

# Evaluation of a Nursing Intranet Using a Two-Phase Approach

Stacey BABE<sup>a,1</sup> and Michelle HONEY<sup>b</sup>

<sup>a</sup>*Te Whatu Ora Te Tai Tokerau, Whangarei, New Zealand*

<sup>b</sup>*School of Nursing, University of Auckland, Auckland, New Zealand*

ORCID ID: Michelle Honey <https://orcid.org/0000-0002-0538-5320>

**Abstract.** An intranet is a beneficial tool, most commonly utilised and researched in corporate settings, but can also be found within healthcare. An organisational intranet has many of the same functions as the internet while also having a security firewall associated with it, meaning that only those with security access to the site are able to gain access. An evaluation study, using a two-phase process, of a Nursing Intranet within a healthcare organisation in one urban hospital in New Zealand is presented. First a content audit was undertaken, before using a selected framework to evaluate the content, design and functionality of the Nursing Intranet. The results from this evaluation identified some strengths, but also areas to improve. Further research, including the development of tools to evaluate intranets in a healthcare setting are needed to ensure information is more readily accessible to health professional staff.

**Keywords.** intranet, evaluation, network, fit for purpose

## 1. Introduction

The internet is defined as a series of connections between computer systems in different geographical locations via an internet provider[1]. Originally referred to by the term ‘corporate portals’[2], the intranet has many of the same functions as the internet while also having a security firewall associated with it, meaning that only those with security access to the site are able to gain access [3]. While often having useful connections to the internet, an intranet comprises a series of pages which may include access to the organisation’s policies, procedures, news, calendars and contact information [4].

The purpose of the intranet, from an organisational perspective, is to improve productivity, relationships and support yet there remains a large discrepancy between effective intranets and those which have not changed in a number of years [5]. One use of the intranet in healthcare, which often involves large and complex organisations, is to provide access to clinical policies and guidelines in a timely manner to support effective treatment decisions [6].

A well-planned and executed intranet can support efficient use of resources which is paramount for improving outcomes for patients and staff [7]. In addition to these practical functions, an intranet can be inexpensive, flexible and increase productivity [8]. Masrek et al [2] suggest that to assess effectiveness of an intranet usage, quality

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<sup>1</sup> Corresponding Author: Stacey Babe; Email: [Stacey.Wilson@northlanddhb.org.nz](mailto:Stacey.Wilson@northlanddhb.org.nz)

and impact on the end user should be considered; where Kincl & Strach [9] argue that the measure of success must be relevant to the context.

Given these differences there is no one evaluation tool that is thought to apply to all intranets. Often an organisational intranet is not evaluated or assessed for its effectiveness, hence this study that describes the process of examining the nursing and midwifery education and information aspects of an intranet (henceforth called the Nursing Intranet) within one healthcare organisation in New Zealand.

The context for this study is in the north of New Zealand, in a region covering a wide geographical area that services around 195,000 people [10]. There are approximately 3400 staff employed and almost 50% of these are nursing staff [11]. There is an organisational intranet, and part of this is the Nursing Intranet. The organisational intranet is accessible from all four different hospitals within the district – the main hospital (urban-based setting), and three smaller (more rural) hospitals. The Nursing Intranet houses the following key components: Nursing and clinical education, In-house training calendar, COVID-19 resources, Coordinator's portfolios and sections that link to documents, contact information, and news and events. However, the Nursing Intranet part of the organisational intranet has been anecdotally noted for not being useful or easy to use. To consider improvement, first an evaluation of the Nursing Intranet is needed.

## **2. Methods**

In order to assess the Nursing Intranet the first step was to identify the approach. A literature search was undertaken, initially focusing on academic sources, and then broadened to also include non-academic sources. An analysis identified the most common concepts across all sources as navigation, access to information, communication and information grouping. This resulted in the selection of a two-phase process: a content audit followed by analysis using a framework [12] to evaluate the content, design and functionality of the Nursing Intranet.

### *2.1. Phase 1 - Content Audit*

The importance of excellent content is reiterated in the literature [13] supporting undertaking a content audit as the first step to evaluate this intranet. The aim was to identify content which was not adding value which could be deleted or altered prior to any other changes being made. The Bonzai template [14] was selected. It came in the format of an excel spreadsheet with different tabs and headings, referring to various levels where information is found on the intranet, content ownership, frequency of use and potential actions, such as whether to keep, review or delete the content within each section at each level. Beginning at the home page, each individual page and link was checked and the findings recorded on the template. Notes were taken of areas where duplication, link errors or out-of-date information were discovered.

### *2.2. Analysis using the Alsulami et al [12] framework*

The second phase of this intranet evaluation used the Alsulami et al [12] evaluation framework, which was developed by completing a literature review to identify key

concepts that were categorised into Content, Design and Functionality, before being verified by experts, then undergoing validation. This resulted in the final framework consisting of 17 sub-categories and the three main categories of Content, Design and Functionality (Figure 1).

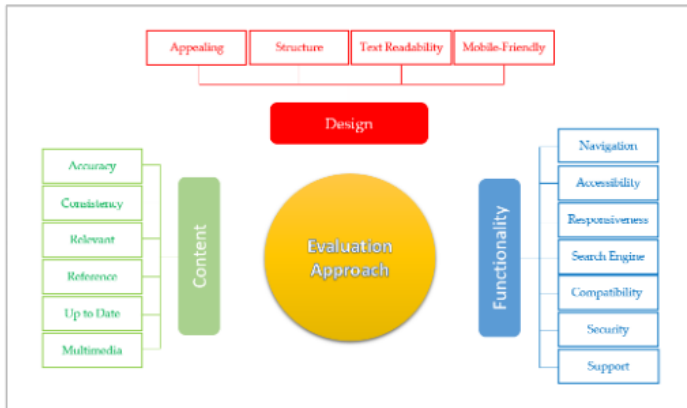


Figure 1 – The Alsulami et al [12] Framework

### 3. RESULTS

#### 3.1. Phase 1 - Content Audit

The results of the content audit are reported using the headings: quantity, duplication, currency and accuracy.

- **Quantity:** On the Nursing Intranet home page there are six main categories under which information is ordered which was recorded as level 1. Under each one of these headings were at least three further links to new pages. Each one of these pages contained headings or links to further pages and in some cases, this continued to seven or eight levels.

- **Duplication:** Many areas of duplication were discovered, but mostly this duplication was a link returning the user to a page which was also on another branch. For example, the page relating to Trendcare (a patient acuity tool) is accessible both from the main home page (level 2), and also from the Clinical Education Helpful Hints Hub (level 7). Duplication can indicate that a user may search for information in a variety of ways, and it might be more easily found. This was considered acceptable providing the pathway to the intended destination was clear.

- **Currency:** None of the internally accessed pages had documented dates when they were last updated. Externally accessible pages have 'last modified dates' which offers some indication of Trend care how current the information is. In addition to this, there were pages which had not had new information added since 2015, so they were potentially seven years out of date. Out of 533 pages or possible links, a minimum of 60 were identified as being out of date (obviously dated or greater than three years old).

- **Accuracy:** Links were checked to ensure they led to further information. Link errors were discovered by clicking on the link to ensure it was active (still worked) and that the link led to the correct information. This was also to check that there were no

‘dead links’, meaning the link led to a message that the webpage could not be found. From a possible 533 pages or links, 18 were noted to have link errors – mainly dead links.

#### *Phase 2 - Analysis using the Alsulami et al (2021) framework*

Each sub-category was reviewed and evaluated against the Nursing Intranet. To quantify the effectiveness of each sub-category a score out of five was given. The overall score for each category was then calculated and is presented as a percentage, providing a numerical and quick reference of the effectiveness for each section and also of the intranet as a whole (Table 1).

**Table 1** Scoring across all categories

Category	Sub-category	Score/5	Total Category Score	Percent
Content	Accuracy	4	23/30	77%
	Consistency	4		
	Relevant	5		
	Reference	5		
	Up to Date	2		
	Multimedia	3		
Design	Appealing	3	13/20	65%
	Structure	4		
	Text Readability	4		
	Mobile Friendly	2		
Functionality	Navigation	4	27/35	77%
	Accessibility	5		
	Responsiveness	4		
	Search Engine	3		
	Compatibility	1		
	Security	5		
	Support	5		
	TOTAL			

## 4. Discussion

The application of the framework by Alsulami et al [12] and scores (Table 2) indicate an overall score of 74% for effectiveness of the Nursing Intranet. The importance of an intranet to support staff, especially new staff to the organisation is well recognized [15] [16]. Ensuring a patient-centred and safety focused approach with easy access to clinical guidelines or policies required is paramount [6]. This study found that accessibility to relevant and reliable information were some of the highest scoring areas, indicating an area of strength in the Nursing Intranet. This was aided by the Nursing Intranet being able to be accessed anywhere within the organisation via the available computers and also the fact that some parts of the Nursing Intranet were accessible from home. Roshan & Rao [8] regard accessibility to information on an organisational intranet as paramount for all employees, regardless of their location or

device being used. However, in this study mobile friendliness scored poorly, and this also impacts on accessibility.

Recommendations to improve and maintain the effectiveness of the Nursing Intranet include developing a process for ongoing evaluation of what is appropriate and including user experience into the design would be advantageous. In addition, content and how frequently regular reviews should be undertaken need to be considered in conjunction with options to improve portability and increase access by including more mobile friendly options and simpler access to the intranet when staff are using their own devices, such as smartphones or tablets.

A limitation of this study was not including the user's perspective, and this is an area for further research. Additionally, there was a lack of a recognised and standardised tool available to evaluate an organisational intranet, in particular related to healthcare and this could also be considered as an area for further study.

## 5. Conclusions

This study describes a content audit and use of a published framework to evaluate the Nursing Intranet in one site, which has highlighted areas of strength and also areas to improve. Further research into evaluating intranets in a healthcare setting is needed.

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