Ontology-based Competence Management for Healthcare Training Planning: A Case Study

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Agenda

- Motivation
  - Städtisches Klinikum Karlsruhe
  - Current problems

- Concept

- Implementation

- Results and Lessons Learnt
1. Motivation

Städtisches Klinikum Karlsruhe
1. Motivation

- Hospital for „maximum care“ (Maximalversorgung)
  - 3,500 employees (among them 1,250 in nursery)
  - 1,531 beds
  - 21 clinics
  - 5 institutes

- Training and Consulting Center → BBZ
  - vocational training for healthcare professions
  - manager academy
  - professional training
    - further education: ward management, specialized nurses etc.
    - continuing training: conversation training, kinaesthetics etc.
1. Motivation

- Insufficient training needs elicitation
  - over/underestimation
  - missing offers

- Requirements for nurses are increasing
  - higher quality requirements (because of quality management)
  - higher pressure towards economic efficiency (introduction of the DRG system with fixed amount of money for case groups)

- At the same time:
  - reduced resources (both in terms of time and money) for training

- Thus:
  - more efficient human resource development needed
  - quality assurance in human resources development processes
1. Motivation

Current Shortcomings

- in **strategic human resource development**
  - no forward-looking competence building, e.g., for planned restructuring
  - no connection to operational level

- in **operational human resource development**
  - participation in training events is employee-driven or reactive to problems-at-hand

- in **strategic training planning**
  - open survey with low response rates do not allow conclusions about training needs

- in **operational training planning**
  - no overview of current employee competencies
  - no planned competency development
2. Concept
2. Concept: Overview
2. Concept

Concept: Levels

- hospital management
- Corporate Goals
  - normative
- nurse management
  - strategic
- ward management
  - operational
2. Concept

Operational Level

Competence Catalog

- Competency Diagnosis & Review
- Actual Competencies
- Gap Analysis
- Competency Gaps
- Development measures
- Participation in Measures
- Assessment of Learning Effects
- Job Performance

ward management operational
2. Concept

Strategic Training Planning

- Nurse management
- Ward management

- Design of new training offers (external/internal)
- Estimated capacity (no. of training events)
- Quantified training needs
- Gap

- Events with participation
- Training program
- Scheduling of training participation
- Scheduling of Events

- New training offers with estimated capacity needs
- Remaining competencies
- Comparison with current training offers

- automatically identified missing competencies of individual employees (after negotiation with employee interests)
- desired competency acquisition of individual employees

- New Competencies in the Competency Catalog
- coordination
3. Implementation
Modelling Competencies

- Competency Catalog is the focal point
  - controlled vocabulary („ontology“)
  - shared for all wards

- Development process
  - iteratively
  - interviews, workshops
  - moderated by a modelling expert

- Discussions focussed on competency catalog were more constructive
3. Implementation

Modelling Competencies (2)

- Structure
  - poly hierarchy (mono hierarchy not sufficient!)
  - mainly because of classification along multiple criteria
  - further semantic relations currently not necessary

- Problem: insufficient tool support
  - don’t support poly hierarchies
  - bad usability
  - Mindmap approach
    - but awkward poly-hierarchy support
3. Implementation

Competence Catalog

Führungskompetenz

IT-Kompetenz

Ärztlicher Dienst

Technik

Verwaltung

Hauswirtschaft

Kompetenzkatalog

Fachkompetenz

Pflege

Allgemein
- Allgemeine Chirurgie
- Gefäßchirurgie
- Unfallchirurgie
- Anästhesie
- Augenklinik
- Innere Medizin
- Intensivmedizin
- Kinderkrankenpflege
- Neonatologie
- Gynäkologie
- OP Gynäkologie
- OP Mund-Kiefer-Gesicht
- OP Haut
- Hautklinik
- Strahlenklinik
- Patientenbegleitservice
- Psychiatrie
- Kinder- und Jugendpsychiatrie

Sozialkompetenz

Medizintechnische Kompetenz

Rechtliche Grundlagen

Organisationskenntnisse
3. Implementation

Requirement Profiles

- Defines what an employee in a certain area must know/ be able to do
  - Mandatory: qualifications, legally required, critical competencies
  - Nice-to-have: mid-term development goals
    - priority were not necessary

- Cascading profiles are helpful
  - general requirements for all nurses
  - special requirements for nurses on ward XY

- Additional ward-level constraints
  - „at least 50% of all employees should have competency XY“
4. Experiences
Competency development is often misunderstood as „participation in training events“
- i.e. requirements profile = check list
- intensive interactive workshops required to establish and internalize thinking in competencies

Communicating development-oriented requirements profiles problematic
- „competency gap“ misinterpreted as „being not qualified“
- instead of potential for competency development
4. Experiences

- **Privacy**
  - Qualification and competency data is sensitive data
  - Acceptance by employees critical
    - it has to be made clear for which purpose data is collected (and for which purpose it is not)

- **Participation**
  - Competence management is subject to worker’s council rights
  - Agreement beneficial, but this should be open for future developments
  - Communication in all phases required
Conclusions

- Competence management is feasible for organizing human resource development in the nursery domain.

- Defining processes and roles both on the operational and strategic level is essential for sustainability.

- Bootstrapping phase with modeling experts needed:
  - establish thinking in competencies
  - guide the competency identification and modeling
Slides, more information & contact

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