Knowledge Brokering in a Zambian Rural Health Setting: A case of Chitambo District.

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ABSTRACT—

Background*- The establishment of an emergency care resource centre in September 2015 by the Friends of Chitambo project is part of the effort to sustain health knowledge use in the health Knowledge network in Chitambo District. The authors in our capacity as health librarians (Knowledge Brokers) empirically observe the perceived benefits of improving access to relevant health knowledge (Knowledge Brokering) of health care workers at Chitambo Mission Hospital.*

Objective*- To assess and evaluate the intended benefits of knowledge gained by health care workers in Chitambo district, Zambia from the use of provided print and digital health information resources.*

Method*- The case study used a self-designed interview guide as its assessment tool. A total number of 11 health care workers working in Chitambo district were interviewed and selected using non-probability sampling.*

Findings*- The print and digital health information resources that were provided are used by the health care workers that were present at the time of inception of the emergency care resource centre.*

Conclusion*- Knowledge brokerage in the Chitambo health network can be enhanced through health care workers access to expert support in finding and summarizing evidence to answer clinical questions.*

Keywords*— Knowledge, Knowledge Broker, Knowledge network, Knowledge in to Action*

I. INTRODUCTION

This paper gives some insight into the attempts to create a Knowledge network for the Health Sector in Zambia. Ultimately the knowledge network will consist of researchers, health practitioners/caregivers and health librarians-knowledge brokers. The paper reviews applicable literature on knowledge brokering and describes the emerging knowledge broker activity of a perceived health knowledge network created in Chitambo district in Northern Zambia. Chitambo Mission Hospital is in a rural set up and is the referral center for 11 other rural health posts located around Chitambo district. Chitambo district is located in Zambia's central province. Chitambo district has approximately 125 health care workers servicing the 12 rural health facilities spread out through the district.

The Knowledge broker (KB) activity is drawn from the novel experiences and observations of the two authors in their capacity as KBs in the Knowledge network for Chitambo Mission Hospital and the surrounding rural health posts that it supports. "Knowledge brokers (KBs) are information professionals involved in the promotion of evidence-informed decision making (EIDM), about which little is written to guide those in this role" (Robeson, Dobbins & DeCorby; 79).

Graham (et al) 2006, offer their Knowledge to Action (KTA) Framework which depicts how once

Knowledge is created, it must go through an action cycle which has representative processes that knowledge must filter through before it can be effectively used in practice. Figure 1.0 illustrates how the KTA framework's Knowledge creation component is like a funnel and whilst the other Action cycle component has multiple phases, with knowledge being refined for use as a result of the transactions in the two components.

Wales et al. (2012) depict how Scotland has a Healthcare Quality Strategy one of whose aims is to use its National Online Knowledge Service to promote the translating of knowledge into action that can help in improving delivery of service in front line healthcare.

There are aspirations to adopt the Healthcare Quality Strategy of Scotland and create a knowledge network that will confirm with the Zambian Context. The functioning of this Knowledge network is centered on Scotland's Knowledge into Action model which is comprised of associated tools and resources developed by the NHS Education for Scotland (NES) Knowledge Services team to support their national Knowledge into Action Strategy.

The Friends of Chitambo project in Scotland, with technical support from Scotland's NES devised an emergency care communications project for Chitambo district, with an aim to reduce morbidity and mortality due to common medical emergencies. Friends of Chitambo, is an organisation whose aim is to promote improved health care service delivery in Chitambo district. One of the outcomes of this project was the establishment of an emergency care resource center. The operation of the emergency care resource centre is founded on the Knowledge into Action (K2A) cycle which is depicted in Figure 2.0. The K2A Cycle, designed for nationwide use in Scotland's health care system forms has been adopted for the Zambian context of translating knowledge into practical health care service delivery. Use of the K2A cycle will allow for interactive activity which provides support for healthcare workers which helps in spanning any gaps between health knowledge and health practice. The kind of support provided is given with the intent of providing perceptive and reliable health knowledge to healthcare workers that will translate to improved health service delivery in health institutions.

Key components of the K2A cycle are:
- **Knowledge Broker Network-** individuals who facilitate translation of knowledge into practice in healthcare. (Healthcare librarians, information support officers, knowledge managers and others.)
- **Sourcing and Quality Assuring Knowledge-** from published research, and from practice.
- **Creating and Combining Knowledge-** summarising and synthesising evaluated knowledge. A key aspect of this stage is delivery of knowledge in actionable formats – e.g. mobile apps, pathways, toolkits, decision support - which can be used easily in decisions at point of care.
- **Sharing Knowledge-** use of tools (What's app, Face book) to connect people to share ideas and experience.
- **Research and Evaluation-** on the impact of K2A approaches helps to build the evidence base for knowledge into action methods.

The Knowledge brokering component of the K2A cycle prompted the partnering of Friends of Chitambo with the University of Zambia Library. Our role in Chitambo is that of knowledge brokering by virtue of being health librarians based at the UNZA Medical Library. Lomas (2007) stipulates the function of knowledge brokering as being a facilitator of the transfer of knowledge through KBs, with an aim to link researchers with individual practice experts.

Robeson, Dobbins & DeCorby (2010) depict some of the aims of KBs as: identification of research evidence needs of decision makers; facilitating decision makers' access to/use of high quality research evidence; assisting decision makers in integrating this evidence into their decision-making process; and facilitating any capacity development

in the use of the evidence-information decision-making (EIDM) process.

Collaborative workshops and meetings were held in September 2015, facilitated by NES Knowledge services team for the University of Zambia Library, Librarians and Friends of Chitambo partners on how to identify key knowledge resources (print and digital) for use in a healthcare setting. Following this collaboration an emergency care resource centre was set up at Chitambo Mission Hospital with the aim of providing health print and digital resources for the health care workers. The resource room was equipped with a desk top computer, tablet with internet connectivity, smart phones, and books. A list (Figure 3.0) of the health information resources provided is appended. The NES team held a training workshop for the Chitambo health care workers on how to access and utilize the digital resources- eBooks, mobile apps and the web based data bases.

II. METHODOLOGY

The study was an exploratory case study. The study was conducted at Chitambo Mission Hospital and 3 selected surrounding rural health centers- Mulaushi, Kafinda and Muchinka. The areas in the study were selected by virtue of them being the beneficiaries of the print and digital resources.

The interviewees for this study were selected using non-probability (purposive) sampling. A total of 11 health personnel were interviewed without any prior notice of a scheduled interview. Interviewee demographics are illustrated in Table 1.0.

The assessment instrument used was a self-designed interview guide. The interview guide questions were set within the framework outlined by the aims of the study to ensure relevant information is gathered. The interviews followed the semi structured interview format which permits directing the discussion by means of following the questions in the interview guide, but still allows the interviewer to probe the interviewee as and when it may be deemed necessary. The semi structured interview approach is substantiated by Gill et al. (2008) as being customarily used in healthcare research.

The instrument had a combination of questions with five-point Likert scale to cater for ranked responses and open ended as well as closed ended questions to cater for capture of both qualitative and quantitative data. The use of both qualitative and quantitative research methods is validated by Greene (1989) on the basis that it is done to achieve expansion- helping the researcher expand the depth and breadth of their study through the use of both methods.

The quantitative data was analyzed using software called Statistical Package for Social Scientists (SPSS) version 16. The Median average was used to describe the statistics and composite scores for each scale were generated.

The qualitative data was disaggregated using a content analysis strategy, by scanning through the text responses taking note of the notable responses the data reveals. The noted responses were thereafter categorized into the aspects of the study to deduce meaning. Prasad (2008) authenticates content analysis as being a useful research technique for analyzing large text based responses as it provides guidelines for coding the text and in turn generating conclusions based on the premises given in the data.

III. RESULTS

The following were the aspects that the evaluation was based on:

1. Access to print and digital health information resources
2. Support for sharing knowledge among clinicians
3. Expert knowledge support in finding and summarizing evidence to answer clinical questions arising from patient care
4. Building clinician's awareness and skills in using digital health information resources

Representations of results as per the four aspects are given in the subsequent paragraphs.

First Aspect

The interviewees' awareness on any improvements in their access to print resources had a median score of 4.

Print resources mentioned as being used by interviewees include; First aid manual, where there is no doctor, where there is no dentist, Obstetrics neonatal book and Merck manual.

3

The most frequently accessed print resource being- Where there is no doctor.
Only one interviewee mentioned the use of the Merck manual.

Interviewee responses on any benefits they have gained from use of print resources were given as:

- Not much book was too summarized
- Very beneficial as it is paraphrased well and written in simple English
- Very much
- Has increased my understanding of certain disease conditions
- I learnt how to manage fractures
- I have gained knowledge form using books in areas where I felt I had little or no information

'I was able to resuscitate a neonate using information from the obstetrics neonatal book as it has easy to follow guides on neonatal resuscitation and as a result I am able to handle those kinds of emergencies.' Midwife.
'I read about the management of snake bites and was able to treat a patient who was bitten by a snake.' Nurse.
'My use of book 'where there is no dentist' has helped me give health education to patients on the right kinds of food for healthy teeth.' Dental Technologist.
'I found that the obstetrics book guided me in the effective management of post-partum hemorrhage.' Matron
'Using the obstetrics book has taught me how to handle post-partum hemorrhage cases.' Nurse

The interviewees' awareness on any improvements in access to digital health resources had a median score of 3.
Only 3 out of the 11 interviewees were able to respond on the benefits of access to digital resources provided by the project.
'I have just accessed the digital resources from computer not the tablet, I used the obstetric care book, it was quick to access and easy to use' Matron

'I have been using the digital first aid mobile application. Mobile Applications are easy to browse through and get information needed when one has a medical case' Nurse
'I use the router to access internet based articles on how to deal with HIV type 2. There is a wide range of information available on the internet on HIV type 2.' ART coordinator

5 out of the 11 interviewees expressed awareness of the existence of the emergency care resource room.

3 out of the 5 interviewees who were aware of the emergency care resource room indicated that they use the resource centre to borrow books.

The Interviewees' responses on their perception of the importance to keep improving their access to print and digital health information resources had median score of 5.

Second Aspect

Interviewee responses on their awareness of improvements in knowledge sharing among Chitambo health care workers (themselves) had a median score of 4.

6 out of the 11 interviewees indicated that they had shared knowledge they gained from the health information resources provided by the project with colleagues. The knowledge shared was around; dental care, neonatal and obstetric emergencies, management of fractures, change of treatment resumes for exposure prophylaxis in HIV and ante partum hemorrhage management. The knowledge sharing was done verbally during presentations in clinical meetings and via the Chitambo What's app group.
'We once received a patient who had had an incomplete abortion, I was not sure how to handle the patient, so through what's app group I consulted how to manage it…. and people started posting. From the posts I was able to manage the patient.' Nurse.
'I share information on different medical conditions based on the knowledge I have gained from information resources provided by the project, during clinical presentations, meetings (especially

in maternity) and when teaching student nurses.' Matron.

Third Aspect

The interviewees' responses on their awareness of the fact that they can access expert knowledge support in finding and summarizing evidence to answer clinical questions arising from patient care had a median score of 2.

All of the 11 interviewees revealed that they had never accessed any support in finding and summarizing evidence.

However, the median score on how important the interviewees felt it is for them to have access to expert knowledge support for finding and summarizing evidence was 5.

Fourth Aspect

The interviewees' responses on their awareness on the improvements of building clinician's awareness and skills in using digital health information resources since the start of the project had a median score of 3.

4 out of the 11 interviewees responded that they had participated in activities unrelated to the project but organized by the Ministry of Health, that were meant to build their skills in using digital health information resources.

The median score on the feeling of how important the interviewees feel it is to keep building their skills in using digital health information resources was 5.

Proposals from the interviewees as per the four aspects are as follows

First Aspect

Interviewees' responses in terms of what they feel will improve their access to digital and print emergency care resources
'We need a tablet for accessing the mobile apps here at Muchinka.' Nurse
'There must be frequent updating of the print and digital resources that have been provided, Wi-Fi

must also be readily available to enable access to on line resources' Clinical officer
'We need more computers and I pads' Matron
'We need more access to digital resources' Nurse
'We need of a room dedicated for use of print and digital resources' EHT
'More people must be trained on how to utilize and access the digital and print resources.' Midwife

Second Aspect
Interviewees' responses on suggestions of improvements in knowledge sharing amongst Chitambo heath workers in the future
'All Chitambo health workers must be added to the What's app group' Nurse
'New health personnel must be made aware of the available print and digital resources as if they are made aware they can access them' Clinical officer
'We must have an actual room dedicated as a resource centre' EHT
'There must be more clinical meetings were experiences are shared in the management of different conditions' Matron
'We must have lots of clinical meetings, and research collaborations' ART coordinator
'We must have adequate electronic devices for use at all levels of health care in Chitambo.' Dental Technologist
'There must be continued sensitization on availability of resource and encouraged use of them.'
'A way must be found to include places that have no network such as Gibson which only relies on radio messages as forms of communication.' Nurse

Third Aspect

Interviewee's responses to feelings towards access to expert support for finding and summarizing evidence in future
'It is important to have experts available.' Nurse
'Feels an expert must be made available and must be active.'

'All health professionals must be made aware of the availability of a health information specialist.' Nurse

'We do not understand this concept and would appreciate more info on this.'EHT

'We need orientation form the expert on how to go about looking for information even when they are not available.' ART Coordinator

'They would have to summarize lots of resources for us to easily access and easily understand.' Nurse

'It is important that we have contact numbers or know how to communicate with these experts.' Midwife

Fourth Aspect

Interviewee's response on how Chitambo health workers skills in using digital health information resources can be improved in future.

'We need Orientation.'EHT

'There should be more sharing of information resources, clinicians must share the knowledge.' Clinical officer

'There is need for more tablets and computers in individual departments, as well as more awareness on digital resources available.' Matron.

'We need an uninterrupted internet access and increased number of electronic gadgets' ART coordinator.

'We need training.' Dental technologist.

III. DISCUSSION

First Aspect

The findings revealed that awareness of improvements in access to both print and digital resources scored median scores of 4 and 3 respectively. This entails that the majority of the interviewees were aware of the improvements in access to print and digital health information resources. This implies that if health care workers in Chitambo are aware of information resources available, then they should be able to access them and benefit from the knowledge they gain from

them. This may translate to improved quality of service provided at point of care.

In terms of access to print resources, most of the health professionals had access and were using the print resources, probably the print resources were easy to use and access as compared to digital resources. This is brought out by respondents who revealed that, they used a book called where there is no doctor as well as, another one on neonatal and obstetric care. Both books were said as to be easy to follow. However, this is contrary to the views by the clinical officer who felt the book 'where there is no doctor' was not helpful as it was too shallow. This implies that, information resources applicability may depend on one's level of education as well as the type of health care work one performs. This may call for information resources to be packaged according to the level of education of the health care workers. Notably, only one interviewee mentioned the use of the Merck manual and yet this is a cardinal book for health personnel.

Despite respondents having access to print resources, it is with great difficulty because there is no room designated as a resource room. Currently books and the desktop computer are kept in what is also the matron's office. Interviewees expressed their feelings of discomfort of having to access resources from the Matron's office.

Although interviewees were aware of improvements in access to digital resources, only 3 respondents actually had access to and used digital resources. This could be due to the fact that the computer was being kept in the matron's office and the person in possession of the password to access the computer based resources was not available. On the other hand, the project tablet was kept by the health information officer. This makes it difficult for any other health care worker to access the digital resources at will. Another contributing factor could be that the health care workers interviewed lacked the skill of how to use digital resources as most of the health care workers who were trained had since left for school and transfer to other health centers.

Those health care workers that had accessed and used both digital and print resources outlined the benefits of accessing health information resources.

As one midwife recounted how using an easy to follow guide on neonatal resuscitation in one of the books provided helped her save a neonate. In contrast with a situation witnessed during a visit to Chalilo rural health centre where none of the provided resources; two rural nurses based on their formal training knowledge spent hours trying to resuscitate a neonate who eventually passed away. This reaffirms the importance of availability of these emergency care resources in rural health centers. The ART coordinator equally narrated how he was able to advocate for change of regime of ART treatment being used to the latest one after getting information from digital resources accessed via the internet using a router provided by the Friends of Chitambo. This explains why all respondents felt it was important to keep improving access to digital and print emergency care resources.

Second Aspect

Furthermore, on the awareness of improvements in knowledge sharing among clinicians, the median score of 4 was scored. This entails that health professionals were aware of improvements in knowledge sharing as seen from the number of respondents who admitted that they shared the project resources with their colleagues. Knowledge was shared through meetings, presentations and social media. Only 3 respondents indicated that they shared information via what's app, the reason could be that there has been no addition of new health care workers on the what's app group as most of the health workers (including the medical officer in charge) in Chitambo district were not there during the project inception. This suggests, recreation of a what's app group to involve all health care workers currently in Chitambo district with a devised system to monitor the activity and ensure frequent additions of any new health care workers.

Third Aspect

In terms of awareness of expert knowledge support in finding and summarizing evidence to answer clinical questions arising from patient care recorded a median score of 2. This was the only aspect with the lowest score and raises a lot of concern. This implies that almost all health professionals were not aware of and had no access to any expert support,

this could be due to lack of awareness of who the knowledge experts are and how they can be consulted. However, respondents still felt it was important to have an expert support available in summarizing and finding evidence

Fourth Aspect

On building clinicians' awareness and skills in using digital health information resources, the median score was 3. The score entails that respondents were aware of improvements in building Chitambo clinicians' skills in using digital health information resources. Despite respondents being aware only 4 indicated that they had participated in activities to build their skills in using digital health information and they did this in their own individual capacity. The reason could be due to the fact that all professionals who were trained at the inception of the project have either gone to school for further studies or had been transferred.

Recommendations

Lack of awareness of the resource center room came out strongly from all interviewees even though they were using the print resources. In the light of this, respondents felt the need to have a separate room other than the matron's office as a resource center were both digital and print resources could be accessed easily. Moreover, respondents also suggested that more resources on different topics in print format to be acquired.

Moreover, there is need for the provision of more digital resources as well as gadgets, this includes desktop computers for the hospital, tablets and smart phones for the rural health centers that have network connectvity.

The study also recommends that all staff to undergo training on use of health information resources as well as on digital skills improvement. The training session can also be used to make them aware of available expert support and how they can contact expert for expert search support.

V. CONCLUSION

The study concludes that Chitambo clinicians should be made aware of the availability of expert support for finding and summarizing health information. There is an urgent need for a standalone resource center were both digital and print resources can be accessed. All health care workers must constantly be made aware of the information resources that are accessible to them based on their location in Chitambo district.

However, there are positive indicators in that some clinicians are using the resources and are able to share the information with others, because of this the benefits on both patients and health staff are evident. In addition, it is our sincere hope that this study has potentially provided the required base for the extension of knowledge brokering to other health centers around Zambia.

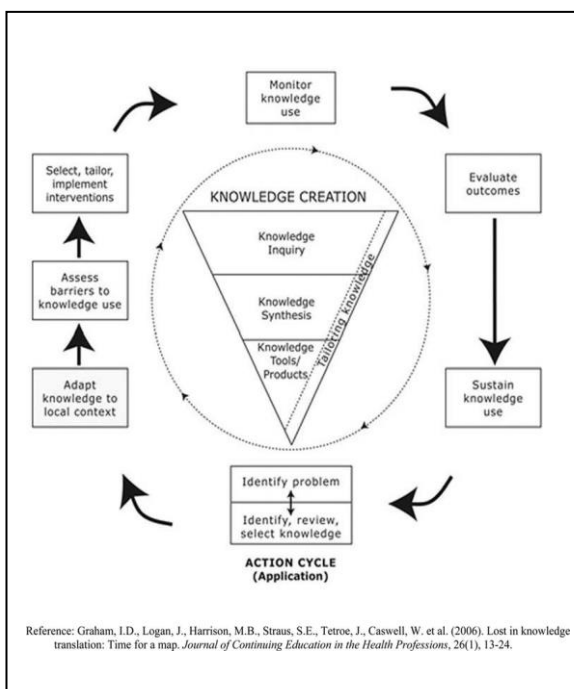## FIGURES AND TABLES

Figure 1.0

Reference: Graham, I.D., Logan, J., Harrison, M.B., Straus, S.E., Tetroe, J., Caswell, W. et al. (2006). Lost in knowledge translation: Time for a map. *Journal of Continuing Education in the Health Professions*, 26(1), 13-24.
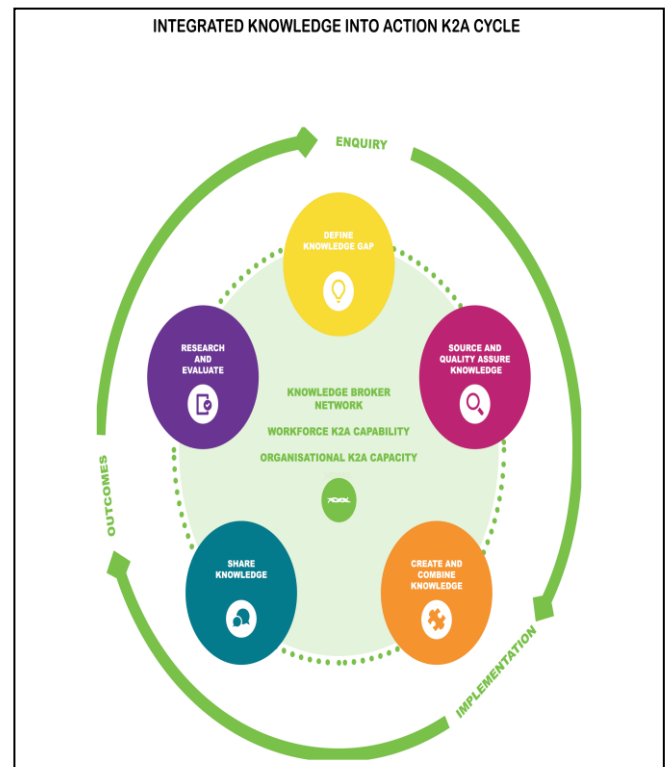
Figure 2.0

Figure3.0

Print Resources
BNF 69 March 2015 - September 2015, Baillieres Nurses Dictionary (26th edition International ed 2014), Clinical Guidelines Diagnostic and Treatment Manual (2013 Edition revised), Clinical Guidelines Diagnostic and Treatment Manual (2013 Edition revised), Life Saving Skills Manual - Essential Obstetric Care Managing Complications in Pregnancy, A guide for midwives and doctors, Oxford Handbook of Acute Medicine(3rd Edition) The Merck Manual (18th Edition, 2006) Step-by-Step Surgery of Vesicovaginal Fistulas.

Freely available apps
Emergency Medicine, Red Cross First Aid, Medscape, Doctors without Borders Guidance app.

Apps negotiated Specifically for this project via NES
British National Formulary (BNF), Dynamed Oxford Handbook of Emergency Medicine

Evidence summary and guideline sources:
Freely available resources
MedBox, TRIP, database Cochrane Library
Subscription evidence summary resource –access via NES for duration of project.
Dynamed
Multimedia e-learning resource
Open Pediatrics

Primary research journals and databases
PubMed, Medline Plus, African Index, Global Health Library, HINARI African Journals Online, Open access journal resources

Downloadable PDFs
Zambia National Formulary (ZNF), Where there is no Doctor "new" (2013) edition, Hospital Care for Children.

Health Centre	Health Care Profession	Number
Chitambo Mission Hospital	Dental Technologist	2
	Medical Officer in Charge	1
	Environmental Health Technologist	1
	Clinical Officer	1
	Midwife	1
	Matron	1
	Acting ART Coordinator (Nurse)	1
Muchinka Rural Health Centre	Nurse	1
Mulaushi Rural Health Centre	Nurse	1
Kafinda Rural Health Centre	Nurse	1
		Total 11

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REFERENCES

[1] P.Robeson , M.Dobbins & K.DeCorby, "Life as a knowledge broker in public health," Journal of the Canadian Health Libraries Association, vol. 29, No 3 p. 79-82, 2008.

[2] ID. Graham et al., "Lost in translation:Time for a map?" The Journal of Continuing Education in the Health Professions, vol. 26, p. 19, 2006.

[3] A.Wales, S.Graham, K. Rooney and A Crawford "Scotland's Knowledge Network: translatingknowledge into action to improve quality of care" Scottish medical journal , November 2012

[4] J.Lomas, "The in-between world of knowledge brokering," BMJ. Jan 20;334, p.129-32, 2007.

[5] P. Gill, K. Stewart, E. Treasure & B. Chadwick, "Methods of data collection in qualitative research: interviews and focus groups" British Dental Journal 204, p.291 – 295, 2008.

[6] J. C. Greene, V. J. Caracelli and W. F. Graham, "Toward a conceptual framework for mixed-method evaluation designs," Educational Evaluation and Policy Analysis, Vol.11,No.3, p.255-274, 1989.

[7] D.B. Prasad, "Content analysis: A method of social science research," Research methods for social work, 2008