Interprofessional collaboration and lecturers´ working life periods: Evaluation of the outcomes and pilot study of Competent Teacher Scale (CTS)

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Abstract

Nowadays healthcare and engineering education should respond to the demands of the continuously changing working life. The aim of this study was to describe the outcome of the eHealth related working life period to the competence of lecturers (N=28) of vocational education and to pilot test the developed Competent Teacher Scale (CTS). The lecturers self-assessed as best competence domain "Practice orientation", the second best competence they assessed "Interprofessional collaboration" and as third competence domain they assessed "Development of education". The lecturers self-assessed "eHealth" as the worst competence domain in point of the content of competence according to InnoHealth project. The first version of CTS worked well as internal assessment purposes in the project and should be further developed and tested in future.

Keywords: competence, nursing, engineering, education, collaboration, questionnaire design

Introduction

eHealth is an essential part of health care and each professional group in the field should understand the content of it. This means that health care and engineering education should understand each other and manage the common language. In the InnoHealth project (European Union Social Fund funded RDI project 2012–2014), the main four cornerstones of the development of health care and engineering education were 1) eHealth, 2) interprofessional collaboration, 3) practice orientation and 4) development of education. The project implementation included 1) 1–2 months' working life periods for lecturers, 2) short updating education periods for working life partners and 3) workshops and student projects. In all, 18 health care lecturers from Turku University of Applied Science and Turku Vocational Institute and 10 engineering lecturers from Turku University of Applied Science were involved in the project. The practice placements were situated in South-West Finland and were chosen according to the lecturers' personal interests. The ultimate aim of the project was to develop education by improving interprofessional collaboration, utilizing eHealth technology and to support health care personnel and related staff as engineers to meet the challenges of working life, for example in health promotion, patient safety, patient orientation and supported self-care. (1) For project's internal assessment purposes to evaluate the outcomes of the lecturers working life periods Competent Teacher Scale (CTS) was developed (2).

The aim of this study was to pilot test the CTS and to describe the outcome and felicity of the eHealth related working life period to the competence of lecturers of university of applied sciences. The aim of this paper is also to describe how the scale was developed, how it measures the felicity of the working life period, how the scale will be developed and utilized in future.

Background

Literature search was done in year 2012 in Ovid Medline and Google Scholar databases to examine the newest knowledge of the concepts under study. Also the interest was to find out comprehensively all aspects of the concepts for scale development purposes. The used key words were in Ovid Medline *development and education, practice, multiprodessional co-operative behavior/collaboration and welfare technology/health technology*. The search was limited into years 2007–2012. In Google Scholar were used following search terms: *study and teacher and multiprofessional collaboration and development and education and clinical practice and health and technology and nursing*. In this database the limitations was in years 2011-2012, because of to seek the newest knowledge of these fields. In addition, manual search was performed. Altogether the searches revealed 19 articles to include. With help of these articles the Competent Teacher Scale was developed.

The four main concepts of the project, the cornerstones, are defined in Box 1. Also the application of these concepts in CTS are described as aspects/topics used in item development process.

Methods

Aim

The aim of the pilot study is to describe the outcome and felicity of the eHealth related working life period to the competence of lecturers of university of applied sciences.

Research question

How the working life period effect to lecturer's competence on eHealth, interprofessional collaboration, practice orientation and development of education?

• What is the competence before the period?
• What is the competence after the period?
• How the competence changed?

Box 1. The main concepts of the study and Competent Teacher Scale.

eHealth

Is defined in this study as a field in the intersection of medical informatics, public health and business, referring to health services and information delivered or enhanced through the Internet and related technologies. The term characterizes not only a technical development, but also a state-of-mind, a way of thinking, an attitude, and a commitment for networked, global thinking, to improve health care locally, regionally, and worldwide by using information and communication technology."(3)

It was studied in this study with help of following topics/aspects:

i) to combine information technology and health care

ii) to give the students possibilities to explore applications of eHealth

iii) to manage eHealth related to one`s substance

iv) to manage diverse learning methods in this subject

(4-7)

Interprofessional collaboration

Is defined in this study as an active, ongoing, reciprocal interaction and partnership of two or more professionals, who work together to solve problems or provide services

It was studied in this study with help of following topics/aspects:

i) to understand what is interprofessional collaboration in one`s work,

ii) to connect the interprofessional collaboration to quality of one`s work

iii) to have a positive attitude against interprofessional education

iv) to recognize the relationship between stress-tolerance and interprofessional collaboration

(8-12)

Practice orientation

Is defined in this study as an interest and assignment of vocational education, universities of applied sciences, to develop basic and continuing education towards the need of employers and customers regionally

It was studied in this study with help of following topics/aspects:

i) to plan the education based on customer/patient

ii) to acknowledge the collaborators´ basic task in one`s own work

iii) to base education on practical examples

iv) to recognize the relationship between professional identity and practice orientation

vi) to have a positive attitude against enterprise.

(13-16)

Development of education

Is defined in this study as lecturer's role and assignment to develop basic and continuing education regionally and interprofessionally (17)

It was studied in this study with help of following topics/aspects:
  i) to recognize students eHealth competence needs
  ii) to increase students´ learning with help of social media
  iii) to have positive attitude against development of work
  iv) to use diverse evaluation methods

(18-21)

Design

The study design was one group quasi-experimental design, in which pre and post test were used. The lecturers answered before the working life period the questionnaire and afterwards. The data was gathered from autumn 2012 into summer 2014 depending on the time when the lecturers had their working life periods.

Setting and sample

The project was carried out in Finland in South West in one of the leading universities of applied sciences in Finland, which hosts 9,500 students studying for a Bachelor's or Master's degree, and in three vocational institutes nearby. Altogether 28 lecturers participated; nine from the "Health care and Well-being" –field, nine from nursing institute, and 10 from "Business, ICT and Chemical Engineering" -field. The sampling was total sampling and all teachers who's had working life periods were asked to participate in the pilot study. The extent of the working life period was one month in engineering field and two months in health care field. The practice placements were chosen according to the lecturers' personal interests. The contract with plan was made between lecturer and the organization. It included a plan for the working life period. The instructions for the plan in point of the InnoHealth project were broad. Nevertheless, the aim, purpose, methods and main results of the working life period were defined afterwards. The company organizations were e.g. small and big nursing and engineering enterprises, one university hospital, and some cities and associations.

Questionnaire

CTS is based on self-assessment and was developed for this project based on purposive literature review and further on opinions of two expert lecturers, who have wide experience of health care and engineering education, clinical practice, engineering, eHealth, nursing research and project work. The CTS consists of two parts. Part A includes the background factors (seven) and Part B includes the sum variables (4 sum variables and 17 items) and four open questions. (Table 1). The project staff modified the scale further to answer properly the needs of the InnoHealth project. The lecturers were asked to assess themselves as follows: *"Assess, how the following items describes You at this moment as a lecturer?"* Likert scale (1= very poor and 5= very well) was used. One open question were added into every sum variable domain to give the participants possible to describe freely competence in point of their view (*What else would You like to tell about?*). The qualitative data were analyzed using content analysis and is reported elsewhere (Lakanmaa & Kontio 2014) and used further development process of the scale. Two lecturers (one health care lecturer and one engineer) pre pilot tested the first version in February 2013 and revisions were made into linguistic form and intelligibility. The reliability of CTS was examined by calculating Cronbach's alpha values of sum variables. The values varied between 0.65–0.87 in pre test and 0.70–0.83 in post test indicating consistency.

Table 1. The structure of Competent Teacher Scale.

Part A the background factors (seven)	Part B the sum variables (17 items)
Age	eHealth 4 items
Gender	Interprofessional collaboration 4 items
Education	Practice orientation 5 items
Faculty	Development of education 4 items
Work experience of the field	4 open question
Work experience as a lecturer	
Previous working life period experience	

Data gathering

The CTS was distributed to the lecturers before the working life period and after the working life period via Webropol system in years 2012–2014. To answer the CTS took approximately 5 minutes lecturers` time. The persons who distributed the questionnaires and managed the data gathering was separate than those persons who analyzed and reported the data.

Analysis

The descriptive statistical data analysis were done by statistician expert with IBM SPSS Statistics 20. Descriptive statistics were used. The sample and data were small and the idea was not to examine the associations of background factors into the competence in this pilot phase.

Ethical considerations

This project was performed according to EU rules and research ethics e.g. the data were stored according to ethical guidelines. Research permission was not obtained from the organizations because the evaluation of working life periods was an official purpose of the InnoHealth project. The lecturers applied the working life periods and knew in advance that the periods will be evaluated in the project. They were informed about the evaluation method via email and in project occasions before the working life period. Participation was voluntary and based on anonymity. It was assumed that by returning the questionnaire participants gave their consent to take part in the study. The participants were not compared with each other.

Results

Sample

Before the working life period 20 lecturers participated into study and after 21. Most of the lecturers were women, their mean age was 47 years, they were MNScs and from Health and Well-being faculty. The experience of the field was over 16 years and experience as a lecturer was approximately 12 years. Previous working life period had less than half of the participants. (Table 2)

Competence

The lecturers self-assessed as best competence domain "Practice orientation", the second best was "Interprofessional collaboration" and as third competence domain they assessed "Development of education". The lecturers self-assessed "eHealth" as the worst competence domain. Lecturers self-assessed that their competence increased in two competence domain "eHealth" and "Interprofessional collaboration". Respectively, the competence decreased in "Development of education" domain and remained in domain "practice orientation". (Table 3)

Before the working life period the best scored item in "eHealth" was *"I manage diverse learning methods*

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(mean 3.90, SD 0.85, n=20)" and the worst was *"the students have possibilities to get familiar with health technology applications (mean 3.05, SD 1.05, n=20)".* After the working life period the situation was not changed *(mean 4.0, SD 0.63, n=21/ mean 3.33, SD 0.91, n=21).* The *best scored item* in "Interprofessional collaboration" before the working life was *"I have a positive attitude against interprofessional education (mean 4.50, SD 0.61, n=20)"* and the *worst scored item* was *"interprofessional collaboration affects positively to my stress tolerance capability in my work (mean 3.60, SD 0.82, n=20)".* After the working life period the situation was changed so that the *best scored item* was *"I know what interprofessional collaboration is in my work (mean 4.48, SD 0.98, n=21)",* the *worst scored item* remained *(mean 3.62, SD 0.97, n=21).* In practice orientation domain the *best scored item* before the working life was *"Practice orientation in my work grows my*

professional identity (mean 4.35, SD, 0.67, n=20)" and the *worst scored item* was *"I acknowledge the collaborators´ basic task in my work (mean 4.15, SD 0.88, n=20)".* After the working life period the situation has changed. The *best scored item* was *"my education is based on customer/patient (mean 4.43, SD, 0.93, n=21)"* and the *worst scored item* was *"my education is based on practical examples (mean 4.05, SD 0.74, n=21)".* In development of education domain before the working life period the *best scored items* were *"I have positive attitude against development of work and I use diverse evaluation methods (both mean 4.35, SD 0.67)* "and the *worst scored item* was *"I use versatility different social medias in my education (mean 3.15, SD 1.02, n=20)".* After the working life period the situation was not changed *(mean 4.19, SD 0.98 and mean 4.19, SD 0.93 the worst mean 3.05, SD 1.02 n=21).*

Table 2. Demographics of the participants

Age (years) n=20	Gender (n= 20)	Education (n=20)	Faculty (n=20)	Work experience of the field (years) (n=20)	Work experience as a lecturer (years) (n=20)	Previous working period experience (n=20)
min 33, max 60, mean 46.70 SD 8.8	Woman 13 Man 7	PhD 4 Licentiate 3 Master 12 Nursing teacher 1	Health and Welfare 14 Business, ICT and Life Sciences 6	min 3 max 36 mean 16.35 SD 10.2	min 2 max 27 mean 11.90 SD 8.0	YES 8 NO 12

Table 3. Mean of the sum variables and the placing

	eHealth technology (n=20)	Interprofessional collaboration (n=20)	Practice orientation	Development of education
Before working period	min 2.25 max 5.00 mean 3.46 SD 0.75 Placing 4.	min 2.75 max 5.00 mean 4.13 SD 0.63 Placing 2.	min 3.00 max 5.00 mean 4.26 SD 0.68 Placing 1.	min 3.00 max 5.00 mean 3.95 SD 0.54 Placing 3.
After working period	min 2.25 max 4.75 mean 3.51 SD 0.67 Placing 4.	min 2.50 max 5.00 mean 4.20 SD 0.71 Placing 2.	min 2.80 max 5.00 mean 4.25 SD 0,60 Placing 1.	min 2.25 max 5.00 mean 3.77 SD 0.75 Placing 3.

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Discussion

The aim of the pilot study was to describe the outcome and felicity of the eHealth related working life period to the competence of lecturers of university of applied sciences. The lecturers self-assessed their competence after working life better in two domains and in two domains they were more critical in their assessments. These can be explained with the realism: "when you see you know". Working life periods are important, fruitful and crucial actions for lecturers in universities of applied sciences to enhance eHealth in education and overall the aim of universities of applied sciences in Finnish higher education system. They will make the interprofessional collaboration, practice orientation and development of education possible in total new way e.g. outside the university walls with the expert of working life nearby patients and customers.

This pilot study has some limitations. The purposive literature review search on which the CTS is based was carried out by one person, was carried out in limited number of databases, and covered only English written literature. CTS is based quite limited number of studies evaluated, and the pilot test sample size was small and the response rate was somewhat low 71%. However, the scale was developed based on the literature review and on expert nursing and engineering lecturers and on project staff expertise of project working, nursing and engineering education in practice. Thus two persons analyzed the literature in point of the InnoHealth project and presented the results to the other experts who verified and fulfilled the results and conclusions drawn. Items of the CTS were created by two persons and modified by the project staff. Further the CTS was pre pilot tested by two independent lecturers before its use. Pilot test Cronbach alpha values were acceptable and the new questionnaire was suitable for internal project assessment and informative. In addition the open questions' qualitative data fulfilled quantitative data. In future the scale could be developed by increasing number of items in sum variables, modifying the items, increasing number of sum variables such as internationality, publication work and network. The reliability and validity of CTS scale should be also tested more extensively in future.

Conclusions

Lecturers' working life periods are fruitful and can be assessed with CTS. It is important for projects' internal assessment purposes to fearless develop and use specific questionnaires.

Conflict of interest statement

None.

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