# LINA
## LEARNING IN AND FOR THE NEW WORKING LIFE



# SELF-EVALUATION REPORT

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# 1 Introduction

This self-evaluation of the vital research environment "Learning in and for the new working life" (LINA) is based on information collected from LINA's strategic documents such as annual reports regarding the research environment's development and evaluation (Verksamhetsplan AVP och Verksamhetsutvärdering AVU) from 2016 to 2021. In addition, information such as data regarding budget, bibliometrics and other statistics have been collected via controllers, librarians, and other key components in LINAS infrastructure.

The collected material provided in this evaluation is presented in two parts:

*Part A – Strategic information about LINA*

*Part B – Quantitative data describing LINA*

These two parts will form the basis for the evaluation. An external peer review panel will read and comment on the material, participate in digital site visits (if they wish to) and conduct strategic interviews to get a comprehensive view of conditions, activities, and achievements within the research environment.

The external reviewers will state their conclusions and recommendations in a external assessment report consisting of the following headlines:

*General assessment*

*1. Research environment and infrastructure*

*2. Quality of research*

*3. Productivity – research results and bibliometric data*

*4. Networks and collaborations*

*Recommendations for future WIL research*

*Other issues*

A final ARC 2022 report will be produced from this self-evaluation and the external assessment report, with the purpose to present the quality of the scientific activities, as well as collaboration with the surrounding society and other academic partners, in the vital research environment LINA. Since LINA is going to be discontinued on the 31st of December 2022, this evaluation can also be seen as a final evaluation of the research environment.

# 2  General overview

*Research organisation at University West*

At University West, knowledge in collaboration is the starting point and basic idea in the university's vision and for the entire university's activities. This means that the university identifies needs, takes a stand, takes initiatives, and drives development together with partners from the surrounding society. By focusing on knowledge production and its dissemination to more people, the university takes the role of society seriously and constantly strives to broaden the recruitment base and reach out. What makes the university unique is the profile of Work Integrated Learning (WIL), stating that knowledge and development is created in the meeting between academia and the outside world. For many years, since 2002 University West has had a special assignment from the government to develop WIL nationally. This funding has been assigned to LINA and in some years been divided among the vital environments. The assignment has had a strong value in promoting WIL within the university and nationally. WIL has developed, from initially focusing on pedagogical development linked to educational activities, to now include more strategic collaboration with the surrounding society, research, and PhD education in WIL. Also, from 2019 there is a process of WIL certification of all our programmes (this is not going to be more elaborated on in this evaluation).

University West has chosen to profile research into three vital research environments: Learning in and for the new working life (LINA) Child and Adolescent Science (BUV) and Production Technology West (PTV). In these research environments, researchers from different disciplines and institutions have collaborated. Common to the three vital research environments and to Primus is that they should involve several scientific disciplines and have a focus on digitalisation in society.

From 2023, the University has decided to re-organise from vital research environments to complete academic environments, resulting in one in WIL and one in production technology (both in which we have the rights to examine on PhD level).

To deepen the university profile based on its areas of strength, University West applied and was appointed to become a KK environment in 2017. The KK environment "Primus" is a research initiative that combines Production Technology and WIL, one of its core areas is Industrial Work Integrated Learning (I-WIL), that has belonged to LINA and from 2023 will belong to

Primus or the School of Business, Economic and IT (where LINA and I-WIL is financially placed right now).

*The vital research environment - LINA*

In conjunction with the reorganisation LINA will end its research activities in the organisation within a vital environment**, but** the phenomenon, research question, partners within national and international context will continue in new formations. LINA is framed by a common focus on research in the field of WIL. The WIL area can somewhat simply be said to consist of three interplaying knowledge interests. These are: (i) The conditions for learning, skills, and business development in a changing working life, (ii) Models and methods for WIL as a pedagogical philosophy in higher education and (iii) WIL in relation to sustainable societal development. As the LINA environment's knowledge interests have a strong relationship with University West's overall business profile, it is natural that the research environment includes researchers and employees from all over the university. LINA currently runs projects with participation from all of university's four departments as well as the university's administration and library.

Since 2007 LINA has focused on research into the conditions for learning and knowledge development in work life. From the decision to grant University West to issue examine in postgraduate education (in 2011) in WIL. LINA constitutes the most important scientific context for the postgraduate students in this area. LINA emphasises the importance of formulating the aims and issues in the projects in close dialogue with the actors where the research is conducted. The projects' research design is encouraged to be oriented towards societal development and the environment prioritises resources to act quickly and responsively on input and invites from the outside world. The environment has also focused on establishing and developing contacts with other national and international research environments that are leaders in WIL research. An important strength in a multidisciplinary research area such as WIL, is the subject-integrated knowledge production that is made possible in the void between traditional subject boundaries and disciplines.

In the year of 2020, the world experienced the start of the Covid-19 pandemic. In the emergent situation the management of LINA decided to make a full turn-over from almost having everything in a physical form, to develop models for having experience-based webinar online. Instead of giving less opportunities to meet we geared up (approximately 30 activities during the year including one international conference, VILÄR), with numbers of at least 20

participants up to 90 on one single occasion. We also asked our well profiled guest professors/affiliated professors to contribute to have a good line-up.

In 2021, LINA launched the Centre for Activity Theory (CAT) that stemmed from a close collaboration with guest professors Yrjö Engeström and Anna-Lisa Sannino and the work with a recurrent summer school for PhD students (and two years on master level). These courses have a high application rate and the demand for competence-based courses for those who are active researchers remains high. Another fruitful collaboration has been with affiliated professor Stephen Billett, who has given webinars, lectures, workshops, keynotes and being a conversational partner for the vice chancellor group.

Over the years, collaboration with the University of the Western Cape (UWC) and South Africa has evolved, now we are giving a candidate programme in international political science together, we have PhD students enrolled and employed guest professor Henri Jacobs. Even though we have been a vital research area, students from bachelor/master have always been welcomed to the webinars/conferences arranged by LINA. LINA members who have been active from the start approximately 25, have grown to be approximately 75 researchers and we have 30 (out of 50) PhD students enrolled and active today.

At University West there are three prioritised strategic areas: *Digitalisation, internationalisation, and inclusion.* These are supported by and embedded within LINA. The prioritised area of digitalisation has been funded and supported by LINA in terms of research initiatives regarding the implications of digitalisation within higher education, schools, healthcare, industry as well as integration and inclusion related work. With internationalisation as a focus, LINA has consistently worked to strengthen collaboration with existing international partners (for more information see appendix A) and expanding its strategic network, with a special focus on WIL through the recruitment of international guest professors and associate professors. Other key initiatives include participation in strategically important international conferences in the WIL area and recruitment of third-party PhD students from international partner universities.

All LINA's activities, seminars and lectures are essentially open and inclusive to university's staff, students and partners in the surrounding community. The composition of LINA regarding gender is evenly distributed in the management, the senior researchers and PhD students. LINA's management team consists of business leaders (female), deputy business leaders (female) and five scientific leaders (two females, three males). Diversity regarding age, gender

and ethnicity are also factors that have been considered when allocating LINA funds, when recruiting and in collaboration with the surrounding society.

*Sustainable development*

The research results and working methods within LINA's prioritised research areas are expected to contribute to LINA's overall research and education being conducted in a sustainable manner. This means for instance that methods for all forms of collaboration have been both in physical meetings as well as digital (reduced travel) and that LINA fundings for networking and conference travel have been distributed based on criteria in which scientific values are weighed against the impact on the environment (carbon footprint). Furthermore, LINA has ensured that there is a focus on research that addresses themes and issues relevant the 2030 Agenda for Sustainable Development. Several goals, such as goal 3 Good Health and Well-being, Quality Education (4), Decent Working Conditions and Economic Growth (8), Sustainable Cities and Communities (11) and Responsible Consumption and Production (12), have clear links to topics that are central to research with a focus on WIL in LINA. Another motive underlying this focus is that many of the major social challenges is likely to be expressed in these areas post-pandemic. As such, LINA with its interdisciplinary and eclectic composition has viewed itself well positioned to address the multifaceted and complex issues addressed within the Agenda 2030.

## 2.1   LINA vision

LINA's vision is: "*LINA is established as the nationally leading and internationally recognised research environment in work integrated learning. Through multidisciplinary and practice-oriented research, we contribute to understanding, supporting and developing work integrated learning in a changing working life.*"

Through the vision LINA supports the overarching vision of University West; *"We act and work together with society to create a more sustainable world. Together with a wide range of partners we create knowledge and strive to make it more accessible"*.

As a vital research environment at University West, LINA has primarily been characterised by:

- **Social relevance** – LINA emphasises that research should address issues and challenges of high relevance for actors in the surrounding society.

- **Co-production** – The research is planned and carried out in close collaboration with actors around the world. Emphasis is placed on the importance of formulating research questions in close dialogue with the actors concerned.

- **Societal impact** – Most of the environment's projects have an action-oriented dimension and thus have a stated ambition to contribute to change and sustainable development.

- **Multidisciplinary** – Research that emphasises relevance, co-production and societal impact formulates research questions that are inherently complex. It is therefore a consequence that research should shed light on the problems from several social science, technical and humanistic perspectives.

- **All sectors of society** – LINA's research on WIL includes projects in and between a wide range of sectors in the surrounding society (regional, national and international).

## 2.2   LINA research areas - an overview

As in all complex organisations, real life challenges and emerging trends knocks on the door. LINA has throughout the years tried to be responsive and innovative in answering to the needs of the local and regional challenges in both businesses, NGOs, industries, and municipalities. This means that the organisation of research within LINA has changed over the years.

The research conducted in LINA has been organised in different research areas. From 2016 to 2019 there were three different research areas:

- Challenges in welfare
- IT, healthcare, and health
- Industrial Work Integrated Learning

In 2020 a reorganisation was done, resulting in the following research areas:

- Work Integrated Learning as an educational design
- Digitalised education
- Competences within welfare
- IT, healthcare, and learning
- Industrial Work Integrated Learning

### 2.2.1 Work Integrated Learning as an educational design

WIL as an educational design can be studied from several different perspectives such as:

- *An epistemological starting point focusing on the perspectives that underly the chosen teaching method*
- *Teaching methods corresponding to the goals that are expected to be achieved*
- *Actors focusing on the learning for whom the research project is designed*

WIL as an educational design is thus about a larger target group than just students within the academy who study full-time on campus. As in all teaching activities, the didactic questions should be asked, what, how and why (with additions when and for whom) the teaching should be planned, implemented, and evaluated.

LINA has strived to develop forms and scientific methodologies for practice-based research. The development has above all had a focus on creating and developing a scientific methodology which, in addition to providing the best possible answers to research questions/knowledge interests, also promotes both research and teaching activities outside academia and creates added value and as much societal impact as possible in the practice/business. In addition, the research area contains research regarding WIL as a pedagogical idea and form, where the theory and practice relationship can be understood and used in planning, implementation and evaluation of teaching.

As an example, in 2020, a LINA PhD student defended a dissertation that had a problematising approach and explored understanding and ascertaining the relationship between work and learning. Research questions that were formulated was: is the WIL concept dualistic and how can it be understood from a historical critical perspective. In addition, a new PhD was admitted, funded by LINA, that investigated the research area of social interactivity in a digitalised teaching context. In 2021, LINA financed an additional PhD project, focusing on the significance of rapidly occurring changes (for example, the pandemic) in relation to teachers' professional role and identity development over time.

As the leading university in Sweden in WIL, LINA has strived to integrate WIL in both teaching and research. It was identified that this was mainly done in form and is still seen as a challenge (i.e., learning goals) to integrate it in content. According to University West´s strategic ambition to create a complete research environment, this issue has been central. The goal has been for

teaching and research to be integrated and organised seamlessly as a prerequisite for implementing this ambition.

Through continued participation in conferences/organisations such as VILÄR, WACE, ECER and Desrist[1] and many more, state of the art research around WIL as a theory and method (design) have been spread both nationally and internationally. LINA has organised the annual VILÄR conference, where WIL as a pedagogical philosophy/design and method has a central role. In addition, organising an international summer school (activity theory) at PhD student and senior level with admission of students from all over the world is strategically important, this collaboration has been developed through workshops with leading researchers from the UK, Australia, USA and Finland.

### 2.2.2  Digitalised education

This research area comprises research concerning the consequences of school digitalisation throughout the educational system from preschool to higher education. The research has focused on several key themes and phenomena such as the introduction of programming in schools, leadership and governance, digital tools and infrastructures, didactic challenges and learning analytics. Research projects have been conducted within strong national networks (GRADE and UpGRADE[2]) and in collaboration with international partners in Norway, Canada, South Africa, the United Kingdom, Denmark and Finland. The National Agency for Education and the Institute of Business Administration (FEI) have been important partner organisations.

LINA has had the intention to intensify research and development linked to the university's role in relation to lifelong learning and skills development of professionals. Ongoing projects with this theme include the training of doctors, nurses, engineers, teachers and IT specialists. An important ambition is that the research results can be translated into the development of the university's professionally oriented educational programs

In 2019 an assistant lectureship, funded by the Knowledge Foundation, was initiated. The project focused on how IT in general and virtual reality, can be used for skill development of professionals. Collaboration partners include State Railways, which trains all their staff (train drivers, train hosts, etc.) in handling complex situations that may occur in the profession. In

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[1] VILÄR – Work Integrated Learning. WACE - World Association of Cooperative Education. ECER (now EERA) – European Educational Research Association. Desrist- Design Science Research in Information Systems and Technology
[2] GRADE – Research environment and PhD school in digital technologies in school. UpGRADE – PhD progamme in the digitalisation in school (9 universities involved)

addition, a feasibility study aimed at understanding, creating, and designing for flexible learning has been completed and a pedagogical test bed for universities, providers of vocational education and training and at learning centres was developed. By designing for a new hybrid learning and addressing a specific target group, the project aimed to understand the complex processes that take place in a digital (mostly in any case) teaching situation.

### 2.2.3 Competences within welfare

This research area was called "Challenges within welfare" until 2020 where the name was changed to "Competencies within welfare". From 2016 this theme has included the "Welfare Workshop", an arena for the development of collaboration, where actors from the surrounding society, students, teachers, and researchers meet to discuss, reflect and talk in order to thereby learn from and with each other. The concept is based on co-production of knowledge where all parties jointly contribute to each other's development.

LINA work across sectoral and interdisciplinary boundaries, contributing to the welfare workshop being an arena for innovation, collaboration, openness, and societal benefit, which is also intertwined in various educational and research projects. Within the Welfare Workshop, LINA has offered seminars, workshops, and lectures and through an innovative "Open lab". The Open lab has generated products and methods that have contributed to knowledge development as well as to social and regional development. The Welfare Workshop has focused on challenges in modern welfare work that follow from the globalisation of working life, specialisation and digitalisation and societal changes at the regional, national, and global level. These changes place new demands on learning, the supply of knowledge and on the organisation of society's institutions. LINA has focused on knowledge-, product-, service- and methodological development regarding how welfare work is organised and coordinated within and between different societal actors, as well as how knowledge is developed, legitimised, and staged within and between different professional groups. The Welfare Workshop's focus has been knowledge about welfare work, its conditions, associated educations, structures and organisation. These include public administration, health, and social work as well as education and focuses on knowledge-, product-, service- and method development. Empirical studies have been conducted within education, healthcare, and social work. The following three areas has been the basis of the research and development:

- Coordination and organisation of interprofessional and interinstitutional work: Focused on the growing need for collaboration between professionals, within and across

institutional boundaries, which is conditioned by increased specialisation and demands for people in need of education and support of various kinds, e.g., students, care recipients and new arrivals.

- Digitalisation and changes in conditions: Focused on the consequences of access to information increasing dramatically, but also what digitalisation means for how information is generated and shared. This means, for example, changed conditions for learning in school.
- Communication and meaningful: Focused on changes in how information is communicated between professionals and between professionals and lay people. How digitalisation affects how information is understood, interpreted and transformed into knowledge on an individual and institutional level. Questions that have been studied are, for example, how the relationship between care providers and care recipients changes when the region's citizens have access to their own patient record. The research and development work has been based on close collaboration between researchers in different disciplines and active in public and private institutions/organisations.

The Welfare Workshop has addressed key challenges within welfare work and associated activities, educational programmes, and structures. The results and insights developed have been of great importance for the content and implementation of training for welfare workers as well as for the development of the activities and occupational groups that are already active in welfare work. In addition, the knowledge has contributed to theory and knowledge development important for both profession-specific knowledge domains and all disciplines who, in different ways, from different perspectives and with different interests, study work, knowledge development and the organisation of welfare work.

In 2018, the national graduate school "GRADE" was formed and is now a part of the LINA environment. GRADE focuses on the school's digitalisation and has the ambition to contribute to the short and long term with research-based, relevant, and sustainable knowledge that can inform future pedagogical work and create new opportunities for integration work, not least in terms of new arrivals and people in isolation. For example, one PhD student is studying programming for teachers and another PhD student is studying big data and Learning Management Systems (LMS).

In 2019 the original graduate school GRADE (six higher education institutions) received a follow-up of "UpGRADE" (nine higher education institutions). The received funding aimed to strengthen teacher educators' ability to teach about digital technologies in education. Both graduate schools are funded by the Swedish Research Council. In 2019 the "Open lab" was developed further as it was established in a physical environment (room G122) containing digital technology. such as 3D printers, laser etchers, VR/AR technology and more. Primary school classes have been invited to the lab to learn and participate, creating equal experiences of research, education and technology.

### 2.2.4   IT, healthcare, and learning

This research area was called "IT, healthcare, and health" until 2020 where the name was changed to "IT, healthcare, and learning. The field of healthcare has in the last two decades been characterised by evidence-based medicine, which means that activities and development must be based on a scientific basis and proven experience. Before this paradigm shift, the medical profession was often described as "the art of making difficult medical decisions without having adequate information." Today the situation is different, there is by no means adequate information, rather the situation is the opposite, and the difficulties are more about being efficient in the search for the right information. In addition, Healthcare worldwide is facing extensive challenges, partly due to an increasing proportion of the aging population, the multi-sick and people in need of care for long-term illness. Hereby caregivers face major challenges concerning upskilling of competencies, implementation of new working methods, increased collaborations, and structural adjustments. In order to meet these challenges and be able to offer a sustainable, person-centred, equal and health-promoting care, a major change "God och nära vård" ("Person-centred and integrated care") has been initiated by the government and this affects the whole healthcare sector in Sweden for many years to come. Accessibility is a key aspect of close care and digitalisation is an important factor in achieving this.

Several information systems have already been implemented in healthcare, however, there are shortcomings in many of the systems that are considered to be poorly adapted to the healthcare personnel's everyday life. The challenge ahead is to develop systems that are integrated into clinical practice. Furthermore, the development of systems is not just about streamlining existing tasks, it is also important that the systems contribute and adapt to new professional roles within the profession. Healthcare is highly technology innovative with rapid development of ICT for example: remote care, information and communication between caregivers and, new

medical technical equipment, measurement and monitoring technology, surgery, robotics and simulation just to name a few areas where development is rapid. In this development, there is a great need for knowledge about integration between informatics and care science/medicine. Research in informatics and health sciences has been extensive at University West but has taken place in isolation and to a high degree individually. An ambition in the LINA environment has been to integrate research that can meet the existing needs through an increased collaboration between computer scientists and health scientists, more projects of an interdisciplinary nature and integration in various educational contexts. The collaboration with external parties has been institutionalised and systematised, among other things through collaboration between University West, NU hospital group and Närhälsan (the largest primary care provider in Sweden).

Technology development and digitalisation in health care can be both costly but also cost-effective. Research is needed to study the use of technology and the balance between efficiency and quality. Within the framework of LINA, various development and research projects of this kind have been supported. LINA has worked with the continued development of a survey of healthcare digitalisation and what research questions this entails. This survey forms the basis for collaboration between University West, University of Borås and University of Skövde.

The importance of digital technology as support for WIL has also been focused on a PhD project that includes a third-party PhD student from NU hospital group (unit of several hospitals). A representative from LINA has been part of a working group within NU hospital group that works with post-doc activities for staff with a PhD degree.

Other research projects have focused on patients' use of social media. The hypothesis is that such a medium can strengthen patients' autonomy and thus give them the opportunity to take greater responsibility and provide increased independence. Patients' increased responsibility and commitment is partly based on the fact that opportunities for this are created but also on patients' own motivation. Previous studies conducted by LINA show that there are different personalities where patients desire to be active, analytical and seek information about their illness varies. A research project was established in 2019 aiming to develop instruments that study the motivation and willingness of different patient groups to actively seek and analyses information about their disease. The project is a collaboration between LINA, Östra sjukhuset (hospital in Western Sweden) and the research institute RISE (Research Institutes of Sweden).

Within the framework of Hälsoakademin Väst (a collaboration between University West, NU hospital group and Närhälsan) several projects have been established. An example is the "e-team" which, among other things, examines the possibilities with digital camera/video technology. Another example is "VITAL", where a so-called test bed was created to test and develop medical technology in collaboration between industry, healthcare and academia. In addition, a collaboration between regional psychiatry and primary care was initiated based on the need for collaboration for patients with schizophrenia.

### 2.2.5  Industrial Work Integrated Learning

From 2016 and forward, LINA´s collaboration with the vital research environment PTW (production technology west) was intensified. In 2017, work began on reviewing LINA's organisational structure so that it could better respond to the investment in I-WIL within the new KK environment Primus and a core area manager in I-WIL was appointed.

One of the goals in Primus is to increase the competitiveness of industry by being a world-class research environment within I-WIL and production technology. The ability to develop new knowledge, innovative technologies and to apply these effectively is crucial for how the industry in Sweden will stand up to international competition. Primus' operations, which include both technological innovation and knowledge development, will, together with various companies in co-production, be able to make a strong contribution to increased competitiveness for both regional and national manufacturing industries. The research within Primus is conducted in two primary areas, WIL and production technology, with great collaboration and collaboration between the areas to achieve scientific height and industrial benefit. Initially, LINA´s focus was to create models for utilising research results in the business sector (regarding production technology) and to develop and systematically research WIL and competence development initiatives in industrial settings. Another research focus was to investigate how to utilise the experiences of production staff to contribute to new research, development and innovations. This alternating exchange of experience and information provides the conditions for implementing innovations more quickly.

Examples of I-WIL research interests was:

- *How is the need for competencies in the manufacturing industry affected by increased automation/robotisation?*
- *How can inter-organisational learning be supported in the production industry?*
- *How can models for utilising research results be designed?*

In 2019, a 5-year strategy plan was developed and in 2020, the strategy plan was adopted to implement several initiatives to strengthen I-WIL as a research environment, including recruitment of new employees (PhD students and seniors), support for merit, initiation of research projects with clear I-WIL focus and implementation of activities for joint and individual competence development).

The aim in 2019 was to strengthen the research and recruitment. Two post-doc projects were initiated (DISCOTECH, INDIGO), two assistant lectureships were appointed (REMIX, e-LEAD) and an I-WIL professor was recruited. A cross-area pilot project (q-mulus) with specific focus on quality development in co-production and learning was initiated. Internal workshops and network visits to national research group (Adult learning and Work and working life) at Linköping University.

Three KK-HÖG applications (funding initiative), written together with industrial companies (AHIL, VERB, RESTART) was granted. Together the research projects have a total project total of SEK 12 million. In addition to this, 2 PhD students were accepted in the core area I-WIL, of which one is a third-party PhD student. in addition, related I-WIL projects were supported by Vinnova (Sweden's innovation agency): the SESMA project and the Test Bed for Marine Waste. Within the SESMA project student projects were included, both pilot projects and degree projects at the bachelor's level.

The following four themes regarding I-WIL research were identified:

- Management and learning in digitalisation processes
- Skills and safety in human-robot interaction
- Sustainable services and business models
- Virtual environments for collaboration and learning

In 2020, funding to obtain an additional assistant lectureship was granted. In addition to this, a PhD student was accepted. The SESMA project's partial results have been presented at several national and international social/popular science forums.

Furthermore, I-WIL has carried out an external monitoring both nationally and internationally based on the purpose of strengthening networks, among other things by recruiting an international guest professor. The international networks include RWL (Research on Work and Learning), research groups from e.g., Australia, England, Denmark and South Africa.

There has been a strive to build on knowledge and learning models from approved research projects. In addition, the goal has been to integrate and include more researchers within the University (from diverse subject areas for collaboration internally in multidisciplinary groups) and to include basic education in all research activities through student projects, degree projects etc.

The research projects conducted during the period 2020-2022 within I-WIL have had a clear collaborative character and focus on industrial and digital learning in connection with the introduction of innovative technology. During the period, I-WIL has the ambition to further develop and broaden the business's research focus to also include themes around WIL and leadership in an industrial context - among other things by developing and seeking funding for a project with the aim of broader study and contribute to the development of systems, strategies, and infrastructure for competence development initiatives in industry in a national and regional context.

# 3 Research environment and infrastructure

## 3.1 LINA members, LINA organisation and management structure

LINA has about 75 active researchers and right now (May 2022) 30 PhD students (more information in part B). LINA operates at University West's own premises and takes part of the support of administration that the university has (including facilitates, ICT staff, library, and databases etc.).

Over the years the management structures has changed from one director and vice director to the implementation of an *advisory board* with representation from the different institutions. The guidelines state it should be two (leaders) and four representatives, but LINA has always had a broader group with the scope taking the university wide engagement as a real task and in that engaged researchers from different faculties to be members of the board (equivalent to approximately 1,4 professor position). Since 2016 LINA has had a *national scientific board* consisting of the director, vice chancellor and representatives from pedagogics, informatics, and caring science (the disciplines have changed over the years). The specific disciplines have not been of importance, instead the person's ability to be strategic and have an understanding for multidisciplinary perspectives have been prioritised. In 2020 LINA also formed an *international scientific board* with three representatives, director and the vice chancellor whom all have an exceptionally good insight in WIL as a research object/pedagogical design. This group has had the international arena to consider and to support the WIL community.

Another especially important contribution to the LINA scientific environment has been the networking and the recruiting of guest professors and affiliated professors, some of them who are world leading researcher in the field. Their work has been crucial in the building of the profile and in the engagement with staff competence building activities. The work with them will continue into the reorganisation.

*Activities*

One stated goal that LINA has is that the environment shall contribute to an atmosphere that respects academic freedom and is characterised by professional integrity and independence in the choice of research questions and research fields. LINA sees it as important to contribute to both the individual and the collective. In addition, LINA will strengthen the opportunities for the environment to develop by funding and implementing research and research projects that enable a high degree of academic freedom and integrity.

LINA annually arranges several activities (for more information see appendix B) that originates from the needs of the members or issues that the advisory board identifies. Most of the activities have been open to everyone. Some has been targeted to staff and/or students as well as representatives from surrounding society. The activities can be webinars, seminars, workshops, lectures, review meetings etc. Annually LINA has arranged two LINA days where the participants meet in a conference facility and work together. During the LINA days 2021 evaluation was a theme and the result from that can be reviewed in the SWOT analysis. Another annual event is the VILÄR conference that is a national conference even though there usually are a small number of international participants. It is organised as a classic research conference with both research presentation as well as best practice presentations. The focus is on WIL as an educational design. Furthermore it is also focused on learning and digitalisation or learning at the workplace.

Besides this, LINA has also offered shorter competence development/activities in WIL research methods by arranging from two days to one week of studies conducted by invited professor. For example, in discourse analysis, quality methods, narrative history telling.

# 4 Productivity – research results and bibliometric data

## 4.1 Staff development

In the last strategic plan (2021-2023) our intentions are formulated like this:

"LINA intends to take internal responsibility for initiating and otherwise developing and strengthening the collegial discussion of the value and significance of scientific production and international publishing and where issues such as scientific quality, relevance and differences between disciplinary norms should be given special consideration. As part of that work, LINA 2021-2023 will work to develop the environment's infrastructure (publishing seminars, initial grants, etc.) and support functions in order to strengthen and develop and ensure more generic research-related competencies around, for example, research and publishing ethics, DAU (European standard for designing and conducting research) and bibliometrics. During the period, LINA will especially work with issues such as competence development and merit and promotion support and work to strengthen the integrity of the environment and scientific freedom. As LINA as an environment does not have supervisor responsibility, efforts on competence supply issues require collaboration with the university's departments and the KK environment Primus."

As previous mentioned the LINA environment constitutes of members with a variety of different professional occupations: researcher, teachers and staff from other units/with other functions. Even though LINA is a research environment, one explicit task has also been to develop the thinking and knowledge of WIL and to disseminate the research results within the organisation as well as outside (national assignment). This means that we have offered workshops on both more targeted research activities, such as bibliometric, writing workshops, application workshops, WIL methodological approaches, DAU, ethics but also more pedagogical focused efforts that focus the whole educational circle, planning, implementing, evaluating etc of course with a bearing on WIL.

LINA has occasionally through the years provided funding for staff to reach higher academic levels, such as associate professor and full professor (usually with a professor as a mentor for the applicant). Another example is junior researcher receiving fundings to continue their research right after their graduation so the research skills can be maintained. This funding has usually been announced for application and a review from the advisory board/assigned group

has been conducted for the sake of fairness and transparency. In the last years this procedure has been sharpened as the group has grown and the environment has matured.

LINA is a vital research environment and at that same time part of a larger community (University West). Over the years LINA has focused on lifelong learning programmes for diverse groups which is in accordance with the University's needs as well as the institutions' needs. LINA has over the years financed PhD students from different institutions and provided support throughout their journey within the programme in diverse ways, such as mentoring, competence development activities, writing "schools," targeted methodological courses and financing of conferences.

## 4.2   Research funding

Research funding within LINA has fluctuated over the years due to changes in society (for example the Covid-19 pandemic), a variation regarding what different actors that the researchers cooperate with, variations in resources and requests from researchers as well as from the surrounding society. LINA's strategy for external funding includes investments in national and international research funders, but also investments in direct funding from public and private organisations, e.g., through funding of so-called third-party PhD students.

Throughout the period 2016-2022, LINA has strived to increase the external research funds of LINA's total research budget. For this purpose, LINA has set up a long-term funding plan with responsible researchers for each of LINA's research areas. Plan for applications in collaboration with other institutions was also formulated which included:

- Increased ambition to apply for funding for networking
- Increased ambition to apply for funding for university-wide graduate schools

Furthermore, LINA has made major investment in research funding of relevant projects within LINA's thematic areas with the aim of increasing the proportion of publications in journals of high scientific quality. Other initiatives in the form of initiation grants have been implemented, for the period 2021-2023, in several specially identified areas, collaboration initiatives and dimensions of WIL where there is a strategic value and need to further establish, expand, and deepen LINA's WIL-oriented research activities. LINA has strategically planned for applications in collaboration with other institutions and recruitment of international guest professors with research excellence within WIL.

## 4.3 Research output

### 4.3.1 Licentiates and PhD Degrees

| PhD Degrees in Work Integrated Learning | | | |
|---|---|---|---|
| **Name** | **Title** | **Year** | **Subject** |
| Annika Andersson | In case of emergency: Collaboration exercises at the boundaries between emergency service organizations | 2016 | Pedagogic |
| Marie Vesterlind | Knowing at work: A study of professional knowledge in integration work directed to newly arrived immigrants | 2016 | Pedagogic |
| Sara Willermark | Digital Didactic Design: To develop teaching practice in and for a digitalised school | 2018 | Informatics |
| Monika Hattinger | Co-constructing Expertise: Competence Development through Work-Integrated e-Learning in joint Industry-University Collaboration | 2018 | Informatics |
| Lars-Olof Johansson | Engaged in digital service innovation | 2018 | Informatics |
| Amir-Masoud Haj-Bolouri | Designing for Adaptable Learning | 2018 | Informatics |
| Camilla Seitl | Informal learning in a formal organization: Meaning making, knowledge domains and competence in work with municipal goals | 2018 | Pedagogics |
| Karin Högberg Karlsson | Persistent Digital Service Encounters: Challenges of organizational use of social media in a hotel chain | 2018 | Informatics |
| Anna Sigridur Islind | Platformization: Co-Designing Digital Platforms in Practice | 2018 | Informatics |
| Livia Norström | Social Media as Sociomaterial Service: On Practicing Public Service Innovation in Municipalities | 2019 | Informatics |
| Jennie Ryding | Between evidence and reflection: professional learning in family support social work | 2020 | Pedagogic |
| Ville Björck | Learning 'theory' at university and 'practice' in the workplace: A problematisation of the theory-practice | 2020 | Pedagogic |

| | | | | |
|---|---|---|---|---|
| | terminology that the dualistic design of Work integrated Learning institutionalises | | | |
| Dennis Augustsson | Expansive design for teachers: An activity theoretical approach to design and work integrated learning. | 2020 | Pedagogic | |
| Helena Vallo Hult | Digital Work: Coping with Contradictions in Changing Healthcare | 2021 | Informatics | |
| Charlotte Arghavan Shahlaei | Rethinking Competence: On Performing Digital Transformation | 2021 | Informatics | |
| Anders Sandblad | Professional-skill Machines Humans | 2021 | Work integrated learning | |

| Licentiate Theses in Work Integrated Learning | | | | |
|---|---|---|---|---|
| **Name** | **Title** | **Year** | **Subject** | |
| Tuija Viking | A study of interprofessional learning in teamwork. The case of a 'best practice' for compulsory care | 2019 | Pedagogic | |
| Ana Fuentes Martinez | Teachers' tactics when programming and mathematics converge | 2021 | Informatics | |
| Lennarth Bernhardsson | An Eye for an I: Focus on integration in WIL | 2022 | Informatics | |

## 4.3.2   Publications and impact

In the strategic plan for 2020 (which is still active) the following is written:

"The LINA environment's scientific production and a LINA joint strategy have been developed which aims to LINA also continue to stimulate and support the researchers to publish research results in qualified scientific journals to an even greater extent and for LINA to systematically and continuously participate and develop own and joint international context and network".

The variation over time in the number of publications by researchers from the LINA environment is large, and the distribution between conference publications and publications in journals as well. In 2018 LINA's management team agreed on a goal of 100 publications per year (corresponding to an average of 1.5 - 2 publications per environmentally active researcher/research student). Measures to achieve this goal was initiated in 2018 and included support for reporting environmental publications in DIVA as well as seminars and financial stimuli for an increased number of WIL publications in relevant journals for instance such as

Jl. of Information Systems Education and Jl. of Business Education. During the years we have had one assigned librarian to LINA that also has been an active researcher participant together with LINA researchers, this has had a significant impact on how the discussions in the environment has developed and elevated. She has contributed with sessions during the LINA days and given webinars for everyone within thematic areas such as authorship, open access, predatory journals, bibliometric and DAU. Another important aspect has been the rules for "authorship" this has been continuous discussed. We have also invited members to workshop on how to write applications, collective writing workshops, mentorship for junior researchers or new employees (to navigate in the WIL jungle) etc.

There has also been given opportunities to apply for financial support for translation, language review, publication fee.

# 5 Networks and collaborations

## 5.1 Collaboration between academic institutions (national and international) and the surrounding society

Research on learning in a changing work life is conducted within a limited number of national and international universities, even though it has increased during the last year, mainly because the Swedish government has funded WIL initiatives nationally. LINA has worked extensively to establish collaboration with key actors that can contribute to the research area. Through strategic agreements, recruitment of guest professors and the commitment of LINA's researchers as guests in these environments, a strong national and international network has been established.

LINA has continued to engage in a national network for research on digitalisation. With funding from the Swedish research council and the national agency for education as well as collaborations with networks, LINA has been able to consolidate its position as a leader in the area. Other activities include recruitment of additional visiting professors from leading WIL environments and enable at least two outgoing LINA researchers to serve at international universities.

All LINA's research is based on the idea that socially relevant and change driven research interests must be formulated in mutual dialogue with the fields of activity and the actors affected by the research. In the same way, LINA's research focus has consequences for how research results are communicated. Here it has been important that the results are not only disseminated through scientific publications, but also through targeted interactions with recipients. The LINA environment's research results have been disseminated in accordance with the research environment's communication plan by developing channels in social media for disseminating research results and financially supporting the dissemination of results (for example through text/video/speech) which is primarily aimed at practitioners.

See appendix A for collaboration between academic institutions (national and international) and surrounding society.

*Collaboration between researchers in LINA*

LINA has invested ambitiously in arranging activities (see table below), partly for the entire environment and partly within the framework of the prioritised research areas. This includes annual LINA days for all LINA researchers and PhD students, lunch seminars with invited

seminar leaders/lecturers and 1-2 separate workshops per semester organised by guest researchers and invited guests.

As a result of the research initiative of Primus, LINA has identified a need to strategically support the development of new forms of meetings and collaboration with the research areas of production processes and production systems. LINA activities that support the development of collaboration with research groups in Primus include planning and carrying out workshops each semester for participants in I-WIL as well as participation in the planning and implementation of workshops each semester for Primus researchers.

| Collaboration between researchers in LINA | | | | |
|---|---|---|---|---|
| Project/activity | | | | |
| 2017 | 2018 | 2019 | 2020 | 2021 |
| LINA-day: panel discussion w/ participants from Södertörn University and Bodö University. Keynote by prof. Ingela Josefsson | LINA-theme days for researchers and PhD students | LINA-theme days for researchers and PhD students | LINA-theme days for researchers and PhD students<br><br>Conference: "Digitalization in schools – a day for inspiration and knowledge" arranged by Kommunakademin Väst and LINA | LINA-theme days for researchers and PhD students |
| Lunch seminars: LINA researchers present & discuss their research. LINA hosts 6-7 seminars/semester | VILÄR-conference: Work integrated learning as a perspective in higher education. Keynote by Kristina Edström and Julianne Cheek | VILÄR-conference: Work integrated learning as a perspective in higher education. Keynotes by Lorna Unwin, Denise Jackson and Mario Romero | VILÄR-conference as a digital event due to COVID-19: Work integrated learning as a perspective in higher education. Keynotes by Annalisa Sannino and Roger Säljö<br><br>Open lunch-webinars: Internal and external researchers present research related to work integrated learning. Digital event due to COVID-19. Several events/semesters | VILÄR-conference as a digital event due to COVID-19: Work integrated learning as a perspective in higher education. Keynotes by Henry Jacobs and Norah McRae<br><br>Open lunch-webinars: Internal and external researchers present research related to work integrated learning. Digital event due to COVID-19. Several events/semesters |

# 6 Self-evaluation

## 6.1 Self-evaluation of LINA

At the LINA days in October last year, a session was arranged for all the LINA members to contribute to this evaluation. They divided themselves into smaller groups (5-6 in each) and the group were heterogenous. They received three questions to answer to:

- *With <u>what</u> and <u>how</u> have LINA contributed to your practice?*
- *What is essential to bring into the evaluation?*
- *What <u>cannot</u> be left out in the evaluation?*

Their answers have been analysed and categorised into each SWOT matrix below.

### 6.1.1 Research environment and infrastructure (SWOT)

| | Strengths | Weaknesses |
|---|---|---|
| Internal | **Meet across the borders**<br>- New perspectives<br>- New knowledge about other's work, projects<br>- Internationalisation, networking capacity/building<br>- Increased understanding of WIL<br>- VILÄR and INTED conference contribution – possibilities for interprofessional work and collaboration<br>- Conduct research and education with a real societal relevance and effect<br>**World leading in theory development in WIL**<br>- Provision of good PhD courses<br>- Fantastic/inspirational guest professors – changed my attitude towards research and perspectives in a positive way and thus promoted my WIL research<br>- A continuously growing/developing research environment<br>- New innovative research ideas<br>**Inclusiveness**<br>- Leadership LINA<br>- Creativity, inspiration<br>- LINA seminars<br>- Friendly, welcoming environment<br>- A continuously growing/developing research environment<br>- Funding for travel expenses and language check | **Communication**<br>- How does information/Invitations about activities reach out to persons without prior knowledge about LINA?<br>- Researchers that match the LINA profile, has not joined<br>- Evaluation of how and whom have been involved in decision making processes<br>- How information is disseminated to LINA members and University West staff<br>- Need of clear spaces/platforms and structures to feel that resources are available and put into use |

| | | |
|---|---|---|
| | - Relation to library – its systematic and clear structure is highly appreciated<br>- Financing for specific requests<br>- Financing for PhDs<br>- Flexibility in application processes (funding opportunities) - create opportunities to be able to act on the unexpected<br>- LINA has supported merit paths for different academical positions | |
| External | Threats<br>- Uncertain future regarding development of new compete academic environment of WIL<br>- Distorted recruitment – some from pedagogics, many from informatics. Underlying structures – LINA has its origins in informatics and pedagogics. As a result, some don't feel welcome/included?<br>- That the University don't learn from LINA | Opportunities<br>**Next step!**<br>- Develop next complete academic environment of WIL that is built on experiences from LINA<br>- LINA should be elevated/advance further<br>- Good to evaluate to find new group settings/forms and intersections within for instance I-WIL<br>**Strengthen UW's position**<br>- LINA is the only example of multidisciplinary, boundary crossing research environment<br>- To keep a world leading position LINA (or the new complete academic environment) must keep develop. In the long run, Work Integrated Learning will be its own academic discipline that reaches outside University West |

One of the *strengths* with LINA is the focus on the multidisciplinary aspects both when it comes to working together over the institutions/boundaries in professional functions as well as theoretical perspectives. LINA members express this as both a strength and a weakness, since communication differs within different communities, LINA's leadership has always promoted

this as a strength. It has also shown to have bearings on the publications across the disciplines and sometimes even outside academic (co-production in project and publications with collaboration partners in business). When it comes to world leading, LINA has a long record of being able to attract world recognised researcher to the environment, and to build up new viable networks. This has led to LINA not only supporting of the University's profile, but also been an active part in developing it. Here the distinct perspective on WIL is also important, guest professors/affiliated professors with different profiles such as Annalisa Sannino, Yrjö Engeström, Maureen Drysdale and Stephen Billett are just a few names.

An initiative started last year is Centre for Activity Theory (CAT) that has its theoretical focus on cultural historical activity theory (CHAT). Summer school, conferences, events, publications are manifested on the platform at University West. This year the summer school will take place for the third time with 15 PhD students and 15 master students registered for a 7.5 credit course online.

A feeling of inclusiveness is another important issue that LINA members stress; they feel welcome to join the activities and apply for funding. Every year LINA has arranged webinars (usually 10-40/year) LINA days (1-2 days) and conferences such as VILÄR. LINA has been open to organise specialised "courses" that has emerged as a need from the members, some has been for only PhD students and some for all, depending on topic. LINA has also funded PhD initiatives like writing workshops for the PhD students at home or conference facilities, arranged and organised by themselves.

Under *weaknesses* only one issue occurred: communication and lack of transparency. This has been outspoken for a long time, and the leaders has tried in several diverse ways to answer to it. One explanation to why this is difficult to resolve is that LINA is multidisciplinary, thus every discipline has its own way to signal and communicate within that community (i.e., engineering vs. pedagogy). Another aggravating circumstance is the loose/flexible ways the environments have been allowed to work, it has been up to every environment to define the members and the content, in LINA we have always worked with the whole university (in all ways, invitation, funding etc.) this has of course been done in the other as well but not to the same extent. Under weaknesses there is a passage of undefined processes in funding, this has been sharpened up during the last years, but it can also be viewed as positive since it gives more flexibility, and the more rigid process, the responsiveness to emerging trends diminish.

When it comes to threats and opportunities, they are the different sides of the same coin. There has been some concerns from the members (researchers in the LINA group – mainly expressed early on in the process on the LINA days) on what is going to happen now when LINA ends, and the new complete academic environment is established. Raised questions include whether the new complete academic environment will have the same principles, openness, and inclusiveness. Moreover, if they will organise activities that are multidisciplinary, and if staff will feel invited. When it comes to the distorted recruitment, this is understandable since University West is a small university with a PhD programme that has grown extensively the last ten years. Before 2020 the PhD programme was with two specialisations, informatics, and pedagogics. This is the reason why there has been a somewhat unbalanced, and it will take some time to flatten this out. LINA is the only university overarching research group, as such the members stress that this needs to be "inherited" and developed further in the new complete academic environment. Finally, it is good to have this "end evaluation" to identify what has been working, and to pass on all the learning experiences to the new leadership of the complete academic environment.

## 6.1.2    Collaboration between academic institutions and surrounding society (SWOT)

| Internal | Strengths | Weaknesses |
|---|---|---|
|  | **LINA as the glue**<br>- A sense of community/context<br>- LINA promotes interdisciplinary collaboration<br>- How different competences contribute to LINA<br>- A network that promotes the development of the University's WIL-profile<br>- Community of practice for the researchers<br>- What is essential aspect for inclusion to happen, learn from LINA and how can this be maintained post-LINA?<br>- VILÄR and INTED conference contribution – possibilities for interprofessional work and collaboration<br>- LINAs involvement in the WIL certification process<br>**Collaboration through net working**<br>- Many LINA arrangements are open for participants from surrounding society. Gives a chance to network. | - Some institutions/departments are less frequent in LINA contexts<br>- How does information/Invitations about activities reach out to people without prior knowledge about LINA? |

|  |  |  |
|---|---|---|
|  | - Collaboration is built on trust, respect, and a mutual understanding for each other<br>- Collaboration around real problems in work life<br>- Wicked or twisted problems can be solved through multidisciplinary research<br>- Research origins in local/regional challenges |  |
| External | Threats<br>- Uncertain future regarding development of new complete academic environment of WIL | Opportunities<br>- Develop the new complete academic environment that is built on experiences from LINA<br>- Continuing Cooperation/collaboration<br>- New MoU with WACE<br>- The new environment creates and strategic plan including definitions etc. |

In LINA collaboration has been essential throughout the years, this refers to both within the academical system (nationally and internationally) as well as together with the surrounding society. LINA members, with the financial support from LINA, have created a master's in WIL together with Henri Jacobs at CUT in South Africa. This collaboration has led to the initiative of third party's PhD students from CUT that are enrolled in the programme. After examination they will have a leading role in the competence development of WIL at their own university.

LINA has not initially been involved in the WIL certification process, but since the members of the research community conduct research within the area and LINA's international guest professors have had a significant role in given talks/workshops on the subject, LINA has been crucial to provide the applicants with valuable input.

Examples on diverse research projects granted and supported by LINA include: one research team which has conducted change laboratories in schools in Strömstad (municipality in West coast) and one research team involved in the initiative of Näktergalen (NGO project from the origin). This specific project focused on organising and creating a sense of belonging to the society (and higher education) by allowing students mentor young children in vulnerable housing areas, which is of significance real societal challenge and local connection. Collaboration is always in focus, it is done consistently, with structural support and resources linked to it. Over the years, some co-operative partners have grown and from the last year

University West has appointed seven new strategic partners, most of them has been partners with LINA for a long time both in small and more extensive projects. From the beginning LINA was funding a major part of these, but more recently the strategic partners have started funding more of the project, for instance part of PhD projects.

# 7 Part B: quantitative data

## 7.1 Research and infrastructure

### 7.1.1 LINA members data

| Indicator | Outcome | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2016 | | | 2017 | | | 2018 | | | 2019 | | | 2020 | | | 2021 | | |
| | Tot | W | M | Tot | W | M | Tot | W | M | Tot | W | M | Tot | W | M | Tot | W | M |
| Total number of PhD students | | | | | | | | | | 23 | | | 29 | | | 30 | 23 | 7 |
| PhD students at University West's post-graduate education (number) | 22 | 15 | 7 | 21 | 13 | 8 | 16 | 10 | 6 | 22 | 13 | 9 | 22 | 12 | 10 | 24 | 18 | 5 |
| Third-party PhD students (number) | 3 | 3 | | 4 | 3 | 1 | 4 | 2 | 2 | 5 | 3 | 2 | 7 | 3 | 4 | 4 | 4 | 2 |
| Second-party PhD students (number) | 10 | 5 | 5 | 9 | 5 | 4 | 4 | 3 | 1 | | | | | | | | | |
| Post-docs (number) | | | | | | | 2 | 1 | 1 | 2 | 1 | 1 | 1 | 1 | | 2 | 1 | 1 |
| Associate senior lecturers (number) | | | | | | | | | | 1 | | 1 | 4 | 3 | 1 | | | |
| Senior lecturers (number) | 17 | 10 | 7 | 18 | 10 | 8 | 23 | 15 | 8 | 26 | 18 | 8 | 24 | 18 | 6 | 35 | 29 | 6 |
| Associate professors (number) | 9 | 5 | 4 | 9 | 5 | 4 | 12 | 7 | 5 | 12 | 8 | 4 | 11 | 7 | 4 | 15 | 7 | 8 |
| Professors - not including visiting or adjuncts (number) | 8 | 4 | 4 | 8 | 4 | 4 | 10 | 6 | 4 | 15 | 10 | 5 | 16 | 9 | 7 | 16 | 8 | 8 |
| Visiting professors (number) | 9 | 4 | 5 | 8 | 3 | 5 | 5 | 1 | 4 | 11 | 3 | 8 | 14 | 5 | 9 | 13 | 3 | 10 |
| Plausible main supervisors of post-graduate education (number) | 8 | 5 | 3 | 10 | 6 | 4 | 22 | 13 | 9 | 27 | 18 | 9 | 27 | 16 | 11 | 31 | 15 | 16 |
| Number of licentiate degrees | | | | | | | | | | 1 | | 1 | | | | 1 | 1 | |
| Number of PhD degrees | 3 | 2 | 1 | 1 | | 1 | 8 | 5 | 3 | 1 | | 1 | 2 | | 2 | 3 | 2 | 1 |

## 7.1.2  Research funding

| Indicator | Outcome | | | | | |
|---|---|---|---|---|---|---|
| | 2016[3] | 2017 | 2018 | 2019 | 2020 | 2021 |
| Submitted applications<br>- Number<br>- Total amount | | 6 st<br>30 406 tkr | 22 st<br>85 046 tkr | 20 st<br>66 980 tkr | 11 st<br>25 677 tkr | 16 st<br>66 526 tkr |
| Granted applications<br>- Number<br>- Total amount | | 2 st<br>8 115 tkr | 6 st<br>18 806 tkr | 9 st<br>43 676 tkr | 3 st<br>6 131 tkr | 5 st<br>18 761 tkr |
| Accumulated funding total amount | | | 6 620 tkr | 7 311 tkr | 8 655 tkr | 9 048 tkr |
| - Accumulated funding by Swedish research councils (FORTE, VR, Formas, Vinnova) | | | 573 tkr | 1 749 tkr | 2 962 tkr | 2 272 tkr |
| - Accumulated funding by other Swedish funding bodies | | | 3 451 tkr | 2 182 tkr | 4 342 tkr | 5 638 tkr |
| - Accumulated funding by international funding bodies | | | 2 596 tkr | 3 380 tkr | 1 351 tkr | 1 138 tkr |

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[3] Due to a large self-evaluation 2010-2015, this year's data was excluded (decision from FUN – the research council)

The table below demonstrates allocated fundings for the four departments: Department School of business and economics and IT (EI), Department Health Sciences (IH), Department Social and behavioral studies (IoS) and the Department Engineering Science (IV).

| Sum of amount institution | Konto | Year 2017 | 2018 | 2019 | 2020 | 2021 | Grand Total |
|---|---|---|---|---|---|---|---|
| EI | 4011 | 1 301 402 | 2 133 285 | 2 330 908 | 1 911 830 | 2 061 088 | 9 738 513 |
| | 4012 | 1 150 444 | 35 816 | | | | 1 186 261 |
| | 4013 | 239 | | | | | 239 |
| | 4015 | 0 | 817 209 | 980 555 | 1 229 772 | 1 782 796 | 4 810 331 |
| | 4017 | | | | 40 894 | | 40 894 |
| | 4018 | | | 293 | | | 293 |
| | 4041 | | 6 754 | 52 063 | 26 527 | 66 768 | 152 112 |
| | 4091 | | | 26 576 | -26 576 | | 0 |
| | 40151 | -1 671 | 31 651 | 34 996 | 13 476 | | 78 451 |
| EI Total | | 2 450 413 | 3 024 715 | 3 425 391 | 3 195 923 | 3 910 652 | 16 007 094 |
| IH | 4011 | 91 348 | 90 838 | 28 575 | 71 821 | 500 615 | 783 198 |
| | 4013 | 0 | | | | | 0 |
| | 4015 | | | | | 148 714 | 148 714 |
| | 4017 | | | 3 259 | 73 | | 3 332 |
| | 4022 | 15 027 | | | | | 15 027 |
| | 4041 | 106 | | 11 051 | | | 11 157 |
| IH Total | | 106 481 | 90 838 | 42 885 | 71 894 | 649 329 | 961 427 |
| IoS | 4011 | 168 326 | 210 041 | 210 552 | 659 401 | 336 696 | 1 585 016 |
| | 4012 | 317 | | | | | 317 |
| | 4015 | 867 811 | 535 686 | 955 624 | 615 023 | 143 374 | 3 117 519 |
| | 4017 | | | | 6 012 | | 6 012 |
| | 4023 | 8 225 | 8 225 | | | | 16 449 |
| | 4041 | 0 | 0 | 8 813 | 18 395 | 3 679 | 30 887 |
| | 40151 | | | | | 105 484 | 105 484 |
| IoS Total | | 1 044 679 | 753 951 | 1 174 989 | 1 298 831 | 589 233 | 4 861 684 |
| IV | 4011 | 30 604 | | | | 95 721 | 126 325 |
| IV Total | | 30 604 | | | | 95 721 | 126 325 |
| #N/A | 4012 | | -35 816 | | | | -35 816 |
| | 4022 | 13 064 | | | | | 13 064 |
| | 4023 | -998 | -8 225 | | | | -9 222 |
| | 4041 | 4 994 | 9 436 | | 16 703 | | 31 132 |
| #N/A Total | | 17 060 | -34 605 | | 16 703 | | -843 |
| Grand Total | | 3 649 237 | 3 834 899 | 4 643 265 | 4 583 350 | 5 244 935 | 21 955 687 |

### 7.1.3 LINA publication data

*Material and method*

Publications as found in DiVA (Digital Archive Online) limited to the research group and the years 2016 – 2021 were extracted to create a good overview of LINA publications. The library's Team Research Support and Publishing has ensured that the DiVA posts are complete which also makes it possible to extract unique identifiers such as Scopus-id and Web o Science-id for further analysis of e.g. citations in the citation databases.

*LINA publications in DiVA*

This section illustrates LINA's complete publishing through the eyes of DiVA 2016 – 2021. The data shown is based on registrations reported to the library by researchers and doctoral candidates. Previously the conference publications have been in majority, but in 2021 there is a noticeable improvement in the number of journal articles and book chapters. This might be due to a more concise publishing strategy from the research environment.

| Publication categories | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | Sum |
|---|---|---|---|---|---|---|---|
| Journal articles | 20 | 11 | 17 | 25 | 25 | 40 | 138 |
| Review articles | | | 1 | | | | 1 |
| Book reviews | | | | 3 | 1 | | 4 |
| Books | | | 1 | 1 | 1 | 1 | 4 |
| PhD theses, monographies | | 1 | 1 | | | 1 | 3 |
| PhD theses, compilations | 2 | | 6 | 1 | 2 | 2 | 13 |
| Book chapters | 7 | | 1 | 3 | 4 | 20 | 35 |
| Conference papers/presentations | 60 | 34 | 48 | 48 | 47 | 31 | 268 |
| Licentiate theses, monographies | | | | | | 1 | 1 |
| Licentiate theses, compilations | | | | 1 | | | 1 |
| Proceedings (editors) | 1 | 2 | 1 | 2 | 1 | 1 | 8 |
| Reports | 4 | 2 | 2 | 1 | 3 | 1 | 13 |
| Anthologies (editors) | 4 | | 1 | | 1 | 4 | 10 |
| Other | | | | 1 | | | 1 |
| **Total sum** | **98** | **50** | **79** | **86** | **85** | **102** | **500** |

## Collaborations according to DiVA

As demonstrated in the table, the Swedish cooperations are dominating in DiVA even though international collaborations are steadily increasing.

| Year | Swedish academy | Swedish company | Swedish Other | International academy | International company | International other |
|---|---|---|---|---|---|---|
| 2021 | 32 | 0 | 13 | 20 | 1 | 3 |
| 2020 | 17 | 2 | 4 | 8 | 0 | 1 |
| 2019 | 17 | 1 | 5 | 12 | 2 | 1 |
| 2018 | 19 | 0 | 4 | 11 | 0 | 1 |
| 2017 | 9 | 0 | 3 | 4 | 0 | 0 |
| 2016 | 17 | 2 | 6 | 19 | 1 | 4 |

## Web of Science

There were 95 results in Web of Science based on WoS-id extracted from DiVA divided into the following categories: 64 journal articles, 29 conference papers, 6 "early access articles", 2 review articles and 1 conference abstract.

## Collaborations in WoS

Most common cooperation is co-authorship within University West, however, there are several partnerships with other Higher Education Institutions. The diagram below[4] displays frequent collaborations with University of Gothenburg as well as other national and international actors.
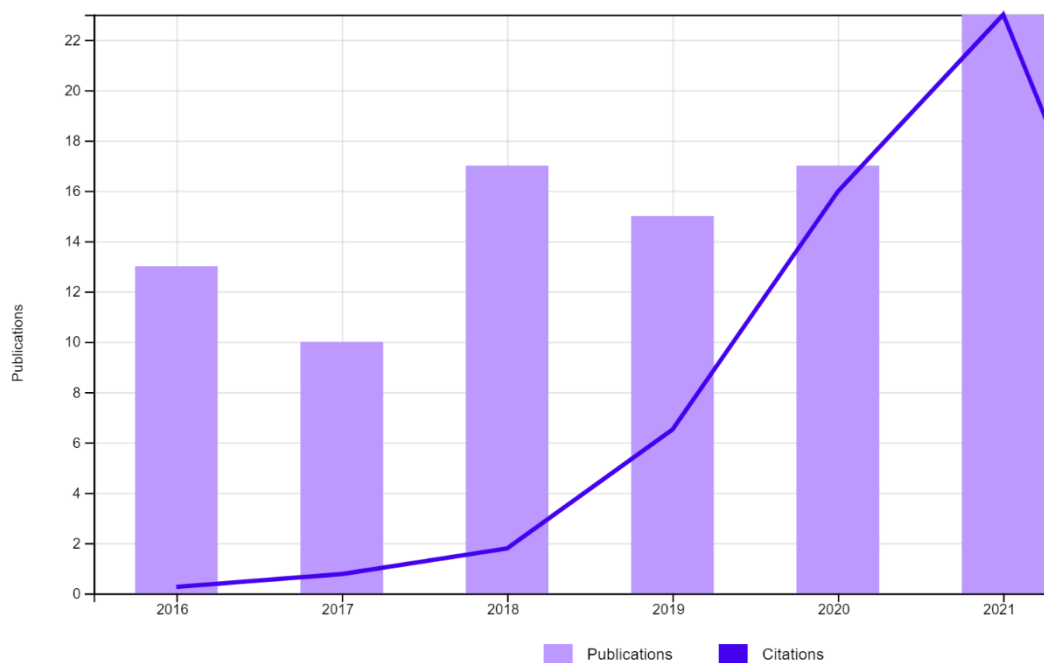


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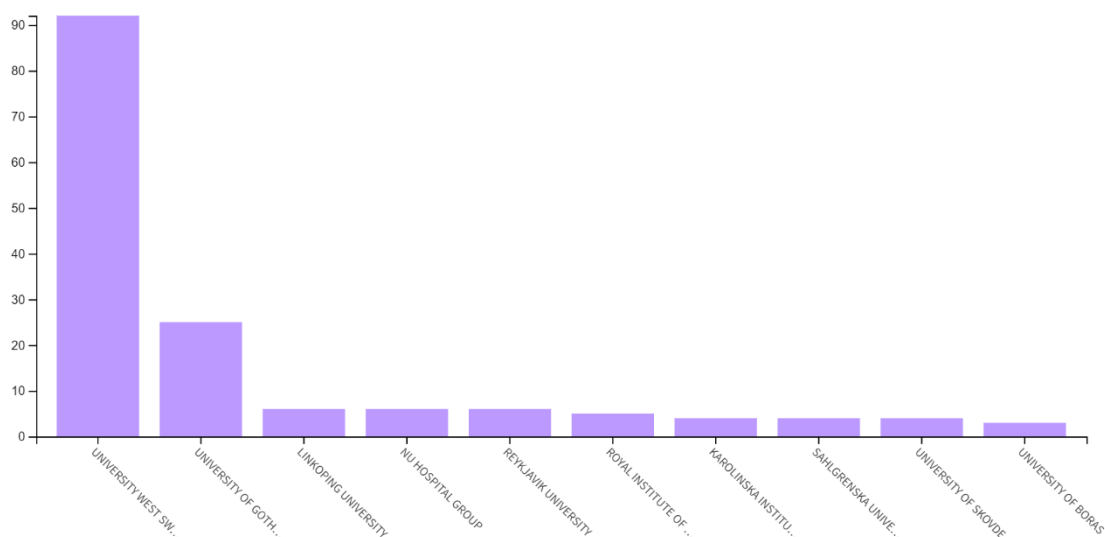
[4] Certain data/images included herein are derived from Clarivate Web of Science. © Copyright Clarivate 202___. All rights reserved.

| Organisation | No of publications |
|---|---|
| UNIVERSITY WEST SWEDEN | 92 |
| UNIVERSITY OF GOTHENBURG | 25 |
| LINKOPING UNIVERSITY | 6 |
| NU HOSPITAL GROUP | 6 |
| REYKJAVIK UNIVERSITY | 6 |
| ROYAL INSTITUTE OF TECHNOLOGY | 5 |
| KAROLINSKA INSTITUTET | 4 |
| SAHLGRENSKA UNIVERSITY HOSPITAL | 4 |
| UNIVERSITY OF SKOVDE | 4 |
| UNIVERSITY OF BORAS | 3 |

*Citations WoS*

Research impact is often measured in terms of number of citations which indicates publication dissemination to readers throughout the world. LINA citations are visualised in the diagram[5] from Web of Science, followed by a table containing LINA's ten most cited publications in WoS. The number of LINA publications in WoS has increased as well as the number of citations.



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*LINA's 10 most cited - Web of Science[6]*

| Title | Authors | Source Title | Year | Total Citations |
|---|---|---|---|---|
| Digital competence and digital literacy in higher education research: Systematic review of concept use | Spante, Maria; Hashemi, Sylvana Sofkova; Lundin, Mona; Algers, Anne | COGENT EDUCATION | 2018 | 85 |
| Technological Pedagogical and Content Knowledge: A Review of Empirical Studies Published From 2011 to 2016 | Willermark, Sara | JOURNAL OF EDUCATIONAL COMPUTING RESEARCH | 2018 | 38 |
| Is preoperative physical activity related to post-surgery recovery? A cohort study of patients with breast cancer | Nilsson, Hanna; Angeras, Ulf; Bock, David; Borjesson, Mats; Onerup, Aron; Olsen, Monika Fagevik; Gellerstedt, Martin; Haglind, Eva; Angenete, Eva | BMJ OPEN | 2016 | 29 |
| Work Values of Police Officers and Their Relationship With Job Burnout and Work Engagement | Basinska, Beata A.; Daderman, Anna M. | FRONTIERS IN PSYCHOLOGY | 2019 | 19 |
| TPACK In Situ: A Design-Based Approach Supporting Professional Development in Practice | Pareto, Lena; Willermark, Sara | JOURNAL OF EDUCATIONAL COMPUTING RESEARCH | 2019 | 15 |
| The Virtual Clinic: Two-sided Affordances in Consultation Practice | Islind, Anna Sigridur; Snis, Ulrika Lundh; Lindroth, Tomas; Lundin, Johan; Cerna, Katerina; Steineck, Gunnar | COMPUTER SUPPORTED COOPERATIVE WORK-THE JOURNAL OF COLLABORATIVE COMPUTING AND WORK PRACTICES | 2019 | 13 |
| The impact of word of mouth when booking a hotel: could a good friend's opinion outweigh the online majority? | Gellerstedt, Martin; Arvemo, T. | INFORMATION TECHNOLOGY & TOURISM | 2019 | 11 |
| Could prioritisation by emergency medicine dispatchers be improved by using computer-based decision support? A cohort of patients with chest pain | Gellerstedt, Martin; Rawshani, Nina; Herlitz, Johan; Bang, Angela; Gelang, Carita; andersson, Jan-Otto; Larsson, Anna; Rawshani, Araz | INTERNATIONAL JOURNAL OF CARDIOLOGY | 2016 | 11 |

| Shift in translations: Data work with patient-generated health data in clinical practice | Islind, Anna Sigridur; Lindroth, Tomas; Lundin, Johan; Steineck, Gunnar | HEALTH INFORMATICS JOURNAL | 2019 | 10 |
|---|---|---|---|---|
| A first step towards a model for teachers' adoption of ICT pedagogy in schools | Gellerstedt, Martin; Babaheidari, Said Morad; Svensson, Lars | HELIYON | 2018 | 10 |

## WoS categories[7]

The diagram and table below illustrate LINA's most common subject categories according to Web of Science.
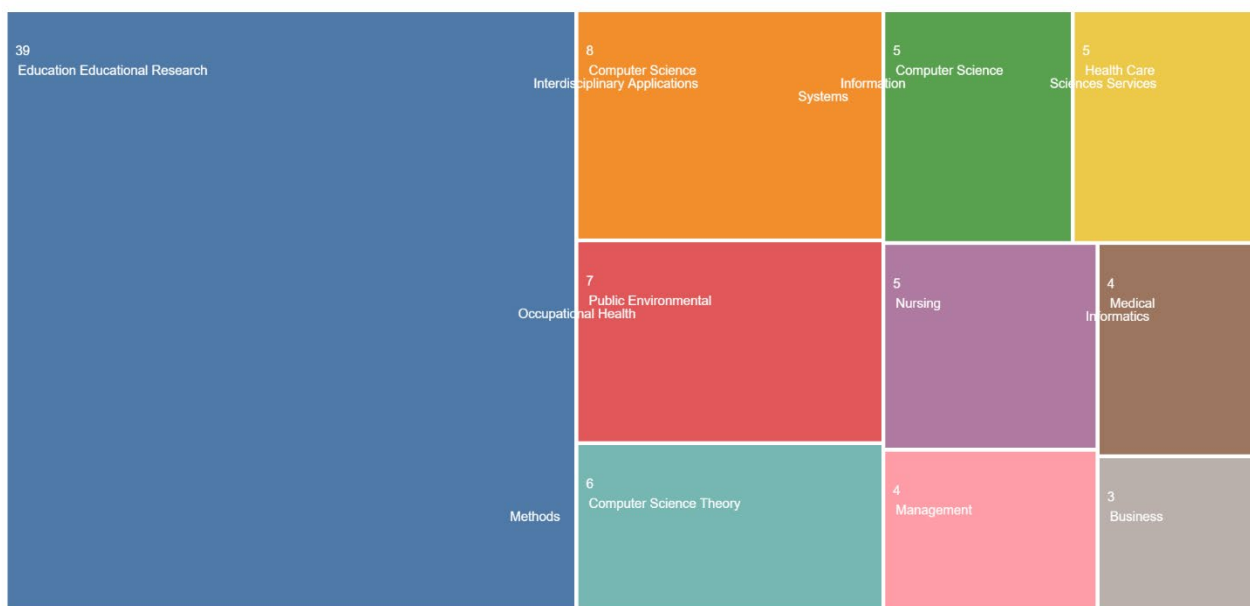


| WoS categories | Number |
|---|---|
| Education Educational Research | 39 |
| Computer Science Interdisciplinary Applications | 8 |
| Public Environmental Occupational Health | 7 |
| Computer Science Theory Methods | 6 |
| Computer Science Information Systems | 5 |
| Health Care Sciences Services | 5 |
| Nursing | 5 |
| Management | 4 |
| Medical Informatics | 4 |
| Business | 3 |

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[7] Certain data/images included herein are derived from Clarivate Web of Science. © Copyright Clarivate 202___. All rights reserved.

The category data, from business to Health sciences, displays the major coverage of subject areas significant for LINA.

*Top 10 sources in WoS*

In Web of Science LINA is most frequently appearing in conference proceedings. Only three papers/articles have been published in peer reviewed journals.

| Source | Number |
|---|---|
| INTED PROCEEDINGS | 11 |
| ICERI PROCEEDINGS | 7 |
| 12TH INTERNATIONAL TECHNOLOGY EDUCATION AND DEVELOPMENT CONFERENCE INTED | 6 |
| JOURNAL OF WORKPLACE LEARNING | 5 |
| ICERI2016 9TH INTERNATIONAL CONFERENCE OF EDUCATION RESEARCH AND INNOVATION | 3 |
| INTED2017 11TH INTERNATIONAL TECHNOLOGY EDUCATION AND DEVELOPMENT CONFERENCE | 3 |
| JOURNAL OF EDUCATIONAL COMPUTING RESEARCH | 3 |
| 10TH INTERNATIONAL CONFERENCE OF EDUCATION RESEARCH AND INNOVATION ICERI2017 | 2 |
| BMJ OPEN | 2 |
| DIGITAL INNOVATION AND ENTREPRENEURSHIP AMCIS 2021 | 2 |

There were 128 results in Scopus based on Scopus-id extracted from DiVA divided into the following categories: 73 journal articles, 43 conference papers, 3 book chapters, 6 review articles and 3 editorial articles.

*Collaborations publications in Scopus based on Scopus data*
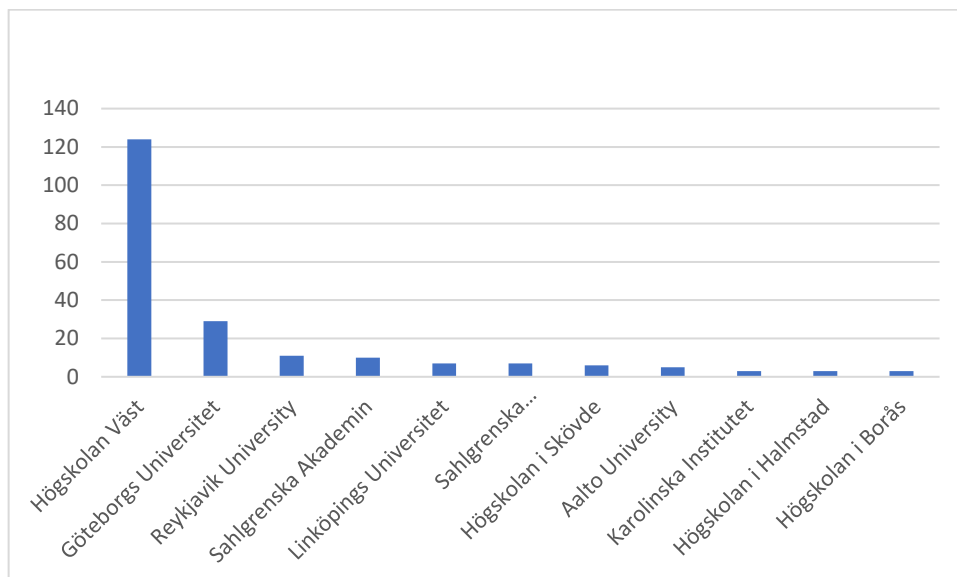


Most common collaboration is co-authorship within University West, however, there are several partnerships with other Higher Education Institutions. The diagram displays frequent collaborations with University of Gothenburg as well as other national and international actors.

| Organisations | |
|---|---|
| University West | 124 |
| Gothenburg University | 29 |
| Reykjavik University | 11 |
| Sahlgrenska Akademin | 10 |
| Linköping University | 7 |
| Sahlgrenska Universitetssjukhuset | 7 |
| University of Skövde | 6 |
| Aalto University | 5 |
| Karolinska institute | 3 |
| University of Halmstad | 3 |
| University of Borås | 3 |

## LINA's 12 most cited – Scopus

Research impact is often measured in terms of number of citations which indicates publication dissemination to readers throughout the world. LINA citations are visualized in the diagram från Scopus, followed by a table containing LINA's ten most cited publications in the same database. The number of LINA publications in Scopus has increased as well as the number of citations.

| Publication Year | Document Title | Authors | Journal Title | Totalt |
|---|---|---|---|---|
| 2018 | Digital competence and digital literacy in higher education research: Systematic review of concept use | Spante M., Hashemi S.S., Lundin M., Algers A. | Cogent Education | 102 |
| 2018 | Technological Pedagogical and Content Knowledge: A Review of Empirical Studies Published From 2011 to 2016 | Willermark S. | Journal of Educational Computing Research | 54 |
| 2016 | Is preoperative physical activity related to post-surgery recovery? A cohort study of Patients with breast cancer | Nilsson H., Angeras U., Bock D., Borjesson M., Onerup A., Olsen M.F., Gellerstedt M., Haglind E., Angenete E. | BMJ Open | 30 |
| 2019 | Work values of police officers and their relationship with job burnout and work engagement | Basinska B.A., Daderman A.M. | Frontiers in Psychology | 20 |
| 2019 | The Virtual Clinic: Two-sided Affordances in Consultation Practice | Islind A.S., Snis U.L., Lindroth T., Lundin J., Cerna K., Steineck G. | Computer Supported Cooperative Work: CSCW: An International Journal | 17 |
| 2016 | Psychological attributes and work-integrated learning: An international study | Drysdale M.T.B., McBeath M.L., Johansson K., Dressler S., Zaitseva E. | Higher Education, Skills and Work-based Learning | 17 |
| 2016 | PADRE: A method for participatory action design research | Haj-Bolouri A., Bernhardsson L., Rossi M. | Lecture Notes in Computer Science (in | 16 |
| 2019 | Co-designing a digital platform with boundary objects: bringing together heterogeneous users in | Islind A.S., Lindroth T., Lundin J., Steineck G. | Health and Technology | 15 |
| 2018 | A first step towards a model for teachers' adoption of ICT pedagogy in schools | Gellerstedt M., Babaheidari S.M., Svensson L. | Heliyon | 15 |
| 2019 | Shift in translations: Data work with patient-generated health data in clinical practice | Islind A.S., Lindroth T., Lundin J., Steineck G. | Health Informatics Journal | 14 |
| 2019 | TPACK In Situ: A Design-Based Approach Supporting Professional Development in Practice | Pareto L., Willermark S. | Journal of Educational Computing Research | 14 |
| 2016 | Co-creation and fine-tuning of boundary resources in small-scale platformization | Islind A.S., Lindroth T., Snis U.L., Sorensen C. | Lecture Notes in Business Information Processing | 14 |

## Scopus categories

The diagram and tables are created from data extracted from Scopus and processed in Excel. The results are displayed in both numbers and percent. The diagram and table below illustrates LINA's most common subject categories according to Scopus.
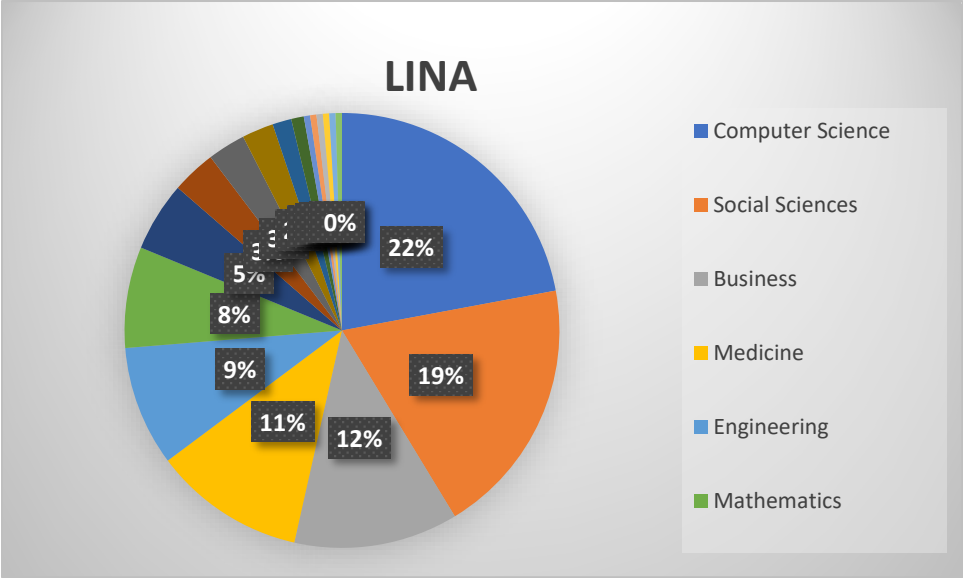
The category data, from Health sciences to Computer Science, displays the major coverage of subject areas significant for LINA.

| Subject categories | Number |
| --- | --- |
| Computer Science | 47 |
| Social Sciences | 41 |
| Business | 26 |
| Medicine | 24 |
| Engineering | 19 |
| Mathematics | 16 |
| Psychology | 11 |
| Decision Sciences | 7 |
| Economics | 6 |
| Nursing | 5 |
| Arts and Humanities | 3 |
| Multidisciplinary | 2 |
| Biochemistry | 1 |
| Chemical Engineering | 1 |
| Energy | 1 |
| Environmental Science | 1 |
| Health Professions | 1 |
| Immunology and Microbiology | 1 |

*Top publications in Scopus*

The diagram and table are created from data extracted from Scopus and processed in Excel. In Scopus LINA is most frequently appearing in journals.
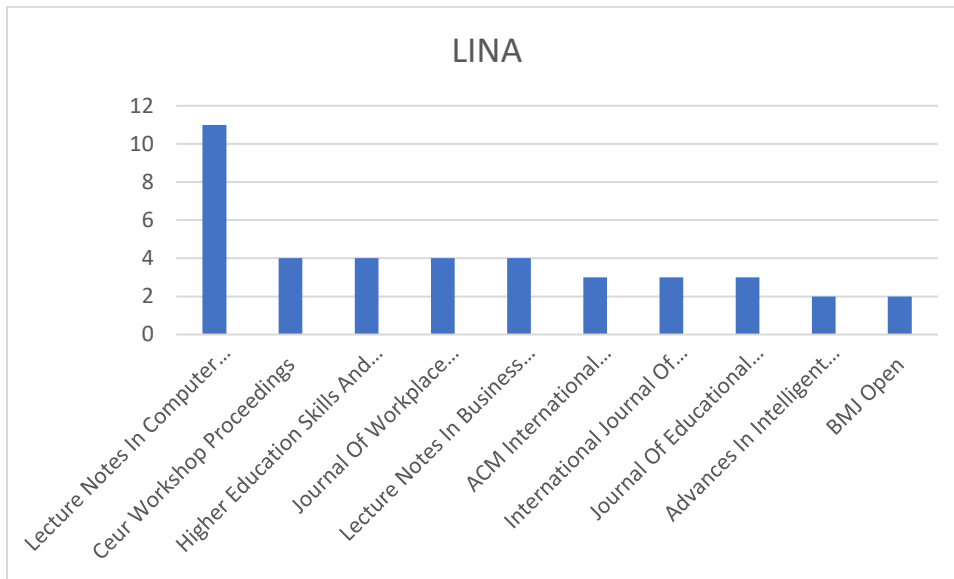


| Journal title | Number |
| --- | --- |
| Lecture Notes in Computer Science Including Subseries Lecture Notes In Artificial Intelligence and Lecture Notes In Bioinformatics | 11 |
| Celur Workshop Proceedings | 4 |
| Higher Education Skills and Work Based Learning | 4 |
| Journal Of Workplace Learning | 4 |
| Lecture Notes in Business Information Processing | 4 |
| ACM International Conference Proceeding Series | 3 |
| International Journal of Entrepreneurship and Small Business | 3 |
| Journal Of Educational Computing Research | 3 |
| Advances In Intelligent Systems and Computing | 2 |
| BMJ Open | 2 |