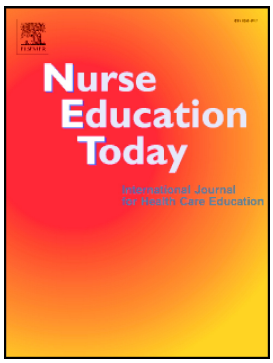

Health science student TEACHERS' perceptions of teacher competence: A qualitative study

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HEALTH SCIENCE STUDENT TEACHERS' PERCEPTIONS OF TEACHER COMPETENCE: A QUALITATIVE STUDY

Abstract

Background. Health science teacher competence is multifaceted and continuously changing according to national and international healthcare standards. Organizational restructuring and emphasis on cost effectiveness is changing the scope of health science teachers' practical work and their role in healthcare (worldwide).

Aim. This study aimed to describe student teachers' perceptions of the competencies needed to work as an educator in the healthcare field. Objective of study was to gain new knowledge which can be used in the development of teacher education programs in nursing science and to define a broader definition of the health science educators.

Methods. A qualitative study was conducted. Data were collected from 23 Finnish students completing a master's degree in teaching in the healthcare context using focus group interviews. The data were analyzed by inductive content analysis.

Results. The student teachers identified eight main categories of teacher competence: leadership and management competence; evidence-based practice competence; subject competence; ethical competence; pedagogical competence; collaboration competence; internationalization competence; and continuous professional development competence.

Conclusion. This study identified essential teacher competencies that can be evaluated among students to develop health science teacher curricula. The findings can be used in follow-up studies or comparative research to investigate competence differences between novice and experienced teachers.

Key words: Competence, Education, Health sciences, student teacher, Teacher, Teacher degree program

Introduction

The concept of competence can be considered to encompass an individual's knowledge, skills, abilities, attitudes and experiences (Delamare Le Deist and Winterton, 2005). Competence can be defined as the successful completion of individual tasks and functions, or alternatively, as specific knowledge and individual solutions based on basic generic capabilities. Competence means that a person can combine a variety of skills or functions depending on the situation in which they work. The ability to perform certain functions always requires some combination of knowledge, skills, dispositions and values (Gonzi 2013). This unique set of attributes – which is both developmental and context-dependent – enables a person to accomplish the tasks and goals that exist at an expected level of performance (Epstein and Hundert, 2002).

Professional competence covers the habitual and calculated use of communication, knowledge, technical skills, reasoning, emotions, and values to benefit the individual as well as the community in which they work. Competence in the professional context also includes the ability to manage ambiguous problems, tolerate uncertainty, and make decisions with limited information (Epstein and Hundert, 2002; Delamare Le Deist and Winterton, 2005). The presence of different definitions for the concept of competence has led to the challenge of trying to conclude what competence really is. At present, it seems unlikely that there ever will be a universally acceptable definition for competence (Garside and Nhemachena, 2013).

The World Health Organization has characterized the core competencies of nursing educators divided into eight domains including: (1) ability to understand educational theories, and principles and models of curriculum design related to health education and adult learning; (2) ability to design, implement, monitor and manage curricula based on best available evidence; (3) ability to maintain current knowledge and skills in theory and practice; (4) ability to develop critical inquiry, conduct research and utilize findings to identify problems and solve them; (5) ability for effective communication and teamwork, and interdisciplinary collaboration enhancing partnership among health education and

clinical practice professionals; (6) ability to demonstrate professionalism including legal, ethical and professional values in developing nursing education policies, procedures and decision making; (7) ability to monitor and evaluate educational programmes, curricula and student learning with differing methods; (8) ability to manage, lead and create educational programmes and shape the future of education institutions (WHO, 2016).

In the American League for Nursing (2012) the educator's competence has been described from a more student- or person-centered perspective. It includes the educator's ability to facilitate student learning and the achievement of desired cognitive, affective, and psychomotor outcomes. It involves learner development and socialization; the ability to use assessment and evaluation strategies in different settings and domains of learning; ability to participate in curriculum design and evaluation, and to function as a change agent and leader creating a preferred future for nursing education and nursing practice; ability to pursue continuous quality improvements in the role of a nurse educator, engage in scholarship, and the ability to act within the educational environment (The American National League for Nursing, 2012; Christensen and Simmons, 2019). Teachers need to possess versatile knowledge in the subject that they teach as well as know how to teach, motivate students, and manage their work in national and international educational environments (Salminen et al., 2013; Töytäri et al. 2016).

A recent systematic review showed that health science teachers' competence is complex as it constantly changes according to the healthcare organizational and political structure (Mikkonen et al., 2018). Furthermore, organizational restructuring and emphasis on cost effectiveness has transformed the scope of health science teachers' practical work and their role in healthcare (Guy et.al., 2010; OECD, 2017). Teachers are also required to use and create evidence-based knowledge, work with digital tools and take responsibility for continuous learning (McAllistair and Flynn, 2016; Mikkonen et al., 2018).

The curricula underlying degree programs for health science teachers are designed to build

competencies which are essential for guiding future healthcare professionals. Educational programs and minimum qualifications or required competencies for health science teachers vary between countries. Acquiring professional qualification internationally, health science educator usually requires a Master's and / or a doctorate degree and at least two years of working experience in the healthcare sector (European Commission, 2009, Salminen et.al, 2014, University of Applied Science Act 1129/2014, Paul, 2015; Oprescu et.al., 2017; National League for Nursing, 2019).

In a previous study, health science teachers ranked their competence in building relationships with students the highest and their teaching skills the lowest. This research found the weakest skills among health science teachers to be teaching decision-making and encouraging students to seek new knowledge (Salminen et al., 2009). Other research found that when delivering simulations, a teacher students' knowledge, behavior, skills, and ability to support students are important competencies (Topping et al., 2015). Research focusing on digital competence have found that student teachers are motivated to use ICT and want to further develop their own skills (Salminen et al., 2016; Autio et al., 2018).

Other studies have focused on the challenges that student teachers face while developing their teaching skills (Black, 2015). Support from other teachers can promote student teachers' self-efficacy by helping them understand the developmental stages of teachers, encouraging critical reflection, and providing motivational and descriptive feedback to improve practical skills (Black, 2015). It has been discovered that new teachers feel a need for supplementary education to update their competencies only a few years after graduation (Vilén and Salminen, 2016). There is a limited amount of published research in this area worldwide. The purpose of this study was to describe health science student teachers' perceptions of teacher competence. The primary question underlying the presented research was: what kind of perceptions do student teachers have of the competencies needed to work as a teacher in healthcare?

Method

Data Collection

A qualitative study was conducted. The data were collected from 23 student teachers at five universities in Finland in spring 2018. The inclusion criteria for participants were being enrolled in postgraduate teaching studies in health sciences and completion of practical teacher training within healthcare education. All of the eligible participants were recruited with the help of coordinators at the universities. The 23 student teachers who joined the study were healthcare professionals, more specifically, nurses, physiotherapists, bio-analysts and radiographers, with working experiences ranging from three to 30 years. In this group of student teachers, 14 were completing a Master's degree in teaching in the field of nursing science while the remaining nine participants were completing a Master's degree in teaching in the field of physiotherapy. Participants ages varied from 23 to 58 years.

The data were collected in focus groups using semi-structured interviews. Focus groups were chosen as they produce conversation and yield collectively formulated information on the phenomenon of interest (Orvik et al., 2013). The themes of the interviews - focus on teachers' work, curriculum development, collegiality and working community, organizational areas, internationalism and multiculturalism, and society and teaching - were based on a systematic review on healthcare teacher competence (Mikkonen et al., 2018). The themes were pre-tested in one interview, and data from this interview were used in the final data analysis because the themes remained unchanged after pre-testing. All but three interviews – which were conducted via Skype online connection - were conducted in a private space at the universities. The duration of the interviews ranged from 25 to 60 minutes. Interviews were audio recorded and coded by number of participants. The amount of data collected in this study can be considered sufficient since data saturation was reached.

Data Management and Analysis

Recorded interviews were transcribed into a word document (149 pages, line spacing 1,5; font size 11), after which data were analyzed by inductive content analysis (Elo and Kyngäs, 2008). The analysis applied the philosophical framework of critical realism, and by focusing on what was being said about competence by student teachers we hoped to gain an understanding of the current situation and how

student teachers make sense of their own experiences. (Tong et al., 2012). Analysis was initiated by reading through the data. During this phase, statements connected to the research question were gathered and reduced to meaning units. Meaning units could be either words or a sentence. Only manifest content was considered. The meaning units were organized by data coding. A total of 197 codes were organized into 63 subcategories, and these subcategories were divided across 22 categories. During the last step, the identified categories were organized under eight main categories describing the meaning of the data. The researchers returned to the data several times during the analysis process to confirm that the results truly represent the student teachers' voices. The Nvivo Plus software was used to manage data during the analysis process. Data analysis was conducted by one researcher (HMK), who presented and discussed their findings with the other researchers (KM, MK) so that the result could be verified. We employed the Standards for Reporting Qualitative Research (SRQR) checklist presented by O'Brien et al. (2014) to ensure sufficiently rigorous research.

Ethical issues

The University of (blinded) provided a statement (12.12.2017) that the planned research was ethically acceptable, and research permission was obtained from all five participating universities. The study fully took into account ethical principles of human privacy, autonomy, data security, confidentially and empathetic behavior towards participants (Declaration of Helsinki, 2013). Participants were informed about the study and it was specified that they had the right to withdraw from the study at any point of time. All of the collected data are stored as protected files accessible according to the regulations of the General Data Protection Regulation (GDPR, 2018).

Results

The data analysis identified eight main categories of teacher competence: leadership and management competence; evidence-based practice competence; subject competence; ethical competence; pedagogical competence; collaboration competence; internationalization competence; and continuous professional development competence.

Insert Table 1.

Leadership and Management Competence

The main category of Leadership and management competence included categories that described competence in education policy and legislation, management, self-management and work well-being management.

Education policy and legislative competence included a teacher's awareness of the legislation guiding teaching, how a teacher can base their work on current legislation, and how a teacher can act as a member of the national education policy system. The participants recognized that a teacher needs to be familiar with the structure and operating principles of the educational organization and be able to act as a member of the work organization and community. This was expressed as: *"A teacher must recognize the theoretical and knowledge base of both governance and organizational structure and strategies. You must know the regulations and laws all the way up to the Ministry of Education and Culture, and how educational organizations work. It's the law and the rules that you need to know, as well as how the local organization works (Interview nr. IV)."*

When candidates discussed management competence, they mentioned that the teacher must be able to work as part of an organization community even if there are ideological conflicts between the organization and themselves. The participants felt that a teacher should understand their work community in terms of its members and the associated roles, including their own. Furthermore, teachers must manage various administrative tasks, such as project coordination, student management and scheduling their own work. Self-management competence encompassed tasks such as working independently, scheduling one's own tasks, balancing teaching, student affairs, as well as various collaborative projects, and taking part in research. Work well-being competence covers how teachers are able to monitor and develop their own work, meaning that teachers are ready to express a need for support from colleague if they are unable to perform their work. One candidate shared: *"In principle, skills such as self-care would be important, that a teacher does not work him/herself to the end, so that they would not immediately end up on sick leave. If you take care of yourself as a teacher, then you are also capable of working* (Interview nr I)*".*

Evidence -based Education Competence

The main category of Evidence -based practice competence consisted of two distinct competencies: evidence-based knowledge retrieval and implementation into practice; and creating evidence-based knowledge. Candidates felt that a contemporary health science teacher must be able to retrieve up-to-date, evidence-based knowledge as well as use different databases and information channels to evaluate the quality and relevance of the identified information. One candidate shared: *"Being able to make use of information in teaching and being able to search for relevant information are both nowadays crucial for a teacher's work* (Interview nr II)*".* Participants felt that competence in creating evidence-based knowledge described a teacher's ability to conduct research. They further thought that the teacher should have the methodological know-how to produce evidence-based knowledge by him/herself and as part of a research team and in projects.

Subject Competence

The main category of Subject competence covered the categories of competence in teaching content management and subject-dependent special competence. The student teachers felt that teaching content management is influenced by working life skills and the teacher's theoretical competence. One candidate expressed: *"Competence will probably come from one's practical or clinical experience* (Interview nr V)*", while* another stated *"In addition to having theoretical understanding of the competencies required and pedagogical competence, it is to really understand what you are teaching. It is important to assure students' hands-on skills* (Interview nr IV)*".* These statements were interpreted to mean that the teacher must know the issues and practices that are taught in clinical practice. Theoretical knowledge was considered to significantly contribute to this competence, with the subject's evidence-based foundation another important factor. Subject-dependent special competence describes a teacher's ability to apply hands-on skills and take a subject-specific approach in certain specialized areas. More specifically, hands-on skills cover the knowledge and skills that are passed on to a student during practical field work, e.g. cannula setting or prevention of pressure wounds.

Ethical Competence

The main category of Ethical competence encompassed the categories of ethical foundations competence and ethics in education and moral standards competence. Understanding ethical criteria

and foundations means that a teacher knows what ethics means in the scope of their work and in assessing student learning. This was expressed in the following statement: *"In ethics, you have to think a little more than just dilemmas in which there is right and wrong. You need to be able to solve very different situations* (Interview nr VI)*".* Ethics in education and moral standards competence includes personal values and moral choices on ethical behavior, which was explained in the following statement: *"The teachers have to face and deal with difficult issues. Sometimes moral dilemmas get under your skin* (Interview nr VII)*".* This statement clearly shows that teachers must work ethically, regardless of their own personal values and reasons. The student teachers also expressed that every choice a teacher makes – as well as their attitudes concerning students, the work community and the job - should be ethically sustainable.

Pedagogical Competence

Health science student teachers defined pedagogical competence with the categories of evaluation competence, digital technology competence, ability to educate heterogenic students, mentoring competence and pedagogical management competence. Evaluation competence describes how a teacher's evaluations should be overt, transparent and based on learning objectives. A teacher's ability to ensure their students' competence and that the students' competencies meet the predetermined goals were seen as essential to this category of competence. One student teacher explained: *"Evaluation competence means that there must be criteria and learning objectives, and these will affect the teaching methods* (Interview nr I)*".* The teacher should also be able to evaluate their own teaching activities, namely, their own teaching skills and the selection of teaching methods and materials.

When discussing digital technology competence, the student teachers mentioned a positive attitude towards digital technology and the possibilities and benefits of applying it to learning and education. One interview participant shared: *"There has to be the willingness (to apply digital technology in teaching) and ability to utilize all kinds of connections, recordings, and other digital applications* (Interview nr II)*".*

The ability to educate heterogeneous students was defined through the teacher's conscious choice to

plan teaching that would reach as many students as possible, along with the ability to consider and respond to learning opportunities (also those of students with learning disabilities) regardless of time and place. One candidate expressed: *"Teaching must be truly diverse and fit everyone so that students can study at different times while being in different places* (Interview nr I)*".* Mentoring competence describes how teachers guide learning and, as such, includes skills such as supporting, motivating, and counselling students. One candidate explained: *"The teacher should have an overall view of the student's needs, taking into consideration their life situations and using the student's previous experiences in the learning process*' (Interview nr III)*".*

One part of pedagogical management competence is curriculum competence, which consists of the teacher's ability to develop and evaluate the curriculum, design the teaching, and work in unpredictable situations. This competence was described by one candidate as: *"The teacher must understand and know how to develop curricula that reflect our social situation and make it visible. The teacher needs to be flexible to adapt to the required educational situation despite the existence of a rigid educational plan* (Interview nr II)*".* Pedagogical management competence details the knowledge and management of different evidence-based teaching methods that support the learner, as well as a teacher's ability to collaborate seamlessly with their colleagues.

Collaboration Competence

The main category of Collaboration competence comprised the categories of networking competence and relationship and communication competence. Networking competence concerns a teacher's ability to work on projects, and was explained as: *"You need to be able to do different type of projects – and the activities and applications associated with these projects - and have the ability to network and cooperate with others* (Interview nr VIII)*".* Networking also describes the teacher's ability to acquire new collaborators, interact with various units and professional groups, and market their own – along with their organization's – competence. One participant explained: *"You should know a little about the market and other areas of science. That would be innovative action that could lead to becoming an entrepreneur and more* (Interview VI)*".*

Relationship and communication competence primarily describes possessing the required professional language competence. This concept was explained by one candidate as: *"Interaction skills are needed, i.e. the ability to express your own thoughts and listen to other's. These skills include professional language management, presentation and argumentation know-how, as well as marketing and sales skills* (Interview nr III)*".* A teacher should be able to talk about a specific subject as well as manage the verbal and nonverbal communication practices that are required for a meaningful conversation. Student teachers felt that interaction skills are an integral part of building a relationship with students.

Internationalization Competence

The main category of Internationalization competence is formed from international collaboration competence, language competence and cultural competence. International collaboration competence describes how teachers take part in international projects and other international educational co-operation measures. One participant expressed: *"There should be interest in other cultures and other countries, and the ability to support learners from different backgrounds. And teachers should have such interaction skills that they can communicate even with those who have worse language skills* (Interview nr V)*".* Moreover, the student teachers felt that teachers should be willing and prepared to share their competencies with international colleagues and participate in joint trainings. International collaboration competence was described as a teacher's ability to acknowledge the challenges in teaching diverse exchange students and creating international co-operation opportunities. Language competence means that a teacher must be able to communicate, provide teaching in a foreign language, and produce research and teaching materials in English. When asked about cultural competence, student teachers talked about the ability to organize teaching for culturally diverse students and acknowledge that cultural diversity can influence education.

Continuous Professional Development Competence

The main category of continuous professional development competence encompassed life-long learning competence, building competence at work and participation in continuing education. One candidate explained life-long learning competence as: *"Maybe the learning is never finished. It is perhaps continuous self-assessment and self-development. It is not so, that the learning happens in one year and it is complete.*

Nothing is static anymore, everything is in transition all the time (Interview nr IV)*".* Discussions of building competence at work evoked descriptions of on-the-job learning, the continuous updating of one's competence, and a teacher's utilization of competence to improve the entire work community. Participation in continuous education was associated with self-education and that a teacher should independently seek information to support their competence.

Discussion

The participating student teachers identified eight competence areas that were related to health science teacher competence. Leadership and consumer-oriented healthcare are essential competencies for teachers. Furthermore, health science teachers have a vital leadership role as clinical experts, role models, mentors, and supporters of quality projects, and are also responsible for developing more holistic models of care for patients (Sayers et al., 2015). This also involves innovation and flexibility in utilizing situational leadership approaches that nurture student confidence and commitment for health practice. Ideally, health science teachers lead by exceptional example (Walls, 2019). The domains of leadership and administration competence can be characterized by system management and leadership skills, which health science teachers can leverage to create, maintain and improve nursing programs – as well as shape the future of nursing education institutions (WHO, 2016; Pihlainen at al., 2016).

Student teachers described managerial competence as the knowledge of administrative tasks and recognition of educational legislation - which is partly consistent with what was reported by Pihlainen et al. (2016) – as well as participating in the work community and focusing on work well-being-related areas as noted by Nilsson, Blomqvist and Andersson (2017) and van den Berg et.al., (2017). Student teachers did not associate a teacher's leadership competence – which manifests itself through acting as a role model - with managerial and administrative competence. They also did not see a leader in nursing education as a person who can create a vision for the future of nursing education and maintain a forward-looking, sustainable environment that contributes to the future. This deviates from what has been presented in previous studies of health science educators (Patterson and Krouse, 2015; Pihlainen et al., 2016). This may be due to the fact that the study participants were students who had not yet

worked as teachers and may not have a deep understanding of the competencies required in the teacher's profession.

Health science teachers need to have versatile knowledge of the subject(s) they teach (Töytäri et al. 2016), theoretical and practical credibility, holistic ethical awareness, moral judgment skills and a willingness to do good (Kulju et al., 2016). When asked about the evidence-based practice competence category, student teachers felt that future health science teachers would be required to generate and manage evidence-based knowledge. As Mikkonen et al. (2018) have suggested, requiring teachers to hold higher education degrees and to have participated in research may be beneficial strategies for building evidence-based practice competence. Holistic care and health services can only be successfully provided when theory and practice are combined.

Concerning the subject competence category, student teachers emphasized the importance of connecting theory and practice. They further specified that a teacher's clinical experience and subject competence allow them to link theoretical learning with practical knowledge when teaching students, and remain connected to contemporary clinical practice, which is consistent with earlier findings (Fowler, Baker and Geraghty, 2017). Ethical competence comprised ethical foundations and moral standards of behavior in education. Other researchers have previously suggested that awareness of both ethical dimensions and teaching obligations is essential as it improves professional skills and practices and can affect students' moral reasoning and attitudes (Warnick and Silverman, 2011). By saying that, all teaching staff need to recognize the multifaceted issues that influence students' understanding of ethical issues, and to integrate cultural safety principles into their ethical teaching (Song, 2018).

When discussing pedagogical competence, the student teachers predicted that future education will be organized irrespective of place or time, and will be predominantly web-based. Technology has been listed as the largest change affecting health science education (LeRouge et al., 2014). In line with our findings, recent studies have shown that student-centred objectives need to be associated with the reform of conservative teaching methods, as well as the skilled use of information technologies (Öner, 2018).Today's learners require new tools for learning and are skilled and accustomed to using a wide

variety of new and changing technologies (McQueen et al., 2017; National League for Nursing, 2019). Digital applications offer new, modern methods to support teaching and learning (Salminen et al., 2016; Bristol, 2019a), and health science teachers have an important role in teaching and guiding students to develop the technical skills and knowledge that will be necessary for future professions (McQueen et al., 2017; Bristol, 2019).

The ability to teach, support, motivate and guide students, along with communication skills, were highlighted during discussions of educating and mentoring competence. The participating student teachers felt that a teacher should be able to identify each learner's unique strengths and then motivate the learner by focusing on their strengths. These findings are in line with previous knowledge of student mentoring and guiding (Tuomikoski et al., 2018; Bristol, 2019b). It is also shown that students can benefit from a mentoring relationship, even from a distance, especially when the student and the mentor already know each other (Cheek, Walsh Dotson and Ogilvie, 2016)

The World Health Organization (2016) has earlier stated that health science teachers must be effective communicators and promote team-building if they hope to improve interdisciplinary collaboration in healthcare and education (WHO, 2016). Student teachers expressed that the ability to operate in projects, both nationally and internationally, as well as language and cultural competence will be among the most important competencies for future teachers.

Student teachers also stated that even though health science teachers are responsible for maintaining a sufficient level of competence, managers should nevertheless afford teachers the possibility to update their competence. Continuous education is vital as it ensures that professionals can adequately monitor their own professional development to provide safe and efficient services (Directive 2005/36/EC and EFN Strategic & Operational lobby plan 2014-2020, revised 2016; National league for Nursing, 2019). Other researchers have suggested that continuous education is crucial to maintaining the skills and competences that are needed to operate in a practical environment (Hendrickx and Winters, 2017) and that it significantly impacts the attendee's knowledge, skills, attitudes and behaviors (Harden et al., 2017).

Limitations

All of the participants in the study were Finnish and, as such, they shared experiences of teacher competence that were relating to the Finnish education system. However, as education systems vary from country to country, the presented results may therefore not necessarily be generalizable to the international educational context.

Conclusions

A study of Finnish student teachers identified eight main categories of competence that were relevant to the work of health science teachers. Even though the participants were students, they already had a clearly developed understanding of the multidimensional competence needed in the work of a health science teacher. A comprehensive description of health science teacher competence is important, as the information provided in this article can be used to evaluate the competence of student teachers at different phases of their studies and then develop the curriculum accordingly. Future research should aim to study how a teacher's competence affects their well-being and coping with work, attitude towards students, and staying in the profession.

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Table 1. Health science student teachers' perceptions of teacher competence

Main categories	Categories
Leadership and management competence	Education policy and legislative competence
	Management competence
	Self-management competence
	Work well-being management competence
Evidence-based education competence	Evidence-based knowledge retrieval and implementation into practice competence
	Creating evidence-based knowledge competence
Subject competence	Teaching content management competence
	Subject-dependent special competence
Ethical competence	Ethical foundations competence
	Ethics in education and moral standards competence
Pedagogical competence	Evaluation competence
	Digital technology competence
	Educating heterogeneous students' competence
	Mentoring competence
	Pedagogical management competence
Collaboration competence	Networking competence
	Relationship and communication competence
Internationalization competence	International collaboration competence
	Language competence
	Cultural competence
Continuous professional development competence	Life-long learning competence
	Building competence at work
	Participation in continuing education