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"FOSTERING SOCIALLY DISTANCED AND INCLUSIVE ON CAMPUS EDUCATION IN ARMENIAN HEIS"

KUNGLIGA TEKNISKA HOEGSKOLAN (KTH)

DIGITAL COMPETENCE FRAMEWORK BEST PRACTICE REPORT

COUNTRY CASE – SWEDEN

STOCKHOLM 2025

Contents

DIGITAL COMPETENCE FRAMEWORK (DCF) IN HIGHER EDUCATION

(Analysis of Digital Competences in Higher Education in Sweden)

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General remarks

There is no Digital Competency Framework in Sweden as such.

Swedish HEIs carry out systematic work on competence development of teachers and it is structured and regulated on the institutional level.

In connection to the COVID pandemic, a pilot project was carried out by one of the universities (Mälardalen Högskolan) in which the EU Digital Competence Framework for Educators (DigCompEdu) was partially used. Information about this pilot project and more details about Pedagogical Development Cycle (PDC) can be found at the following link (some materials and reports are in English):

https://www.mdu.se/om-mdu/organisation/hogskolepedagogik/undervisning/pdk-cykel

Even though the project is considered as a successful one, its goal was mainly to elaborate approaches to structured retraining of the university staff through Pedagogical Development Cycle and DCF played a minor role. Structured retraining and development of the academic staff is a part of quality work to be carried out by the universities according to national regulations – more information will be provided in this report.

Introduction

Sweden has a long history of public funding of education. This approach applies to all level of education – from pre-school education to higher education. The concept "money follow the student" was implemented very early and it is applied throughout the educational system. Basically, all actors, public or private, who provide educational services from pre-schools to universities, according to the national legislation, are not allowed to collect fees from private persons. On the pre-school and school levels, there are private actors that provide educational services. The government on the base of the number of students/pupils who attend the studies reimburses the providers of the educational services.

In case of higher education, majority of the universities (about 40) have a status of public agencies and receive funding from the government for their activities related to education. The funding comes in 2 parts: first part on the base of admitted students and the second part on the base of the amount of credits produced by these students. Every

year, as a result of negotiations with the government, the number of students to be admitted by the universities is decided and this is the responsibility of the universities to decide about number of places to be allocated to particular programs. However, the Government can decide about some dedicated funding to specific study programs and respective number of the places as well as institutions that shall carry out these studies.

Until 2011, this approach applied to all students, including international students. From the academic year 2011/2012, the tuition fees were introduced for the students from outside the European Union and Swedish universities had to reorganize their work in order to attract, select, collect tuition fees and educate students from outside the European Union. It shall be noted, that main part of education on Bachelor level is provided in Swedish while education on Master level and above is carried out in English. Recently, some universities in Sweden started to offer Bachelor programs in English (in this way opening them to program-seeking international students), though the quantity of such programs as well as the number of students enrolled on them is rather limited. Majority of such programs are offered in humanities and social sciences, much less in STEM subjects. KTH has only one program in English on Bachelor level that started as a pilot project and currently there are no plans in introducing new Bachelor programs in English.

Section 1: Pre-university education in Sweden

On national level the leading role in governing of the pre-university sector belongs to Skolverket – Swedish National Agency for Education.

The Swedish National Agency for Education is an administrative authority responsible for governing and supporting Swedish preschool, school and adult education. The Agency works to ensure that all children and students receive an education that is equal and of good quality in a safe environment.

The Swedish National Agency for Education's work is based on the government's instructions to the authority and the assignments received from the government, including through the annual appropriation letter. This is how our work looks like in brief:

- Sets a framework for how education should be conducted and assessed. For example, by developing syllabi, subject plans, assessment criteria, tests, regulations and general advice.
- Conducts in-depth studies, makes analyses and produces statistics on preschool and school. We are also responsible for Sweden's participation in international studies.
- Supports development and improvement work in preschool and school.
- Offers continuing education for preschool and school staff.
- Issues credentials for teachers and preschool teachers.
- Administers and distributes government grants to activities that are eligible to apply for grants.

The Agency implements several programs for competence development and retraining of teachers on various levels. With the help of these initiatives in the school development programs, principals, preschools and schools can develop teaching and pedagogical

activities. The initiatives will contribute to creating conditions for children's development and learning and improved knowledge outcomes for students. One of the programs with highest priority is Digitalization. In framework of this program a range of competence development instruments has been developed and are offered to the teachers.

Programming: The online course provides the basics of some programming languages. Participants gain knowledge about creating, reading, debugging, testing and improving program code. The course can be completed independently or together with colleagues. Target group: primarily teachers of mathematics or technology in grades 4-9 and upper secondary school and equivalent school types in adult education.

Identity, gender equality and digitalization in preschool: The web course supports the implementation of the preschool curriculum (2018) and contributes to the development of preschool teaching. It provides support in the work on identity, gender equality and digitalization. Target group: pedagogical staff in preschool, the head of preschool has their own part of the course.

To lead digitalization: Skill development for school leaders and principals through peer learning with material on the Learning Portal. Gain increased knowledge and understanding of how to successfully and strategically lead digitalization of the organization. Target group: school leaders and principals.

About Programming: The web course provides greater knowledge of how programming and computing affect society and how it can be a tool in teaching. It can be completed independently or together with colleagues. Target group: everyone who works in schools, preschools and adult education.

Teaching and learning with digital tools: Competence development through peer learning with support from tutors and materials on the Learning Portal. For example, the modules Digital storytelling, Safe use of the internet and Leading and learning in technology-intensive classrooms are available. Target group: teachers and school librarians.

The Agency also offers a range of courses for teachers and staff of the pre-school and school sectors including:

- Program: assessment and grading
- Program: knowledge, values and health-promoting school development
- Program: learning of newly arrived and multilingual children and students
- Program: school and working life and further studies
- Program: governance and management
- Program: systematic quality work

Courses from the programs listed above usually are included into competence development plans at the pre-school and school institutions in connection to the career development of the staff. Besides these courses, the institutions active in the school education have a possibility to apply for national funding for the development initiatives. The funding is channeled through the agencies on competitive basis.

While Skolverket is the main agency acting in the area of school education on national level, there are 4 other governmental agencies which are responsible for specific areas:

- Agency carrying out control on legal compliance and review of applications to start new schools (Skolinspektionen)

- Agency for special pedagogy – the agency responsible for all methodology and instruments for students with special needs

- Skolforskninginstitutet – agency coordinating research in school pedagogy and providing grants for research projects in pedagogy. -

- Sameskolstyrelsen – the agency coordinating the activities for school education of Saami people.

Section 2: Higher education in Sweden

Comparing to the higher education systems of many other countries, the Swedish higher education system is relatively flexible.

Educational offerings are largely course-based and most HEIs offer freestanding courses and programmes as distance courses, some of which can be completely online. This offers excellent opportunities for lifelong learning. Traditionally, Swedish higher education does not just involve educating youth after completing secondary education. It also includes continuing development for professionals and it is common to return to higher education after previous studies. HEIs also provide third-cycle education and conduct most of the publicly funded research in Sweden. This means that Swedish higher education is relatively heavily focused on research. Measured in terms of monetary value, more than half of the activities at HEIs consists of research and third-cycle education. There are 2 main legal documents which regulate higher education in Sweden – Higher Education Act and Higher Education Ordinance. These documents establish operational framework and provide broad autonomy for the Swedish universities.

Following Swedish tradition, these are the professional agencies, which operate in the sector of higher education. After the most recent reform, there are two main national agencies which operate in the area of higher education: UHR – Swedish Council for Higher Education and UKÄ - Swedish Higher Education Authority. While the first one, UHR, is tasked with assisting Sweden's higher education institutions with digitalization and service development within study administration, the second one is responsible for official statistics and monitoring of compliance with laws and regulations among universities and university colleges and evaluates quality of higher education and research.

Other important stakeholders in the higher education sector:

SUNET (Swedish University Computer Network) is tasked with meeting the needs of data communication at Swedish universities and other public organizations with links to research or higher education and culture. Sunet also delivers identity infrastructure, extended IT security services and optional additional services to these organizations and participates in a number of projects and collaborations with other authorities within the framework of identity management and digitalization in general.

SUNET was formed in the early 1980s as a research and development project. A decade later, Sunet paved the way for the establishment of the Internet in Sweden. Today, SUNET is part of the Swedish Research Council. All universities and colleges are affiliated with

SUNET through regulatory letters and instructions. The operations are primarily financed by the affiliated organizations, but SUNET also receives funding from the Ministry of Education via the Swedish Research Council. SUNET's committee has a mandate to make decisions on important issues relating to the development of the operations. The Swedish Research Council is responsible for ensuring that Sunet is administered and operated in accordance with the guidelines established by the government.

Sunet's network, Sunet CD, gives Swedish universities and other public organizations involved in research or higher education access to the Internet and the global research networks. The network is nationwide, stable, fast and reliable.

Sunet's network offers standard routed network access. It is also possible to get a dedicated connection directly between two points, via a non-routed connection. In addition, we can connect two computer networks so that they function as a common one, for example in collaborations between universities. Similar dedicated connections with research networks in other countries can often be arranged in collaboration with other research networks.

A basic requirement for taking part in Sunet's network is that the activity is related to research or higher education. Sweden's universities and colleges are connected to the network through our regulatory letter. Other universities and other public organizations with a connection to research or higher education can sign an agreement with Sunet to join.

SUHF - Association of Swedish Higher Education Institutions

The Association of Swedish Higher Education Institutions was founded in 1995 as an organisation for institutional cooperation on a voluntary basis. 38 universities and university colleges in Sweden are members (16 universities, 18 university colleges and 4 university art colleges).

The Association aims at promoting sector interests to external actors and at strengthening internal cooperation. The Association was set up by the universities and university colleges themselves, the initiative being taken by the rectors concerned. It was as a merger between two existing rectors' conferences. There are no official duties or responsibilities, since the Association is not regulated by law. The Association has no legal status, although in practice it is acknowledged as the representative of universities and university colleges as a sector.

The Association is governed by statutes adopted in 1995 with later amendments. The Association aims at promoting sector interests to external actors and at strengthening internal cooperation. SUHF provides an arena for exchange of views and cooperation among its member institutions and safeguard their interests.

No public authorities control or are members/observers of the Association, because it would be quite contrary to the ideas in which the Association was established. The Association have good working relationships with public authorities, for example The National Agency for Higher Education, Research Councils and other funding bodies. The Presidium of the Association meets the Secretary of State regularly for informal discussions. Sometimes governmental representatives (Minister or Secretary of State) are invited for special presentation at Assembly meetings.

Eligible for membership are universities and university colleges that have the right to award degrees according to the Higher Education Ordinance (issued by the government). Memberships are decided by the General Assembly. The statutes stipulate that at the Assembly meetings each member institution is represented by its rector and at most one more representative. The latter one shall be an administrator. There are no rules to maximise the period during which an institutional head can represent his/her university or university college at Association meetings or as a member of the Board. The term of office for a rector is six years, with a possibility for re-election for another three year period.

Many of the activities in the Association are run by different kinds of permanent or more temporary working groups dealing with various issues of importance to the HE-sector. The Association is an arena for discussions and decisions in the field of higher education. We address issues of principle nature as well as more concrete practical handling ones. Our other working methods are conferences, reports, seminars and direct contacts with Parliament, Government as well as government commissions and agencies.

Examples of current activities:

- Funding of undergraduate teaching and learning

- Research policies, especially funding issues

- Relations to industry and commerce

- Institutional autonomy and the legal position of higher education institutions

- Gender problems in recruiting academic top leaders

- Long-term development of auditing within the higher education sector

- Nordic co-operation

- European co-operation, Bologna and establishment of ERC

- Open Access

- Financing of the Association

The Association is financed by fees paid by the member institutions. The fees are based on the turn-over figures from each member institution. The budget is 7 600 000 SEK (approx. 700 000 euro) mainly to finance the office of the Association. The Association is a member of the Nordic University Association (NUS), the European University Association (EUA) and the International Association of Universities (IAU) and EOSC-A.

LADOK Consortium: The Ladok Consortium comprises 41 Swedish higher education institutions.

Within the Ladok Consortium, technical staff from the unit for IT support and system development (ITS) at Umeå University collaborate, along with hired experts from other universities within the Consortium. The Ladok Consortium is responsible for the development and operation of Ladok, as well as providing support to the universites. The system is developed for all universities collectively, but each university owns and is responsible for the content within its own registry.

Digitalization in higher education has started in 1980th with the launch of the project SUNET. When it comes to digital environment at the institutions, during recent years the focus was on providing stable, secure and safe infrastructure for all universities.

In turn, Swedish universities and university colleges are free develop their own institutional environment on the base of this infrastructure.

There is no institutional accreditation in Sweden, Swedish Higher Education Authority (UKÄ) carries out 4 types of evaluations to ensure quality of education and research carries out at the universities. Three of them

- Institutional reviews of the HEIs' quality assurance processes

- Programme evaluations

- Appraisal of applications for degree-awarding powers

They are regular and carried out in 6-year cycle. The fourth one – thematic evaluations – is carried out upon request of the government or self-initiated by the Agency.

UKÄ has developed clear guidelines for the institutions on implementation of the evaluation with the well-formulated criteria, these guidelines are available in Swedish and English. One of the criteria for institutional review is formulated in following way:

Competence supply and professional development:

The HEI works systematically to ensure a long-term competence supply to satisfy the needs of education and enable renewal. The HEI works systematically to create favourable conditions for the professional development of teaching staff.

As a response on the requirements from the Agency, Swedish HEIs under umbrella of SUHF has developed Recommendations on Staff Development in Higher-Education Pedagogy. This is rather short and straightforward documents, which provides main aspects to be taken to the account.

Section 3: Recommendation for higher education pedagogical development

SUHF's member institutions support the following principles and commitments linked to the promotion of higher education pedagogical development:

1. The institution's higher education pedagogical work is based on scientific and/or artistic foundations as well as proven experience, and relates to relevant and current higher education pedagogical research.

2. The institution's higher education pedagogical work supports the work with student-centered teaching.

3. The institution works to clarify responsibility for higher education pedagogical development within the institution.

4. The institution is responsible for ensuring that competence and support in higher education pedagogical is made available to all parts of the operation and ensures the institution's need for competence development.

5. The institution has a physical and digital infrastructure that facilitates the institution's ability to offer study and learning environments that promote innovative higher education pedagogical thinking and stimulate social interaction.

6. The institution has an incentive structure that stimulates employees to develop their competences and work in higher education teaching.

7. The institution monitors the world and stimulates the exchange of knowledge and experience in higher education teaching with external actors.

8. The institution conducts internal quality work that systematically follows up on higher education teaching development.

The second document "Guidance for implementing the SUHF Recommendation for the development of higher education teaching" provides more details on how the recommendations shall be implemented.

It shall be stressed, that both documents are recommendations and the HEIs are free to decide whether they follow them, to which extent and the methodology they apply for the implementation.

In 2021, Swedish government decided to allocate dedicated funding to the development of higher education pedagogy at the institutional level. This funding was channeled through UHR on competitive basis (from 19 applications 8 projects were funded).

In 2022 UHR carried out a study on higher education pedagogical development at Swedish HEI and produced the report: "Compilation and analysis of survey responses within the UHR project Higher Education Lift". The report clearly shows that Swedish institutions pay attention to the pedagogical developments of staff and, in particular, to development of the competences in the use of digital tools and practices in the learning process. Majority of the institutions have a dedicated unit responsible for pedagogical development of staff and that the university leadership is directly involved in competence development process.

Section 4: KTH and pedagogical development

KTH is among the leading universities in integrating pedagogical development of teachers in career progress of academic staff. The dedicated unit for pedagogical development was established already in mid-2000s and has grown significantly since that time. Currently the Department of Learning in Engineering Sciences consists of 4 divisions and carries out education and research in the area of higher education pedagogy:

- Digital Learning
- Language and Communication
- Learning in STEM
- The House of Science

The research areas of the Department are carried out in following areas:

- Research on digital learning
- HEOS – Higher education organisational studies
- Engineering education in society

- Global competence
- Learning in technology and science education

Currently KTH practices worldwide recruitment of the academic staff. Majority of the new academic positions are openly announced and selection is carried out on the base of clearly identified criteria for academic excellence. One of the requirements for the academic career progress of KTH staff is continuous pedagogical development, in particular in order to progress in the tenure track, a person shall collect 15 ECTS of higher-education pedagogy courses. These courses can be collected through courses at KTH, other universities in Sweden or can be partially recognized from other institutions. **One of the courses (LH231V Teaching and Learning in Higher Education 7.5 credits) is compulsory as it provides main principles for teaching, learning and evaluation of the student performance at KTH.**

There is a range of advanced courses offered for the academic staff with the course LH238V Digital Learning in Higher Education 4.5 credits being provided on regular basis.

Content and learning outcomes:

Course contents

Main themes for the course are:

- Basic theoretical perspectives on learning and teaching in digital environments.
- Design and organisation of web-based courses.
- Teaching and learning activities using digital tools.
- Assessment and examination using digital tools.
- Web-based types of instruction and the role of the teacher in a digital education environment.

Intended learning outcomes

The course intends to contribute to university teachers' development of proficiencies and abilities to analyse, plan, create, carry out and evaluate learning and teaching in a digital education environment.

After passing the course, the participant should be able to:

- Describe and apply central concepts, theories and methods in digital learning in relation to their own teaching practices.
- Create learning activities and assignments for assessment with digital tools.
- Reflect on how digitalisation influence the preconditions for one's own teaching, the students' learning and one's own role as a teacher in a short and long perspective.

It was decided very early, in mid 2000s that the learning environment of KTH shall be based on Learning Management System and that LMS shall be a single system for management of all course offerings and communicating with the students. Initially, a nationally developed product was used. In the beginning of 2010s it became obvious that KTH requires more powerful product and the decision about transition to more modern LMS was taken by the university management. Finally, the product Canvas was selected and deployed at KTH. After a transition period of about 6 months when 2 system were run in parallel, the transition to Canvas was completed and the old system was phased out.

Canvas is a modern LMS, which provides plenty of possibilities for teachers to carry implement their respective courses, integrate third-party digital tools, multimedia solutions and multi-channel communication with the students.

During transition to the new system, extensive training of the academic staff was carried out. Currently, there is a set of courses offered through Canvas which are recommended for all staff at KTH:

Canvas@KTH – Introductory course (compulsory for new academic staff)

Digital@KTH – Create and publish content (compulsory for new academic staff)

GDPR@KTH – Recommended for all staff

Sustainable Development@KTH – Recommended for all staff

Besides the courses listed above, the Department of Learning provides extensive materials for pedagogical development of teachers through KTH intranet. The materials are provided both in Swedish and English and most of them are freely accessible from KTH website:

https://intra.kth.se/en/utbildning/utveckling-och-hogskolepedagogik/hogskolepedagogisk-utveckling-1.826123

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