Gap between craft and academic knowledge in professional education?

Full presentation
This presentation is about knowledge in Professional Education and the focus is on the structuring of knowledge in professional education. The title may sound a bit provocative, but the question mark indicates that I am not claiming there are gaps, but I want to discuss if gaps are likely to occur in the knowledge which the students are supposed to acquire.

Object of study and questions:

1. Object of study:
   - Organisation and structuring of knowledge with emphasis on the potential for the students to build knowledge – a curriculum perspective

2. Questions:
   - What is understood by coherence in knowledge and how can it be conceptualised?
   - What are the implications of strong or weak coherence in knowledge building?

To clarify the object of study I want to state that I look at knowledge from a curriculum perspective.

The main questions are:

- What is understood by coherence in knowledge and how can it be conceptualised?
- What are the implications of strong or weak coherence in knowledge building?
Empirical basis

- Danish ‘Profession-Bachelor’ programmes of 3½ year study (Teacher, Nurse, Constructing Architect, Diploma engineer etc.)
- A double case study from 2009 – 2013:
  a) Nursing Education (NE) – primary case
  b) Constructing Architect Education (CAE) – secondary case

Theory and methodology

- Theoretical approach:
  - Discourse analysis (CDA - Fairclough)
  - Education sociologist perspective:
    - ‘Social realism’ (Maton and others)

- Analytical tools:
  - Legitimation Code Theory ‘specialization codes’ and semantic codes
About the background:

Due to modernisation discourses on macro level higher education needs to be more user orientated and to function on behalf of society and market demands. This trend is called *marketization*. It calls for the disciplinary content in curriculum to be selected and prepared on basis of contemporary user demands.

Along marketization another trend – or discourse - has also dominated professional education, such as *academization*. This trend arises partly from the professions themselves in their striving at professional autonomy and authority - by developing their own scientific area and thereby gaining control over it. The move also comes from government policies of institutional integration.

Obviously different educational programmes have responded differently to the two trends. Some have turned orientation strongly towards practice fields while others have tried to do both. Nursing in DK is an example of the latter.

As illustrated, an orientation to the academic world may be advantageous for the development of own knowledge basis and thus increase power and control. It means that the emphasis will be on theoretical conceptual knowledge (knowing why). An orientation towards practice world has become more crucial also and here the emphasis will be on procedural knowledge (knowing that and how). Procedural knowledge is for doing, conceptual knowledge is for understanding. In many ways this is an opposite movement, which give rise to the question: What does it mean to the organising of knowledge in curriculum?
I studied curriculum documents from over several decades to see how discourses about teaching and learning had changed and how this had affected the organisation of curriculum content. I will briefly sum up on this analysis:

Generally subjects were more clearly defined and demarcated in the 60-th. The curriculum was viewed as a collection of subjects to be learned and evaluated separately.

Gradually learning discourses focus on the learning subject and its ability to actively engage with the content and the learning material. Along this code change orientation towards interdisciplinarity also increases. Furthermore we see how problem based models are implemented from the 90th onwards. You might say that curriculum shifts from collection to integration.
Let me draw up some few preliminary conclusions, (read the above):

Marketization tends to emphasise procedural knowledge. And academization tends to emphasise conceptual knowledge. Can professional education do both? – the two trends may cause the risk of weak coherence or even that a gap occurs in the student’s knowledge building.

What is then understood by coherence?

Inter-relations among subjects (horizontal perspective)
I will now turn to some specific study modules in the nursing case:

The illustration shows a typical PBL-course. A case story is introduced to the students – typically about a patient with a disease or symptoms. Some theories are briefly presented to the students and then it is up to the students to read and study those resources and try to build up a consistent ‘body of knowledge’……a coherent argumentation.

This is challenging for several reasons. One is that there are two different knowledge cultures involved in nursing, natural science and humanist culture. According to Bernstein humanist knowledge is characterized by horizontal or segmented structures. It means that the knowledge field grows by adding new – often competing theoretical perspective rather than integrating. Natural science is the opposite case. Such fields grow mainly by integrating old theories in new ones. Thus, very different types of knowledge should be integrated in nursing.

This concerns mainly a horizontal plane in the PBL-programmes. However there is also another challenge: A vertical dimension of coherence. Not only do the students need to build knowledge across humanist’s and natural science fields. They also need to establish connections between various abstraction levels within each of these knowledge areas.

The main focus in my studies has been this vertical coherence, which I will further unfold.

If we consider the various theoretical levels (slide), we find that very abstract theories dominate in the subjects of ‘Ethics Religion and Philosophy’ and more specific theories dominate in the subject of ‘Nursing/care’. The point is then: The students do not only have to build knowledge between the various abstraction levels. They also need to build knowledge across humanist and natural science areas.
Vertical coherence in knowledge can probably be viewed from various perspectives. In this discussion of vertical coherence I draw on the so called ‘semantic codes’ developed by Karl Maton. Basically this theory is about how strong concepts in a high level are, related to more specific ones at a lower level. I will briefly explain the two key concepts:

**Semantic gravity:**

The degree to which meaning relates to its empirical context. The stronger the semantic gravity (SG+), the more meaning is dependent on its context; the weaker the semantic gravity (SG-), the less dependent meaning is on its context.

**Semantic density:**

The degree to which meaning is condensed in symbols, concepts. The stronger the semantic density (SD+), the more meaning are condensed within practices; the weaker the semantic density (SD-), the less meaning are condensed.

The knowledge organized in curriculum should enable students to move between concrete descriptions of a problem to more general propositions and concepts, both up and down the semantic scale. This would produce vertical coherence in making meaning and can be termed cumulative knowledge building. One problem can be that students work with abstract theories without being able to unpack those into more specific descriptions, and it is also a problem if knowing remains locked into the specific context without students being able to do abstractions into theoretical terms.
I have tried to look at those semantic movements from this perspective by looking into the curriculum organised knowledge and the way students work with the different knowledge resources in their study work. As previously mentioned: Not only is it challenging to combine theories from such different domains as philosophy and human biology, but vertical coherence seems to be extremely challenging too.

In fact, nursing theorists have tried for many years to conceptualise different types of theories and levels of abstraction. Strong focus has been on different ‘levels of abstraction’, but vertical coherence in terms of semantic flow seems to have had very little influenced so far. Generally in the literature about nursing knowledge you find the terms ‘meta-, grand- middle-range and micro range’ theories. It is not possible to go into details about those here, but an example of a meta-theory could be Martinsen’s ‘The ‘perceiving eye’ or ‘seeing with the heart’s eye’. This work is highly philosophical and ethical and very difficult to relate to certain groups of patients, so by working with a case the students may include those thoughts, but the concepts are not engaging with the actual case problem, but remain on their own abstract level as unrelated statements (see Petersen and Bredow). Sometimes even macro societal theories are included such as Habermas’ sociological concepts of System and life world. Again, it is difficult for the students to obtain semantic connection between the concept of ‘system’ and what it specifically does to the health service system further down to a hospital and eventually to the relationship between a nurse and a patient.

Micro theories typically – on the other hand - operationalise ideas into procedures for treatment of very specific groups of clients, so this knowledge is close related to the craft of nursing.

When such levels are looked at from the perspective of semantics weak coherence is likely to occur between very abstract conceptual knowledge and more specific, procedural knowledge. In other words: The students are quite capable of demonstrating how micro-range theories engage with the problem they are studying, but they have difficulties in relating meta- and grand theories to the actual problem the particular context.

**Conclusively:**
I have not studied the students learning outcome as such. I have studied the structuring of knowledge in the enactment of curriculum. Lack of coherence is not necessarily lack of competences. The students may prove otherwise when they come to act as a nurses in real situations. However some points can be made:

Especially extension and strength in vertical relations provides a capacity for the knowledge to be extended and applied across different contexts, what is also termed transferability.

The concept of semantics can contribute to the discussion of knowledge in professional education, as it emphasises some new aspects of knowledge. This may enable educators to put more focus on what kind of learning materials may provide the best basis for achieving coherence.
Finally, I find that the concepts of semantics and coherence highlight a significant problem for many professions to become an independent profession with its own body of knowledge.
References (updated after announcement on ECER web site)


Higgins Patricia A., Moore, Shirley M.: Levels of Theoretical Thinking in Nursing, Nurse Outlook 2000;48:179-83

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Abstract
This paper focuses on the organizing and structuring of knowledge in professional education in DK. It specifically examines Nursing Education and the consequences of the increasing orientation towards intellectual ‘academization’ with emphasis on the difficulties of obtaining coherence within curriculum knowledge organization.

The paper introduces a conceptual framework for curriculum differentiation and for the study of knowledge transformation processes in professional education.

During the past twenty years two major trends have influenced professional education in many parts of the world… including DK. One is an academization process involving higher skills in theorizing. The other trend is an increasing orientation towards external market demands, often referred to as regionalization (Bernstein 2000), possibly leading to what Barnett has termed ‘operationalism’ (Barnett 1994). In other words where the universities becoming a function of society rather than being a university in society. In some ways the two trends are contradictory, because such operationalism’ may result in focusing too heavily on applied knowledge forms and less on the theoretical and paradigmatic aspects of knowledge – ‘knowing how ’before ‘knowing why’.

In the rush to become an independent profession, nursing education in DK has strived for academization (Eriksen 2005), while still claiming to master the craft of nursing. But, from a ‘sociology of knowledge’ point of view, the question of coherence in the various knowledge forms becomes crucial, as such coherence determines the ability of nursing students to combine both craft and experiential knowledge with explicit theoretical and academic knowledge. Although not insurmountable, the span from craft to academic seems extremely challenging.

If Bernstein’s works of knowledge structures and later theories of Muller and Maton are applied, it is possible to illuminate where such difficulties arise (Muller 2007). With the emphasis on ‘semantic gravity’ and ‘semantic density’ weak semantic connectivity between propositions and between concepts can be identified and semantic gaps defined (Maton 2014, Maton 2013) This not only applies to how knowledge is recontextualised into the curriculum, but also how various knowledge forms are expected to be integrated and learnt (Kolb 1984).

Methodology or Methods/ Research Instruments or Sources Used
The conceptual framework is based on Bernstein’s work on horizontal and vertical discourses and his further distinction between hierarchical and horizontal knowledge structures.

Muller has argued that Bernstein’s knowledge structures differ in two ways: - their verticality and grammaticality. ‘Verticality’ refers to the internal relations of knowledge and describes how theory develops; for example, its capacity for integration. ‘Grammaticality’ refers to the external relations of knowledge or its capacity for precise empirical descriptions. However it has been discussed if such dimensions should be seen as distinct features or rather on a continuum. The Legitimation Code Theory (LCT) developed by Maton - particularly the semantic codes of gravity and density -
refers to the dimensions above, but in continua. Movements between semantic gravity and semantic density in building knowledge concerns a vertical dimension in the semantic structures of knowledge and express how meaning is developed as learners are expected to continually climb up and down the semantic ladder, incorporating lower order concepts into more general propositions and concretizing theoretical concepts in context-specific statements. Shay’s work with semantic codes in relation to curriculum knowledge also provides a basis for the analyses underlying this paper (Shay 2012).

Data is generated from case based research carried out in a recent completed Ph.D. project comprising curriculum analysis, interviews, classroom and student work product studies.

Based on curricula research, interviews, classroom studies and analysis of student work this paper argues that semantic gaps are likely to occur when students are attempt to construct knowledge within the curricular framework spanning from craft to academic. The paper documents different semantic profiles referring to various case-based study programs in nursing. The paper also goes on to debate the potential consequences for learning and developing professional identity.