Swedish Bachelor of Science in Diagnostic Radiology Nursing. A curriculum study

Solveig M Lundgren RN PhD Associate professor, Carina Furåker RN PhD Associate professor

ABSTRACT

Aim: *The aim of this study was to describe and analyse what characterise curricula and syllabi in diagnostic radiology nursing programs in Sweden after the implementation of the Bologna process.*

Background: *Significant changes in diagnostic radiology nursing educations and in radiographers' clinical work have occurred during the last years in Sweden.*

Method: *Curricula and syllabi documents were collected and used to analyse data at eight universities and university colleges. Content analysis was used.*

Findings: *The findings show that the mix of theoretical, clinical studies, grades, elective studies, content and scope between subjects, vary among programs. In most programs, the major subject is described as multidisciplinary, closely linked to nursing and medicine, and the majority of other subjects are integrated into the major subjects. The average degree of clinical study is 30 %, which means that theoretical study cover 70 % of the programs as a whole.*

Conclusion: *The steering policy documents differ in terms of major subjects, content, structure, grades as well as integrated and collective codes between diagnostic radiology nursing programs in Sweden. Whether newly educated radiographers are professionally and academically skilled for their coming profession is a matter of further research.*

KEY WORDS: Curriculum, radiography, diagnostic radiology nursing, education, major subject, integrated code.

Introduction

Diagnostic radiographers have a long time been influenced and directed by nursing education and have been closely associated with the nursing profession. In recent decades, radiography has undergone many important changes, educationally and professionally, involving teaching, learning and curriculum changes. The professional identity and title of radiographers, as well as the work content and educational background, vary a great deal between countries in Europe (1, 2). In many countries, the education has been transferred from the hospitals to institutions of higher education at the universities (3, 4). Radiography is a young scientific field and a discipline that still needs clarification. There is a national discussion about the difference between radiographers´ professional and academic title. Thus, there is a need of more radiographers with academic degrees, with an interest in research and to participate in research projects within their specific radiographic domain (5).

Diagnostic radiology nursing education in Sweden

There have been significant changes in radiology nursing education and in radiographers' clinical work in Sweden. Some education programs started in the early 1960s because of a lack of nurses in radiology. The programs involved four or five semesters. In 1977, a higher education reform was introduced that transformed healthcare education into a degree program (6). The purpose was to create a scientifically based education and to provide opportunities to carry out research in different specialist programs, for example in diagnostic radiology nursing. After 1982, diagnostic radiology was coordinated with nursing educational programs and consisted of 80/90 credits, i.e. two years. A two-year upper secondary school education in nursing care was required for qualification into different specialist programs, such as radiology. Radiology nurses became registered nurses in diagnostic radiology in 1982.

With the 1993 university reform (7), the nursing education was obligatory turned into three-year programs at the undergraduate level, comprising 120 credits (180 ECTS) with at least 60 credits in the major subject and the opportunity to obtain a Bachelor´s degree (7, 8). Between 1993 and 2001, discussions were held about whether the education in diagnostic radiology should be a separate program. In 2000, all students who specialised in diagnostic radiology received professional certification as registered radiographers, but the title of the program remained diagnostic radiology nursing (8).

As a result of the 1993 Higher Education Reform, each educational department could decide the content and structure of curricula based on the qualification descriptors of the National Higher Education Ordinance (7). As of 2007, with the implementation of the Bologna declaration process, all registered radiographers receive a Bachelor of Science degree in Diagnostic Radiology Nursing (7, 9). Some programs also include a Master´s degree. After 2007, all diagnostic radiology nursing programs in Sweden had to revise their curricula and syllabi to follow the new requirements (10).

Steering policy documents

The aims of the current European higher education reform, the Bologna process, were to;

- create a three–cycle system of higher education
- describe typical learning outcomes for each cycle and discipline
- give opportunities for student and staff mobility, employment and collaborative work
- create a credit transfer and accumulation system (ECTS)
- develop European quality assurance standards for higher education (11)

The implementation of the Bologna principles in Europe has varied. There are some obstacles associated with the implementation such as costs, cultural traditions as well as students and staff opportunities to transfer between universities or countries associated with the implementation (12). Many countries have reported lack of financial support in connection with the reform (13). The three-cycle degree model has though been accepted throughout in Europe. Many radiography programes in Europe have raised their educational status from diploma to graduate level and beyond.

In order for the Bologna process to become realised a ´Tuning project´, including 16 countries, was formed in 2000. The goal of the project was to make curricula comprehensible and comparable. The idea behind this "tuning" was to implement the process without losing the

autonomy or ability to innovate (2). According to the ´Tuning project´, the degree profiles in radiography vary substantially throughout Europe and this variation in curricula needed to be sorted out.

In the line with the Bologna reform in 2007, all registered radiographers in Sweden have a professional qualification as well as a Bachelor´s degree (first cycle with at least 90 ECTS in the major subject (7, 9). After 2007, teachers in higher education in Sweden are required to follow the Bologna Declaration along with its above mentioned objectives. Thus, following this implementation, all diagnostic radiology nursing programs had to revise their curricula and syllabi in order to meet the requirements (10). After the reform, some of the diagnostic radiology nursing programs in Sweden were separated from other nursing programs, great changes and many improvements have been made. The degree of the programs is, according to Swedish National Agency for Higher Education; Bachelor of Science in Diagnostic Radiology Nursing and several programs include both Bachelor´s and Master´s degrees (first and second cycle) (9).

After the introduction of professional certification in 2000, a discussion started about the major subject, its content and scope in the radiology nursing programs. The major subject in Europe and the Nordic countries is most often called radiography. The degree profiles in radiography vary in Europe, and the profession has developed through different national traditions, a variety of educational programs and requirements of service (2).

In Finland, many radiographers previously got a degree in nursing and parts of the syllabus are still shared with the nursing education. The program entered the degree program in 2005, which includes both Bachelor´s and Master´s degrees (14). Similarly, according to Castle (3), the development of the radiography education in the UK has followed the lead of nursing education. However, Paterson (15) claims that, despite the vast technological developments in diagnostic imaging and treatments, changes in the curriculum model have been very limited during the past thirty years. Moreover, the role of radiographers has developed to encompass new imaging modalities and new treatment technologies, despite the lack of changes in curricula. The structure of higher education in radiography in Japan appears to be more uniform compared with programs in Europe. Akimoto et al. (16) show that curricula in Japan have a more technological orientation at the expense of education in healthcare management. Clinical training is less emphasised and occurs later in the program.

There are international and national discussions about the boundaries between radiography and radiology (17) as well as between radiography and nursing. Radiographers' responsibility for both patient care and technical equipment, for example, has increased, which makes their position unique (18). For example requirements of this profession are demands on evidence-based knowledge, a scientific approach, technology and multicultural knowledge (2). The radiographer profession is regulated by law in many European countries so that certain national qualifications can be maintained (19). Payne and Nixon (19) identified legislation and nine competences that are crucial for radiographers to master, for example safety, communication, and professional knowledge in the context of care, science and technology (a.a). Other competences are generic competences for employability which are described as being instrumental, interpersonal and systematic competences (2).

The curriculum code concept

According to Karseth (20) curriculum as a field of study has up until today not played any major role in higher education in Europe. However, analysing the curriculum has become more important with the expansion and increased complexity of the academic education. To conceptualise curriculum in terms of how it is formed, Bernstein´s (21) code concept has been used as a framework for uncovering the content and structure in educational curriculum. Bernstein described two curriculum codes, a collective and an integrated code. A collective code forms distinctions, for example between subjects in a curriculum and between education and production. An education of this type makes it easy for students to understand what teaching is about – a visible pedagogy. In contrast, an integrated code has unclear boundaries between subjects and is characterised by diversity – an invisible pedagogy. An interesting question in this study concerns whether and how integrated or collective codes have influenced curricula and syllabi and the boundaries between subjects and courses.

Aim

The aim of this study was to describe and analyse what characterise curricula and syllabi in diagnostic radiology nursing programes in Sweden after the implementation of the Bologna process.

Research questions

How is the major subject defined and how it is referred to in the curricula?
In what way is the major subject demarcated from other subjects?
How are theoretical studies and clinical studies distributed in the programs?
How are the pedagogical content and structure expressed in the curricula?

Method

Design

Curricula and syllabi documents were used to collect the data. These documents were selected and then analysed to clarify the content and structure of diagnostic radiology nursing programs.

Procedure

Curricula and syllabi documents were used from all diagnostic radiology nursing programs at eight universities and university colleges in Sweden. Curricula and syllabi are public documents and were obtained from university websites or via email from the program directories in the spring of 2012. The documents that were required were curricula and syllabi adopted for the full three-year programs. Eight curricula and 163 syllabi were obtained.

Analysis

The documents were analysed according to summative content analysis (22, 23, 24). Summative content analysis is an analytical method that starts with identifying the document text as a whole. Some crucial words and sentences were therefore quantified in order to understand the contextual use of the content of the document, a so-called manifest analysis. The focus was on analysing and interpreting the underlying meaning of words and content in all the curricula and syllabi documents, i.e. a latent analysis in relation to the aim and research questions of the study.

As a starting point, both researchers individually studied all the curricula and syllabi. Thereafter, the data were analysed by studying all the documents a second time to detect differences and similarities between documents. A manifest content analysis was first carried out. Various units of meaning were identified and abstracted into codes, such as self-directive learning, clinical studies, and nursing science. The manifest analysis was followed by an interpretation, i.e. a latent analysis of the documents, for example if an integrated or collective code was used. The codes were organised into sub-themes, and were in turn divided into two themes. To obtain inter-reader reliability, the data were examined and re-examined several times by the two authors.

As all the documents are publically available documents, no ethical considerations or ethical permission were required. Both researchers had a preunderstanding of writing, interpreting and using documents in higher education. This preunderstanding was discussed until a consensus was reached. It was stipulated that no specific university and university colleges could be identified from the data and that the data collection would only be used for research purposes. Quotations were used to increase the accountability of the analysis.

Findings

Two themes emerged: descriptions of the major subject and other subjects and pedagogic perspectives and structures. The first theme comprises three sub-themes: titles of the major subjects and other subjects, definitions of major subjects, and content and structure. The second theme comprises two sub-themes: outcomes and grades, and elective and joint studies.

Description of the major subject and other subjects

Titles of major subjects and other subjects

A variety of titles describe the major subjects in the eight diagnostic radiology nursing curricula. One orientation is radiography, found to be a major subject in five of the curricula. Another orientation is found in one curriculum with the title nursing and medicine in diagnostic radiology, others where health sciences and medicine. Six of the eight curricula have both a Swedish and an English title for their program. In turn, the English titles appear to vary greatly (Table 1). In all of the curricula, the titles of the professional degree are the same as stated by the Swedish National Agency for Higher Education, i.e. Bachelor of Science in Diagnostic Radiology Nursing. However, the titles of the academic degree differ considerably between programs, which means that the student can obtain their academic degree in either radiography, medicine, nursing or the caring sciences (Table 1).

Definitions of major subjects

The major subject is defined in three curricula. These definitions focus on the programs' positioning of the major subject, such as health and illness or clinical practice. In five programs, the major subject is defined as having a multidisciplinary base with an emphasis on knowledge in three different paradigmatic orientations in the following order, medical, technological and nursing sciences.

Content and structure

The major subject in five curricula and syllabi programs clearly has a interdisciplinary base. Nursing, medicine and technical sciences are integrated into all major subjects, whereas social and behavioral sciences, physics and medical imaging are integrated into several of the major subjects' syllabi. The theoretical content of the major subjects varies in scope in the eight programs between 113.5 and 146 out of the 180 ECTS (M=125). Scientific methodology has a separate syllabus (collective code) in all programs, and the number of ECTS differs between 22.5 and 30 (Fig 1).

Clinical study in the major subject varies strongly in scope between 18 and 56.5 ECTS (M = 36) while the syllabi of the clinical studies are not clearly stated or structured. Laboratory work, case studies, field studies and pharmaceutics are integrated into clinical studies, and it is therefore difficult to identify and categories the exact number of ECTS. The ECTS awarded for clinical studies as a whole (including all subjects above) in the eight programs range in scope between approximately 34 (19%) and 67 (37%) of the total 180 ECTS (M= 54.5).

Nursing science is integrated into the major subject in both theoretical and clinical studies in five of the programs and, in the others, nursing science has separate syllabi. Nursing science varies in theoretical study between 0 and 28 ECTS (M= 18) and in clinical studies between 7 and 49.4 ECTS (M = 20). Another integrated subject that can be distinguished is medicine, which differs between 20.5 and 40.5 ECTS (M = 31) in theoretical studies and, in clinical studies, one ECTS is found in one syllabus. Radiation protection and technology are included in medicine, six programs have separate syllabi and two are integrated into other subjects and vary between 7.5 and 15 ECTS.

In two out of eight programs, social and behavioral sciences are integrated into the major subject. In six programs, social and behavioral sciences have separate syllabi. The ECTS differ in scope between 6 and 7.5 ECTS (M = 7). Social sciences included subjects like leadership, organisation, pedagogy.

Pedagogical perspectives and structures

Half of the curricula specify and explain pedagogical perspectives, for example those relating to self-directed learning, active knowledge seeking, student activating pedagogics, taking responsibility for personal learning and knowledge seeking. One of these pedagogical perspectives is described as follows:

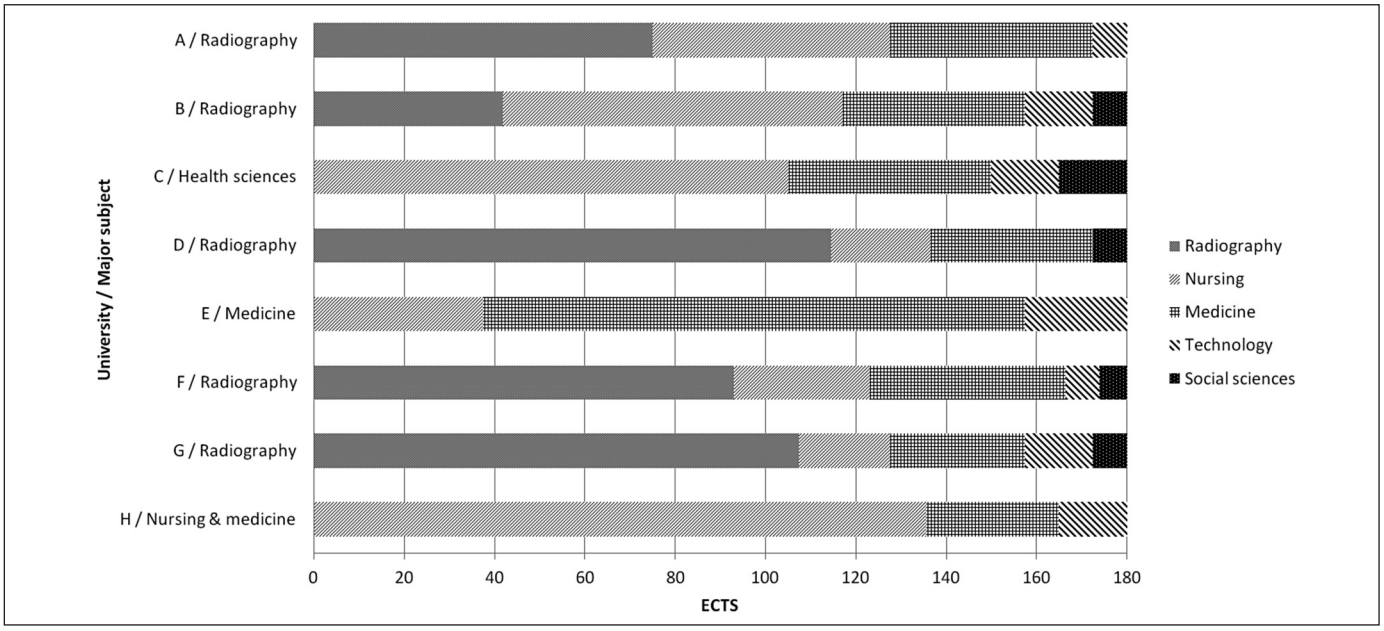
> The individual is given freedom to seek his or her knowledge and to take responsibility for his or her own learning and personal development. The goal of learning is for the individual to acquire a readiness for participation in the development of a changing society.

Three programs describe a pedagogical profile using the words distance education, internationalisation and process-oriented supervision. Pro-

Table 1. Major subject, description of major subject, program title in English, professional degree, academic degree

Program	A	B	C	D	E	F	G	H
Major subject	Radiography	Radiography	Health sciences	Radiography	Medicine	Radiography	Radiography	Nursing and medicine within diagnostic radiology
Description of major subject	Health – illness and life perspective			Clinical practice		Clinical practice		
Program title in English	Bachelor Program in Diagnostic Radiology Nursing	Diagnostic Radiology Nursing Program Nursing		Study Program in Radiography	Diagnostic Radiology Nursing Program	Study Program in Diagnostic Radiology Nursing	Program in Diagnostic Radiology Nursing	
Professional degree	Bachelor of Science in Diagnostic Radiology Nursing	Bachelor of Science in Diagnostic Radiology Nursing	Bachelor of Science in Diagnostic Radiology Nursing	Bachelor of Science in Diagnostic Radiology Nursing	Bachelor of Science in Diagnostic Radiology Nursing	Bachelor of Science in Diagnostic Radiology Nursing	Bachelor of Science in Diagnostic Radiology Nursing	Bachelor of Science in Diagnostic Radiology Nursing
Academic degree	Bachelor Science in Radiography	Bachelor of Medical Science in Radiography	Bachelor of Medical Science in Caring	Bachelor of Medical Science with a Major in Diagnostic Radiology Nursing	Bachelor of Medical Science	Bachelor of Science in Radiography	Bachelor of Science with a Major in Radiography	Bachelor of Medical Science – Major: Nursing

Fig I. Distribution of ECTS in major subject and integrated subjects



cess-oriented supervision is a compulsory pedagogical course in one program. In turn, an example of a profile is the following:

> The purpose of internationalisation and intercultural communication is for students to become aware of their role and responsibilities as professional practitioners for collaboration across cultural and national boundaries.

The syllabi varied a great deal between programs in relation to the content structure. There are unclear boundaries between subjects both within and between syllabi in all programs. There are syllabi that have an integrated structure as well as syllabi with a collective structure. The integrated code is the most common structure, whereas the syllabus content does not describe one specific subject or scientific discipline.

Outcomes and grades

The majority of the programs have a similar objective outcome. The student shall demonstrate that they have acquired the necessary knowledge and skills to plan investigations based on patients' safety needs and conditions. One program states that the intended outcome of the program is for students to have acquired a professional role and learning skills.

Furthermore, in five of the eight curricula, local outcomes are described in addition to the national objectives. According to the local outcomes, the students shall know and apply, for example, the major subject scientific basis, technology, patients' needs, how to secure medical equipment and how to give information and communicate.

Additionally, the written grades in the curricula and syllabi also differ. Three programs have a three-grade scale in theoretical studies and a two-grade scale in clinical studies. Three programs have two grade-scales both in theoretical and in clinical studies and one program has a three grade and one has a seven-grade scale.

Elective and joint studies

Three of the programs have one or more elective courses, and students can choose for example between mammography, magnetic resonance and angiography. It was also found that five programs shared courses with biomedical laboratory science or with nursing education programs. The shared courses in nursing are scientific methodology and degree project while in biomedical science, they are anatomy and pharmacology.

Discussion

Curricula and syllabi documents from eight diagnostic radiology nursing programs in Sweden were analysed to shed light on the discipline and its professional qualifications. We found that the content, grades, elective studies, structure and scope of subjects vary a great deal among the programs. These differences in documents also occur in international studies (15, 16, 25).

In this study, radiography is the major subject in most of the programs and is described as multidisciplinary. Radiography draws knowledge from nursing, medicine and technological sciences. The integration of subjects, an integrated code, is observed in both theoretical and clinical studies with the effect that the subjects become less apparent (an invisible pedagogy). This means that students may not always be able to identify the subjects that have formed the radiography education. The goal of the ´Tuning project` was to make curricula comprehensible and to facilitate the mobility of students between programes in Sweden. However, according to this study, the integrated code may limit students´ opportunity of mobility and possibility of fully understanding the curricula.

The major subjects are closely linked to nursing and medical sciences. Nursing and medical sciences represent different paradigmatic orientations, which will make it difficult to strengthen the discipline of radiography and the specific professional qualification. Hafslund et al (5) suggest that the implementation of evidence-based knowledge in the curriculum will increase the possibilities of developing a discipline. Therefore it is essential to reach a national consensus regarding the major subject to be able to advance the profession and strengthen the discipline. Internationally, radiography has long been dominated by other disciplines such as radiology, physics, nursing and sociology (26). Furthermore, Castle (17) argues that the boundaries between radiography and nursing must be further discussed and clarified. Many subjects and concepts may differ considerably in terminology within and between programs, and how these differences are interpreted by teachers and how they are expressed in teaching need further research. As pointed out by Ahonen and Liikanen, (14) radiography science can be clarified by means of a development of the curriculum and by a systematic development of terminology.

The integration of subjects in the same course raises questions about whether teachers and supervisors have the necessary competence in all subjects included and whether the learning environment is adapted to the variation in subjects. Teachers have an important role in making the curriculum and the syllabus comprehensible to students and clinical supervisors (27). According to the researchers of this study, many supervisors in clinical education lack undergraduate or graduate degree, which is a weakness and a limitation in education.

The syllabi of clinical studies are unstructured and include many different subjects. Therefore it is not easy to understand the exact number of credits. The recommended ECTS for clinical education in Europe (2) is 38 % of the total number of credits. In this study, the mean extent of clinical studies is 30 %. These figures indicate that theoretical courses

cover 70 % of the programs as a whole. One reason for this unequal division of theoretical and clinical studies could be that theoretical studies are more economical than clinical studies. Based on these conditions the use of clinical training centers (CTC; all programs train medical techniques and methods and some include training of diagnostic radiography) has increased due to decrease in the access to clinical settings and an increase in the number of students (28). It can be questioned if short times in different clinical settings and when the students start their clinical courses might affect their opportunity for developing competence (29). A question that must be raised is whether the average of 30 % clinical studies is sufficient to learn technical skills and to apply and develop knowledge in a broader sense, i.e. to learn generic skills. Since the major subject has a multidisciplinary base, this implies that students must master different types of knowledge, competences and skills throughout the education program (2, 27). The conclusion is that the registered radiographers will start their career with great variation in terms of credits and knowledge from clinical and theoretical studies.

The courses in scientific methodology have a separate syllabus in all the programs, i.e. a collective code (a visible pedagogy). According to Bernstein (21), it is easy for students in such courses to understand what the subject concerns and it is also easy to compare studies with each other. In higher education, students acquire knowledge of research and skills through effective reflection, analysis, evaluation and evidence-based knowledge, leading to skills that are necessary for both professional and personal development (30). This way of learning in higher education is regulated by law in Sweden, as is the case in most countries in Europe (18).

Conclusion

The study shows that Diagnostic Radiology Nursing programs in Sweden vary a great deal in documents, i.e. they are unclearly expressed in content and structure. Most programs describe the major subject as being multidisciplinary, and most of the subjects are integrated into the major subjects. The average level of clinical studies is 30 %, which means that theoretical studies account for 70 % of the full program, which could be contrasted with the recommended 38 % for clinical courses in Europe. The majority of the subjects are still closely linked to the nursing and medical sciences. Half of the curricula identify and explain pedagogical perspectives; five programs share courses with biomedical laboratory science or with nursing education programs. The written grades in the curricula differ a lot between programes.

Implications and further research

The documents differences in term of content, structure, grades and codes between diagnostic radiology nursing programs in Sweden naturally raise some questions. Do these differences imply a variation in the quality between programes? What consequences will the differences have for the coming profession and discipline? Are the employers aware of the fact that the knowledge of newly registered radiographers varies depending on what program they have attended? Clearly, the registered radiographers will start their career with great variation of credits from clinical and theoretical studies depending on where they graduated. The newly registered radiographers will also vary in their knowledge and skills depending on the same factor. Still, further research is needed to determine whether these differences have any actual consequences for employers and newly graduated radiographers.

Accepted for publication 26.09.2013

Solveig M Lundgren Associate professor (senior lecturer), Institute of Health and Care Sciences, Sahlgrenska Academy at University of Gothenburg, Box 457, SE-405 30 Göteborg Phone +46317866094, Fax: +46317866120, E-mail: *Solveig.Lundgren@gu.se*

Carina Furåker Associate professor (senior lecturer), Institute of Health and Care Sciences, Sahlgrenska Academy at University of Gothenburg, Box 457, SE-405 30 Göteborg, Phone +46317862313, Fax: +46317866120 E-mail: *Carina.Furaker@gu.se*

References

1. Cowling C. Global review of radiography. Radiography 2013;19:90-91.
2. Tuning Templates for Radiography in Europe 2007. Socrates Erasmus 2008.
3. Castle A, Holloway DG, Rage A.J. A review of issues in continuing professional development in teaching, nursing and radiography. International Journal of Lifelong Education 1998;17(5):328-340.
4. Malamateniou C. Radiography and research: A United Kingdom perspective. European Journal of Radiography 2009;1:2-6.
5. Hafslund B, Clare J, Graverholt B, Wammen Nortvedt M. Evidence-based radiography. Radiography 2008;14:343-348.
6. SOU 1978:50. New health care education: report from the committee of certain care programes in higher education; Vård 77. (In Swedish: Ny vårdutbildning: betänkande av Utredningen om visa vårdutbildningar inom högskolan: Vård 77. Stockholm: Liber).
7. SFS 1993:100 Higher Education Ordinance. Swedish Statues in translation. http:www.sweden.gov. sf/sb/d/3288 Retrieved 2012.
8. SFS 1998:513. Act relating to professional health care area. (Lag om yrkesverksamhet på hälso- och sjukvårdens område). Htpp://www.riksdag.se/sv/dokument-Lagar/Lagar/svenskf. Retrieved 2013.
9. Government proposal, 2004/05:162.New world – new higher education. (In Swedish: Ny värld – ny högskola.) Ministry of Education, Research and Culture. Stockholm.
10. Swedish National Agency for Higher Education National Qualification Framework, 2011. Report 2011: 1 R. Follow-up of the National Agency for Higher Education´s subject and programe evaluations in 2005.
11. Coming A. The Bologna process, medical education and integrated learning. Medical Teacher 2010;32:316-318.
12. Gordon D, Christensen L, Carle H. Medical education in the Bologna process: A critical appraisal of current practice and implementation. Available at: htpp://www.bologna-handbook.com
13. Davies H. A Chance too good to miss. Medical Teacher 2010;32:284-287.
14. Ahonen S-M, Liikanen E. Radiographers´ preconditions for evidence-based radiography. Radiography 2010;16:217-222.
15. Paterson A. Cancer: Implications for pre-registration radiography curricula. Radiography 2012;18:47-50.
16. Akimoto T, Caruana C. J, Shimosegawa M. A qualitative comparative survey of First cycle radiography programes in Europe and Japan. Radiography 2009;15:333-340.
17. Castle A. Radiography: nature of knowledge and academic tribe. Radiography 2000;6;261-268.
18. Andersson B.T, Fridlund B, Elgán C, Axelsson Å. Radiographers´ areas of professional competence related to good nursing care. Scandinavia Journal of Caring Sciences 2008;22:401-409.
19. Payne K, Nixon S. External influences on curriculum design in radiography degrees. Radiography 2001;7:249-254.
20. Karseth B. Qualifications framework for the European higher education area. Utbildning och demokrati 2008;17(2). Örebro university Sweden.
21. Bernstein B. Some aspects of the relationship between education and production. In: Bernstein B. Lundgren U.P: (Eds.), In Swedish: Några aspekter av relationer mellan utbildning och produktion i: Makt, Kontroll och Pedagogik. Studier av den kulturella reproductionen. Liber: Lund, 1983; pp.23-47.
22. Hsiu-Fang, H. Shannon S. Three approaches to qualitative content analysis. Qualitative Health Research 2005;15:1277-1288.
23. Krippendorff, K. 2004. Content analysis an introduction to its mythology. Sage Publications: Newbury Park.
24. Silverman, D. 2011. Qualitative Research. Sage Publication: Newbury Park.
25. Ahonen S-M. Radiographer´s work in Finland. European Journal of Radiography 2009;1(2):61-65.
26. Decker S, Iphofen R. Developing the profession of radiography: Making use of oral history. Radiography 2005;11:262-271.
27. Öhlen J, Furåker C, Jakobsson E, Bergh I, Hermansson E. Nurse Education Today 2011;31:122-128.
28. SALAR, 2006. The Swedish Association of Local Authorities and Regions. http://english.skl.se/ 2006.
29. Watson R. Is there a role for higher education in preparing nurses? Nurse Education Today 2006;26:622-626.
30. Nixon S, Professionalism in radiography. Radiography 2001;7:31-35.