

## Steps towards enabling health professionals through future skills

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### **Abstract**

*Education in healthcare must enable professionals to work in the health sector for as long and as fulfilled as possible. Yet, new requirements are constantly arising in the health sector, which continuously change the required competences, e.g. due to new technological possibilities and increasing interdisciplinarity. Several challenges arise: education in healthcare needs awareness of required competences and their rapid change. At the same time, addressing them in education presupposes an in-depth understanding of what they actually are.*

*To tackle these issues, a teaching concept was developed that builds on self-reflection of to-be professionals in healthcare. This concept includes characterizing typical professional situations and deducing required (future) competences for mastering these situations.*

*Beyond rising awareness to future skills, applying this teaching concept also yields data that support a better understanding of required competences and their importance across professions. A case study resulted in initial competence profiles for several professions in healthcare.*

**Keywords:** *Future skills; teacher education; health; vocational education; competence assessment; self reflection.*

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## **1. Introduction**

Societies are getting older and health is a key aspect for maintaining quality of life. Education in the health sector must enable health professionals to work as long and as fulfilled as possible. In addition, requirements constantly evolve through megatrends such as digital transformation, thus continuously changing the required competences of professionals, e.g. due to new technological possibilities and increasing multidisciplinary. So-called future skills are gaining importance. Consequently, already the training of professionals and trainees must pay attention to these future skills. In this context, student teachers play a central role, as they must already address these future competences in the training of future professionals for sustainably and permanently securing health care in an ageing society. To aggravate things, the competences required in the future may not even be known yet. In particular, this holds true for those of health professionals and their teachers.

The central research questions are derived from these considerations: What are relevant future skills in health professions? How can student teachers be supported in addressing future skills in their classes?

This paper contributes to answering these research questions through a teaching concept that addresses both aspects jointly: student teachers are encouraged to increase their awareness of future skills, while the future skills they identify shed a light on relevant competences for health professions. The resulting documents will be analysed applying Grounded Theory (Glaser & Strauss, 2009) to develop health competence profiles. As it turns out, competence profiles have a high overlap across various professions in the health sector, yet emphasis on specific competences differs largely between professions and several competences are specific to particular professions.

The paper clarifies terminology and underlying concepts, before section 3 gives an overview of the learning approach which serves two functions: collection of data on health future skills, and making future skills explicit for future health teachers. Section 4 presents and discusses some of the results of applying the concept. Section 5 provides a scientific underpinning of the teaching concept. Section 6 summarizes the paper and gives an outlook to future work.

## **2. Clarification of terms: Competences and Future Skills**

At present, there are hardly any systematic and methodologically sound studies on what future competences do exactly mean, especially since they may differ significantly depending on the field and region, e.g. between software professionals require and nurses or social workers (Sedelmaier & Landes, 2015).

The concept of competence as such has been used in social and educational sciences for more than 50 years, but is still very fuzzy and partly contradictory (Klieme & Hartig, 2007), thus

it is theory-relative (Erpenbeck & Rosenstiel, 2003). The starting point for discussions on the concept of competence in educational science is the triad of social, self, and subject competence introduced by Roth (1971). This triad is also reflected in Weinert's general, cross-cutting concept of key competences (2001). Similarly, Erpenbeck (2003) distinguishes four competence classes that can be broken down into a variety of sub-competences.

Various models agree that competences are a dispositional concept. They are tied to a person, are based on personal characteristics (Erpenbeck & Rosenstiel, 2003), and aim at self-organized action. Competences "are founded by knowledge, constituted by values and attitudes, dispositional as abilities, consolidated by experience, and realized on the basis of will or motives" (Maag Merki, 2009, p. 494). For Rhein and Kruse (2011, p. 80), the core theoretical idea is that "it is the specific inter-play of knowledge, skills, abilities, personal characteristics, experiences, and motivational structures {...} that constitute a competence, without it being possible to reduce it to its individual components, although the description of competences must always draw on these building blocks".

Competence is manifested in performance (Arnold, 2002, p. 31), which is interpreted situationally or subject-specifically in almost all concepts of competence (Klieme & Hartig, 2007). This suggests that action competence is not only person-specific, but also situation-specific and thus occupation-specific. Consequently, each occupational profile requires its own competence profile, including general generic, occupational generic, and subject-specific competences (cf. e.g. (Maag Merki, 2004)). Thus, competence profiles are not easily transferable to other job profiles due to their subject-specificity.

The term "future competences" is difficult since competences as such are oriented towards future challenges, without need for the word "future" to express this (Ehlers, 2020). Yet, all definitions agree that competences are occupation-specific and continue to gain importance. Future competences are often still unknown in detail, which is also true in healthcare.

### **3. Learning and Teaching Approach**

Our learning concept for student teachers integrates identifying and understanding future competences of health professionals in a self-reflexion task which aids both research questions: qualitative data on required future competences of health professionals and teachers are collected, while student teachers reflect on future skills and their integration in their own classes later on. This is accomplished as outlined subsequently.

#### **3.1. Intended learning outcomes**

The learning approach focusses on three intended learning outcomes: First, student teachers are aware of the importance of future skills. Second, student teachers are capable of recognizing future skills and, third, of developing ideas how to address future skills in their classes.

Furthermore, we collect data for deriving a competence profile for health professionals through qualitative research methods in three steps:

- a. As a prerequisite, an understanding needs to be gained of how career reality in health is changing and which competences will be required in future.
- b. How can we gain awareness at future teachers about the competences and the changing of the competences? How can we support student teachers to address these potentially changing future competences in their classes?
- c. In parallel, collected data are analysed by the instructor in order to derive a competence profile for health professionals and their teachers.

### **3.2. Learning Approach**

To that end, two exercises are used.

#### *Exercise A: Characterize everyday professional situations*

In order to introduce student teachers to the task, they are requested to describe everyday professional situations and a typical working day including current and future tasks. These descriptions should be profession-specific (e.g. for nursing, emergency medical services, or surgical technology). Results are shared within the course for mutual inspiration.

#### *Exercise B: Describe required (future) competences*

Based on these typical professional situations and tasks, students shall then derive competences that they currently need and will also need in the future for mastering the described professional situations well. Attention should be paid to both professional and multidisciplinary competences. It is important to develop “thick” descriptions and not just catchwords in order to gain a detailed understanding of the competences. Furthermore, students should focus on whether and how the required competences might change in the future. Students work individually on these competence descriptions and hand their results in to the instructor.

### **3.3. Competence Descriptions for Systematic Self-Reflection**

The instructor merges the resulting competence descriptions occupation-specifically using a qualitative research approach that follows grounded theory (Glaser & Strauss, 2009). The aim is to identify central competences, elaborate occupational specifics, and present them in comprehensible, in-depth competence profiles. These competence profiles are the basis for evaluating them in a competence assessment approach (CAT), which is intended to support students' self-reflection in a goal-oriented way (Sedelmaier & Landes, 2014).

In CAT, the superordinate subject-specific and interdisciplinary competences are arranged on three competence levels. Concrete partial competences are derived from each of these, which form the basis for a systematic and repeatable self-assessment. Furthermore, CAT can

also be used to draw conclusions about the success of a particular teaching-learning concept with regard to the achievement of the competence goals.

## 4. Results

This teaching approach has been implemented as a case study in an introductory course in pedagogy of a part-time bachelor program of vocational education in healthcare at SRH Wilhelm Loehe university. It trains future vocational teachers in healthcare. The case study resulted in 21 student documents specifying future skills in healthcare. 4 out of these 21 documents dealt with nursing-specific future skills, 4 with those for surgical assistants, 5 documents focused on the emergency medical services, and 8 took the perspective of healthcare teachers. Documents were analyzed following Grounded Theory (Glaser & Strauss, 2009) and coded with a total of 593 codes which were grouped into clusters (see fig. 1 and 2).

### 4.1. Competence Profiles in Health Professions

In addition to technical and functional competencies (Rauner, 2011), empathy as well as a structured approach and the ability to quickly grasp and link complex situations are of particular importance in the healthcare sector. Another core competence is the ability to deal with diverse stakeholders, such as multidisciplinary cooperation with other medical staff or patients, relatives, or police and fire departments, etc. (see fig. 1, in german). Of particular importance, especially for surgical assistants, is direct self-reflection and recognizing one's own limits, while for emergency paramedics communicative aspects and for nurses empathy are particular focal points.



Figure 1. Word Cloud of Future Skills for Health Professionals (in german).



To that end, a teaching concept was developed that largely builds on self-reflection of to-be teachers in healthcare. In particular by characterizing typical professional situations and deducing required (actual or future) competences for mastering these situations. A first implementation of the approach as a case study resulted in material from 21 students which was analysed using Grounded Theory, resulting in 593 detailed codes. Clustering the data from the 21 documents reveals competence profiles that have a large overlap in terms of common competences, yet with different emphasis across professions. At the same time, rising awareness with respect to future skills could be observed among student teachers.

By going through this learning concept, future health teachers get first ideas how to address future skills in their classes later on. They could learn from models and get methodological inspirations for their own classes. The learning approach reminded them of the importance of learning goals, their explicit discussion with learners and the function and effectivity of self-reflexion. These aspects are helpful for student teachers.

Next steps will include the collection of more data to consolidate the initial findings from the case study. Results will be compared to further competences profiles, e.g. from technical disciplines like Software Engineering. Some main differences in the competences profiles will be highlighted in order to (further) develop domain-specific learning approaches and subject matter didactics.

Then, the teaching concepts will be elaborated further in order to enable future teachers to recognise future competences and address them in their classroom. Here competence assessment is an important aspect. A common assessment approach is self-reflection, which is seen as a central aspect for learning (Henschel, 2019; Kauffeld, Reinecke, & Hennecke, 2009). Self-reflection is often implemented via learning diaries, but systematic, generalizable evaluation is rare. This is where CAT (Sedelmaier & Landes, 2014) provides a connecting bracket with its underlying competence profile. In addition, the detailed competence descriptions are used as a basis for competence self-assessment with CAT. For this purpose, the code categories are first used as concretizations in the competence model. From this, statements can be derived from the individual statements of the interviewees in the research documents, which enable a self-assessment of the students with regard to competence development. These statements are collected in a questionnaire which can be mirrored to intended learning outcomes of the course. The questionnaire is handed over to students to support self-reflexion with regard to specific health future skills.

## References

- Arnold, R. (2002). Von der Bildung zur Kompetenzentwicklung. *Literatur- Und Forschungsreport Weiterbildung*. (49), 26–38.

- Arnold, R. (2015). *Bildung nach Bologna! Die Anregungen der europäischen Hochschulreform*. Wiesbaden: Springer. <https://doi.org/10.1007/978-3-658-08978-8>
- Arnold, R., & Erpenbeck, J. (2014). *Wissen ist keine Kompetenz: Dialoge zur Kompetenzreifung*. Baltmannsweiler: Schneider.
- Erpenbeck, J., & Rosenstiel, L. v. (Eds.) (2003). *Handbuch Kompetenzmessung: Erkennen, verstehen und bewerten von Kompetenzen in der betrieblichen, pädagogischen und psychologischen Praxis*. Stuttgart: Schäffer-Poeschel.
- Glaser, B. G., & Strauss, A. L. (2009). *The Discovery of Grounded Theory: Strategies for Qualitative Research*. Chicago: Aldine Transaction.
- Henschel, L. (2019). Competence Assessment and Competence Reflection in Software Engineering Education. In *5th International Conference on Higher Education Advances (HEAd'19)*. Valencia: Universitat Politècnica València.
- Kauffeld, S., Reinecke, D., & Hennecke, M. (2009). Self-Assessment - ein Reflexionsansatz in der Ausbildung? In S. Kauffeld, S. Grote, & E. Frieling (Eds.), *Handbuch Kompetenzentwicklung* (pp. 388–408). Stuttgart: Schäffer-Poeschel.
- Klieme, E., & Hartig, J. (2007). Kompetenzkonzepte in den Sozialwissenschaften und im erziehungswissenschaftlichen Diskurs. *Zeitschrift f. Erziehungswissenschaft* (8), 11–29.
- Maag Merki, K. (2004). Überfachliche Kompetenzen als Ziele beruflicher Bildung im betrieblichen Alltag. *Zeitschrift Für Pädagogik*, 50(2), 202–222.
- Maag Merki, K. (2009). Kompetenz. In S. Andresen (Ed.), *Handwörterbuch Erziehungswissenschaft* (pp. 492–506). Weinheim: Beltz.
- Mager, R. F. (1992). *Preparing instructional objectives* (2nd ed.). London: Kogan Page.
- Rauner, F. (2011). *Messen beruflicher Kompetenzen*. Münster: Lit.
- Rhein, R., & Kruse, T. (2011). Kompetenzorientierte Studiengangsentwicklung an der Leibniz Universität Hannover. In S. Nickel (Ed.), *Der Bologna-Prozess aus Sicht der Hochschulforschung* (pp. 79–87). Gütersloh: CHE.
- Roth, H. (1971). *Entwicklung und Erziehung: Grundlagen einer Entwicklungspädagogik. Pädagogische Anthropologie: Vol. 2*. Hannover: Schroedel.
- Sedelmaier, Y., & Landes, D. (2014). A Multi-Perspective Framework for Evaluating Software Engineering Education by Assessing Students' Competencies. In *44th Frontiers in Education (FIE)*, 2065–2072.
- Sedelmaier, Y., & Landes, D. (2015). Swebos - The Software Engineering Body of Skills. *International Journal of Engineering Pedagogy*, 5(1), 12–19.
- Weinert, F. E. (2001). Vergleichende Leistungsmessung in Schulen - eine umstrittene Selbstverständlichkeit. In F. E. Weinert (Ed.), *Beltz-Pädagogik. Leistungsmessungen in Schulen* (pp. 17–31). Weinheim: Beltz.