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# Education and Training **MONITOR 2018** Denmark



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EUROPEAN COMMISSION

# **Education and Training Monitor 2018**

Denmark

*Volume 2 of the Education and Training Monitor 2018 includes twenty-eight individual country reports. It builds on the most up-to-date quantitative and qualitative evidence to present and assess the main recent and ongoing policy measures in each EU Member State, with a focus on developments since mid-2017. It therefore complements other sources of information which offer descriptions of national education and training systems.*

*Section 1 presents a statistical overview of the main education and training indicators. Section 2 briefly identifies the main strengths and challenges of the country's education and training system. Section 3 looks at investment in education and training. Section 4 focuses on citizenship education. Section 5 deals with policies to modernise school education. Section 6 discusses measures to modernise higher education. Finally, section 7 covers vocational education and training, while section 8 covers adult learning.*

*The manuscript was completed on 1 September 2018.*

*Additional contextual data can be found online ([ec.europa.eu/education/monitor](https://ec.europa.eu/education/monitor))*

## 1. Key indicators

		Denmark		EU average		
		2014	2017	2014	2017	
<b>Education and training 2020 benchmarks</b>						
Early leavers from education and training (age 18-24)		7.8%	8.8%	11.2%	10.6%	
Tertiary educational attainment (age 30-34)		44.9%	48.8%	37.9%	39.9%	
Early childhood education and care (from age 4 to starting age of compulsory primary education)		98.1% <sup>13</sup>	98.1% <sup>16</sup>	94.2% <sup>13</sup>	95.3% <sup>16</sup>	
Proportion of 15 year-olds underachieving in:	Reading	14.6% <sup>12</sup>	15.0% <sup>15</sup>	17.8% <sup>12</sup>	19.7% <sup>15</sup>	
	Maths	16.8% <sup>12</sup>	13.6% <sup>15</sup>	22.1% <sup>12</sup>	22.2% <sup>15</sup>	
	Science	16.7% <sup>12</sup>	15.9% <sup>15</sup>	16.6% <sup>12</sup>	20.6% <sup>15</sup>	
Employment rate of recent graduates by educational attainment (age 20-34 having left education 1-3 years before reference year)	ISCED 3-8 (total)	83.7%	82.9%	76.0%	80.2%	
Adult participation in learning (age 25-64)	ISCED 0-8 (total)	31.9%	26.8%	10.8%	10.9%	
Learning mobility	Degree mobile graduates (ISCED 5-8)	:	1.4% <sup>16</sup>	:	3.1% <sup>16</sup>	
	Credit mobile graduates (ISCED 5-8)	:	8.4% <sup>16</sup>	:	7.6% <sup>16</sup>	
<b>Other contextual indicators</b>						
Education investment	Public expenditure on education as a percentage of GDP	7.1%	6.9% <sup>16</sup>	4.9%	4.7% <sup>16</sup>	
	Expenditure on public and private institutions per student in € PPS	ISCED 1-2	€8 587	:	€6 494 <sup>d</sup>	:
		ISCED 3-4	€7 730	:	€7 741 <sup>d</sup>	:
		ISCED 5-8	:	:	€11 187 <sup>d</sup>	:
Early leavers from education and training (age 18-24)	Native-born	7.8%	8.8%	10.4%	9.6%	
	Foreign-born	8.4% <sup>u</sup>	9.3% <sup>u</sup>	20.2%	19.4%	
Tertiary educational attainment (age 30-34)	Native-born	44.6%	46.6%	38.6%	40.6%	
	Foreign-born	46.0%	58.1%	34.3%	36.3%	
Employment rate of recent graduates by educational attainment (age 20-34 having left education 1-3 years before reference year)	ISCED 3-4	81.3%	81.7%	70.7%	74.1%	
	ISCED 5-8	85.9%	83.8%	80.5%	84.9%	

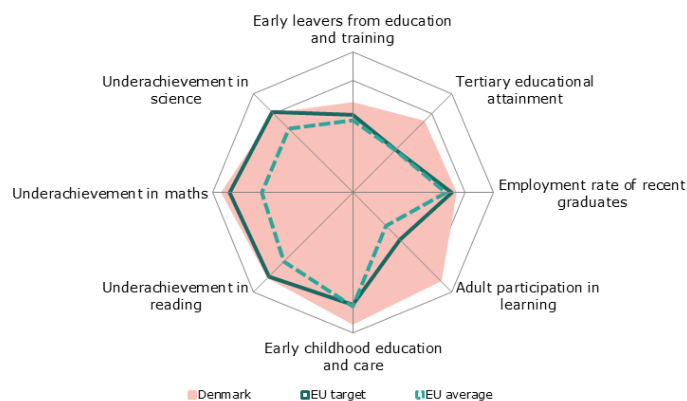
Sources: Eurostat (see section 10 for more details); OECD (PISA).

Notes: data refer to weighted EU averages, covering different numbers of Member States depending on the source; d = definition differs, 12 = 2012, 13 = 2013, 15 = 2015, 16 = 2016.

On credit graduate mobility, the EU average is calculated by DG EAC on the available countries; on degree graduate mobility, the EU average is calculated by JRC over Eurostat and OECD data.

Further information can be found in the relevant section of Volume 1 ([ec.europa.eu/education/monitor](http://ec.europa.eu/education/monitor)).

**Figure 1. Position in relation to strongest (outer ring) and weakest performers (centre)**



Source: DG Education and Culture calculations, based on data from Eurostat (LFS 2017, UOE 2016) and OECD (PISA 2015). Note: all scores are set between a maximum (the strongest performers represented by the outer ring) and a minimum (the weakest performers represented by the centre of the figure).

## 2. Highlights

- Danish education combines high achievement with a focus on student well-being.
- Despite the strong participation in early childhood education and focus on inclusion throughout the system, the impact of socio-economic status on education outcomes persists and those with an immigrant background still lag seriously behind.
- Citizenship education is a cross curricula topic in Denmark and the differentiation of competences is less developed than in other Nordic countries.
- Education has seen many reforms leading to 'reform fatigue'. Teachers' participation in continuing professional development is low.
- Public budgets have been reduced, but Denmark remains one of the biggest spenders on education in the EU, operating very generous grant systems.

## 3. Investing in education and training

**Denmark continues to belong to the group of countries with the highest education spending in the EU, despite recent reductions.** Public spending as a percentage of GDP has remained practically the same, at 6.9 % in 2016 (Eurostat COFOG). General government expenditure on education also remained broadly unchanged at EUR 19 billion. Cuts were made to expenditure at local level, with a particular impact on early childhood education and care (ECEC). The quality of the services delivered, as measured by child/teacher ratios and the qualification levels of ECEC staff, varies considerably between municipalities. The impact of budget savings was also visible in tertiary education, where for instance the University of Copenhagen announced in 2016 that more than 500 teachers, researchers and staff providing services risk losing their job. This equates to 7 % of staff.

**Denmark spends a higher share than comparable countries at early stages of education<sup>1</sup> and offers generous grants.** Over 90 % of spending on primary education is dispensed by local authorities. Denmark spends 1.3 % of GDP on ECEC; this is 0.5 percentage points more than the EU average, but still below the 2 % spent by Sweden. Overall a significant part of spending compared to other Nordic countries is related to the generous student grant system at tertiary level. Compared to teachers in other EU countries Danish teachers are well paid, earning about 90 % of the salary of other tertiary-educated full-time employed<sup>2</sup> (OECD, 2018a).

**The student population is expected to fluctuate over the next decades, with a particular increase at earlier ages and more stable cohorts at tertiary level.** Eurostat forecasts a 2 % reduction of 7-18 year-olds by 2030 compared to 2017 (in line with the OECD 2016b) and a 7 % increase by 2050. For below-6 year-olds, a dramatic increase of 18 % by 2030 is expected, and a further increase of 10 % by 2050. The relevant age group for tertiary education (19-26 year-olds) will shrink by 4 % by 2030 and thereafter increase very slightly by 1 % by 2050. This necessitates a particular focus on ECEC in the future. More immediate fluctuations in participation patterns in education included a 3 % decline in vocational education and training (VET) between 2013 and 2014 and a particular increase in short-cycle university students of 6 % in 2014 and again 5 % in 2016.

## 4. Citizenship education

**Citizenship education is a cross-curricula topic in Denmark. Given the decentralised structure of education in Denmark there is no central oversight, but students excel.** Citizenship education in Denmark is mainly a cross curricular theme at ISCED level 1 to 3. But

<sup>1</sup> OECD EaG 2017, indicator B1.

<sup>2</sup> OECD EaG 2017, table D3.2a.

citizenship is offered as an independent subject at grade 8 and 9 as well (“samfundsfag”). Curricula for upper secondary education state that both educational programmes and the school culture should help to prepare pupils for participation, co-responsibility, rights and responsibilities in a free and democratic society. According to the 2016 International Civic and Citizenship Education Study (ICCS)<sup>3</sup> by the International Association for the Evaluation of Educational Achievement (IEA) (Schulz et al, 2017), Danish eighth grade students score highest on knowledge on civic issues in international comparison.

**The differentiation of competences is less developed than in other Nordic countries** (Eurydice, 2017). There are no guidelines on classroom assessment in citizenship education in primary, general secondary education and in school-based VET and there are no national tests in citizenship education. In general secondary education, citizenship education is taught by non-specialist teachers qualified in other subjects. But since 2017 a part-time two-year course is available leading to a ‘Master of Authority and Citizenship’ covering issues such as the relationship between the individual and the community and concepts like individualism, globalisation, Europeanisation and multiculturalism. Experience from the first courses will allow the authorities to improve future initial teacher education.

**Critical thinking has now been made an explicit learning objective and extra-curricular activities depend on schools.** The new curriculum for the Folkeskole in 2015/2016 simplifies the common objectives issued in 2009 and focuses on citizenship and human rights and makes critical thinking now an explicit learning objective. This reform gives students more possibilities to modulate their own school day. Engagement and extra-curricular activities with the community are a regular part of a student’s life. Primary and secondary schools are responsible for organising this.

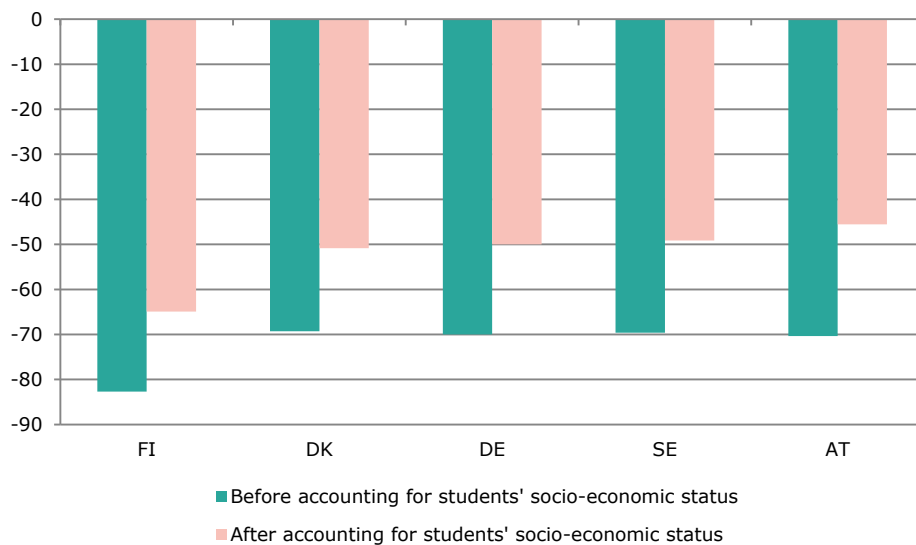
## 5. Modernising school education

**Denmark has generally good education outcomes; however young people from a weak socio-economic and in particular immigrant background lag seriously behind.** Denmark does well in international testing. It is among the best performing EU countries with regard to the share of low achievers in mathematics, science and reading (PISA 2015) with an overall rate of 15 % which meets the Education and Training 2020 benchmark and exceeds it for mathematics with 13.6 %. However, PIRLS data from 2016 show that reading skills among Danish fourth graders have not improved since 2006 in contrast to other Nordic countries such as Norway or Sweden (Mejdning et al, 2017), confirming the lack of progress in PISA among 15 year-olds since 2000. Recent reforms in Folkeskolen and in upper secondary education that have aimed to improve quality have still to be evaluated. Denmark has, compared to other Nordic countries, a significantly smaller share of high-performing students (OECD, 2016a).

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<sup>3</sup> ICCS reports on students’ knowledge related to concepts of citizenship, equity, decision-making and civic self-image. In ICCS 2016 the civic knowledge scale was set to a metric with a mean of 500 (the average score of countries participating in ICCS 2009).

**Figure 2. Difference in science achievement between immigrant and non-immigrant students (PISA score points) with and without adjustment for socio-economic status**



Source: OECD PISA 2015.

**Second-generation young people with an immigrant background are much more likely to be low achievers than non-immigrant students.** While Denmark's immigrants have a smaller share of low performers in mathematics than the EU average, it is the only country where the second generation does not improve as measured by PISA 2015 (European Commission, 2016 and 2018a). Among immigrants, those from Western countries generally perform better than those from other countries but still perform below non-immigrants. National tests in reading in 2016/2017 confirm a clear performance gap for immigrants but not that the second generation does worse. While 78 % of non-immigrants performed well in second grade, only 52 % of first-generation immigrants and 61 % of second-generation with a migrant background did so. Tests in eighth grade showed a similar pattern (Ministry of Education, 2017).

**The Folkeskolen reform means Danish students now have the longest school hours among Nordic countries** (Vive, 2017). According to national PIRLS 2016 analysis, this additional learning time has not yet contributed to improved learning outcomes. This is in line with international studies. Bad results in international reading testing may also reflect the finding that Danish students take the lowest pleasure in reading of all countries participating in PIRLS. Their teachers similarly report that only about 15 % of them read for pleasure. The resilience of Danish students with immigrant background is mixed. Compared to other Nordic countries they do better academically and show a stronger achievement motivation but have higher life-related anxieties (OECD, 2018b).

**While internet usage has increased to one of the highest levels in the EU there is no clear indication of a short-term improvement in digital skills.** 95 % of the population aged 16-74 used the internet in 2017 compared to 78 % in 2006. For the same age group the indicator for basic or above digital skills improved between 2015 and 2016 but dropped in 2017 below the level of 2015, unlike in the other Nordic countries. The digital skills of the employed population increased between 2015 and 2017 for those with low overall skills, remained about the same for those with basic skills and decreased somewhat for those with above-basic digital skills. Denmark's 'Digital Growth Strategy' (Ministry of Industry, 2018), agreed upon in parliament in February 2018, identifies 38 activities with the aim of making Denmark a digital frontrunner. About EUR 10 million have been allocated for a four-year trial programme (2019-2021) on testing different models to strengthen technology understanding in primary and secondary school, one of the strategy's seven key initiatives (European Commission, 2018b). In addition, a strategy to strengthen teaching and learning of natural sciences was presented in 2018 (Eurydice, 2018).

**There is a strong focus on harnessing digitalisation, including in education.** In 2018, an action plan for technology in teaching and learning was prepared, addressing how to strengthen



digital competences for all age groups and among teachers and school managers; to make better use of ICT in teaching; and to educate on the ethical use of data. More broadly, the government and the social partners have established a 'Disruption Council' to adapt the Danish labour market to the collaborative economy and digitisation. The aim is to develop a strategy whereby digitalisation, robots and artificial intelligence improve welfare, while preparing the labour market for a future in which many traditional jobs are expected to disappear. Its work also informs education providers on the reforms required due to these technological changes.

**Figure 3. Percentage of low achievers in mathematics (PISA 2015)**



Source: OECD PISA 2015.

**The rate of early leavers from education and training (ESL) for 18-24 year-olds has fallen steadily, but immigrants have difficulties accessing upper secondary education.** From 2007 to 2017 ESL declined by 5.7 percentage points to 7.2 % but increased in 2017 by 1.6 percentage points. This increase was more pronounced in towns, suburbs and rural areas than in cities. The ESL performance gap of young people from an immigrant background is only 0.7 percentage points higher than native-born; for those not originating from western countries, it is only at 1.5 percentage points higher. While comparatively fewer young immigrants drop out from education in Denmark, they still face difficulties entering upper secondary education. 28 % of the students that are interested in continuing in upper secondary education have been declared educationally not ready. This group reaches 52 % for vocational programmes as against 17 % for general upper secondary education. In general upper secondary education, the share of young people not fit to continue has increased continuously in recent years. Since 2017, all schools have to assess in eighth grade whether a pupil is ready to pass on to upper secondary education, not only focusing on the pupil's academic, personal and social competence but also using a newly introduced practical dimension<sup>4</sup>.

**Box 1: Youth Initiative North Jutland assisted about 1400 marginalised Danes into education and work.**

15-30 year-olds with no educational qualifications received tailor-made support with an ESF contribution of EUR 5 million, about 50 % of the total budget. Collaboration between professionals from education, social services and employment made it possible to develop personalised education and job plans. A wide range of services including job guidance, mentoring, internships and traineeships prompted 68 % of the young people to start education or take up work. Besides essential skills (Danish language, maths and social studies) they learned also about healthy diet, personal communication and financial literacy.

More information: <http://ec.europa.eu/esf/main.jsp?catId=46&langId=da&projectId=2137>

<sup>4</sup> The Consolidation Act on Guidance.

**Denmark has one of the highest participation rates in early childhood education and care (ECEC) both for native and foreign-born.** In 2015, 91 % of children under 2 years old participated in ECEC and 97.1 % of 3 year-olds. This is the highest participation for under-2s in the EU (OECD, 2018a). While the government has identified ECEC as a key measure to reduce the socio-economic isolation of foreign-born people in its strategy 'One Denmark — without parallel societies, no ghettos in 2030', the situation at municipality level remains uneven and, as previously stated, may also be deteriorating due to budget cuts. Teacher-child ratios keep increasing in some municipalities as does the share of unqualified staff working in ECEC (Christensen, 2017).

### Box 2: Teachers in Denmark

**Denmark has a relatively even age distribution of teachers in education and a more even gender balance than other EU countries.** The bulk of teachers are between 30 and 60 years old (OECD, 2016a). However, Denmark will have to continue to attract young people to the teaching profession considering the future demographic trend. Denmark is one of only seven EU countries that engage in forward planning for teachers (Eurydice, 2018). Male teachers are comparatively well represented with 30.4 % in primary and 32.3 % in lower secondary education. This compares to, for instance, 2 % in primary school in Slovenia and 22 % in lower secondary school in Sweden.

**Danish teachers earn relatively well but working conditions have been subject to reforms.** Teachers' pay is relatively attractive at primary and lower secondary level, but less so at upper secondary level (OECD, 2017a). Generally, the impact of these reforms has been positively evaluated. But the increased instruction time leaves teachers with less time to prepare lessons for students more individually (Vaaben and Vive, 2017), which is a central aim of the reform.

**Qualification of teachers is an issue, as is their limited engagement in continuing professional development.** The National Research and Analysis Center for Welfare reports that 12 % of school leaders find that the lack of qualified teachers hampers schools from delivering optimal education. An additional 25 % consider this somewhat the case. In a recent survey, 41 % out of 98 municipalities reported that they experience shortages in skilled labour in schools. 43 % believe it has become more difficult to recruit teachers within the last 3 years (Kommunernes Landsforening, 2017). The international PIRLS 2016 study identified a decrease in the continuing professional development of teachers compared to 2011. About 50 % of students have teachers not attending further professional development. There are no courses during working time, no special leave and expenses for travel or substitute teachers are not covered (Eurydice, 2018). Most Danish teachers and school heads hold bachelor's degrees only. The lack of continuing professional development is a concern as teaching and the management of schools becomes an ever more challenging task.

## 6. Modernising higher education

**Denmark continues to have, with 48.8 %, one of the highest tertiary educational attainment rates in the EU with a sizeable number of students from abroad.** Tertiary attainment increased by 10.7 percentage points during the last 10 years. Denmark belongs to the countries with a high number of foreign students. According to Eurostat, both the number of students originating from EU countries as well as those from non-EU countries continued to increase between 2013 and 2016, reaching 9 % for the former and 10.8 % for the latter. As far as degree-mobile students are concerned, in 2016 alone Denmark registered a 10 % increase to 10.9 % among EU students and to 12.9 % for all foreign students. Thanks to the traditional gap year between upper secondary education and tertiary education, Danish students entering tertiary education are older in international comparison. They also tend not to enter the labour market after having obtained their bachelor's degrees but to stay in education for a master's degree.

**When migrant students reach tertiary level, their educational outcomes are broadly similar to those of natives.** Analysing the highest completed qualification by ethnicity in 2017 (Ministry of Foreign Affairs and Integration, 2017) shows that about the same percentage of women from migrant as from native backgrounds had obtained a bachelor's or a master's degree.

Migrants from a western background did more than twice as well (28 %) as natives or migrants from a non-western background (both 12 %) in obtaining master's degrees. These figures suggest a certain inward migration of already well qualified migrants to undertake master's studies.

**Danish reforms in higher education concentrate on funding.** A new funding formula for higher education is intended to form the basis for performance-based funding. Basic funding (25 %) will be renegotiated every 4 years. The number of active students determines activity funding (67.5 %) and the remaining 7.5 % is distributed based on performance on certain criteria (7.5 %). The key measurement for this performance-based funding is the amount of time it takes graduates to find their first employment.

**Denmark aims to become digitally the leading country in Europe.** The "Digital Growth Strategy" provides for relevant measures in higher education. As well as offering more IT courses, higher education should train students to be among the best in the world and thus make Denmark a catalyst for both new technologies and new business models. Even though Denmark has made progress in increasing the number of science, technology, engineering and mathematics (STEM) graduates<sup>5</sup> (European Commission, 2018b), these graduates still don't fully satisfy labour market demand. No increase is registered for ICT specialists. (European Commission, 2017b). The Technology Pact — part of the 'Digital Growth Strategy' signed by 80 participating institutions in April 2018 — aims to encourage even more young people to select technology-oriented STEM subjects.

## 7. Modernising vocational education and training

**Denmark is addressing decreasing enrolments in VET and links VET more strategically to economic and innovation systems.** The share of students in upper secondary participating in VET further decreased to 41 % in 2016 (Cedefop, 2018a). A tri-partite agreement aiming to attract young people into VET and to increase completion rates was concluded in August 2017. Under this agreement, employers committed to offer at least 8 000-10 000 additional apprenticeship places by 2025 to allow more young people to choose and to complete a VET programme (Apprenticeship toolbox, 2018). Initiatives to secure a sufficient and qualified workforce in the long run include strengthening financial incentives for companies that offer apprenticeships and the creation of subsidy programs providing internships. In 2017, VET knowledge centres were launched to develop Centres of Excellence (Cedefop, 2018). These are to provide knowledge and training in specific areas with high relevance for emerging and growing sectors: robotics and automation, welfare technology, process technology, craftsmanship and handicrafts, craftsmanship and design, sustainable building and energy-related building renovation, e-business, and database service development. These centres have a close and formalised cooperation with other actors relevant for regional growth. The government has provided DKK 133 million (EUR 17.8 million) to establish and operate the centres between 2017 and 2020, and a further DKK 80 million (EUR 10.7 million) for specific technology investments.

## 8. Promoting adult learning

**Denmark continues to further modernise its high performing adult education and continuing training system.** Denmark has one of the highest adult participation rates in learning in the EU: 26.8 % in 2017 (Eurostat 2017). According to the Continuing Vocational Training Survey from 2015 (Eurostat 2015), 34.6 % of employees participated in continuing vocational training (EU-28 average 40.8 %). Participation of the low-skilled in education and training is the second highest in Europe (17.3 % in 2017).

**A tripartite agreement towards stronger and more flexible adult education and continuing adult training was concluded in October 2017.** The agreement contains initiatives aimed at helping those wishing to upgrade their qualifications in their present profession as well as those considering switching jobs to another profession or industry in line with the Council Recommendation on Upskilling Pathways. It will also serve to improve the quality of the adult vocational training (ArbejdsMarkedsUddannelser (AMU)) programmes, and ensure more flexibility

<sup>5</sup> In 2016, Denmark had the second highest number of STEM graduates among Nordic countries (23.3 % compared to 15.5 % in Sweden, 14.3 % in Norway) but this compares to 28.9 % in Ireland and 25.5 % in France. Denmark produces a comparable share of STEM PhDs to Germany and Finland with 1.3 % but less than Sweden (1.4 %) or Switzerland (1.9 %) and clearly more than Norway with 0.8 %.

for companies. The agreement will give employers in the public and private sector better access to qualified labour, and a better framework will be created for keeping workforce skills up-to-date with the pace of change in the labour market.

**The agreement will run for 4 years (2018-2021). Its key elements are:**

- (1) Targeted labour market transition — with establishment of a ‘transition fund’ (more than DKK 400 million (EUR 54 million)) intended to promote labour market mobility by strengthening the possibilities for employees to participate in job-orientated training and education, either in their spare time or during their working hours;
- (2) Strengthening basic skills and more extensive use of screening tests (around DKK 60 million (EUR 8 million));
- (3) Improving the quality of the adult vocational training (AMU) programmes (DKK 420 million (EUR 56.3 million));
- (4) Increased compensation for participation in all AMU programmes;
- (5) Further development of the adult and continuing higher education system and a better certification system (DKK 5 million annually (EUR 0.7 million));
- (6) A more professional AMU system with greater flexibility, documented learning through tests and easier access for providers of AMU programmes and a single entrance to the VET system;
- (7) Flexible VEU employer contribution and refund of DKK 680 million (EUR 91 million);
- (8) Dedicated outreach activities (DKK 100 million (EUR 13.4 million)).

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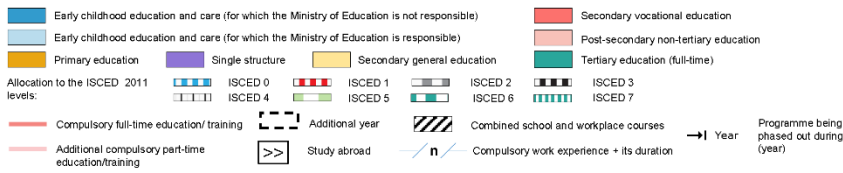
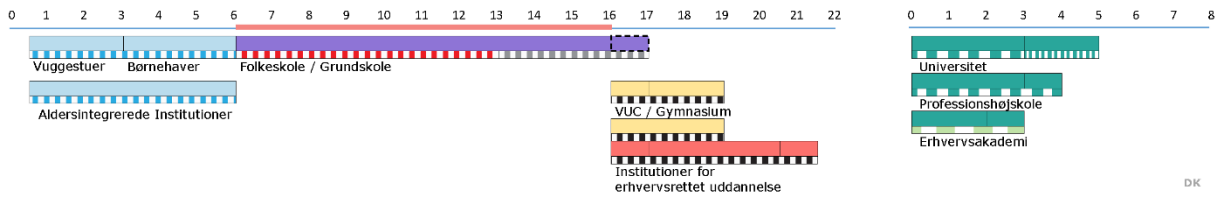
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## 10. Annex I: Key indicator sources

Indicator	Eurostat online data code
Early leavers from education and training	edat_lfse_14 + edat_lfse_02
Tertiary educational attainment	edat_lfse_03 + edat_lfs_9912
Early childhood education and care	educ_uoe_enra10
Underachievement in reading, maths, science	OECD (PISA)
Employment rate of recent graduates	edat_lfse_24
Adult participation in learning	trng_lfse_03
Public expenditure on education as a percentage of GDP	gov_10a_exp
Expenditure on public and private institutions per student	educ_uoe_fini04
Learning mobility: Degree mobile graduates	JRC computation based on Eurostat / UIS / OECD data
Credit mobile graduates	educ_uoe_mobc02

# 11. Annex II: Structure of the education system



Source: European Commission/EACEA/Eurydice, 2017. *The Structure of the European Education Systems 2017/18: Schematic Diagrams*. Eurydice Facts and Figures. Luxembourg; Publications Office of the European Union.

Comments and questions on this report are welcome and can be sent by email to:  
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