Use of Two Screens at Academic Library Reference Desk for Improved Information Services

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Short Communication

ARTICLE INFORMATION

ABSTRACT

This article describes the positive interaction achieved with the use of two screens by the librarian and the user in an academic library reference service. Besides the ergonomic benefits provided for both the librarian and the user, the advantages of the system will be shown in terms of information transmission. This will involve an explanation of how the librarian's screen display is shared with the user and simultaneously allows the librarian to present additional information and announcements.

I. Introduction

The aim of this study is to promote the use of two screens developed to improve the reference service, one of the main services offered by the central library. In other words, to increase the usefulness of the service for the librarian and the user. "Understanding usability is a combination of understanding the user's needs, desires, and abilities, combined with the goals, functions, and limitations of the product or service"(Lease, 1999, p.52) In the reference service, use of two screens considerably enhances the communication between the user and the librarian in the research process, and has a very positive impact on the role of the Reference Desk.

Although there has not been much research done in this area, there are a few studies on the use of multiple screens for academic library reference services. These studies focus on the standard borrowing service of the libraries in question. It would therefore not be wrong to say that the current study, involving the use of two screens for the reference service of a university library, is a first of its kind.

The Mustafa Inan Library of Istanbul Technical University (ITU) offers a library service to an engineering school with a population of 40,000 in the central campus. The two-screen reference service, which is the subject of the study, is presented to the user from a single point in the library entrance hall. Mustafa Inan Library is open for 24 hours a day 7 days a week. Universities in Turkey are configured within two separate financial structures, as foundations and as state universities. For this reason, the conditions / budget / services / facilities they have vary. The budget of most state university libraries is below the budget of those run by foundations (Çetinkaya, 2014). Another constraint that has a direct impact on library services in public universities is that library budgets can only be used for purchases of publications. This type of budget organisation adversely affects the reference service of the library which should ideally be constantly upgraded and developed. On the other hand, the fact that the library of this prestigious state university is open 24/7 increases the importance of the reference desk as a primary and continual service.

II. Mustafa İnan Library Reference Desk Short History and Development

ITU Central Library have an independent library building with a single Reference Desk. Short questions, closed-ended questions, location-direction, working hours, service points queries, help in document copying and computer use, reference questions about service policy, reference service over the phone, reference service by email, database usage, catalogue scanning, use of databases, providing access from outside campus, research techniques, solution of access problems, forming

bibliographies and other questions requiring considerable research are now answered from a single point.

ITU Library collection has nearly 500 thousand volumes, 50 thousand emagazines, 5 thousand rare works, 3 thousand maps, and more than 200 electronic databases. Due to the fact that it is an engineering school, academic publications (electronic books, journals, standards, theses, statistics) are widely used in the syllabus.

Such a large and diverse collection of source material requires a good level of information literacy and research skills to be successfully explored in finding the specific resource needed at any given time in the library. Information literacy training sessions are not compulsory at ITU as part of the curriculum. In an informal system, when users (academicians / students) request such a service from the library, information literacy training is given by the reference librarians in the classroom / library. Because training is not mandatory, participation is relatively low, and as a natural consequence the vast majority of users' knowledge literacy skills are not at the required level. However, for a university member this skill is essential and indispensable, and should not really therefore be optional.

Based on a single member of staff and the computerized Reference Desk the intensive service is as follows. The user comes to the Reference Desk. They direct a question to the librarian. The question is whether a particular textbook resource is in the library or not, for example, and the librarian connects to the catalogue from their own computer, queries the publication, and verbally passes the result to the user. In the case of printed source queries, the process ends quickly if the source is accessed from the collection. In this process, because the computer screen is only facing the librarian, the user cannot see the whole research process on the computer.

If the user has applied to the Reference Desk to investigate an academic article, standard or thesis in the electronic environment, this process requires a more detailed and time-consuming questioning. The librarian expects this process to be carried out while the user is inactive and sometimes bored. The librarian then shares the result with the user. In all of these processes, the user plays a passive role and the librarian plays an active role. This process contributes little to the user's information literacy skills.

III.   From the Librarian's Perspective

"Reference transactions are opportunities to engage patrons in informal teaching and learning activities in which librarians help users to develop information literacy and critical thinking skills."(Folk,2015,p.13) Providing reference services to a large group of people some parts who do not have sufficient information literacy skills with a single pc has become a tiring and time-consuming task for a single member of staff. Trying to successfully answer the questions of users who have little knowledge of the library and its services, and more importantly, providing an efficient reference service, requires much more than verbal communication. The single-person computer at the reference desk has been

quite inadequate in the face of the sheer volume of user enquiries.

In order to facilitate this process, to make the service more efficient, and to improve the user's information literacy skills, the reference librarian presented a double screen proposal for the Reference Desk to the library management. A positive response was received and the project was soon implemented. Since 2014, two screens have been utilized at the Reference Desk.

The two-screen Reference Desk project was designed to provide a quality service to our users, who mostly have low level knowledge literacy skills, in the research process and also to help them develop relevant skills.

As the author of this study is also a reference librarian at Istanbul Technical University, it is clear that this application of technology is particularly useful and important for services like university libraries with heavy usage. For this reason, it is worth bearing in mind that the system should always be kept up to date. As well as reducing the workload of the librarian, the system also greatly facilitates the transmission of information between librarian and user. (Manjoo, 2014) Being a support for the information literacy level of the user, it is important that the two-screen system is always developing and keeps up to date. The fact that the devices needed for the installation of this system require very little in the way of financial outlay is another major advantage.

As university libraries utilize technology in a wide variety of applications, many recent studies in the literature envisage the disappearance of the Reference Desk altogether in the not too distant future. On the other hand, while big data increases every day there is a growing need to facilitate access to information; a problem only compounded by the proliferation of types of source material. The ability to access data and navigate information sources is therefore crucial, which is why the reference service of academic libraries continues to be vitally important. It follows that the quality of this service has a similar significance. According to Phillips, Van Epps, Johnson & Zwicky "the preponderance of traditional, face-to-face lecture style teaching, which is not surprising since many librarians who are teaching are accustomed to this model and likely, it is still the most comfortable for many librarians. This could lead to thinking that the face-to-face lecture is the most effective"(2018, p.709)
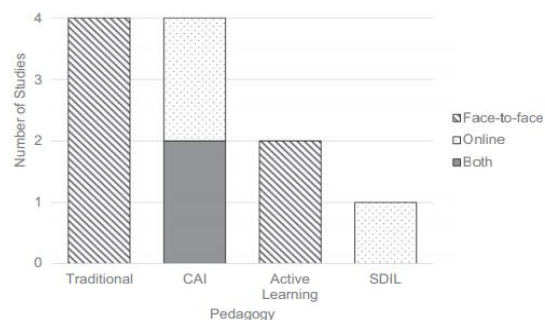

Fig. 1: students' preferred modes of information literacy (Phillips,Van Epps, Johnson, Zwicky,2018,p.709)

From the point of view of service delivery, the two-screen system would seem to be an indispensable element

of a reference library in the digital age. The application of a two-screen system for the library Reference Desk is not a new concept. However, the modified system outlined in this study, involving a more efficient use of the extra screen as a library notice display, represents a new approach.

IV.   The Interactive Two-Screen Reference Desk

The study carried out in Mustafa İnan Library involving an interactive two-screen Reference Desk consisted of the following hardware elements:

- 1 PC
- 2 monitors
- 2 keybords and mouse
- VGA switch for the screen pass
- 1 Rasperry pi
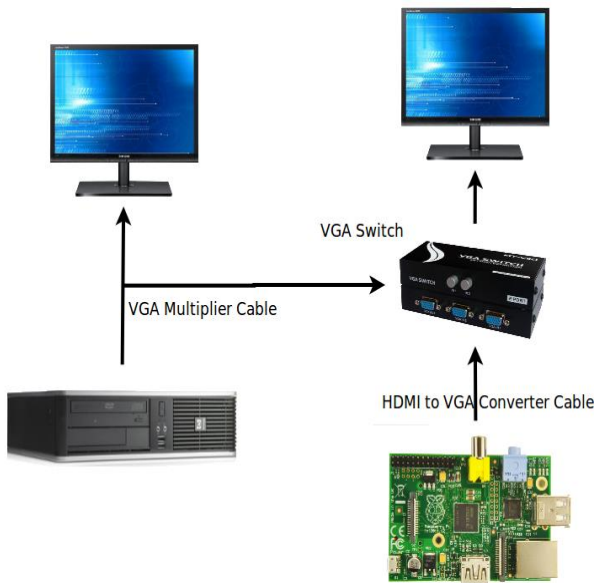
The operating principle of the system is as follows:

When necessary, the librarian displays her monitor view on the second screen by pressing a key on the VGA Switch. In this case, the user will see the same screen as the librarian. A keyboard-mouse is available both to the librarian and the user. Both can input and output information on the screen. In cases where the user is not present and the librarians are working alone or privately, the librarian uses the VGA Switch button on the back to retrieve the screen and the user screen is fed with the image from Rasperry Pi. In Raspberry Pi, there is an application called Screenly, which is customized for information / announcements. This application can publish video, images and web pages in a specific order.

Raspberry Pi Configuration:

Raspberry Pi outputs are via HDMI. Today, HDMI input / output systems are common and can be configured accordingly; but the system we use is VGA-based, so we had to use an HDMI / VGA converter. The following configuration changes were made in Raspberry Pi in order to run the configuration.

- Config.txt file must be edited for these processes
- The config.txt file is kept in a separate partition. However, when the device starts up, it is mounted on the partition / boot directory. The /boot/config.txt file must be opened to edit this

file while the device is running

- The following settings are changed. First, the comments in the lines hdmi_force_hotplug and hdmi_drive are removed.
  - hdmi_force_hotplug=1
  - hdmi_drive=2
- The hdmi_group and hdmi_mode comments are removed, and the parameters are set to the following new values.
  - hdmi_group=2
  - hdmi_mode= 16
- the file is saved and exit.

V.   Security

The management of the Screenly system in Raspberry Pi is done over the network. This means that announcements are added, updated and removed via a remote-connected web browser. However, an authorization system has not yet been developed. As a solution to this problem, links to the Screenly system must be configured with a firewall. Below are the installation and setup commands required for this purpose:

```
sudo              apt           install          ufw
sudo ufw enable
# ssh ile bağlantılara tamamen izin ver
sudo ufw allow ssh
# yönetim paneline yalnızca belirlenen IP'den bağlantıya
izin ver:
sudo ufw allow from 192.168.0.100 to any port 80 proto tcp
```

Following these commands, security settings should appear as follows:

```
sudo ufw status
Status: active
To                        Action    From
--          ------        ----
22/tcp                    ALLOW         Anywhere

80/tcp                    ALLOW         192.168.0.100
22/tcp (v6)               ALLOW         Anywhere (v6)
```

VI.   Simulation of Employee System

The user comes to the Reference Desk. The librarian tries to determine the need for information by questioning the user. With a few initial questions asked, a quick situation determination is made for the need of general information.

The librarian asks whether any research has been carried out before arriving at the Reference Desk. If the answer to this question is positive, then the librarian requests that the user repeat the research activities already performed on the library resources or website. The user repeats their previous research activities on the screen with the help of a one-to-one keyboard or shares the user research question with the librarian. The librarian supports this research process by navigating the library website and its resources live on the keyboard while the user participates.
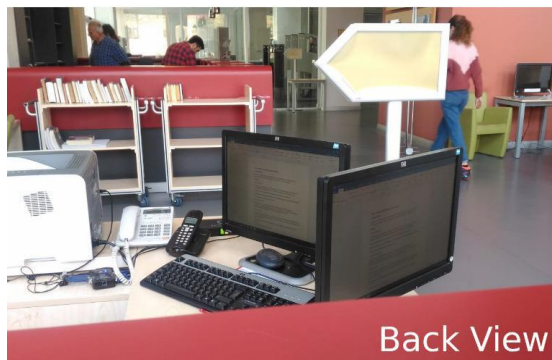
The way the system works with Images

Fig. 2: With Two Screen Reference Desk

VII. Contributions of Two-Screen use for User / Librarian and Services

- Enables the librarian to see the user's information literacy level
- Allows easy, fast detection of the research question as the user can participate actively or passively in the queries on the shared screen
- Facilitates and speeds up determination of the amount of information the user needs
- Helps the efficient use and promotion of the library collection through interactive communication with the user
- Introduces the types of academic resources and usage forms in the collection through interactive communication with the user
- Helps the promotion and efficient use of the library website thanks to the interactive communication it provides
- Facilitates, accelerates and increases the efficiency of the service as it saves time and effort for both the user and the librarian

- Increases communication efficiency
- Makes the service attractive, motivates the researcher and significantly reduces the phobia of library use and resource discovery, especially for new researchers
- Decreases librarian's workload while increasing productivity
- Provides ergonomic two-screen system for the user and the librarian
- Allows user to see detailed information about the collection, services and research tools offered by the library
- Enables user to show the research / information question to the librarian using the keyboard and develops user's information literacy skills permanently as the direct involvement of the user in the research process also means learning by experience
- Adds visuality and high speed to the service
- Displays library announcements and collection presentations when the computer is out of use, continuing to contribute to library services even when no user is at the desk
- Increases usability of the reference service for both librarian and user
- Reference librarian can be always stay current on students research needs. (Miles, 2013, p.326.)

With the application of a two-screen system at the library Reference Desk a considerable rise in the quality of interaction between librarian and service user was experienced. This effect was most obvious among new library users with low information literacy, such as new students, academics and personnel, whose response to the service was strongly positive. In particular, these types of users can be said to have largely overcome their initial phobia of the library system, as borne out by their spontaneous feedback at the point of delivery of the service.

"By Van Epps and Sapp Nelson (2013), that showed a just-in-time model of information delivery, with the library information tied closely with the timing of then related assignment, produced student work with more references that are scholarly and a greater variety of resources, rather than relying solely on websites."(Phillips, Van Epps, Johnson & Zwicky, 2018, p.710) So we can offer as a helper just-in-time model of information delivery as the system operates with two keyboards, the user is able to access the computer system with a wireless keyboard, allowing their information literacy and information retrieval strategies to be observed by the librarian, one to one and in real time. The author of this study is of the opinion that the quickest and most permanent type of learning is through direct experience, as in the case of infant learning, and a significant element of the guidance provided by the two-screen Reference Desk is of this most effective kind. At the moment of receiving the service, the user is far more active than the librarian: the user is well to the fore, while the librarian has a secondary, assisting role.

VIII. Conclusion and Recommendations

According to the comments on a recent forum discussing and some latest literature researchs, in the near future libraries will no longer need a catalogue or reference librarian (Banks, & C. Pracht, 2008). Because library users will increasingly make use of technology, particularly search engines on the internet such as Google for their research needs. But the literature of engineering information is growing and diversifying.

The development of information and communication technologies has dramatically changed the size the quantity form of information and the ways in which it is used. Today especially engineering academic library collections consist of variety of academic resources which is not easy to use like standards, reports, statistics, ebooks. So quantity of reference desk question seems to decline besides the quality of question has totally changed. Mostly library users ask to reference desk non-directional questions like "How do I access JSTOR from off-campus?" rather than directional or close ended questions.(Folk,2015) Reference Services, which are maintained by face-to-face communication, are gaining more importance and still remains a key component (Nolen,2010,p.9;Bowron &Weber,2019). Feeding the quality of face-to-face communications with technology is essential for the efficiency of the reference services. Increased service efficiency is an important factor that nourishes success in education and training activities. The Reference Desk two-screen application is a useful resource for users of all levels with or without information literacy skills, while also facilitating the librarian.

It is still the case today that the "personal touch is expected and desired by students, and the Reference Desk is the best place for this." (Miles, 2013, pp.326,328) Whether the library in question is presenting a service to a large or small population of users, the majority operate with just a single librarian at the reference desk and so an extra monitor will increase efficiency (Banks, & Pracht, 2008; Russel & Wong, 2005). These developments all point in the direction of more ergonomic and efficient computer use for the library user. Having second screen at the reference desk promotes students questions.

One possible criticism of the present study might be that it lacks proper discussion of the disadvantages related to dual monitor use. The kind of negative factors encountered in other sectors where dual monitor use has been introduced, such as increased cost, greater need for physical space in the workstation, and user distraction, were not found to a degree worth commenting on in the present study. The library reference desk is usually designed in such a way that there is plenty of room to accommodate an extra screen and the hardware requirements for such an information point are generally low cost in relative terms.

Reference desk will be important for the casual real positive relationship between user and reference librarian in the academic library environment near future. Considering the service provided by the reference desk and the ongoing developments in information technology, it seems obvious that a two-screen application for the library reference desk will be increasingly utilized and developed into the future.

Limitations of the Study:

Weakness of the study is the lack of written face to face feedbacks from library users.

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