

# Nursing Informatics Education Stakeholder Analysis in South Africa

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## ABSTRACT

Stakeholder knowledge of Nursing Informatics (NI) and its competencies in nursing education curricula is crucial for the sustainability of healthcare systems. According to Freeman (2013), stakeholder collaborations have been proven to “shape a project in its early stages, improving the quality of a project” and help “winning resources that can make a project likely to be successful”.

A process of mapping key stakeholders in South Africa was conducted using a participatory design approach and questionnaires for a focus group of nursing education stakeholders from three universities in the Western Cape.

A listing of stakeholders, not initially conceptualised as a deliverable, was the main outcome of the focus group session. This outcome is an indication of the major role the end benefactors of Nursing Informatics outcomes play as stakeholders in influencing the implementation of a Nursing Informatics program.

## Author Keywords

Participatory Design, Nursing Informatics, Stakeholders

## ACM Classification Keywords

H5.m. Information interfaces and presentation: Miscellaneous.

## INTRODUCTION

The National Planning Commission, in the *National Development Plan 2030* (NPC, 2011), and the Western Cape Government Health, in *Healthcare 2030: Road to wellness* (WCGH, 2014), recognises Information and Communications Technology (ICT) as vital for its support services to providing better patient care. The Western Cape Government Health declares that “ICT will play an important role in enhancing the integration of patient data and facilitating the continuity of care of patients across facilities in the system as well as over the life course of the patient”, and that “by 2030, the generation of health workers will be very ‘techno savvy’ and ICT will be an essential tool like the pen and paper of yester year.”

Although the South African nursing education curriculum system is mapped by two major bodies, the South African

Nursing Council (SANC) and the Sector for Education and Training Authorities (SETA), the content of the curricula is determined by input from various stakeholders. They are from within the governmental national and provisional curricula accrediting bodies, nursing bodies and organisations, educational institutions, students and healthcare workers, and other training and support organisations. The presence of Nursing Informatics (NI) and its competencies in nursing education curricula is “critical to health care success”. However, despite the insightful initiative by the Western Cape Department of Health, there still exists a paucity of informatics competencies within the nursing education curricula in Africa (Isabalija *et al.* 2011; Safdari and Azadmanjir, 2014).

## Nursing Informatics

Nursing Informatics (NI) is a growing multi-disciplinary field in Health Informatics, which speaks to the utilisation of information technology in the work practises of nurses, mid-wives, care-givers and lay-counsellors (Graves and Corcoran, 1989). Since its inception almost 30 years ago, there have been extensive studies on the definition of NI and NI competencies. Due to the contextual nature of the work practises of nurses, a standard definition of NI and its competencies has not yet been established (Staggers and Thompson, 2002; ANA, 2008). However, one of the NI pioneers, Hannah (1985), defines NI as the use of information technology in relation to any of the functions which are within the preview of nursing and which are carried out by nurses. Hence, any use of information technology by nurses in relation to the care of patients, or the educational preparation of individuals to practice in the discipline, is considered to be Nursing Informatics (Staggers and Thompson, 2002).

NI was later first defined as a discipline by Graves and Corcoran (1989), which included the nursing and information technology disciplines. This has been advanced by the American Nursing Association (ANA, 2008) to include the management and communication of “data, information, knowledge, and wisdom in nursing practice.

Nursing Informatics facilitates the integration of data, information, knowledge, and wisdom to support patients, nurses, and other providers in their decision-making in all roles and settings. This support is accomplished through the use of information structures, information processes, and information technology”. NI has evolved from pen and paper to a discipline focused on computer modes and integrated and patient centred environments.

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"Position paper presented at the workshop 'Participation for Development' at the PDC'14, 05-OCT-2014, Windhoek, Namibia. Copyright with the authors."

### Role of Nurses in Informatics

According to Hebert (1999), nurses with informatics skills are able to:

- Analyse, design and implement information systems that support nursing in a variety of healthcare settings
- Function as translators between nurse clinicians and information technology personnel
- Use information and communication technologies to enter, retrieve and manipulate data, ensuring that information systems capture critical nursing information
- Interpret and organise data into information to affect nursing practice
- Combine information to contribute to knowledge development in nursing

The design, development and implementation of emerging healthcare systems require the input of healthcare workers in order to be applicable and sustainable. Training in Nursing Informatics equips nurses with knowledge that can assist them to be part of the creation of systems that ensure they not only deliver excellent patient based care, but also enhance their evidence based practice (The TIGER Initiative, n.d.).

In order to map a suitable NI curriculum with appropriate competencies, collaboration with relevant Nursing Informatics stakeholders is crucial (Westra and Delaney, 2008).

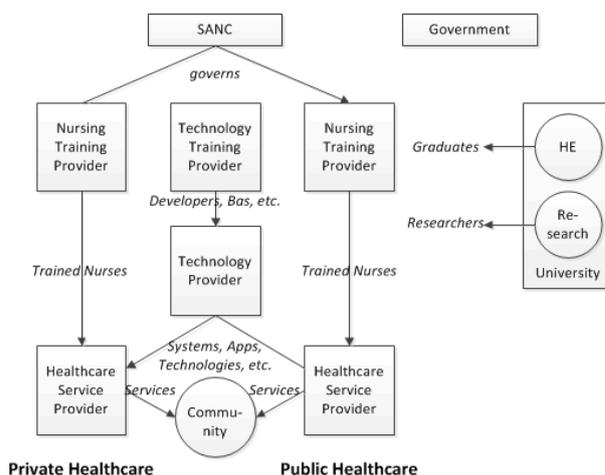
### Stakeholder Analysis

“A stakeholder is an individual or group influenced by—and with an ability to significantly impact (either directly or indirectly)—the topical area of interest” (Freeman, 2013). In NI, “stakeholders are present in many forms: as active participants in the problem solving process itself, as components within the models, tools and techniques, as decision-makers and as a necessary constituent of any resulting intervention” (Brill *et al.*, 2006). Stakeholder analysis is a process where stakeholders are identified and the extent and type of influence to a topic of interest is determined. There are many techniques offered for the process of the analysis of stakeholders, involving comparisons of power, interest, influence and attitudes of stakeholders. However, as Thompson (2011) states, the first step in all techniques is the identification of the stakeholders.

### Context of the Study

The South African (SA) healthcare system is represented by the public sector which is severely under-resourced while servicing citizens who are mostly from poor to low income settings. The private healthcare sector is well resourced and offers services to middle to high income citizens who typically belong to medical aid companies. Nurses are trained by a few dedicated universities, nursing colleges and private nursing service providers. The training is accredited by the South African Nursing Council (SANC) that governs the offering of all nursing qualifications. IT people are trained by universities, private and public colleges and sometimes they are self-trained. Technology providers provide IT systems,

applications, technologies, etc., for the healthcare service providers to facilitate their healthcare services. The healthcare service providers are the hospitals, clinics and other organisations such as non-government organisations (NGOs) that provide the necessary health services to citizens in the different communities. Figure 1 provides an overview of the SA context used for this study and was used as a starting point for the discussions in the focus group. It should be noted that the participants added many more stakeholders during the participatory design session that would not have been included or considered for the study otherwise.



**Figure 1. Nursing and technology stakeholders involved in nursing services to communities.**

### Materials and methods

The purpose of this study was to identify the stakeholders that can shape the implementation of NI education programmes. In addition, the study looked at the degree and type of interest and power of influence to the implementation and sustainability of the programme by the stakeholders.

The study was done using one focus group of participants attending a Nursing Informatics Education Needs workshop, facilitated by Nursing Informatics educators from SANORD and Cape Peninsula University of Technology. The workshop consisted of expert participants with the following backgrounds: academics from universities in the Western Cape, Department of Health Officials, nursing council representatives, midwives, nurses and nursing trainers in private health or NGOs. The selection of participants provided a group that was well versed in the following criteria: (1) nursing, (2) nursing education and (3) policy. They were chosen because of their extensive expertise in the latter three criteria and not because of their expertise in Nursing Informatics since South Africa does not have Nursing Informatics specialists. These criteria were chosen from a combination of Nursing Informatics studies by Goosen and Dasan (1997), Chang *et al.* (2011) and Herbert (1999), who included policy as a key contributing factor to the success of developing a Nursing Informatics educational program. A qualitative process of collecting data was done by conducting a participatory/co-design session and survey.

### Workshop Procedure

A participatory/co-design session during the workshop was conducted to identify the stakeholders within the South African nursing education context. Popular with researchers, participatory design has the following core elements: it provides a multidisciplinary co-learning environment with shared decision making power; reciprocal transfer of expertise; and mutual ownership of the project creation process (Cargo and Mercer, 2008). Participatory design was selected to deliver the stakeholder mapping with the participants from the various working fields to ensure the integrity of the mapping as it is conducted with individuals directly affected by and involved in nursing education. The participants were split into three groups and identified stakeholders able to affect nursing education.

One of the co-design activities was to identify the stakeholders according to the following categories: (i) core target group and staff involvement; (ii) direct; and (iii) indirect. Each group identified the stakeholders per category and these stakeholders were then consolidated into a single list containing all the identified stakeholders. The list was then given in the form of a questionnaire to the participants to indicate the influence and benefits on a scale of 0-5. The participants felt that the list was too comprehensive and that it was difficult to distinguish between core and direct stakeholders. The core and direct stakeholders were then combined into one group and all the stakeholders were grouped into categories which formed the basis of a follow up questionnaire.

### RESULTS

The participatory/co-design group session in the workshop produced an initial listing of 58 stakeholders that was collapsed into 25 categories (Table 1, refer to Annexure A). An important note is that these stakeholders would have been omitted if only the initial stakeholders were considered as indicated in Figure 1. In this case, the participatory design session resulted in obtaining much more relevant data. There was a long discussion on which stakeholders to include. The initial question (whether to categorise the stakeholders as core, direct or indirect) resulted in the decision to rather combine the core and direct categories and only remain with two types of stakeholders. This was a direct outcome of the participatory discussion. The three categories had different perceptions about who are core and who are direct stakeholders and it was difficult to reach consensus. The method described next was a result of this dilemma.

The identified stakeholders were further categorised into direct and indirect stakeholders in a follow-up questionnaire which each workshop participant completed. The *interest* and *influence* of the stakeholders were also specified, with the preliminary results indicated in Tables 2 and 3 as well as Figure 2.

From the analysis of Tables 2 and 3, the stakeholders with the highest influence, who also are direct stakeholders in the implementation of a Nursing Informatics education programme, are the ones who will highly benefit from the programme. According to the stakeholder's matrix

(Figure 2) (Freeman, 2013), stakeholders with the highest influence and benefits are the promoters of the project and need to be managed closely, while the latent ones are kept satisfied. Defenders as well as the indirect and low benefit stakeholders need to be monitored as they are apathetic.

		Stakeholder Power of Influence	
Power Of Influence	High	<ul style="list-style-type: none"> <li>• International Collaborators</li> <li>• Media</li> <li>• External Organisations</li> <li>• Private Businesses</li> <li>• DPSA</li> <li>• Informatics Bodies and Associations</li> </ul>	<ul style="list-style-type: none"> <li>• Health Care Professionals</li> <li>• Community Advisory Board</li> <li>• Curricula Bodies</li> <li>• Health Education Support Entities</li> <li>• Health Education Institutes</li> <li>• Computer Professionals</li> <li>• Students</li> <li>• Future Employers</li> <li>• Health Facilities</li> <li>• Local Health Organisations</li> <li>• NRF</li> <li>• Patients</li> <li>• DHET</li> <li>• NDoH</li> <li>• Government ( Local, Provisional, National)</li> <li>• HR/Finance</li> </ul>
	Low	<ul style="list-style-type: none"> <li>• Consumer Bodies</li> <li>• Department of Public Works</li> </ul>	<ul style="list-style-type: none"> <li>• Citizen</li> <li>• Community</li> <li>• Admin Support</li> </ul>
		Indirect	Direct
		Stakeholder Category	

Table 2: Stakeholder power of influence

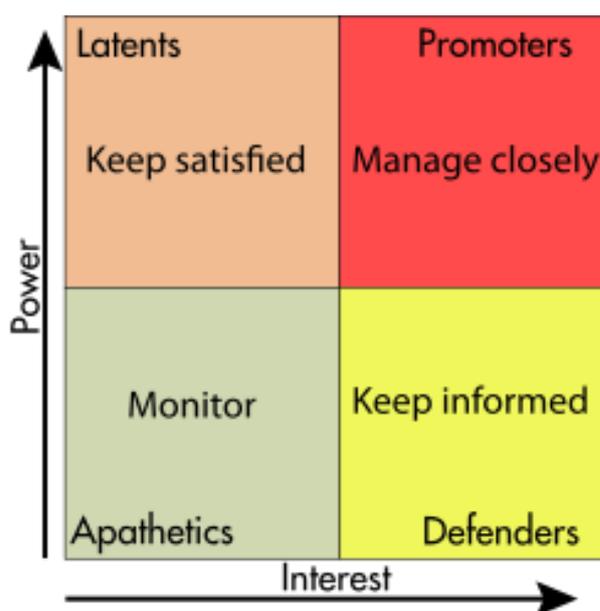


Figure 2. Stakeholder Matrix

Stakeholder Benefits Obtained	
Benefit Obtained	<i>High</i>
	<ul style="list-style-type: none"> <li>• International Collaborators</li> <li>• Informatics Bodies and Associations</li> <li>• External Organisations</li> <li>• Private Businesses</li> <li>• Consumer Bodies</li> <li>• Health Care Professionals</li> <li>• Community Advisory Board</li> <li>• Citizen</li> <li>• Health Education Support Entities</li> <li>• Health Education Institutes</li> <li>• Computer Professionals</li> <li>• Students</li> <li>• Future Employers</li> <li>• Health Facilities</li> <li>• Local Health Organisations</li> <li>• Community</li> <li>• Patients</li> <li>• NDoH</li> <li>• Government (Local, Provisional, National)</li> <li>• HR/Finance</li> </ul>
<i>Low</i>	<ul style="list-style-type: none"> <li>• DPSA</li> <li>• Media</li> <li>• Department of Public Works</li> <li>• Curricula Bodies</li> <li>• DHET</li> <li>• NRF</li> <li>• Admin Support</li> </ul>
	<div style="display: flex; justify-content: space-between;"> <span><i>Indirect</i></span> <span><i>Direct</i></span> </div>
<b>Stakeholder Category</b>	

**Table 3: Stakeholder benefits obtained**

### DISCUSSION

According to Hersh (2009), “one of the challenges for informaticians is that they do not yet have a distinct professional identity. The heterogeneous nature of the field and those who work in it make such an identity difficult”. Advocacy of Nursing Informatics would be necessary for the inclusion of Nursing Informatics competencies in any nursing program. An identification of the stakeholders and their degree and type of influence on NI education programmes, empower developers of the programmes to identify stakeholders in areas needed for collaboration. The contextual work and evidence-based practise outcomes for a particular course are determined by the required work outcomes of the individuals who are practising. It is noted that SANC, a health curriculum body, governs the offering of all nursing training courses and has the final say in the development and approval of nursing curricula. However, in addition to governing the courses, every approved certified nurse is meant to be registered with SANC for them to be able to practise, and as such directly influences the decision SANC makes on the type of training required for their particular work practise. This empowers nursing practitioners who also are direct stakeholders with great influence and benefits such as personal growth, professional growth and a meaningful lifestyle change.

Although other stakeholders would not be directly involved in the actual curricula development, they influence the curricula by providing capacity and ensuring capacity development for the introduction of Nursing Informatics as a discipline in nursing education. Advocacy of key infrastructural and policy forming stakeholders is necessary for sustainable capacity development of Nursing Informatics training, especially in developing contexts.

### CONCLUSION

Training in Nursing Informatics competencies develops not only the knowledge base of a nurse, but equips the nurse with digital literacy skills that are useful in informatics literacy and informatics knowledge management. In communities, the introduction of Nursing Informatics training provides the following opportunities: job creation for infrastructural development and support; development of health promotion systems for communities; and improvement of the health services within the community.

Further research into stakeholder involvement in national NI education programmes, data standardisation and health policies can be conducted.

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## ANNEXURE A

**Table 1. Nursing Informatics Education Stakeholders**

- |   |  |
|---|--|
| ➤ Health Professionals: Accredited individuals in the health profession, i.e. from list—nurses, practitioners, promoters  | ➤ Curricula Bodies: SANC, SETA, SAQA, CHE              |
| ➤ Health Facilities: From list—public and private health facilities   | ➤ Students   |
| ➤ Health Education Support Entities: Course facilitator, IT trainer/educator, mentors, nursing educators, researchers, other training providers, Basic Adult Training | ➤ Community  |
| ➤ Health Education Institutions: HEI, NEI, Teaching Units   | ➤ Consumer Bodies                                      |
| ➤ Local Health Organisations: SANC, SASOHN, NEA, FUNDISA, SAHIA   | ➤ Department of Public Works                           |
| ➤ External Organisations: WHO, international collaborators, international Informatics bodies or associations, NGOs  | ➤ Media  |
| ➤ Health Systems Support Entities: Service providers (broadband, internet etc.), Health Information Manager, Health Information Systems Support, IT support staff     | ➤ Community Advisory Board                             |
| ➤ Department of Public Service and Administration (DPSA)  | ➤ Future Employers                                     |
|   | ➤ Patients   |
|   | ➤ Admin Support  |
|   | ➤ National Department of Health (NDoH)                 |
|   | ➤ Human Resource (HR)/Finance                          |
|   | ➤ Computer Professionals                               |
|   | ➤ Government (Local, Provisional, National)            |
|   | ➤ National Grant for Research and Infrastructure (NRF) |
|   | ➤ Informatics Bodies And Associations                  |
|   | ➤ Department of Higher Education and Training (DHET)   |