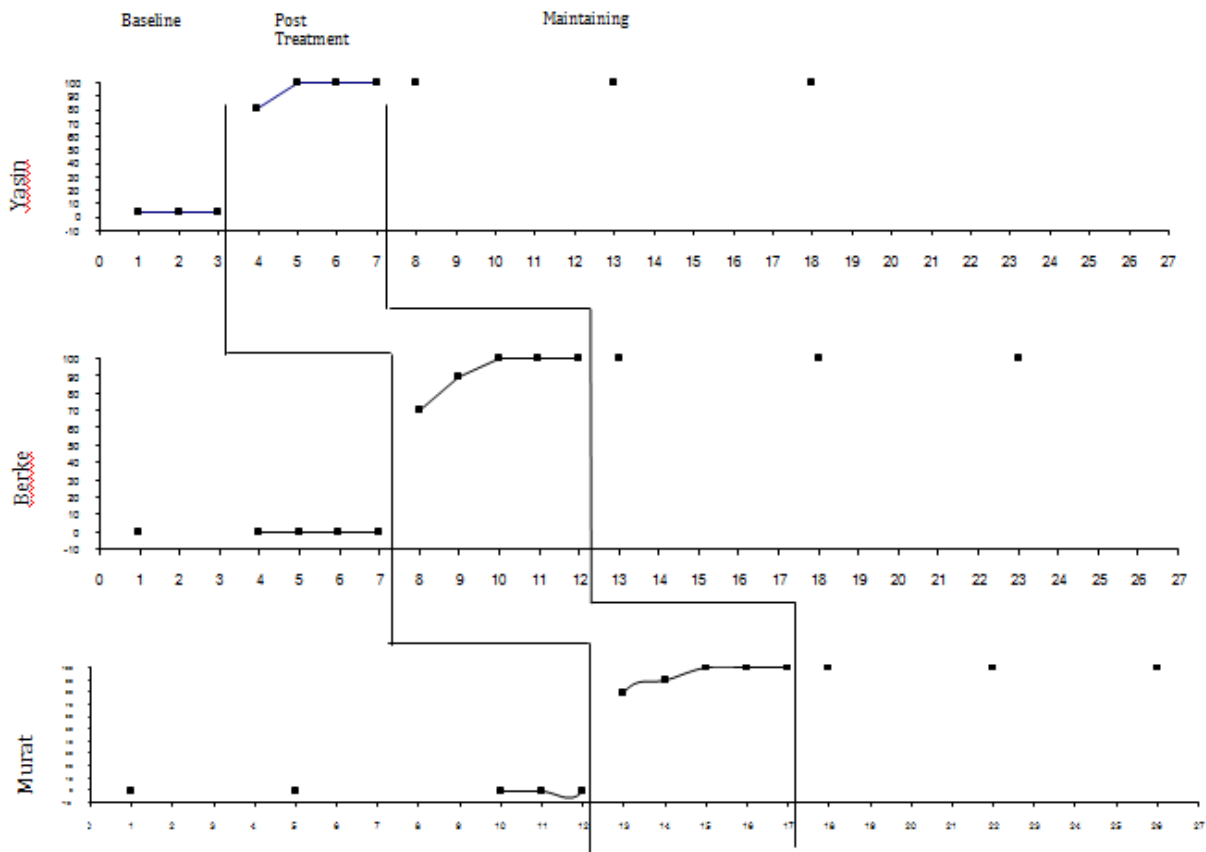
practitioner, reinforcing the correct reading of the student, says *"come on and let's find these products by moving in the market"*. While saying that sentence, he moves his finger forward, backward, left and right and shows the student how to move between the sections of the store. Later, he comes toward the shelf where there is tomato sauce and points his finger to it and carries it into the shopping basket. The same procedure is repeated for the other items such as macaroni, bread, napkin and yoghurt on the list by showing the student how to buy them one by one. After that, the shopping carriage is drawn to the cash register by the finger movements of the technician and when it reaches the cash the cashier says *"welcome"*. The practitioner puts the products in the basket in front of the cashier by his finger. The cashier registers the barcodes of the products and tells the price. The practitioner pays for the price giving the money from the left down corner of the screen. The cashier pays back the rest of the money. The practitioner opens with his finger the plastic bag near the cashier and puts the products in bag and thus finishes the shopping process. By being a model for the student, the practitioner gives iPad to the student in closed position and wants him to do shopping on iPad. He watches the student switch on iPad and apply the procedure for doing shopping. When necessary, he guides the student. The procedure goes on until the student fulfills the shopping skill by himself on iPad. The presentation for teaching sessions took place from 45 minutes to 60 minutes. The participant who completed the shopping skill for three times successively finished the teaching step of the study and passed on the independent application stage. The independent practice stages were recorded through video and it was later watched by two independent observers. The data about the reliability between the observers and applicational reliability was collected in at least %20 of each teaching step for each subject by the two independent observers. In the study, (agreement/agreement+disagreement x100) formulate was used for an analysis of data about reliability between the observers (Tekin-Iftar, 2012).

Findings and Comments

As it is seen in Graph 1, the first, second and third participant could fulfil none of the levels of skill independently in the beginning stages.

Before the application of *"animation activity that indicates shopping skill based on iPad technology"*, the beginning level data of all the participants proved to be stable. No change was recorded in the data gained from the inspection measurements until the instruction was done.

The first participant (Yasin) fulfilled independently %80 of the *"market-shopping skill"*, which meant 8 of 10 stages required of him. He did it in the inspection at the beginning of fourth session, which was one of the teaching sessions realized by the animation activities that showed how to do the shopping based on iPad interaction. Through the inspection done at the



Graph 1. The Percentage of Participants performing the Steps of Shopping Skill Independently.

beginning of 5th teaching session, he could manage independently %100 of the “market-shopping skill”, which amounts to a total of 10 steps necessary for fulfilling the shopping from a supermarket. In the independence inspections in which “*the assessment scale for market shopping*” was applied three times, the first participant continued to manage %100 of the skill independently. When analyzed in Graph 1, the follow up data that were taken at 3 day intervals are compatible with the teaching process data.

The second participant (Berke) showed independently %70 of the “*fulfilling market-shopping skill*” at the beginning of 8th teaching session which was one of the sessions conducted through the interventional animation of how to do shopping based on iPad. This amounts to the seven of ten steps required of him. In the inspection conducted at the beginning of 9th instruction session, he was able to perform independently nine of the ten steps, which amounts to % 90 of the “*super market-shopping skill*”. In the inspection conducted at the beginning of 10th session, he was able to perform independently %100 of the “*supermarket-shopping skill*”, which amounts to a total of 10 steps necessary for fulfilling “*the market-shopping skill*”.

In the independence inspections where the independent “*market-shopping scale*” was used for three times, the second participant continued to perform %100 of the skill independently. As it is seen

in Graph 1, the follow up data received at 3 day intervals are compatible with the data of the instruction process.

The third participant (Murat) showed independently %70 of “*fulfilling market-shopping skill*” at the beginning of 8th instruction session, which was one of the sessions conducted through interventional animation of how to do the shopping based on iPad. This amounts to the seven of ten steps required of him. In the inspection conducted of the beginning of 9th instruction session, he was able to perform independently nine of the ten steps, which amounts to %90 of the “*market-shopping skill*”.

In the independence inspections where the independent “*market-shopping scale*” was used for three times, the third participant continued to perform %100 of the skill independently. As it is seen in Graph-1, the follow up data received at 3 day intervals are compatible with the data of instruction process.

After the application of interventional animation technique indicating how to do shopping by means of iPad, the number of independent skill steps of the participants showed considerable progress when compared to their initial performances. Finally, it could be claimed that the teaching practice based on the instructional shopping skill developed through iPad has been effective on the intellectual disability students

in doing shopping independently from a market when they have succeeded the necessary prerequisites.

The reliability between the observers of the research was found to be %100. The reliability of the application was calculated by dividing the observed student performances to the planned student performances and by multiplying the result by 100, and it was found to be %100 reliable in all the performance sessions of 3 students who participated in the research.

Discussion and Conclusion

In this research, three intellectual disability and autistic teenagers were taught how to do shopping in a supermarket by means of iPad. The permanence of the skill was also tested 5 or 10 days after the teaching session. The findings of the research show that "the animation practice based on interactional shopping skill presented through iPad" has been effective on children's acquiring independent shopping skill and that the participants could maintain the relevant skill even 5 or 10 days after the instruction.

When the data related to the ability of interactional shopping in the supermarket developed through animation practice with iPad are analyzed, it is seen that the data are higher in all the participants than they were at the beginning. Therefore, it can be claimed that the iPad-based interactional shopping skill has proved to be successful reaching %100 level in all the three participants.

In this research, the autistic and intellectual disability children were taught how to do the supermarket shopping by means of iPad used as a teaching tool. Likewise, in a research in which iPad was used as a teaching tool Dundon, Mc Laughlin, Neyman & Clark (2013), they taught the pre-school autistic students the communication skills by using My Choice Board and Go Talk Now for Free practices that took place in iPad. Vowelt, Moore & Anderson (2012), proved that the iPad-based instruction practice made positive contributions to the autistic students in reading and writing the numbers between 1 and 7. Burton, Anderson, Prater and Dyches (2013), taught 7 intellectual disability children between 13 and 15 years of age the mathematical operations about money through iPad. Malley, Levis and Donehower (2013), applied the teaching sessions on basic mathematical operations to 7 intellectual disability children between 11 and 13 through iPad. In the light of the aforementioned researches, it can be claimed that iPad is an important and current technological device for the mentally retarded people in acquiring their daily life and communication skills as well as acquiring their conceptual and academic skills.

In the research, the socially-valid question form was filled in by the mothers of the participants. When the answers given by mothers are analyzed, it can be perceived that their opinions with regard to the social validity of the research are positive. All the mothers said that their children's learning of the market

shopping skills could make their children more independent, could contribute to them positively in social relations, facilitate their fulfilling of some of their daily life skills and they also said that it was very gratifying for a parent when an intellectual disability child had the ability to do the shopping from a supermarket by himself. Considering those findings, it can be said that the social validity of the research is high.

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