A strategy for Designing an Effective Guide and a Software to Facilitate Communication with Deaf Persons

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Abstract

The deaf people are human beings with significant abilities who can effectively contribute to society. This is where the value of the study actually lies. When science and technology are adequately employed as a means of communication, they add value to the role of deaf people in the society at large thereby, increasing their chances towards self-reliance.

The main purpose of this paper is to propose a strategy for designing a guide supported with a software that helps deaf people, organization owners, and the general public to communicate effectively. Giving the deaf people better chances for self-dependence in real life is another important aspect of the study. The researcher used field research, experimental and analytical descriptive research methods for collecting data, describing and analyzing information. The research concluded with a design of the right product that attains the required positive communication.

Introduction

The advanced technology and the proficiency of using it have recently become an imperative imposed further by the deaf people. The deaf people are now a tangible part of the reality in our society that requires us to earnestly serve and to effectively communicate with them. In the light of the advanced intelligent information technology, the researcher designed a guide supported with a software of integrated communication systems performing functional services that positively impacts and develops the life style of the deaf in both present and future time.

Such a uniquely new practical guide is designed to help the deaf perform their activities in all different organizations and businesses. The researcher used an experimental approach for designing the guide with the help of a number of organizations which hired people speaking sign language to deal with the deaf. A number of such organizations used instructions and printed materials of sign language to facilitate the service. Some other organizations find out the process of implementing the service is expensive for a number of reasons fall out of the research objectives which at the end prevent them from dealing with the deaf.

The guide aims at helping the organization to offer an elaborately rational approach to communicate with the deaf and promote the organization itself. The organization's vision, mission, services, and the way deaf become capable of serving themselves independently are presented in the proposed guide. Using sign language, the simplicity of accessing and presenting information, and the capability of activating the organizations electronic system benefiting from technological developments in creating proper functional links offer the best and fastest value services to the deaf customers.

Keeping this in mind, the study aims at:

1. Designing a model of a guide to be used globally.
2. Providing the deaf people with satisfying self-services.
3. Elaborating all possible advanced electronic technology and the different organizations' systems by providing the guide.
4. Reducing effort, time, and cost to both the deaf people and organizations through the way guides are designed.

In this context, the main idea of this paper lies

on designing a model that can be used globally by the different private and public organizations. The model is designed to be used as a universally standardized guide improving and activating the communication means between the deaf people and the service world.

Research Questions
The study answers the following main questions:
1. What is the proper model that can be used to achieve affective communication between the different organizations and the deaf people?
2. What are the organizations' impressions about the model?
3. What are the general publics' impressions about the model?
4. What are the deaf peoples' impressions about the model?

Research Objectives
As stated above the main objectives of designing the guide model is to satisfy the conditions of active communications between organizations and the hearing impaired. As such, the research aims at achieving the following sub-objectives:
1. Providing a model of the proposed guide in two different designs approaching the ideal communication between organizations and the hearing impaired.
2. Designing an electronic software of ideal communication between organizations and the hearing impaired and at the same time provides self-service opportunities to the deaf people.
3. Simplifying the guides language using clear pictographs signifying the organizations' activities.
4. Simplifying the guides' implementation idea to encourage all organizations to use the guides' operating system.
5. Identifying the level of services provided by the guide and its software.
6. Identifying the level of usability of the guide by the deaf people and their support of implementing the guide in all organizations.
7. Identifying the difficulties of using the guide by the deaf people.
8. Identifying the difficulties of using the guide by the organizations.
9. Are there significant statistical differences among the opinions of the deaf person, owners of organizations, and ordinary people about the guide and the software.

Research Significance
The significance of the study stems from the importance of its population, the deaf people, as human beings with great potentials in society. It is also believed that science and technology when adequately used to communicate with deaf people help highlighting the value of their contribution to the whole society. Offering the deaf people the chance to be more independent in performing their living activities is another important aspect of the study. It is also noticed that the topic of establishing a meaningful active communication between the deaf people and the different organizations has not been taken seriously enough. This is evident in the absence of similar services and products. Some organizations assigned a person speaking the sign language to communicate with the deaf people. Other organizations used printed materials and instructions of sign language to provide the offered services. A third kind of organizations used no communication means because they considered it expensive for a number of reasons outside the research's interests.

Research Methods
The study uses an experimental and analytical descriptive approach, as well as a field study. During the field study a Questionnaire has been used to collect information from the research population including a sample of deaf people, organizations' representatives, and experts assessing the end products' usability. Other tools included: a fixed paper booklet introducing the product, an attached booklet, a note book, a pencil, deaf proper contact cards, a complete CD of the guide, and an electronic link of the download site. In addition, an iPad showing a video on how to use the guide and an actual application of a self-service by the deaf was utilized.

Research Hypothesis
Using the proper strategy, the proposed guide should introduce a rational way for ideal communication between the deaf and the organizations.

Definition of Research Terms
The Deaf: A person who suffers from auditory deficit starting from 70 decibels that preventing him/her from relying on the sense of hearing to understand speech with or without speakers (Moores,1996).
The Guide: the researcher's proposed communication solution between the deaf and organizations.

People with Disability: Those who have long-term physical, mental, intellectual or sensory deficiencies, that might prevent them from dealing with the various barriers and the full and effective participation in society on an equal basis with others (article 1 of the International Convention on the rights of persons with disabilities).

Strategy, as defined by Merriam-Webster Dictionary, is "a careful plan or method for achieving a particular goal usually over a long period of time." It is also referred to by J. Christopher Jones (1981) as a number of methodologies each of which is involving a set of processes; noticing that the process is made of a number of procedures. In such a sequence, each procedure consists of different actions. If a method is enough to achieve a particular goal or solve a novel problem, it can be promoted to strategy level.

Logo or Logotype, precisely is a symbol made out completely of typography. One of a purely typographic logotype example is Coca-Cola. Logo is a word often used interchangeably with symbol. It is used to identify a company, a product, or a service through marks, flags, symbols or signatures. Logos, according to Jacob Cass, " derive their meaning from the quality of the thing (they) symbolize, not the other way around – logos are there to identity, not to explain. In a nutshell, what a logo means is more important than what it looks like." (http://justcreative.com/2010/04/06/branding-identity-logo-design-explained/).

Pictograph, according to Meggs (2006)is one of the oldest symbol-making skills. It can be defined as an elementary picture or sketch representing the things depicted. It looks like the simple drawings appeared on the cave walls such as the deer and salmon that are accurately depicted. The early pictographs developed in two ways: they were the beginning of pictorial art. Then some pictographs by the late Paleolithic period, were reduced to letters forms. Then, they formed the origin of writing.

Figure 1

Review of the Related Literature:

ASL is an international website concerned with providing related studies and researches as well as researchers and scholars in different areas of study. It is a rich data source for everybody interested in sign language and its direct translation that can be used in the organizations willing to establish communication with deaf people through the guide. It is true that the sign language differs from country to another. Saudi Arabia is unfortunate because it has not been given a place in the site. Therefore, it is important to start working on a site designed specifically to serve the kingdom.

The effectiveness of the proposed guide lies in providing a good range of different effective media to communicate with the deaf people. In a similar, but limited approach, Gentry, M. M. and others find that "presenting stories on CD-ROM with multiple modes of reading cues, such as print, pictures, and sign language, may be an enjoyable and interesting supplement to standard reading practices." (2004/2005, p. 394). So the conceptual frame work of the proposed guide is to provide various effective opportunities to the deaf people. At the same time encourage the service providers to establish an interactive environment for communication with deaf people in real life situation boosting their spirits of self-dependence.

Theoretical Framework:

The total number of deaf people in KSA according to the Saudi Society of the Hearing Impaired is about 450000 person. 60% of this number is male; and 40% is female. This is a considerable a large number that really needs the interest and cooperation of all people concerned with hearing impaired people.

Specification of Design Quality is the core requirement of good design and the main reference point of features and characteristics that have to be satisfied in any product to perform its functions appropriately. The design of the guide must satisfy the deaf expectations, wishes, and needs. Based on Hiesinger, K. B. and Marcus, G. H. understanding of good design criteria (1993, pp. 176 - 177), the following design specifications of the proposed guide that guarantee its quality, efficiency, and validity are:

1. Form specifications: the guide must be aesthetically appealing in terms of color, texture, and other design elements and values.

2. Function specifications: the guide must be a friendly product, easy to operate, and has a sustainable quality. It must be also easy to carry, durable, and has an active interface with high speed and storage capacity.
3. Materials and technical specifications: materials used must be safe with high technical standards for mass production that is comparatively low cost process, precise and high quality production.
4. Specifications of production methods that insure productivity and wide dissemination of the guide.

The Logo Design of the Guide

It is an international logo design signifying the service with the following design criteria:
1. Clear communication symbol identifying the service.
2. Strong deaf logo signifying the deaf people.
3. Clear signal approval or consent: when the deaf raises his/her hand grip and thumb up, he/she indicates a preference and high satisfaction in sign language. Consequently, these concepts are incorporated to design the

logo indicating the service and the identity that can be recognized internationally upon providing a guide that serves the deaf by the organization, see the figures bellow both in Arabic and English:
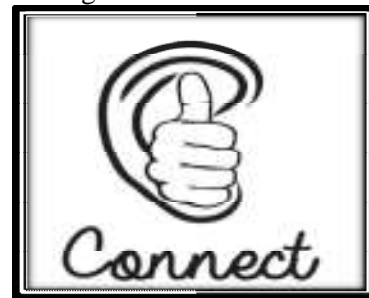
Figure 2

The logo has been tested on different samples representing the deaf people, logo designers, specialized people, and the public. The analysis of the response showed a clear understanding of the logo and the symbols. Based on this, the logo is approved as the guide's identity.

Approved Characters
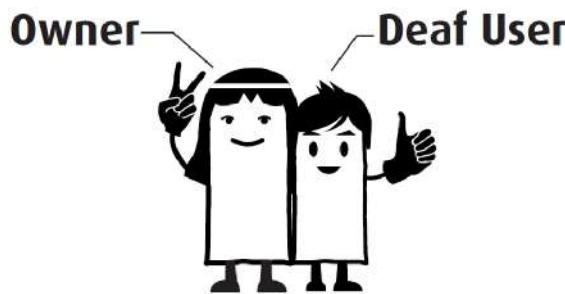
Figure 3

The Organization Owner Character:
It is designed to show the role of the organization's owner, to facilitate movement through the different sections of the guide and to simplify its usability. It is designed with: a Saudi character identity represented by the Saudi costume , a smile signifying the service, and a raised hand symbolizing the deaf language.

The Deaf or the Guide's User Character:
It is designed to follow up the work steps while using the guide and moving through its different parts and sections. It is also used to facilitate the self-service aspect of the product. The design is characterized by the use of simple lines emphasizing the ear to signify the deaf, the hand representing the sign language, and the mouth movement to emphasize the language.
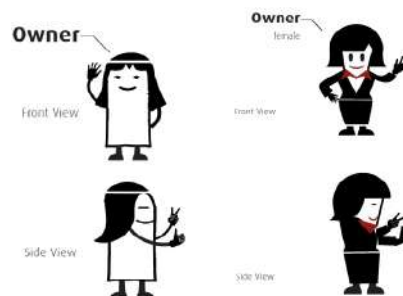
Figure 4
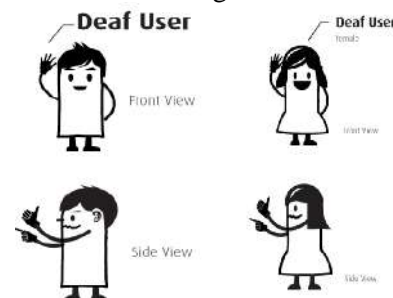
Figure 5

Guide Design:

Size is important; for it contains the different sections of the guide which the user has to smoothly navigate through. The linear composition optimized the design solution achieving ease of movement, clear direction, and comfortable instruction and service.

Model 1

Figure 6

Model 2

Figure 7
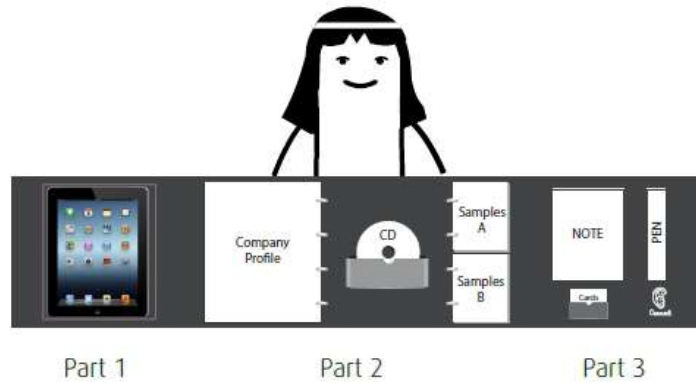
Figure 8

Guide Sections:

The electronic Section (Part 1) includes iPad to operate the videos and to demonstrate instructions during independent operation by the deaf.
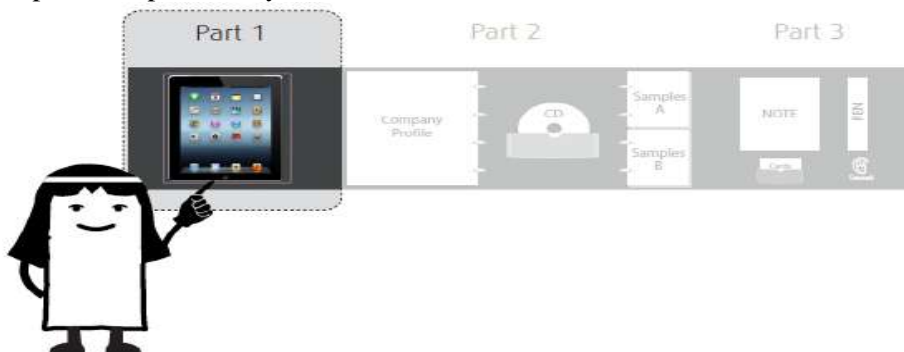

Figure 9

The printed paper section (Part 2) is divided into fixed and changeable paper subsections. The first contains organization's booklet defining its different sections. The second contains models, samples, and the attachments needed in each department of the organization which is connected with a number signifying the service. The numbering system is used to easily reach the service by the user and initiate the desired improvements and change by the organization.
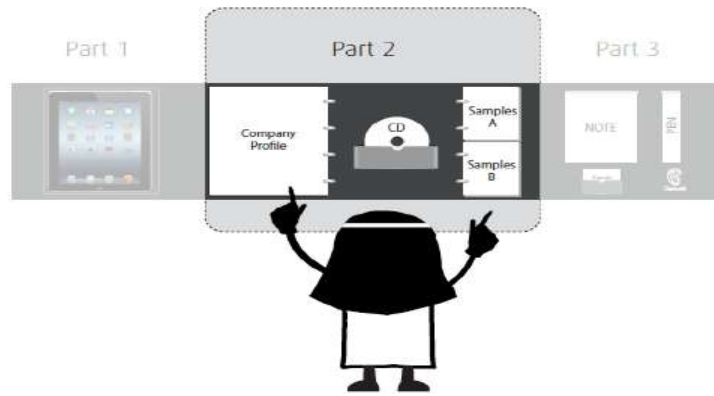

Figure 10

Service Section (Part 3) includes everything the user needs such as paper notes, pens, cards with the service symbol or pictograph including e-mail addresses and the means of communication using the sign language. In addition to a place designed to get a copy of a CD containing the guide and links of the site for downloading the guide.
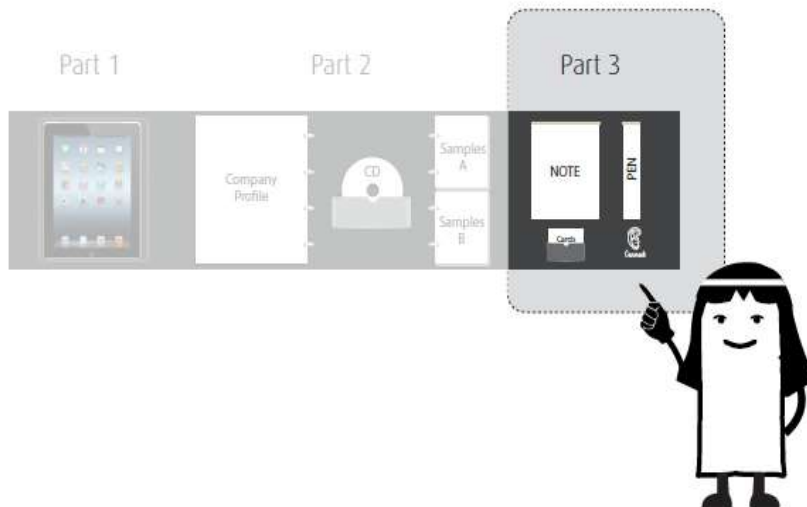

Figure 11

Figure 12

Paper Guide Sections: the following sections are considered by all organizations. They form the main parts that best introducing the organizations.   They are written in a simple form containing a small number of Sign Language terms, see the following figures indicating vision, mission, objectives, and tasks:
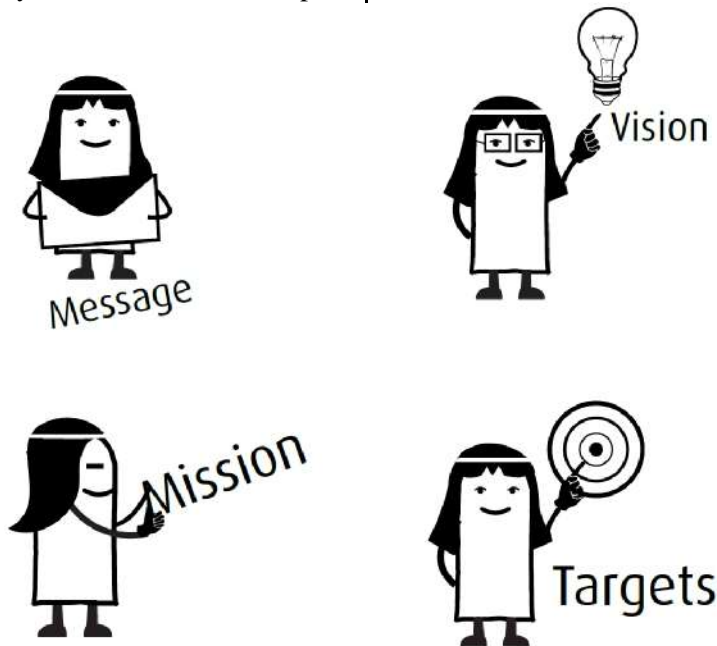
Figure 13

Steps of Requesting a Service:
This section differs from one organization to another one in terms of the type of services offered and the number of employees delivering the service.   Each organization arranges its departments and sections according to the way services are offered. It also provides the user with the employees offering the service, the time and the way to get the service, as well as the sequence of actions needed.
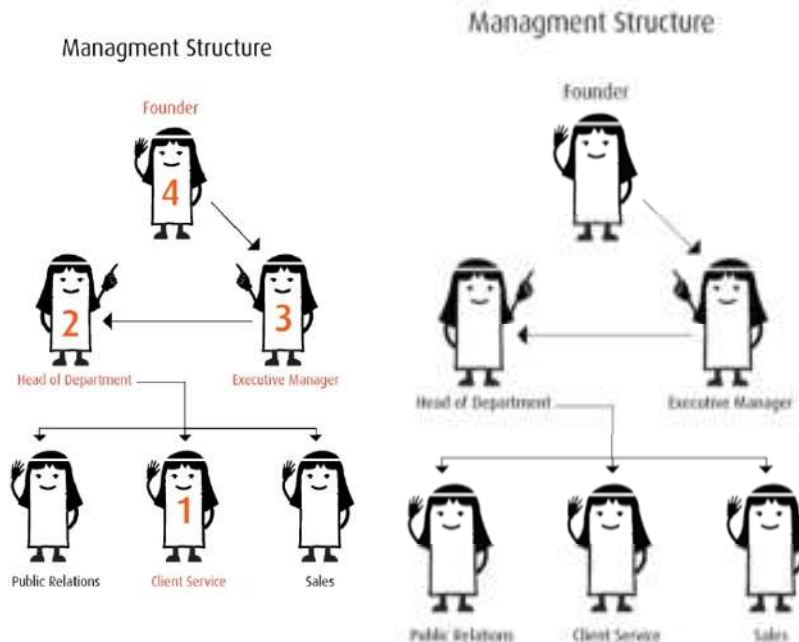
Figure 14

Dividing the Guide:
The guide is divided into a number of sections representing the real section of the organization. Each section is defined and explained using the characters.

Part 1

Part 2   Part 4

Part 3   Part 5
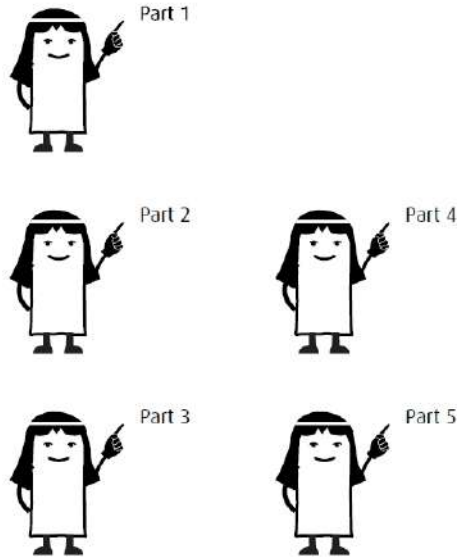
Figure 15

Creating characters to communicate with the deaf people is an important and proper way to explain the organization. It also reduce the language terms that really change from place to place and from user to another. Each character is meant to facilitate the use of the guide divisions, simplifying the Sign Language using pictographs, meanwhile speeding up the service by the organizations using the proposed guide. See the samples that were assessed by an assessment committee at the end of the paper.

Happy to serve you

Cause we love you
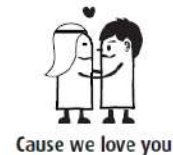
نسعد بخدمتك

لأننا نحبك

وقد صمم هذا الدليل ليجعل من السهل أن تعتمد على نفسك وتخدم بنفسك بنفسك.

إن مساعدة الأصم واجب علينا، بتقديم الحب وأفضل ما لدينا دائما. وإنك بقلوبنا تحتل مكانة عالية، لذلك فإن زيارتك لمؤسستنا تسعدنا بتقديم أفضل الخدمات.

Happy to serve you

This directory is designed to make it easy to depend on yourself serving your own.

Cause we love you

It's a must to help deaf, love them and give them the best we can.
In our hearts you have a special place, for that your visit to our organization makes us happy and we enjoy serving you.

Figure 16

<div dir="rtl">

لنصـل إليـك

جعلنا التكنولوجيا لتصبح اللغة الخاصة بك.
باتباع الإرشادات يمكنك أن توفر لنفسك الخدمة التي تحتاجها بسهولة.

</div>

<div dir="rtl">

نجـــاحنا

بهـذا الدليل نصـل بك إلى قمـة انتصـارنا على أي صعوبـات
قد تقف أمام طريـق خـدمتك

</div>

Reaching you

We made technology to become your own language.
By following the instructions you can provide yourself the service you need easily.

Our success

This guide leads you to the peak of the victory we achieved against any difficulties to to offer your the services you need.

Figure 17

<div dir="rtl">

رضاك هـدفنا

قمنا باختيار هذا الشعار ليوضح مدى اهتمامنا بتحقيق رضاك
والحصول على أفضل خدمة لك

</div>

<div dir="rtl">

بتواصلك ننجح

أنت شريك في إنجاح وتحقيق أهداف هذا الدليل

</div>

Your satisfaction is our goal

We choose this logo to show our care to achieve your satisfaction and get the best service for you.

Your ability to communicate is our success

are a partner in the success and achievement of the objectives of this directory

Figure 18

The steps involved in the implementation of the guide and the advisory programme on the research sample:

In the researcher's design steps, the researcher depends on to the needs of deaf persons, the previous studies, and the experiences of teaching the deaf people to achieve research idea. The following steps are considered:

Simplifying Information: the researcher transformed all theoretical information related to the organization involved in the study into simple and easy to understand language by the deaf people.

Using Video: the researcher used videos to demonstrate the simplified information using the Sign Language, and to implement the service. After simplifying and transforming the organization's information, the researcher organized them into simple explanation of the design idea and the guide in a video using Sign Language supported by another video demonstrating the way of using the software in simple detailed steps. The videos are downloaded in the researcher's website for review and assessment of the research idea.

Figure 19

Readjusting the organization structure: The organizations are used to organize their administrative structure in a way that seems difficult to understand by the deaf people. The researcher started by reorganizing the structure of each department in relation to the service offered to the deaf person. This process involved merging a number of departments together, subtracting some others, and replacing the departments' names with numbers; suggesting that the number of departments involved ranges from 3 to 5 according to the nature of the organization to facilitate the movement of deaf person in between the departments.

Organizing the Stages of Finishing up the Service: It is difficult for the deaf person to stop by different departments or persons to obtain a service that are needed based on the service hierarchy of the organization and the different tasks of the nature of each service. Therefore, the researcher designed a service hierarchy of 2 to 3 persons allowing the deaf person to move in between easily and comfortably to finish the

service. This way the deaf people understand and tolerate the service hierarchy that is simplified further using the pictographs and characters.
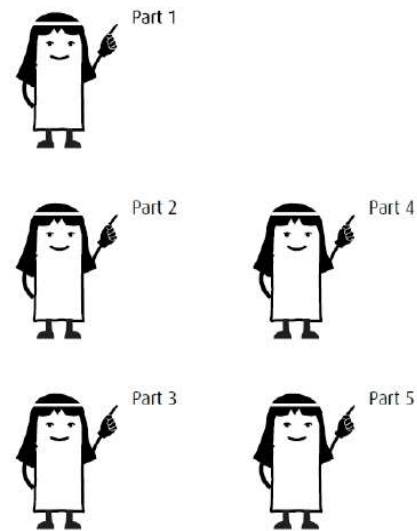
Figure 20
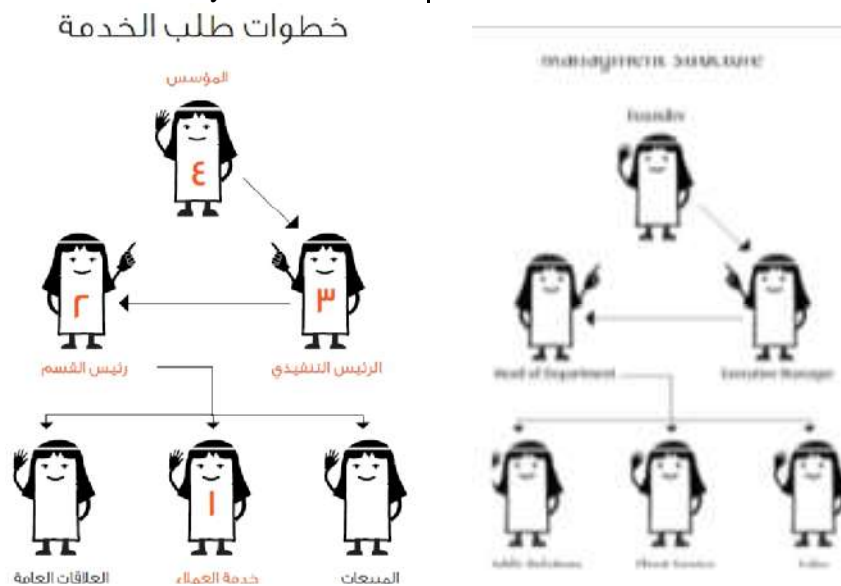
Figure 21

Designing the Software
The software was designed with the cooperation of the computer software engineer as per the researchers' requirements of the proposed guide

Figure 22

Icon Design
Experimental implementation of the organization: when operating the program the next screen open. The demo video shows the operation steps and the use of the software step by step in Sign Language, allowing the user to apply the functions of using the guide during the demo.
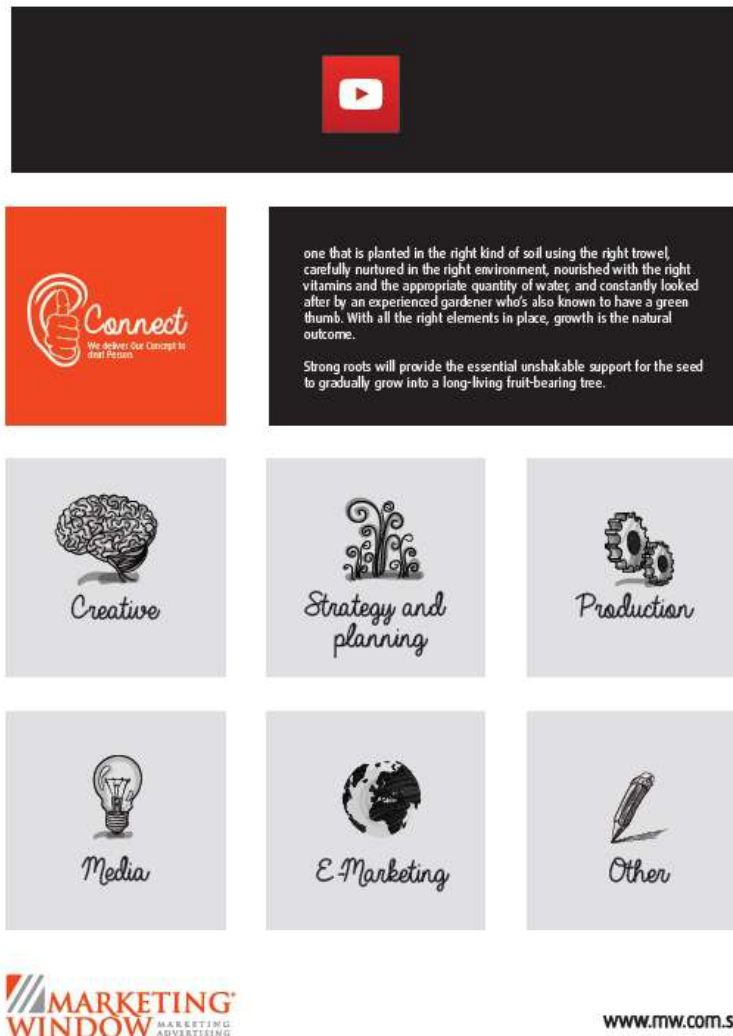

Figure 23

When choosing an icon representing a section of the organization, the page of that section opens containing a video explaining how to execute the section's service in Sign Language. It is also possible to follow up the demo while applying the instructions step by step, and serving the user independently.


Figure 24

Figure 25

The following measures were considered through the software design

1. Communicating with the organization system and connecting with its electronic services enable the user, based on the nature of the organization, performs the service from a remote distance if the guide is available.
2. The positive interaction with the user's environment of target group all the time, Resisting the possible negative effects, and characterized sustainability.
3. Integration of the program planning and design (self-operation) when compared to traditional design programmes. The software capability of the program has a strong effect on the guide's effectiveness.
4. Integration of the design and the program as both its outputs and objectives are parts of the organization's objectives, operations, and ambitions.
5. Its appropriateness to all businesses, commercial or Government, in the process of creating the guide and dividing the services within the organization's typical program. It is acknowledged that the part-whole relationship is essential to the success of this serviceable guide for the deaf user class.
6. Constructing the initial phase of the program in a collective decisions manner of the participants in building up the organization's programming expertise according to the available data of the proposed guide.
7. Presenting the program and sharing the experiences in the local, regional, and international communities.

8. Studying the nature, characteristics, and skills of users; appropriating the guides design program to the level of users' understanding of the application, requirements, and satisfactions of their needs; and assisting the organization to establish the culture of electronic and self-services to the deaf class, as well as merging aesthetic, environmental, social, political and ethical values within the expectations of the experienced parties supervising users and organizations.

Standards of Quality Control and Efficiency Specifications of Guide Design

The quality specifications of guide design is achieved through the translation of the deaf needs, wishes, and understanding, in addition to the goals, mission and vision of the organization, as well as the services provided to both the average and deaf persons. This can be achieved according to the following points:

1. The design ability to achieve objectives
2. The design compatibility to the objectives

The proposed idea of improving communication with deaf people is to design a guide containing all the different offered data and services helping the organization and the deaf. The guide also saves time, effort, money, and presents necessary and sufficient information. In order to achieve success of the guide the following considerations must be taken care of:

1. Use the "Connect Symbol" of the service to announce its availability in the organization's advertisements.
2. Design the right environment including internet connection linked to the main system of the organization to properly provide the service.
3. Design the work atmosphere that suites the deaf users in terms of the right choice of floors, ceilings, walls, furniture, lighting, ventilations specifications.
4. Introduce the availability of the service properly through its clear symbol and its location in the organization premises.
5. Follow up the main guide design in its different sections and the way it is presented and designed. The consent of the researcher must be considered before any modifications, additions, or deletions take place.

Research population

Research population is a group of individuals, books, school buildings or anything who may

benefit from the research findings (Assaf, 2000, p 75). The population of this study is composed of a number of organizations who agreed to be part of the study and preserving the researcher's conceptual property rights, the organizations' employees, the deaf people, normal people who have a direct or indirect relationship with the deaf.

Procedures of collecting information and designing the model

This part of the study is concerned with the field and experimental studies. It is used to verify the success or failure of the research idea through its application on the real organization, the level of the deaf satisfaction of the self-service by using the guide, the deaf satisfaction of the main idea of the study. The making and implementation of the guide were documented through video recording of the deaf during application. the performance of using the guide was presented on the researchers site. Then, the feedback about the deaf people, organization owners, and the public was collected based on a questionnaire designed for that purpose.

Approving the guide's experimentation requires demonstration on a voluntary sample of the target people. To ensure the guide's quality control, its efficiency, the level of the deaf understanding, satisfaction of the deaf needs, achieving the organization's objectives in terms of its vision and mission require measuring the compatibility of the guide with the efficiency of production and operation, and the effectiveness with the user. The researcher asked the Deaf Association for implementing the guide and collecting the information.

Procedural Steps

1. choosing the organization based on its willingness to fully participate in the experimentation with the preservation of intellectual property rights for the researcher.
2. Choosing the deaf persons based on their agreement to perform the service, present the video on the researcher's website, and use the guide sample to implement the performance test.
3. Choosing a sample from the general public who has a direct or indirect relationship with deaf people.
4. Assessing the data collection form filled by the experts and researchers on deaf people, members of the deaf Association, the general public, the deaf people, the interpreters of Sign Language, Organizations owners, and the leaders of government organizations.

Testing the guide's validity

The researcher collected the population responses on the guide and the demo video installed on the researcher's website.

Questions were divided into the following three target groups which were defined before answering the questions:

1. The deaf (user) group
2. The organization's owner group
3. The general Public group

The researcher will use the assessed form as a tool for collecting data and information and the questionnaire designed by the researcher to collect the necessary information including the general data identifying the extent to which the guide achieves its objectives. The researcher believes that these points are enough to know the population opinion about the guide through viewing the video and the guides application.

Questionnaire

Strongly Don't Agree	Don't Agree	Neutral	Agree	Strongly Agree	Phrase	No
					Responses	
					The guide's design, software and sections are clear.	١
					the guide and software are easy to use.	٢
					The guide and software are easy to carry and to deal with as presented in the photos and video.	٣
					The guide and software are important to the organization.	٤
					The guide saves effort and time for both the user and the owner.	٥
					The guide saves lots of money for both the user and the owner.	٦
					The guide gives correct information about the services offered by the organization.	٧

					Statement	No.
					The design of characters using pictures facilitates understanding of the idea.	٨
					The design of dividing the organization's work into sections facilitates its function.	٩
					Designing the services in sequence facilitates locating the person in charge.	١٠
					Using the video in the guide and the software help understanding the application.	١١
					Self-service saves effort, time, and money for the deaf.	١٢
					The deaf person needs the guide and software a lot.	١٣
					The guide shows the organization's vision, mission, task and objectives.	١٤
					Characters speed up the application process while using the guide.	١٥
					The software uses advanced electronic technology properly.	١٦
					The idea and its design are up to date.	١٧
					I recommend using the guide in all organizations.	١٨
					It is the most appropriate way to facilitate the service of introducing the organization to the deaf people.	١٩
					The guide encourages you to search for the organizations offering the service.	٢٠
					The guide and the software fit all kinds of organizations.	٢١
					It saves the organization hiring a specialized person to serve the deaf people.	٢٢
					The success of the guide's idea in the organization is based on the application of the proposed guide and software.	23
					It obliges the organization to serve the deaf person.	24
					The proposed guide and software enable the organizations to use it without trial?	25
					It serves the deaf person without the need to a specialized employee.	26
					It is a practical and smart solution to benefit from the organizations' programs.	27
					It is fast to publicize and implement.	28
					In order to understand the service and publicize it we need advertising campaigns.	29
					The idea of the guide and the software is successful because we understanding the researcher's virtual guide and the software.	30
					The accompanying video of the application clarifies the software idea.	31
					The software is easy to use.	32
					The use of the software achieves the user's self-service.	33

Interim Approval of the Guide:

The guide's design and approval pass through the following three stages:

1. Evaluating the design idea of the guide.
2. Evaluating the electronic and printed guide by the user.
3. Evaluating the effectiveness and the impact of the guide by the organization.

The three stages go through the following procedures:

Measuring the value, level, and features of the required performance.

Measuring the level of acceptance and rejection.

Measuring the range of amendment, addition, and deletion.

Measuring the validity and reliability and judging the approval tools used. Applying the analysis scale of probabilities and job failure, measuring its effects on the guide, and estimating the risks resulting from the misuse and the good use of the guide.

The Final Approval of the Guide:

The confirmation of the following procedures leads to the guide's final approval:

1. Assessing the software functional performance and the impact of its satisfaction on both the user and the owner of the organization.
2. Emphasizing all achieved functional features of the guide and their level of achieving the design objective for all parties involved.
3. Reviewing the organization's and user's systems and validations for: controlling the quality and specifications of the proposed guide and the level of their compatibility with the proposed study as totally implemented and documented.

Evaluating the design guide of the deaf person:

This is to set an interim evaluation list to assure control over the work progress according to the proposed design specification:

1. The needs and wishes of the user.
2. The needs, wishes, goals, mission, vision, and services of the organization.
3. Comparing the level of compatibility of achieving the needs of the deaf users and the organization owner. The achieved result is a strong measure of the evaluation.
4. The level of guide design validity to every organization.
5. The extent to which the validity of the guide design achieves continuity and sustainability.
6. The level of usage environment validity in different environmental conditions with respect to the nature of the organization.
7. The level of application effectiveness of the guide model with respect to the application research by various organization.
8. Its satisfaction level of and closeness to the user's culture, and its relevance to the environment. In addition, the terminology used in the guide must be carefully selected and characterized with being very simple, clear , and familiar to the deaf people due to their poor linguistic knowledge. (Al Azzah, 2001)
9. The existence of appropriate global guide designs in the line of this proposed research.
10. Its ability of achieving an appropriate level of performance, high quality and lower maintenance cost.
11. The level of technical overriding and their influence on the guide's efficiency.
12. The possibility of assembling, manufacturing, and ease of applying the guide.
13. The level of accepting and publicizing the logo accompanying the service.
14. The level of demand to provide this service and achieve the quality of the proposed Guide by government and private organizations in all areas of specializations.

Analysis of Data

Data were analyzed using spss to reflect the flexibility required for results.

Statistical processing methods

After collecting the forms data were analyzed using spss, the following statistical methods were used:

1. Alpha Cronbach coefficient for reliability tool calculation.
2. The Pearson correlation coefficient to determine the internal consistency of the study tool.
3. Duplications and Percentage for describing the population of the study
4. The arithmetic mean and standard deviation to see trends in the responses of the respondents.
5. Test of one-way variance analysis to determine statistical differences.

The five-point Likert scale method

5 (the greatest value on the scale) – 1 (the lowest value on the scale)

$4/5 = 0.80$

$0.80 + 1 = 1.80$

$1.80 + 0.80 = 2.60$

$2.60 + 0.80 = 3.40$

$3.40 + 0.80 = 4.20$

$4.20 + 0.80 = 5$

Degree of Acceptance	Mean
Strongly agree	4.21 – 5
Agree	3.41 – 4.20
neutral	2.61 – 3.40
Do not Agree	1.81 – 2.60
Strongly Do not Agree	1 – 1.80

Stability of the study tool

The tool stability is calculated using equation Alpha Cronbach coefficient. table (1) shows the value of the coefficient of reliability for each part of the questionnaire.

Table No. (1) reliability coefficient values for each theme of the questionnaire

Theme	reliability coefficient
Evaluation Questionnaire	0.962

Table 1 shows that the reliability coefficient values of the evaluation theme reached 0.962. This high value means the questionnaire has a high degree of reliability coefficient value.

Verity of Internal Coherence

To ensure total coherence of the statements within the theme to which they belong, the verity of the internal consistency of the tool was measured through the responses of the population of the study by calculating correlation coefficients between each phrase of

the theme and the total value of the theme to | which they belong.

Evaluation form

Table 2: correlation coefficients of each phrase of the theme and the total value of the theme to which they belong.

correlation coefficients	Phrase	No
0.652**	The guide's design, software and sections are clear.	١
0.588**	The guide and software are easy to use.	٢
0.654**	The guide and software are easy to carry and to deal with as presented in the photos and video.	٣
0.774**	The guide and software are important to the organization.	٤
0.692**	The guide saves effort and time for both the user and the owner.	٥
0.664**	The guide saves lots of money for both the user and the owner.	٦
0.615**	The guide gives correct information about the services offered by the organization.	٧
0.645**	The design of characters using pictures facilitates understanding of the idea.	٨
0.656**	The design of dividing the organization's work into sections facilitates its function.	٩
0.741**	Designing the services in sequence facilitates locating the person in charge.	١٠
0.728**	Using the video in the guide and the software help understanding the application.	١١
0.680**	Self-service saves effort, time, and money for the deaf.	١٢
0.626**	The deaf person needs the guide and software a lot.	١٣
0.722**	The guide shows the organization's vision, mission, task and objectives.	١٤
0.792**	Characters speed up the application process while using the guide.	١٥
0.732**	The software uses advanced electronic technology properly.	١٦
0.606**	The idea and its design are up to date.	١٧
0.691**	I recommend using the guide in all organizations.	١٨
0.718**	It is the most appropriate way to facilitate the service of introducing the organization to the deaf people.	١٩
0.650**	The guide encourages you to search for the organizations offering the service.	٢٠
0.705**	The guide and the software fit all kinds of organizations.	٢١
0.751**	It saves the organization hiring a specialized person to serve the deaf people.	٢٢
0.676**	The success of the guide's idea in the organization is based on the application of the proposed guide and software.	23
0.674**	It obliges the organization to serve the deaf person.	24
0.706**	The proposed guide and software enable the organizations to use it without trial.	25
0.566**	It serves the deaf person without the need to a specialized employee.	26
0.741**	It is a practical and smart solution to benefit from the organizations' programs.	27
0.676**	It is fast to publicize and implement.	28
0.447**	In order to understand the service and publicize it we need advertising campaigns.	29
0.688**	The idea of the guide and the software is successful because we understanding the researcher's virtual guide and the software.	30
0.673**	The accompanying video of the application clarifies the software idea.	31
0.731**	The software is easy to use.	32
0.735**	The use of the software achieves the user's self-service.	33

(* *) Function at 0.01

Table (2) Shows that all correlation coefficients are statistical functional at the level (0.01). This indicates internal consistency between paragraphs of the theme and the total value of the theme.

Preliminary Data

Table (3) shows that 74.8% of respondents are from the general public, 12.6% are deaf person and 12.6% are owners of the facilities.

Table 3 distribution of sample members

Percentage	Recurrence	
١٢.٦	12	Deaf Person
١٢.٦	12	Organization owner
٧٤.٨	71	Public
١٠٠	95	Total

Evaluation form

Table (4) shows the opinion of respondents on the evaluation form

	Phrase		Strongly Agree	Agree	Neutral	Don't Agree	Strongly Don't Agree	Mean	Standard Deviation	Sequence
١	The guide's design, software and sections are clear.	ك	٦٢	٢٩	٢	٢	٠	٤.٥٩	٠.٦٤٤	١٣
		%	٦٥.٣	٣٠.٥	٢.١	٢.١	٠			
٢	The guide and software are easy to use.	ك	٥٩	٣٢	٢	١	٠	٤.٥٩	٠.٥٩٤	١٢
		%	٦٢.٨	٣٤	٢.١	١.١	٠			
٣	The guide and software are easy to carry and to deal with as presented in the photos and video.	ك	٦٠	٢٥	٥	٣	٠	٤.٥٣	٠.٧٤٦	٢٣
		%	٦٤.٥	٢٦.٩	٥.٤	٣.٢	٠			
٤	The guide and software are important to the organization.	ك	٦٢	٢٢	٨	١	٠	٤.٥٦	٠.٦٩٩	١٧
		%	٦٦.٧	٢٣.٧	٨.٦	١.١	٠			
٥	The guide saves effort and time for both the user and the owner.	ك	٦٦	٢٤	٤	١	٠	٤.٦٣	٠.٦٢٠	٤
		%	٦٩.٥	٢٥.٣	٤.٢	١.١	٠			
٦	The guide saves lots of money for both the user and the owner .	ك	٤٩	٣٣	١٢	١	٠	٤.٣٧	٠.٧٤٥	٣١
		%	٥١.٦	٣٤.٧	١٢.٦	١.١	٠			
٧	The guide gives correct information about the services offered by the organization.	ك	٥٨	٣٢	٣	٢	٠	٤.٥٤	٠.٦٦٥	٢٠
		%	٦١.١	٣٣.٧	٣.٢	٢.١	٠			
٨	The design of characters using pictures facilitates understanding of the idea.	ك	٦٧	٢٢	٣	٣	٠	٤.٦١	٠.٧٠٤	١٠
		%	٧٠.٥	٢٣.٢	٣.٢	٣.٢	٠			
٩	The design of dividing the organization's work into sections facilitates its function.	ك	٥٤	٣٤	٥	٠	٠	٤.٥٣	٠.٦٠١	٢١
		%	٥٨.١	٣٦.٦	٥.٤	٠	٠			
١٠	Designing the services in sequence facilitates locating the person in charge.	ك	٦٥	٢٦	٢	٢	٠	٤.٦٢	٠.٦٣٩	٦
		%	٦٨.٤	٢٧.٤	٢.١	٢.١	٠			
١١	Using the video in the guide and the software help understanding the application.	ك	٦٨	٢١	٥	١	٠	٤.٦٤	٠.٦٣٤	٥م
		%	٧١.٦	٢٢.١	٥.٣	١.١	٠			
١٢	Self-service saves effort, time, and money for the deaf.	ك	٦٠	٢٨	٥	١	٠	٤.٥٥	٠.٦٩٧	١٨
		%	٦٣.٨	٢٩.٨	٥.٣	١.١	٠			
١٣	The deaf person needs the guide and software a lot.	ك	٦١	٢٩	٤	٠	٠	٤.٦١	٠.٥٧٢	٨
		%	٦٤.٩	٣٠.٩	٤.٣	٠	٠			
١٤	The guide shows the organization's vision, mission, task and objectives.	ك	٥٤	٣٠	٨	١	١	٤.٤٤	٠.٧٨٤	٢٨
		%	٥٧.٤	٣١.٩	٨.٥	١.١	١.١			

	Phrase		Strongly Agree	Agree	Neutral	Don't Agree	Strongly Don't Agree	Mean	Standard Deviation	Sequence
١٥	Characters speed up the application process while using the guide.	ك	٥٩	٣١	٤	١	٠	٤.٥٦	٠.٦٣١	١٥
		%	٦٢.١	٣٢.٦	٤.٢	١.١	٠			
١٦	The software uses advanced electronic technology properly.	ك	٥٦	٣٠	٤	١	١	٤.٥١	٠.٧٣٤	٢٤
		%	٦٠.٩	٣٢.٦	٤.٣	١.١	١.١			
١٧	The idea and its design are up to date.	ك	٥٨	٣١	٥	١	٠	٤.٥٤	٠.٦٤٩	١٩
		%	٦١.١	٣٢.٦	٥.٣	١.١	٠			
١٨	I recommend using the guide in all organizations.	ك	٦١	٢٧	٦	١	٠	٤.٥٦	٠.٦٦٤	١٦
		%	٦٤.٢	٢٨.٤	٦.٣	١.١	٠			
١٩	It is the most appropriate way to facilitate the service of introducing the organization to the deaf people.	ك	٦٢	٢٦	٥	٠	٠	٤.٦١	٠.٥٩٠	٩
		%	٦٦.٧	٢٨	٥.٤	٠	٠			
٢٠	The guide encourages you to search for the organizations offering the service.	ك	٤٩	٣٧	٩	٠	٠	٤.٤٢	٠.٦٦٢	٢٩
		%	٥١.٦	٣٨.٩	٩.٥	٠	٠			
٢١	The guide and the software fit all kinds of organizations.	ك	٤٩	٣٦	٧	١	١	٤.٣٩	٠.٧٦٥	٣٠
		%	٥٢.١	٣٨.٣	٧.٤	١.١	١.١			
٢٢	It saves the organization hiring a specialized person to serve the deaf people.	ك	٦٤	٢٩	٢	٠	٠	٤.٦٥	٠.٥٢١	١
		%	٦٧.٤	٣٠.٥	٢.١	٠	٠			
٢٣	It obliges the organization to serve the deaf person.	ك	٦٦	٢٦	٢	١	٠	٤.٦٤	٠.٦٣٤	٢م
		%	٦٩.٥	٢٧.٤	٢.١	١.١	٠			
٢٤	The success of the guide's idea in the organization is based on the application of the proposed guide and software.	ك	٦١	٢٤	٩	١	٠	٤.٥٣	٠.٧١٢	٢٢
		%	٦٤.٢	٢٥.٣	٩.٥	١.١	٠			
٢٥	The proposed guide and software enable the organizations to use it without trial.	ك	٤٦	٣٠	٤	١٠	٣	٤.١٤	١.١١٩	٣٣
		%	٤٩.٥	٣٢.٣	٤.٣	١٠.٨	٣.٢			
٢٦	It serves the deaf person without the need to a specialized employee.	ك	٦٢	٢٩	٢	١	١	٤.٥٨	٠.٦٩٣	١٤
		%	٦٥.٣	٣٠.٥	٢.١	١.١	١.١			
٢٧	It is a practical and smart solution to benefit from the organizations' programs.	ك	٦١	٣٠	٤	٠	٠	٤.٦٠	٠.٥٧٢	١١
		%	٦٤.٢	٣١.٦	٤.٢	٠	٠			
٢٨	It is fast to publicize and implement.	ك	٤٥	٣٤	١٠	٥	٠	٤.٢٧	٠.٨٥٧	٣٢
		%	٤٧.٩	٣٦.٢	١٠.٦	٥.٣	٠			
٢٩	In order to understand the service	ك	٦٧	١٩	٧	١	٠	٤.٦٢	٠.٦٧٤	٧

	Phrase		Level of Agreement					Mean	Standard Deviation	Sequence
			Strongly Agree	Agree	Neutral	Don't Agree	Strongly Don't Agree			
	and publicize it we need advertising campaigns.	%	٧١.٣	٢٠.٢	٧.٤	١.١	٠			
٣٠	The idea of the guide and the software is successful because we understanding the researcher's virtual guide and the software.	ك	٥٤	٢٩	١١	٠	٠	٤.٤٦	٠.٦٩٨	٢٥
		%	٥٧.٤	٣٠.٩	١١.٧	٠	٠			
٣١	The accompanying video of the application clarifies the software idea.	ك	٥٥	٣٠	٧	٢	٠	٤.٤٥	٠.٨١١	٢٧
		%	٥٨.٥	٣١.٩	٧.٤	٢.١	٠			
٣٢	The software is easy to use.	ك	٥١	٣٤	٧	١	٠	٤.٤٥	٠.٦٨٤	٢٦
		%	٥٣.٧	٣٥.٨	٧.٤	١.١	٠			
٣٣	The use of the software achieves the user's self-service.	ك	٦٢	٣٠	٣	٠	٠	٤.٦٢	٠.٥٤٩	٥
		%	٦٥.٣	٣١.٦	٣.٢	٠	٠			

Arithmetic mean = 4.52, standard deviation = 0.464

Table 4 shows the sequence of the phrases in the evaluation form according to the sample responses

1 It saves the organization hiring a specialized person to serve the deaf people, its mean is 4.65. this means that the sample members strongly agree.
2 Using the video in the guide and the software help understanding the application. its mean is 4.64. this means that the sample members strongly agree.
3 The guide saves effort and time for both the user and the owner. its mean is 4.63. this means that the sample members strongly agree.
4 The use of the software achieves the user's self-service. its mean is 4.62. this means that the sample members strongly agree.
5 Designing the services in sequence facilitates locating the person in charge. its mean is 4.62. this means that the sample members strongly agree.
6 In order to understand the service and publicize it we need advertising campaigns. its mean is 4.62. this means that the sample members strongly agree.
7 The deaf person needs the guide and software a lot. its mean is 4.61. this means that the sample members strongly agree.
8 It is the most appropriate way to facilitate the service of introducing the organization to the deaf people. its mean is 4.61. this means that the sample members strongly agree.
9 The design of characters using pictures facilitates understanding of the idea. its mean is 4.61. this means that the sample members strongly agree.
10 It is a practical and smart solution to benefit from the organizations' programs. its mean is 4.60. this means that the sample members strongly agree.
11 The guide and software are easy to use. its mean is 4.59. this means that the sample members strongly agree.
12 The guide's design, software and sections are clear. its mean is 4.59. this means that the sample members strongly agree.
13 It serves the deaf person without the need to a specialized employee. its mean is 4.58. this means that the sample members strongly agree.
14 Characters speed up the application process while using the guide. its mean is 4.56. this means that the sample members strongly agree.
15 I recommend using the guide in all organizations. its mean is 4.56. this means that the sample members strongly agree.
16 The guide and software are important to the organization. its mean is 4.56. this means that the sample members strongly agree.
17 Self-service saves effort, time, and money for the deaf. its mean is 4.55. this means that the sample members strongly agree.
18 The idea and its design are up to date. its mean is 4.54. this means that the sample members strongly agree.

19 The guide gives correct information about the services offered by the organization. its mean is 4.54. this means that the sample members strongly agree.

20 The design of dividing the organization's work into sections facilitates its function. its mean is 4.54. this means that the sample members strongly agree.

21 It obliges the organization to serve the deaf person. its mean is 4.53. this means that the sample members strongly agree.

22 The guide and software are easy to carry and to deal with as presented in the photos and video. its mean is 4.53. this means that the sample members strongly agree.

23 The software uses advanced electronic technology properly. its mean is 4.51. this means that the sample members strongly agree.

24 The idea of the guide and the software is successful because we understanding the researcher's virtual guide and the software. its mean is 4.46. this means that the sample members strongly agree.

25 The software is easy to use. its mean is 4.45. this means that the sample members strongly agree.

26 The accompanying video of the application clarifies the software idea. its mean is 4.45.

this means that the sample members strongly agree.

27 The guide shows the organization's vision, mission, task and objectives. its mean is 4.44. this means that the sample members strongly agree.

28 The guide encourages you to search for the organizations offering the service. its mean is 4.42. this means that the sample members strongly agree.

29 The guide and the software fit all kinds of organizations. its mean is 4.39. this means that the sample members strongly agree.

30 The guide saves lots of money for both the user and the owner. its mean is 4.37. this means that the sample members strongly agree.

31 It is fast to publicize and implement. its mean is 4.27. this means that the sample members strongly agree.

32 The proposed guide and software enable the organizations to use it without trial. its mean is 4.14. this means that the sample members strongly agree.

The general arithmetic mean (4.52) shows that the sample members strongly agree on the phrases of this theme.

Deviation analysis testing to define statistical differences of the evaluation form with regard to the primary data factor

Table 5 Deviation analysis test outlines statistical differences between the responses sample members with regard to the primary data factor

Themes	Source of differentiation	Sum of squares	Freedom degrees	Mean of Squares	The Value of F	Level of Significance
Evaluation form	Between Groups	٠.٩٧٢	٢	٠.٤٨٦	٢.٣١٥	٠.١٠٤
	Within Groups	١٩.٣٢٣	٩٢	٠.٢١٠		

Table 5 shows that there are no differences with statistical significance in the responses of the sample members about the evaluation form. The F factor reached (2.315) on the freedom degree of (94)and significant level of (0.104) which is greater than (0.05).

Results and Summary

The research results confirmed the seriousness of the paper and the lack of significant statistical differences among the deaf people, owners, and ordinary people about the strategy guide and the software. It assured the total support for the proposed design, the idea based on expressive pictorial language, and the reduction of terminology as well as unification of visual symbols and logos. It also clarifies the organization's concept, vision, mission, division, the request services sequence, and achieving self-service for deaf person using the program.

The importance of getting the correct information from competent personnel in an appropriate way relating to their personality types in any time with less effort through its availability in the guide, the software, and the

video. The study provides evidence and videotaped demo services showing the impact of the programme and achieving the objectives of both the owners and the user.

The research findings confirmed that (1) the significance of the research and its idea of designing a guide to communicate with the deaf people, (2)the uniqueness of the guide in real life situations including the organization and the deaf users, (3) the impact of its realization in terms of the design criteria of the proposed model provided by the researcher to organize and insure quality time, efforts, and money to the target groups.

The guide design is considered an important addition to the specialized designs in this area of services at national and international levels. The guide also added more positive and

developmental impact that can be improved by the following outcomes:

1. The guide must be designed in terms of the proposed method of making the sample model as presented in this study. The study is considered the main source of the guide design specifications as being one of the important design principles and the conceptual property rights of the researcher.

2. The guide design must tolerate some additions and deletions as needed by the organization along the lines provided by the researcher of the proposed design and methods of use.

3. Approving the guide through different process of testing and evaluation provided an objective stand for accrediting the guide as being characterized with efficiency and good quality. This made the different interested people and organizations' owners believe in the scientific and practical experience of the research outcomes related to the ways of implementing the guide and estimating its benefits. The right implementation of the research outcomes enhances the quality level of the service offered to the target users and develops the ability to achieve satisfaction to everyone using the communication guide to connect with the deaf people.

References

Moors (1996) in Omari, Ghitan. (2009). Problems with the application of the general education curriculum in schools and programs for the Deaf Hope Primary in Jeddah from the point of view of teachers and administrators. Master Thesis. Department of Special Education, Faculty of Education, King Saud University, Riyadh (in Arabic)...

http://www.gulfkids.com/ar/index.php?action=show_res&r_id=50&topic_id=918

Shaheen, Gamila (2012), The direction and guidance of the motor with visual disabilities. Gulf children with special needs (in Arabic)..

Al Ezza, Saied Hosney (2001) hearing disability, Speech disorder, The international Scientific Publications, Amman (in Arabic).

Al Assaf, Saleh Ben Hamad (1989), An introduction to Behaviour Sciences Research, Aubaican Press and Publication, Riyadh (in Arabic).

Cass, Jacob. (http://justcreative.com/2010/04/06/branding-identity-logo-design-explained/). Accessed 10:20, November 10, 2013.

Gentry, M. Mary , Chinn M. Kathleen, Robert, D. M. Effectiveness of Multimedia Reading Materials When Used With Children Who Are Deaf**. American Annals of the Deaf**, Volume 149, Number 5, Winter 2004/2005. pp. 394-403. Winter, 2004/2005)

Hiesinger, Kathryn B. and Marcus, George H. **Landmarks of Twentieth-Century Design: An Illustrated Handbook**. New York: Abbeville Press Publishers. (1993).

Johnes, J. Christopher. (1980). **Design Methods: Seeds of Human Futures** Edition with a review of new topics. New York: John Wiley & Sons.

Meggs, Philip, B., **Meggs' History of Graphic Design** 4rd Edition, , New Jersey: Hopkins, John Wiley and Sons., Inc,. (2006).

http://www.merriam-webster.com/dictionary/