KANSALLINEN
KOULUTUKSEN
ARVIOINTIKESKUS

Entry-Level Competencies and Study Completion among University Students

Counsellor of Evaluation Mira Huusko, PHD, Docent
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University of Turku

The goals of the presentation

- To examine, based on statistics from the Finnish education administration's Vipunen service, university students' **entry-level competences**, especially in **mathematics**, and the **completion of university degrees**.
  - What **previous degrees** are typical among students entering various fields of study?
  - What is the level of **mathematical competence** demonstrated by the Finnish matriculation examination in different fields of study?
  - How are **studies completed** within or close to the target time in different study fields?
- To describe, based on qualitative data, university students' and teaching staff's perceptions of students' competence.

Data

- Statistics from Vipunen by fields of study
  - **Previous degrees** completed by new students before beginning their university studies in 2022
  - **Average grades of matriculation examinations** of new university students, including **mathematics** taken in matriculation exams as well as **grades** in basic (short) and advanced (long) **mathematics** in 2024.
  - **Completion rates** of university studies among new university students who started their studies in 2015–2016.
- Responses to the open question from students and teaching staff in the Evaluation of the state and renewal of higher education pedagogy (Toom et al. 2023), which examined university **students' competencies.**

Previously completed degrees of university students who started in 2022

- 82% of university students in 2022 had completed the Finnish matriculation examination.
  - 83% of university students in the education field had completed the matriculation examination.
- 15% of university students had completed degree at university of applied sciences before the university studies.
  - 11% of university students in the education field had completed a degree at university of applied science
- 12% of university students had completed a vocational qualification, with the highest proportion found in the education field (24%)

Study field	Percentage of new students with a prior vocational qualification (%)	Percentage of new students with a prior matriculation examination (%)	Difference in the relative proportions of students with a matriculation examination and a vocational qualification
Health and Welfare	11	94	83
Business, Administration and Law	9	88	79
Natural Sciences	6	81	75
Social Sciences	13	86	73
Services	20	90	70
Agriculture & Forestry	14	84	70
Humanities and Arts	16	83	67
Engineering	9	75	66
Educational sciences	24	83	59
Information & Communication Technologies (ICT)	8	67	59

Average grades of all matriculation examination subjects for those who accepted at universities in 2024

- The average matriculation examination grade of university students was 4.9.
- The highest average grade was in the health and welfare fields (5.3), and the lowest in the education field (4.2).
- Scale: L =7, E = 6, M = 5, C = 4, B = 3, A = 2, I = 0.

Study field	Students who accepted study places at universities
Health and Welfare	5,3
Social Sciences	5,2
Engineering	5,1
Natural Sciences	5,0
Business, Administration and Law	5,0
Humanities and Arts	4,9
Information & Communication Technologies (ICT)	4,8
Agriculture & Forestry	4,8
Services	4,6
Educational sciences	4,2
Avarage	4,9

Grade distribution of matriculation examinations for those who accepted at universities

	Koulutusala, taso 3	80. persentiili	Mediaani	20. persentiili
1	Kansantaloustiede	6,33	5,67	5,19
2	Lääketiede	6,50	6,00	5,17
3	Psykologia	6,20	5,83	5,17
4	Eläinlääketiede	6,17	5,83	4,86
5	Suun terveydenhuolto	6,14	5,71	4,85
6	Filosofia ja etiikka	6,33	5,50	4,77
7	Kone-, energia- ja sähkötekniikka, monialaiset koulutusohjelmat	6,20	5,50	4,71

38	Sotilas- ja puolustusala	5,20	4,54	3,60
39	Luokanopettajien koulutus **Primary school teacher education**	5,00	4,33	3,51
40	Taidealat, monialaiset koulutusohjelmat	5,40	4,40	3,50
41	Kasvatustieteet **Educational sciences**	5,17	4,20	3,33
42	Aineenopettajien koulutus **Subject teacher education**	4,60	3,93	3,10
43	Viljan ja karjantuotanto **Grain and Livestock Production**	5,16	3,93	3,07
44	Varhaiskasvatuksen opettajien koulutus **Early childhood education teacher training**	4,40	3,60	3,00
45				

Education sciences by university

Korkeakoulu	80. persentiili	Mediaani	20. persentiili
Åbo Akademi	4,67	4,00	3,28
Helsingin yliopisto	5,00	4,20	3,33
Itä-Suomen yliopisto	4,60	4,00	3,20
Jyväskylän yliopisto	5,00	4,20	3,20
Lapin yliopisto	4,50	4,00	3,40
Oulun yliopisto	5,00	4,20	3,25
Tampereen yliopisto	5,33	4,40	3,60
Turun yliopisto	5,20	4,20	3,20

Koulutusala, taso 3	80. persentiili	Mediaani	20. persentiili
Arkkitehtuuri ja kaupunkisuunnittelu	5,86	5,29	4,64
Taidealat, yleiset koulutusohjelmat	5,82	5,33	4,63
Biokemia	6,00	5,38	4,60
Oikeustieteet	6,33	5,60	4,50
Fysiikka	6,00	5,17	4,40
Kemian tekniikka ja prosessit	5,83	5,20	4,40
Valtiotieteet	6,00	5,17	4,40
Viestintätieteet	5,67	5,14	4,33
Ympäristönsuojeluteknologia	5,62	5,00	4,33
Biologia	5,80	5,00	4,29
Sosiaali- ja käyttäytymistieteet, yleiset koulutusohjelmat	5,43	5,00	4,29
Elektroniikka ja automatiikka	5,56	5,00	4,20
Matematiikka	5,67	5,00	4,20
Rakentaminen ja rakennussuunnittelu	5,33	4,75	4,20
Tuotanto- ja prosessitekniikka, monialaiset koulutusohjelmat	5,33	4,82	4,20
Historia ja arkeologia	5,80	5,00	4,17
Kielten opiskelu	5,80	5,00	4,17
Sosiaalitieteet	5,67	5,00	4,17
	5,67	5,00	4,15
	5,40	4,83	4,13
	5,60	4,83	4,00
	5,74	5,00	4,00
	5,50	4,82	4,00
	5,67	4,83	4,00
	5,57	4,80	4,00
	5,50	4,83	4,00
	4,80	4,38	4,00
	5,40	4,80	4,00
	5,86	4,85	4,00
	5,60	4,83	4,00
	5,57	4,80	4,00
Terveys, monialaiset koulutusohjelmat	5,33	4,67	3,86
Farmasia	5,50	4,67	3,83
Kuvataiteet	5,33	4,83	3,83
Sosiaali- ja käyttäytymistieteet, monialaiset koulutusohjelmat	5,67	5,00	3,83
Tietojenkäsittely- ja tietoliikenne ICT), monialaiset koulutusohjelmat	5,80	4,80	3,83
Musiikki ja esittävät taiteet	5,67	4,83	3,82
Sotilas- ja puolustusala	5,20	4,54	3,60
Luokanopettajien koulutus	5,00	4,33	3,51
Taidealat, monialaiset koulutusohjelmat	5,40	4,40	3,50
Kasvatustieteet	5,17	4,20	3,33
Aineenopettajien koulutus	4,60	3,93	3,10
Viljan ja karjantuotanto	5,16	3,93	3,07
Varhaiskasvatuksen opettajien koulutus	4,40	3,60	3,00

Mathematics in the matriculation examinations by university entrants of 2024

- 60% of new university students had taken the advanced (long) mathematics matriculation exam, 34% had taken the basic (short) mathematics exam, and 8% had not taken either.
- Students beginning studies in engineering had the highest rate of taking advanced (long) mathematics exams (98%), while those in education sciences had the lowest (28%).
- The highest proportion of students who took basic (short) mathematics were in the education field (59%), and the lowest in engineering fields (4%).
- 14% of university students in education fields had not taken any mathematics at matriculation examinations.

Field of study	No written mathematics, percentage (%)	Written short mathematics, percentage (%)	Written advanced (long) mathematics, percentage (%)	Difference in written short and advanced mathematics exams
Engineering	-	4	96	92
Health and Welfare	4	19	77	58
Information & Communication Technologies (ICT)	2	22	76	54
Natural Sciences	3	22	75	53
Agriculture & Forestry	5	33	62	29
Business, Administration and Law	5	40	55	15
Services	3	43	54	11
Social sciences	10	48	42	6
Humanities and Arts	23	47	30	17
Educational sciences	14	59	28	31

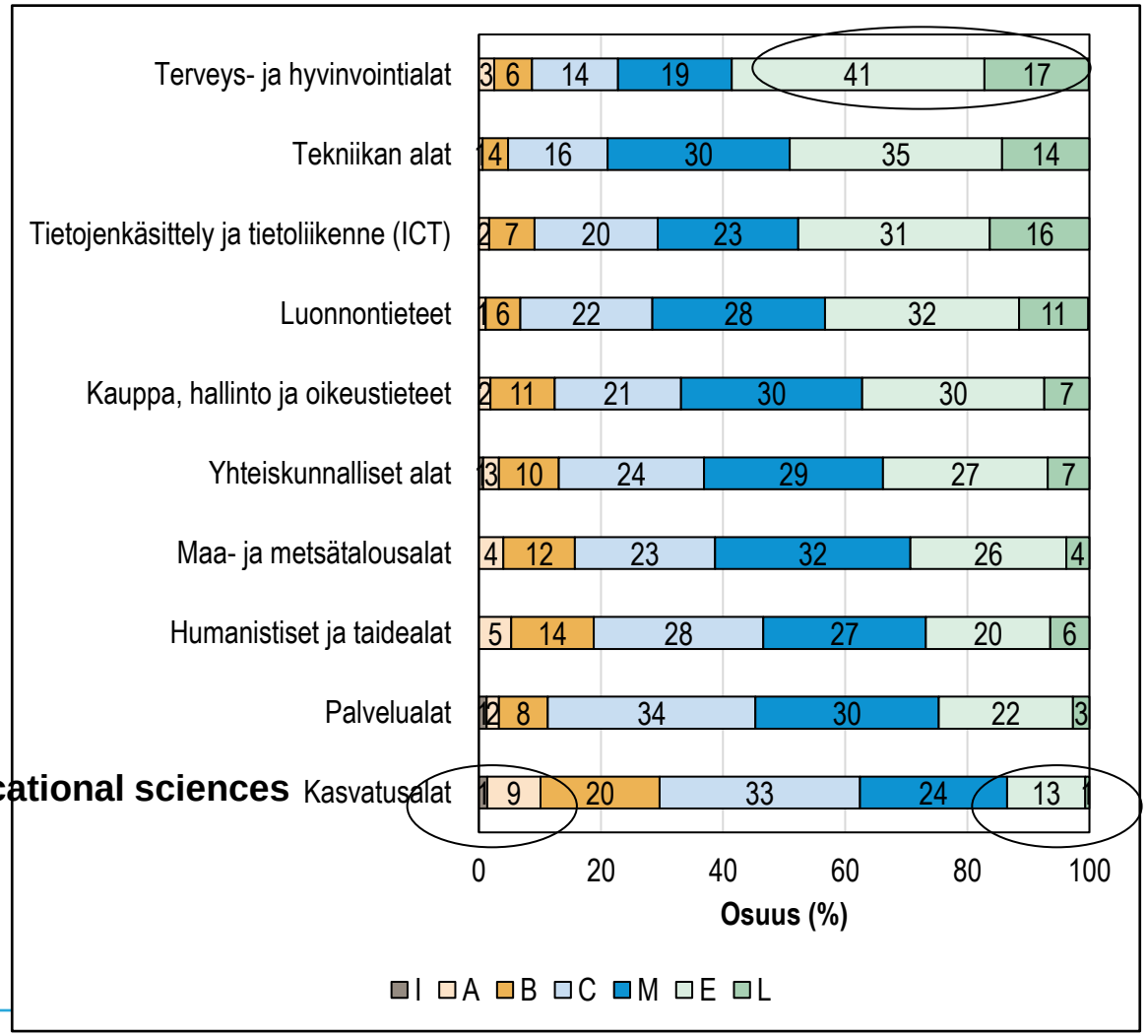
Extent of mathematics taken by new university students in 2024

	Long maths	Short maths	No maths
Luokanopettajien koulutus **Primary school teacher education**	32,6 %	57,8 %	9,9 %
Taidealat, yleiset koulutusohjelmat	32,1 %	46,4 %	21,4 %
Humanistiset alat (paitsi kielet)	30,0 %	60,0 %	3.3 % - 13.3 %
Kasvatustieteet **Educational sciences**	29,8 %	57,9 %	11,9 %
Taidealat, monialaiset koulutusohjelmat	29,6 %	51,9 %	18,5 %
Sosiaali- ja käyttäytymistieteet, yleiset koulutusohjelmat	28,3 %	60,4 %	11,3 %
Historia ja arkeologia	28,2 %	49,0 %	22,8 %
Kuvataiteet	25,0 %	50,0 %	25,0 %
Kirjallisuus ja kielitiede	24,2 %	51,5 %	25,8 %
Uskonto ja teologia	22,4 %	51,7 %	25,9 %
Aineenopettajien koulutus **Subject teacher education**	21,6 %	58,8 %	21,6 %
Varhaiskasvatuksen opettajien koulutus **Early childhood education teacher training**	13,7 %	61,3 %	24,2 %

Koulutusala, taso 3	Pitkä matematiikka	Lyhyt matematiikka	Ei matematiikkaa
Elektroniikka ja automatiikka	96,4 %	3,6 %	0.4 % - 1.5 %
Rakentaminen ja rakennussuunnittelu	96,2 %	3,8 %	
Matematiikka	92,2 %	7,8 %	
Fysiikka	90,0 %	8,8 %	0.4 % - 1.6 %
Lääketiede	89,9 %	9,3 %	1,9 %
Suun terveydenhuolto	88,3 %	10,0 %	0.5 % - 2.2 %
Eläinlääketiede	86,4 %	9,1 %	1.5 % - 6.0 %
Kemia	86,3 %	15,1 %	0.4 % - 1.8 %
Arkkitehtuuri ja kaupunkisuunnittelu	81,0 %	20,0 %	0.3 % - 1.3 %
Biokemia	80,0 %	16,7 %	3,3 %
Tietojenkäsittely- ja tietoliikenne ICT), monialaiset koulutusohjelmat	76,4 %	22,0 %	2,0 %
Kansantaloustiede	74,2 %	25,8 %	1.0 % - 4.3 %
Luonnontieteet, yleiset koulutusohjelmat	72,7 %	22,7 %	6,8 %
Farmasia	70,9 %	26,0 %	3,1 %
Biologia	63,9 %	32,8 %	3,4 %
	60,3 %	36,8 %	2,2 %
	57,6 %	39,4 %	1.0 % - 4.0 %
	56,5 %	30,4 %	8,7 %
	55,6 %	44,4 %	0.9 % - 3.7 %
	55,5 %	41,8 %	2,9 %
	54,7 %	41,5 %	3,8 %
	54,2 %	33,2 %	13,2 %
	53,5 %	39,5 %	7,0 %
	50,0 %	38,9 %	16,7 %
	46,3 %	44,2 %	10,5 %
	42,9 %	35,7 %	21,4 %
	41,9 %	46,8 %	11,8 %
	35,0 %	47,5 %	17,5 %
	34,6 %	55,1 %	9,0 %
	33,5 %	52,5 %	14,5 %
Musiikki ja esittävät taiteet	33,3 %	43,1 %	25,5 %
Kielten opiskelu	33,1 %	43,3 %	23,6 %
Luokanopettajien koulutus	32,6 %	57,8 %	9,9 %
Taidealat, yleiset koulutusohjelmat	32,1 %	46,4 %	21,4 %
Humanistiset alat (paitsi kielet)	30,0 %	60,0 %	3.3 % - 13.3 %
Kasvatustieteet	29,8 %	57,9 %	11,9 %
Taidealat, monialaiset koulutusohjelmat	29,6 %	51,9 %	18,5 %
Sosiaali- ja käyttäytymistieteet, yleiset koulutusohjelmat	28,3 %	60,4 %	11,3 %
Historia ja arkeologia	28,2 %	49,0 %	22,8 %
Kuvataiteet	25,0 %	50,0 %	25,0 %
Kirjallisuus ja kielitiede	24,2 %	51,5 %	25,8 %
Uskonto ja teologia	22,4 %	51,7 %	25,9 %
Aineenopettajien koulutus	21,6 %	58,8 %	21,6 %
Varhaiskasvatuksen opettajien koulutus	13,7 %	61,3 %	24,2 %

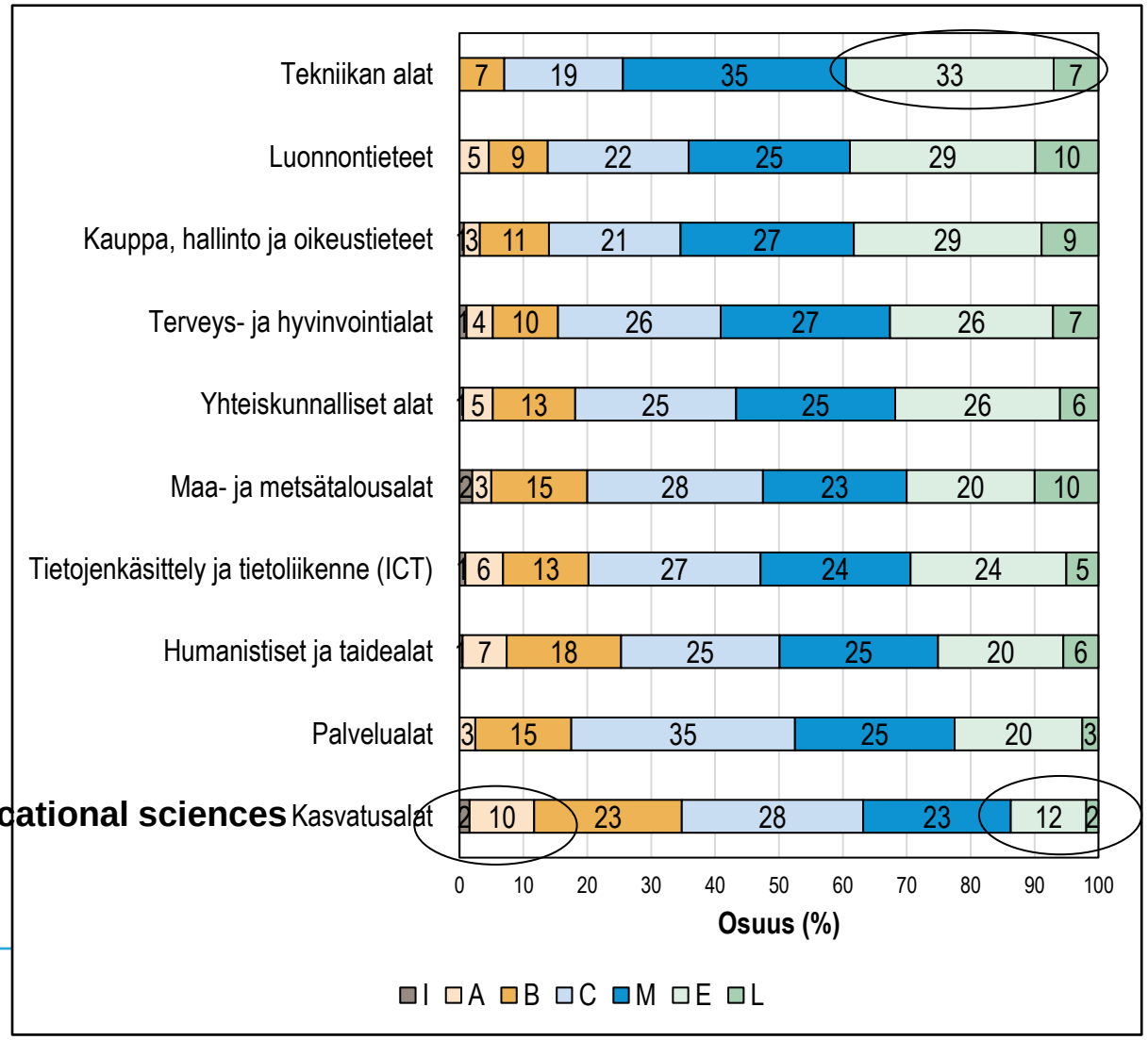
Matriculation examination grades in advanced (long) mathematics of those who accepted at university in 2024

- Students who started in the health and welfare field performed best in advanced mathematics, with 58% achieving grades E or L in advanced mathematics.
- Students who started in the education science performed the weakest in advanced mathematics
  - 14% receiving grades E or L
  - 10% receiving grades I or A in advanced mathematics.



Matriculation examination grades in short mathematics of those who accepted at university in 2024

- University students who started in engineering fields performed best in short mathematics, with 40% achieving grades E or L.
- Students who started in education sciences performed the weakest in short mathematics
  - 14% receiving grades E or L
  - 11% receiving grades I or A.



Completion of university studies among students who started in 2015–2016

- 56% of university students graduate within 7 years in the same degree program from the start of their studies.
- The highest graduation rates within 7 years were in the health and welfare fields (86%) and education fields (79%).
- Within 6 years, the highest graduation rates were also in health and welfare (73%) and education fields (72%).
- Students in education fields completed the most studies within 5.5 years (56%).

Study field	3 years	3,5 years	4 years	4,5 years	5 years	5,5 years	6 years	6,5 years	7 years
Health and Welfare	22 %	24 %	29 %	30 %	34 %	42 %	73 %	76 %	86 %
Educational sciences	15 %	18 %	23 %	27 %	49 %	56 %	72 %	74 %	79 %
Business, Administration and Law	5 %	9 %	17 %	21 %	35 %	44 %	62 %	65 %	72 %
Services	1 %–3 %	1 %–3 %	5 %	8 %	26 %	36 %	54 %	62 %	69 %
Social sciences	3 %	4 %	7 %	10 %	19 %	26 %	46 %	49 %	56 %
Engineering	0 %	0 %	1 %	2 %	7 %	13 %	28 %	36 %	48 %
Agriculture & Forestry	0 %–1 %	0 %–1 %	2 %	3 %	9 %	13 %	33 %	35 %	48 %
Humanities and arts	1 %	2 %	3 %	4 %	12 %	17 %	33 %	36 %	45 %
Natural sciences	2 %	2 %	3 %	4 %	10 %	15 %	27 %	31 %	40 %
Information & Communication Technologies (ICT)	1 %	2 %	2 %	3 %	5 %	8 %	15 %	19 %	25 %
Avarage	5 %	7 %	10 %	12 %	21 %	28 %	44 %	48 %	56 %

Qualitative data: Students and staff expressed concerns about competencies (Toom et al., 2023)

Students

- Students highlighted the need to strengthen mathematical competencies as part of university studies, as they sometimes found the teaching too demanding without adequate support measures.
- They emphasized the importance of clear course structure and coherence between study modules.
- Students expressed a desire for more diverse assessment methods and entrance exams that support motivation.
- They also wished for the development of labour market skills and support for coping.

Teaching staff

- Teaching staff experienced that students' basic knowledge and skills vary greatly.
- They expressed concerns about the decline in students' competence levels, challenges in teaching, and the negative effects of entrance exam reforms.
- According to teachers, increasing student numbers and the rise of remote teaching have made it harder to deliver high-quality education and have led to a lowering of standards.
- Teaching staff also noted that the students are becoming increasingly challenging, which increases the need for diverse support services.

Summary

- **The health and welfare fields** stand out in many ways from other university fields.
  - 94% had completed the matriculation examination.
  - They had the highest average matriculation exam grades (5.3).
  - They performed best in advanced (long) mathematics.
  - Completion of studies was most likely in this field.
- The lowest average matriculation exam grade among university entrants was found among students in **the education science field** (4.2).
  - They performed the weakest in both advanced (long) and basic (short) mathematics.
  - 14% had not taken any mathematics at all.
  - Students in education fields completed the most studies within 5.5 years, with 56% of students in that field having graduated by then.
- Among students in universities of applied sciences, 29% of those in education fields had taken advanced mathematics, 45% had taken short mathematics, and 25% had not taken any mathematics.

More information

In Finnish

- Huusko, M. & Nurkka, N. (2025). Korkeakouluissa aloittaneiden lähtötason osaaminen ja opintojen läpäisy.
- Toom, A., Heide, T. Jäppinen, V., Karjalainen, A., Mäki, K., Tynjälä, P., Huusko, M., Nurkka, N., Vahtivuori-Hänninen, S. & Karvonen, A. (2023). Korkeakoulupedagogiikan tila ja uudistaminen -arviointi

In English

- Summary publication (2023)
- Press release (2023)
- Press release about the article (2025)
- Summary (2023)
- Pedagogical leaders' checklist for developing higher education pedagogy
- Teachers' checklist for developing higher education pedagogy
- Students' checklist for developing higher education pedagogy
- Evaluation of the state and renewal of higher education pedagogy_main findings and recommendations