Extended abstract

An innovative Digital Champion: Exploring the development of a mobile app to improve Welsh health clinicians' sustainable engagement with electronic test requesting (ETR)

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Keywords: Mobile Learning, Mobile application development, innovative interactions, ETR (Electronic Test requesting)

Introduction

Over the past five years mobile phone users have increased to 92% in the United Kingdom [5]. Data has revealed that since last December 2021, there has been more than six million people mobile phones users [1]. A lot of citizens now have a mobile phone, and this figure grows higher day by day. In detail, 77% of those between the age of 16 to 25 years old own a smartphone for education entertainment and income [3]. In terms of the health care sector, most appointments are now done through health care mobile applications. Mobile based Technology health services in Wales are experiencing significant growth. However, the implementation of mobile learning in Wales still stands low because users and medical practitioners have a less usage of mobile health application [6].

The aim of this study is to explore the development of a digital champion mobile application to support Welsh NHS clinicians in the use of an Electronic Test Requesting (ETR) system for their lab practice. This paper will document a study with hospital clinicians on their feelings around a mobile digital champion to support their use of an ETR system. It will also highlight the design and development of the mobile Digital champion focusing particularly on information accessibility, ETR support and application experience.

Literature Review/ Background

Electronic Test Requesting (ETR) is a system for pathology investigation for inpatients, outpatients, aiming to improve patient safety, to achieve a commencement treatment for better outcomes [10, Volume 4 | Issue 9]. It is implementation Evaluation of an electronic requesting system for diagnostic tests in George Eliot Hospital. [10, p.1] . Laboratory testing has not escaped this pressure,

particularly since pathology investigations cost the National Health Service £2.5 billion per year. Indeed, the Carter Review, a UK Department of Health-commissioned review of pathology services in England, estimated that 20% of this could be saved by improving pathology services [11]

Electronic Test Request is performed on Clinical a Workstation (CWS) via the Welsh Clinical Portal (WCP) [11] It allows clinicians and suitably trained Pathology staff to electronically submit and track [blood test?] results. For the ETR system to function successfully, staff need appropriate training on how to use the system. In addition, a good supply of hardware (PC's and printers) is required in all key areas of the department. On-going training must be provided, due to new staff and staff rotation; support from IT is also required especially when equipment and systems are failing. In particular, pathology has a need to support the lab clinicians with outcomes of faster and better results, Based on the analysis undertaken by Dr Ian Barnes, over 95% of clinicians are dependent on the patients records where they have digitally accessed for efficiency [7, p.5].. The main motivations for these ETR pathology services are quality and efficiency.

Mobile Learning

Mobile learning is method of wireless technologies for modern learning education, M-Learning activates to merge their learning experience in the collaborative and decent environment[8]. Mobile technology is one of the latest extensions of technological innovations that can be integrated into medical education [14]. The amount of information needed by doctors has exploded. The nature of knowledge (explicit and tacit) and processes of knowledge acquisition and participation are complex. Aiming to assist workplace learning, Wales Deanery funded "iDoc", a project offering trainee doctors a Smartphone library of medical textbooks [15].

Today, the internet is the main source which connects people socially throughout the global. In terms of learning, it enables learning activities for high level of interaction between teachers and learners. Internet is not just providing the content to the users, it's also engaging interactions, collaboratives and provides opportunities for problem solving. The mobile has made learning accessible because a handheld device is the one of the most flexible and feasible devices in the world. When, it comes to education, it has become the device that many students use to access material and learn. It is versatile and flexible, providing a learning experience across multiple contexts and at convenient times. In this busy world, humans are not capable of easily carrying around their desktops and books, hence mobile smart phones can play a major role. In 2020, during Covid19, many education institutes

could not offer offline classroom teaching. In this case mobile devices, became prominent devices for online teaching and assessment [8, p.2].

Digital Champion

A digital champion has been described [11, p.1] as ‘individuals who could help both their own and other communities to nurture and manage collections of online content’. In their article [13], define a digital champion as someone that promotes the use of digital technology, has positive conversations around the use of digital and helps people to improve their confidence. In our project, the Digital Champion is the informational resource for helping hospital clinicians to use the ETR system. This mobile based application digital champion will play a major role for the clinical staff. It will not only provide relevant information but also motivates every practitioner to use the ETR system

In this article digital champion perform the trouble shooting information for the clinicians when they have issue in the laboratory. This article identifies every single clinician behavior through Qualtrics survey by asking what kind of difficulties facing while lab test. In this project we follow the decision tree algorithm for the digital champion, for example clinician face the printer issue, he/she open the application go to the respected issue which is already pre-build. Where he/she performs the yes/no decision making for the issue. If the issue doesn’t resolve. It also sends the request through ETR (Electronic test request) system.

Study Design

The aim of this study is to explore pathology clinicians' experience of using an Electronic Test Request (ETR). In detail, to explore their feelings around the use of the ETR system and why, if they don't use it. In addition, the study is interested in determining if test participants think/ feel that a smartphone ETR support application would enhance their use and experience of the ETR system. What they felt an ETR digital champion (interactive Q&A visualization) would look and function like? The study took pace at Cardiff Met University in the Autumn 2021. The authors are aware of the difficulties and often negative feelings of the clinicians around the ETR system. The study involved twenty-three participants from NHS University Health Board and took approximately twenty minutes in duration. The study was approved by the Ethics Board at the Cardiff School of Technologies, Cardiff Met University and all the test participants provided and online consent for study participation and the academic use of their data.

Research approach

This study uses a qualitative and quantitative research approach to analyze the clinical staff behavior while working on labs. A total of 23 respondents completed the questionnaire (Qualtrics survey) and interviews were performed with three senior staff. After conducting the survey, we have analyzed the behavior of the health staff during they lab practice, The highest weight for the issues is for the support of ETR and relevant information on mobile app. And also, clinicians also mentioned that they have less access to the desk system due to system busy, It is very difficult to the clinicians to raise the request to the ETR support. From the survey we have also analyzed most of the test participants are female then male. And everyone is happy to use their mobile application on work environment.

The study was conducted using the Qualtrics online survey software. Participants were presented with a series of quantitative and qualitative questions. To detail, some these questions included: Do you use the ETR system? If you use the ETR system how much of your requesting is done by ETR? If you're not using the ETR system what are the barriers to using the system? How do you think an ETR champion would help you to use the ETR system? Do you think an ETR support application on your smart phone would be a good idea as an ETR digital champion? Do you think watching videos are a good way to learn about how to use a system like the ETR system? Do you think an ETR support application (i.e. ETR digital champion) would help you when using the ETR system (i.e. you could open the application on your smartphone to remind you of how to do something etc.)?

Discussion

From this study, some interesting questions emerged, why are pathology clinicians having such issues with the ETR system? The findings highlighted some specific lack of knowing around what type of labels to use for the blood samples (. P7) and also the uncertainty of how to get an immediate response from the ETR support? (P.9). As per the needs of the test participants identified in the study, a support in the form of a digital and mobile ETR champion could work. Moving forward, a set of requirements have been drawn up for the mobile based application with the model view control architecture. In detail, for every request from the end user there will be an immediate response from the server (the videos and documents will be stored at the server side). It was envisioned that the ETR digital champion could house an interactive service request or FAQs for the lab clinicians to ensure that they have immediate answers for their ETR questions. The mobile application will host some pre-questions and answers as well as the facility to enable a service request. For

example, when the lab clinician is facing an issue with the ETR system he/she can trouble shoot directly through an interactive ETR champion on their mobile application. If still unsolved, the digital champion can provide them with a direct line to a technical support member.

Conclusions/implications

Based on the result of the study, the ETR champion, professional learning, and long-term commitment to support the implementation of ETR mobile application. To reach wider market and mobile training application should be user friendly as possible for the health clinicians. It also showed the need for an ETR champion to support the clinician (in real time) as they attempt to use the ETR system. The paper discusses the early stages of the design and development of the digital ETR champion. The proposed system model aims to provide all the required information and support for the clinicians (i.e. the necessary documents, guides, and tutorial videos). It strongly emphasizes the importance of the design of the ETR digital champion and how crucial it is for this to be user centered in addressing the current lack of ETR system usage (i.e. incorporating accessibility, convenience and inclusivity). In detail, we are looking at a digital champion that functions on both Android and IOS operating systems, that is easily accessed whilst performing clinical procedures and importantly something that clinicians can and will use. It will need to be versatile and equipped to support different kinds of test scenarios and situations.

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