

Opetusministeriö

Ministry of Education



Education and research 2007–2012

Development Plan



EDUCATION
AND RESEARCH
2007-2012

DEVELOPMENT PLAN

MINISTRY OF EDUCATION



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In accordance with the Decree on the Development Plan for Education and University Research (987/1998) issued on 14 December 1998 within the administrative sector of the Ministry of Education, the Government adopts a plan for the development of education and university research within the administrative sector of the Ministry of Education every four years for both the year in question and for the following five calendar years.

On 5 December 2007,
the Government adopted the following
development plan for 2007–2012.

The development plan is based on the objectives set for education and science policy in the Government Programme of Prime Minister Matti Vanhanen's Second Government.

Priorities for development are to guarantee equal opportunities for education and training, a high quality of education and training and the availability of skilled labour, to develop higher education and to safeguard competent teacher resources.

The objectives of the development plan support the implementation of the policy programme for the well-being of children, young people and families, the policy programme for health promotion, the policy programme for employment, entrepreneurship and working life, and the child and youth policy development programme.

The development plan will be implemented within the Government decision on spending limits and the related Basic Public Services Programme. The implementation of the development plan will be evaluated in 2010.

Helsinki, 5 December 2007

Sari Sarkomaa, Minister of Education and Science

Kirsi Kangaspunta, Planning Director

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Change in the operating environment



Changes in the world of work and the incidence of
children and young people | Globalisation
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children and young people | Globalisation
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Change in the operating environment

Globalisation

Globalisation is an opportunity to promote national and international well-being. Economic growth in the developing countries has strengthened, with the average growth rate exceeding 6% in the 21st century. At the same time, changes in the economic structure of post-industrial societies have become more rapid as traditional industrial processing is being transferred to new industrial countries (Labour Force 2025. Helsinki, 2007). Globalisation can promote a more equal distribution of well-being globally and bridge gaps between living standards.

The partial transfer of industrial manufacturing and basic production outside Finland's borders will change the national industrial structure. The number of people employed in agriculture and forestry started to decline as early as the 1960s. The amount of industrial work began to decrease at the turn of the 21st century, and this development is expected to continue. Growing sectors in the global economy include the service and trade industries (Labour Force 2025. Helsinki, 2007).

One of the most significant forms of globalisation in terms of its impacts is the deregulation of the financial and labour markets of national states,

which means that it is now easier to make cross-border capital transfers and investments. Developed communication and a reduced need for a fixed workplace contribute to the generation of worldwide markets. The deepening and expanding integration in Europe will create a distinct market area. This will increase pressures to reorganise work in Finland and to increase its flexibility. Significant phenomena include part-time and fixed-term work and, in particular, the non-secure access of young age groups to the labour market.

More attention has been paid to global environmental threats, particularly climate change, which may endanger sustainable development. Global cooperation can help identify more efficient solutions to these threats than separate actions by individual states. These solutions have also created new business opportunities, including opportunities in the development and production of environmental technologies.

The education system must support the creation of new jobs in Finland and enable both individuals and businesses to adapt to the changes caused by globalisation.

Demographic change

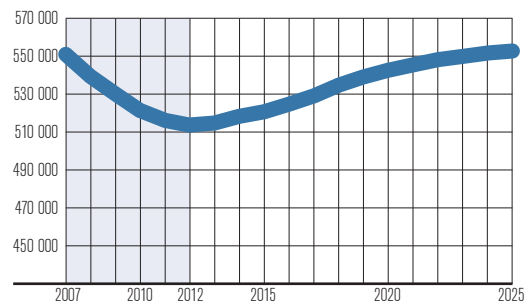
Demographic change will be a significant challenge in developing the education system during and after the forthcoming development plan period. There has already been a significant decline in the number of those in basic education, and the numbers starting upper secondary education will take a downward trend towards the end of the period. Soon after this, the number of those starting higher education will start to decline.

The number of those in basic education is estimated to be lowest in 2012, more than 40,000 below the figure in the current year. After this, the numbers in these age groups will slowly start to increase, and the number in 2025 is estimated to be close to the current level.

Changes of such magnitude in the young age groups will require adaptation and development measures in the network of schools, institutions and higher education institutions. Key decisions will be taken during the development plan period in the network of education institutions and higher education institutions in order to maintain the equal availability of education and training, while maintaining and enhancing quality.

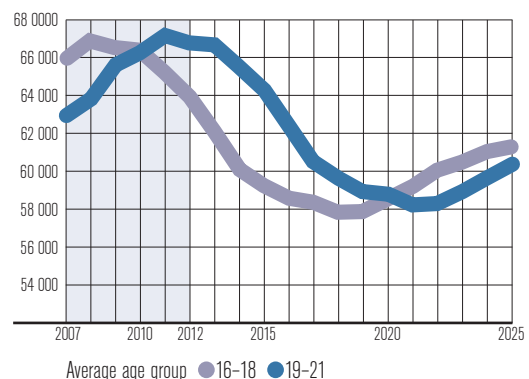
The development of the numbers of children and young people is regionally uneven, which poses a particular challenge in developing the network of education institutions. For example, the number of those in basic education compared with the current situation will decrease only slightly in the Oulu and Tampere Regions and in Kanta-Häme by 2012, and the relative decrease will not be dramatic in Uusimaa, either. On the contrary, in South Karelia, South Savo, North Karelia, the Kainuu Region and Lapland, the numbers of those in basic education in 2012 will be under 90% of the current level. Regional differentiation

Figure 1. Development in the number of those in basic education (7-15 years) in 2007-2025



The numbers starting upper secondary or higher education will continue to grow for a while and will then start to fall at slightly different rates. The decrease will continue until 2020, which marks the transition towards increasing numbers in these age groups. The number of those starting upper secondary education will be greatest in 2008, and of those starting higher education, in 2011. Source: Statistics Finland.

Figure 2. Development in the numbers of those starting upper secondary and higher education in 2007-2025. Source: Statistics Finland.



will continue until 2020. By that time, many regions will have again reached the 2007 level, and the number of those in basic education in the Tampere and Oulu Regions will be 110% compared with the current situation. In contrast, the number of those in basic education will continue to decline in some regions, such as Kymenlaakso, South Karelia, South Savo, North Karelia and the Kai-nuu Region.

The situation will be highly differentiated in regional terms also for the age groups starting upper secondary or higher education. The number of those starting upper secondary education will remain at least at the current level until 2012 in Uusimaa, East Uusimaa, Southwest Finland, Kanta-Häme and the Tampere Region. The number of young people will clearly fall in South Savo, North Karelia and Lapland. In 2020, fewer young people will start upper secondary education in all regions than in 2012, but the pace and extent of the decrease will vary significantly. The numbers starting higher education will continue to increase in most regions until 2012. However, only Uusimaa and East Uusimaa will have as many people aged between 19 and 21 in 2020 as in 2007. Regional differences will be considerable in this age group, too. In 2020, the numbers starting higher education will be about 80% of the current figures in South Savo, North Karelia, the Kainuu Region and Lapland.

The structural development of the network of education institutions, providers and higher education institutions to support a controlled transition towards decreasing numbers in the relevant age groups has already begun. Both the network of training providers and the network of higher education institutions are being restructured by removing overlaps and by supporting the creation of strong, high-quality units.

Another challenge arising from demographic change is ensuring the adequate supply of skilled

labour in the future. Since 2005, the number of those reaching working age has been smaller than the number retiring from the labour market. The Finnish labour market has not been in this situation since the Finnish wars, and attempts must be made to secure access to the labour market for the entire workforce. The number of those aged between 25 and 55 is already on the decline, and the number of those aged between 55 and 65 will also start to decrease around 2012. In contrast, the number of those over 65 has already seen a dramatic increase and will be 1.17 times the current figure in 2012 and 1.56 times the current figure in 2020.

In the future, actions will be required for the ageing population to enhance the efficiency of the education system, to speed up transition points and to shorten study periods. It must also be ensured that the working-age adult population will have adequate opportunities for self-development during situations of change in working life. Similarly, the retired population must have services that cater for their educational needs.

Changes will be seen not only in the size of the workforce but also in its educational level. Approximately 1.65 million of those of working age (people aged between 25 and 65) are estimated to have a vocational qualification in 2007, whereas the corresponding figure is expected to be about 1.85 million in 2012 and about 2.05 million in 2017. In addition, the number of people who have completed higher education will increase.

The trend in migration is a key question in developing competence. Net migration between regions has remained stable during the 21st century. The population has increased particularly in Uusimaa, Southwest Finland, Kanta-Häme and the Tampere and Oulu Regions. During 2003–2005, there was a

slight decrease in net migration in growth centres, particularly in Uusimaa. In addition to migration within the country, developments in net immigration affect the need to develop education and training services. The net population gain resulting from immigration has remained relatively stable in the 21st century, despite a slight increase in recent years. The net migration gain in 2001 was approximately 5,800 people, whereas in 2005 it was about 9,000 people. The needs for education and training services among immigrants are very diverse. On the one hand, some people are in need of language and cultural training, as well as initial vocational studies; on the other hand, there are experts whose training needs are very specific.

Changes in the world of work and the incidence problem

The adaptation of businesses to international competition and changes in production methods affect the demand for labour. Competitiveness has been boosted by increasing productivity, for example by reducing the share of labour in production and service processes. Changes have also been made to the competence structure of businesses. The resulting changes in the industrial and occupational structures have increased occupational mobility. The rapid changes in the occupational structure and professions have been a challenge for the incidence of competence and jobs. The skills of those moving away from fields of decreasing employment do not always meet the requirements for vacancies. Strict adherence to traditional professions for men and women prevents the functioning of the labour market and contributes to labour bottlenecks.

During the forthcoming development plan period and far beyond, the amount of labour among the

younger age groups will not compensate for those who retire. It is important for society that, to the extent possible, the educational choices of young people correspond to the demand for labour. However, educational choices should also support personal growth and independent development.

Indeed, responding to the incidence problem and safeguarding the availability of skilled labour will be some of the key challenges in education policy during the forthcoming development plan period.

Changes in the labour market do not apply only to the quantitative shares of the various professions in the occupational and industrial structure. Job descriptions within professions and the contents of professions will also change. Therefore, broad-based competence and its transferability will have a special role. Competence tied to a single job or task will not be sufficient in the future. In addition to basic vocational skills, vocationally oriented training in upper secondary or higher education should provide students with broad-based competence that enables them to work at various tasks, can be transferred from one workplace to another and provides the basis for studies at a later age. Correspondingly, adult education and training should provide flexible study opportunities to increase employees' competence level, to prepare them for changes in job descriptions and to provide possibilities to change fields and occupations.

Change in the growth environment of children and young people

Changes in society affect children's and young people's well-being and are reflected in schools as growth communities. It is demanding to attend school and study. Learning environments and communities outside school are becoming more diverse, and

television and the Internet are significant influences in a child's growth environment. Parenting resources are consumed by competition and are affected by insecurity in working life, as well as changing family structures. Different and increasingly unequal circumstances at home are reflected on a daily basis in schools and early childhood education.

In general, children are doing fine in Finland. However, some pupils have increasingly more psychosocial problems, mainly resulting from family circumstances. The demand for general and parenting support in families has increased. According to a school healthcare survey, approximately one in every six young people suffers from ill-being and unhealthy habits. According to the survey, the manifestation of symptoms of moderate or severe depression has increased, particularly among girls. The proportion of young people reporting bullying has long remained at approximately 8%. The world of children and young people involves pressures, yet responses have been inadequate. These pressures relate to appearance, gender roles, the feeling of being accepted, the need to grow up too early and expectations of success. Children and young people need adults as discussion partners, both at home and at school.

Judging by cognitive indicators, the Finnish compulsory education system is a great success. However, the results concerning children's well-being at school are not equally good. Finnish children also feel that they have little influence at school in international comparison. In addition to cognitive-based competence targets, schools should better support the development of children's general well-being and their emotional, social, ethical and aesthetic skills. Schools also have an important role in the prevention and early recognition of problems.

Immigration has increased and is estimated to increase further. Different cultures and practices will be part of everyday life. Differentiation is a phenomenon that diversifies communities and promotes economic development. New practices and innovations are created in communities where different people meet and the various groups trust each other. A free atmosphere based on trust contributes to the creation of communities of various competences and encourages creative activities. It is essential to have a broad selection of vocationally oriented high-quality training, but it is not alone sufficient to create qualitatively new practices. We need a high level of education, which enables us to see our actions as part of a larger entity and encourages mutual learning. Schools also play an important role in building community spirit within schools and locally. As migration and increased immigration add to the feeling of rootlessness, the school becomes a key social institution in building community spirit.

The ongoing rapid technological development creates new possibilities for maintaining social contacts and networking. It increases the forms of social participation and facilitates the provision and availability of information and services. Information and communications technology enables the creation of more efficient and productive practices, which can also be utilised in teaching and education. The development of the information society also brings challenges. This requires increasingly diverse skills and media literacy, as well as the ability to be critical towards the information produced by the media.



A close-up photograph of a hand holding a pen, poised to write on a document. The background is a warm, brownish-orange gradient with a repeating pattern of text in a cursive font. The text is semi-transparent and includes phrases like 'Quality of education and training', 'Teachers as a resource', 'Safeguarding a skilled workforce', and 'Equal opportunity in education'. The overall composition is layered, with the hand and pen in the foreground and the text pattern in the background.

Priorities in development

Priorities in development

This development plan is based on the objectives set for education and science policy in the Government Programme of Prime Minister Matti Vanhanen's Second Government. Competence and a high level of education, creativity and innovativeness are necessary prerequisites for the success of Finland and the Finnish people.

As laid down in the Government Programme, the education system will be developed overall so that it meets global challenges and responds to changes in the demographic and occupational structures.

The challenges of the plan period will require close cooperation between Ministries.

Equal opportunity in education and training

A high level of education and the availability of high-quality, free education are the cornerstones of the Finnish welfare society. The Government will secure equal opportunities for quality education from early childhood to university education throughout the country. The objective is to raise the population's

educational and knowledge level close to the world top. Adult education and training supports the participation of citizens in society and the world of work.

Quality of education and training

A high quality of teaching and qualifications is a precondition for the effectiveness, efficiency and productivity of education and training. Attention will be paid to continuous quality enhancement and to quality assurance at all levels of education.

As the attitudes, knowledge and skills acquired in basic education provide the basis for future learning, it is particularly important to ensure a high quality of basic education.

A particular priority during the development plan period will be to enhance the quality of basic and higher education. To this end, the aim in basic education will be to reduce group sizes and to reinforce remedial teaching and special needs education. The well-being of children and young people will be promoted as part of quality enhancement in education and the development of the school environment.

Special objectives for higher education include the improvement of the student/teacher ratio and the reform of performance management to underscore the quality of education.

Safeguarding a skilled workforce

A child starting school this year will be in working life well into the 2060s, maybe even longer. The world of work can be expected to change drastically over the next fifty years. Education should provide a strong knowledge base that is also serviceable in changing circumstances. Furthermore, schools should encourage constant learning.

Safeguarding the availability of skilled labour requires a high level of education, knowledge and skills among the decreasing younger age groups and measures geared to maintain and develop the knowledge, skills and educational level of the adult population. Care must also be taken to put the talent reserves of immigrants to full use.

In order to safeguard the availability of skilled labour, measures will be stepped up to expedite graduation, to improve the matching of education and working life and to reduce the relative number of those who remain untrained. Further, the system of adult education and training will be overhauled and foresight will be developed.

Development of higher education

Universities and polytechnics will continue to be developed in keeping with the dual model, which is based on different degrees, degree titles and professional tasks. A large-scale university reform will be launched during the plan period. University structures will be developed and the financial and administrative autonomy of universities will be enlarged. The aim is to increase top international expertise and establish stronger and more effective higher education units.

The Government will guarantee the financial and structural prerequisites for high-quality, multidisciplinary basic and applied research and will bolster the innovation capacity of the economy through strategic investment in knowledge. Strategic centres of excellence in science, technology and innovation will be created.

Teachers as a resource

It is impossible to raise the level of education and competence among the population, to develop the quality of education and training or to continually develop the education system without highly competent teaching staff. Measures must be taken to ensure access to competent and knowledgeable teachers. To this end, care will be taken to ensure sufficient provision of teacher education, and teachers' working conditions will be improved. Similarly, teachers' opportunities for systematic upgrading of their competencies will be improved.

and multiple education | Structural development and innovation | International Connections between education and work | Qualifications | Quality and and polytechnic education and research | Social coherence and active citizenship | Evidence-based decision-making | Level of labour | Efficiency, retention rates and monitoring and financing | Research, development and innovation | Immigrants and multiculturalism | Co-operation and the promotion of entrepreneurship education | Assurance | Development of university and research | Development of teaching | Social

Development of
education and
research

Level of education and knowledge

The educational level of Finns is rising steadily. This is mainly due to the more educated younger age groups gradually replacing those with less education. In 2005, 38% of those aged 60 or more had post-primary qualifications, whereas the share was 83% among those aged between 20 and 29.

In an OECD comparison, Finland is ranked tenth as regards the share of people aged 25–64 with post-primary qualifications (OECD (2007) *Education at a Glance OECD Indicators 2007*. Paris: OECD Publishing) and 15th as regards higher education graduates.

In participation of the workforce (aged 25–64) in training in 2004, Finland is 23rd among 30 OECD countries.

Finland's success in global competition, the promotion of well-being in society as a whole and the prevention of exclusion require that the entire population and workforce have a strong knowledge base. The demographic change entails both constantly raising the level of education and competence among the decreasing younger age groups and maintaining and raising the level of education among the adult population. To satisfy the demand for skilled labour, it is necessary to fully harness the talent reserves of

different population groups in the service of society and the economy.

With a view to securing Finland's international competitiveness and advancing Finnish civilisation, the educational level of the population will be raised to become one of the highest in the world as regards both holders of post-primary qualifications and holders of higher education qualifications. Reaching this objective requires not only raising the educational level of young people but also opening opportunities for adults of different ages to upgrade their education.

Apart from raising the level of education, attention will be paid to quality assurance at all levels of education and training. The aim is a high level of competence in all education and training.

Measures will be taken to ensure that all children complete the basic education syllabus.

The aim is to increase the share of post-primary qualification holders in the 25–34 age bracket to 92.5% by 2015 and to 95% by 2020.

The proportion of vocational qualification holders in the younger age groups has decreased. This is mainly due to the expansion of higher education and the fact that a larger number of young people, including vocational qualification holders, go on to higher education.

As regards vocational qualification holders aged between 25 and 34, the aim is to maintain the current level (45%) up to 2015 and to increase the share to 46% by 2020. The aim is that a larger share of vocational qualification holders will continue in higher education and that a larger share of school-leavers who currently do not continue at the post-primary level will study for a vocational qualification.

As regards higher education, the aim is that 38.5% of the 25–34 age group will have either a polytechnic or a university degree in 2015. The target for 2020 is 42%.

The objective is that those active in working life will have opportunities for continuous development of their competence and for the retraining required by changes in the world of work and by occupational mobility.

The aim is that annually at least 60% of the working-age adult population will participate in training and that participation will expand to cover the currently under-represented groups.

The educational levels of women and men differ quite considerably in favour of women in the younger age groups. In 2005, 60% of women and 41% of men aged between 20 and 24 had taken the matriculation examination. The share of vocational qualification holders in the 25–34 age bracket was 46% for men and 44% for women. In the same age group, 31% of university or polytechnic graduates were women and 25% men. In the 45+ age group, men were in a majority among university degree holders.

There are also considerable regional differences in the educational level of the population. In 2005, the share of post-primary qualification holders aged over 15 was 67% in Uusimaa and 59% in South Savo, South Ostrobothnia and Central Ostrobothnia, whereas the average for the entire Mainland Finland (Not including the Åland Islands) was 63%. The share of university graduates in the same group was 21% in Uusimaa and 9% in the Kainuu Region in the north-east, while the average for Mainland Finland was 14%.

Gender equality will be promoted in education and training. The study choices of boys and girls will be influenced with the aim of bridging the gap in the educational levels of women and men and levelling out occupational distribution in working life. A development project focusing on equality issues and gender awareness will be undertaken in teacher education.

In measures to raise the educational level of the population, special attention will be paid to levelling out differences between regions and age groups.

Development of accessible education will be supported in order to enhance the educational opportunities of different learners, groups with different disabilities and students from different linguistic and cultural backgrounds.

Access to skilled labour

Safeguarding access to skilled labour will be an increasing challenge as a result of the demographic change. From 2010 up to 2030, the number exiting working life will annually exceed the number of young Finns entering it by 11,000–12,000. Filling the number of vacancies that may exceed the natural wastage owing to possible positive economic development will require that the overall employment rate is raised, that the younger age groups are maximally employed and that the working-age adult population is retrained for new jobs. The employment reserves among the unemployed, the inactive and immigrants must be utilised better. The dwindling supply of labour highlights the importance of anticipating quantitative and qualitative training needs in the world of work. At the same time, the flexibility of the education system and its ability to respond to changing needs must be enhanced. Changes in the world of work are rapid and in some cases it may be impossible to respond to them through educational policy decisions. Therefore, the focus must be on education that provides broad, versatile knowledge and skills both in general education and in subsequent education and training.

One challenge in targeting education is that the need for new skilled labour in all sectors and

occupational groups cannot be satisfied with training supply geared to young people.

As regards the supply of youth education and training, the policy premise in target-setting is, firstly, that all the age groups leaving comprehensive and upper secondary schools will be offered opportunities to study for qualifications in vocational or higher education and, secondly, that a sufficient share of vocational qualification holders will have the possibility to continue in higher education, particularly in polytechnics.

The target-setting is also geared to improve the performance of the education system. The retention rate in education must be raised from the current average of about 70% to at least 80%. This will require efficient measures to reduce the drop-out rate. Long-term multiple training, where inappropriate, must also be reduced.

With regard to economic and workforce development, the targets for training supply are based on the estimates put forward by the Ministry of Employment in its Labour Force 2025 project, which anticipated developments up to 2025 (Labour Force 2025. Full employment, high productivity and good jobs will provide the foundation for well being as the working age population diminishes, Työpoliittinen

tutkimus 325/2007, Ministry of Employment). The basic message is that employment growth will be significant only in the service sector. At best, employment in the manufacturing sector will remain at the current level, while employment in primary production will decrease substantially. Employment in the service sector will grow particularly in social and household services, business and real estate services, and trade.

The other key starting point in the target-setting is the occupational structure forecast up to 2020, which was prepared by the Finnish National Board of Education on the basis of the aforementioned job development and Statistics Finland data on the occupation, education and age of the employed in 1995, 2000 and 2004. According to the forecast, the main occupational groups with positive job development are construction; services; social and health care; teaching and education; culture and communications; and other managerial and expert work. The main occupational groups of decreasing employment are agriculture and forestry, and office work. Occupational groups with stable labour needs include manufacturing, transport and logistics, and the security sector.

The total natural wastage in 2005–2020 will be approximately 913,000, i.e. 40% of persons employed in 2004. Natural wastage varies substantially, from 25% to 60%, between occupational groups, and this will greatly influence the number of vacancies and the need for new skilled labour within different occupational groups.

According to calculations, the total annual need for a new skilled workforce will be approximately 65,000 in the baseline scenario of slower, more traditional development and approximately 70,600 in the target scenario of more rapid and dynamic development. As the anticipated average size of the 16–21 age group in 2011–2015 will be around 64,000 and its projected

labour force participation rate around 90%, this age group will satisfy only around 90% of the need for new labour in the baseline scenario and only around 80% in the target scenario.

The need for a Swedish-speaking workforce and training is anticipated according to the same principles as described above regarding Finnish speakers, with due consideration of the occupational and educational structure of the Swedish-speaking population and the importance of proficiency in the Swedish language and Finland-Swedish culture in different occupations.

Table 1 presents the entrant targets for 2012 in the target scenario in youth education and training, as well as the share of Swedish-language education and training, by field and sector.

The target-setting must accommodate the fact that those starting education in 2012 will mostly enter working life between 2015 and 2020. The basis for the targets is therefore the need for new skilled labour during that period. Entrant targets by subfield are presented in Appendix 2.

The means available to the Ministry of Education for achieving the entrant targets are authorisations to provide vocational education and training and performance and target negotiations with higher education institutions. Operational targeting and steering powers have been devolved on universities, polytechnics and vocational education institutions in order to emphasise the responsibility of education and training providers in anticipating changes in working life and responding to them. They are required to play an active role in considering the competence needs of the world of work and in regional development. Education and training provision is also steered by means of performance-based financing systems, which will be developed for all the aforementioned forms of education.

EDUCATION AND RESEARCH 2007-2012
DEVELOPMENT

Table 1. Entrant targets for education and training in 2012*

Field	Entrant target in 2012	of which the share of Swedish-language**
Humanities and education		
Vocational education and training	850	55
Polytechnics	350	15
Universities	4 280	310
Culture		
Vocational education and training	2 270	180
Polytechnics	1 600	130
Universities	1 300	100
Social sciences, business and administration		
Vocational education and training	5 200	255
Polytechnics	4 800	260
Universities	4 620	425
Natural sciences		
Vocational education and training	1 500	70
Polytechnics	1 500	35
Universities	3 100	140
Technology, communications and transport		
Vocational education and training	21 500	885
Polytechnics	7 000	395
Universities	3 500	175
Natural resources and the environment		
Vocational education and training	2 700	180
Polytechnics	900	70
Universities	340	15
Social services, health and sports		
Vocational education and training	9 000	540
Polytechnics	7 150	405
Universities	1 850	105
Tourism, catering and domestic services		
Vocational education and training	6 200	300
Polytechnics	1 300	75
Universities	100	5
Total		
Vocational education and training	49 220	2 465
Polytechnics	24 600	1 385
Universities	19 090	1 275
Total	92 910	5 125

*Education and training within the administrative sector of the Ministry of Education.

**Entrant targets for vocational education and training and polytechnic education apply to Swedish-language teaching. Targets for university education do not apply to Swedish-language university education but to new university students with Swedish-speaking primary education. The total number has been calculated according to the age group that completed Swedish-speaking comprehensive school.

Regional targets

The Regional Councils have prepared regional targets for the supply of youth education and training for 2012. The sum total of targets proposed to the Ministry of Education significantly exceeds the national total presented in Table 1. In the spring of 2008, the Ministry of Education will set regional targets for 2012 with a view to implementing the development plan. The target-setting will be informed by the national framework for education and training supply in the development plan, as well as developments in regional business and employment, the related need for labour and education and training, and changes in the size of the younger age group up to 2012 in different regions. The aim is to improve equality and balance between the regions in education and training supply.

Adult education and training

The aim in the supply of adult education and training is to offer good opportunities for the working-age population to develop its competence at work, to facilitate occupational mobility and to raise the adult population's level of education and competence. The training supply will also meet the cultural needs of the ageing adult population. Entrant targets for adult education and training in 2012 are presented in Table 2.

The need for higher education is estimated to increase in the long term, partly because of the rise in the population's overall level of education.

Table 3 presents the estimated distribution of qualification needs between fields of education in vocational adult education and training. The estimate is based on the number of employed unskilled people by occupational group in 2004, the number of employed people who have changed profession between 2000

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Table 2. Entrant targets for adult education and training in 2012 ¹

<i>Education and training</i>	<i>Entrant target in 2012</i>
General upper secondary schools	
Upper secondary school studies	10 000
Subject studies ²	17 500
Vocational adult education and training	
Preparatory training for competence-based initial vocational qualification	17 000
Preparatory training for further vocational qualification	25 000
Preparatory training for specialist vocational qualification	10 000
Competence-based preparatory, total	52 000
Other vocational further education and training ²	45 000
Polytechnics	
Basic qualifications	4 000
Upper qualifications	3 800
Specialised studies	5 000
Open polytechnic education ²	15 000
Universities	
Basic degrees	5 500
Researcher training ³	2 000
Continuing education ²	110 000
Specialised studies	5 700
Open university ²	95 000
Liberal adult education ²	1 200 000

1) Education and training within the administrative sector of the Ministry of Education. |
2) Number of participants. | 3) Full-time researcher training. The realised figure for 2006 includes all the further degrees completed.

and 2004, and the estimated number of vacancies by occupational group during 2005–2020.

As regards Swedish-language provision, it is estimated that there will be a slightly above-average need for adult education and training in the humanities and education; social sciences; business and administration; natural resources and the environment; and social services, health and sports, and a slightly below-average need in technology, communications

and transport; and tourism, catering and domestic services. In terms of sectors of education, the need for Swedish-language adult education and training is estimated to be slightly above average in polytechnics and universities and slightly below average in vocational education and training.

Interim review

There is a constant supply of new data on the changing needs of the world of work. Further, as the overall reform of adult education and training proceeds, it may cause changes in the entrant targets. An interim review will therefore be conducted halfway through the Government's term of office, and the entrant targets of the development plan will be amended, where necessary.

Table 3. Distribution of adult education and training leading to a qualification by field

<i>Field</i>	<i>%</i>
Humanities and education	5
Culture	5
Social sciences, business and administration	20
Natural sciences	5
Technology, communications and transport	35
Natural resources and the environment	5
Social services, health and sports	15
Tourism, catering and domestic services	10
Total	100

Efficiency, retention rates and multiple education

The aim in improving the performance of the education system is to bolster the success of individuals in their studies and later life. Another aim is to get more value for the resources invested in education and training and to increase the employment rate.

Currently, the calculated retention rate (The calculated retention rate means the relative share of those completing a qualification in the total natural wastage each term, i.e. the graduates and the drop-outs. The data are from the academic/school year 2004-2005.) is around 89% in general upper secondary education, around 70% in vocational education and training, around 66% in polytechnics, and around 63% in Master's programmes.

Retention rates will be raised and drop-out rates reduced at all levels in order to alleviate exclusion and to enhance the efficiency of the education system. With a view to reducing drop-out rates, measures will be taken to develop guidance counselling, information and advisory services; student selection; student financial aid; personalised studies; systems for monitoring progress in studies; cooperation between homes and schools; and pupil and student health services. Flexible basic education and training guiding to and preparing for

vocational education and training (currently piloted) will be provided on a permanent basis. More weight will be put on retention rates in the financing of vocational and higher education institutions. Comparative reviews will be published on the performance of training providers and on the performance of higher education institutions and their units.

In terms of access to skilled labour and the efficiency of the education system, it is important to examine the time spent on education and training.

The objective set for all sectors is to further shorten study times. The Ministry of Education and higher education institutions will prepare recommendations for the accreditation of prior learning by fields of education.

During the development plan period, the occupational structure is expected to change radically and, therefore, retraining is often a prerequisite for success in the labour market. Retraining for a change of occupations will also expedite structural change in the labour market. The challenge for the education system is to equip individuals to upgrade their competence;

another challenge is to target supply to offer sufficient training which facilitates occupational mobility. By the same token, the educational choices of young people should equip them well for working life and for further studies.

Some multiple education and training of the same level is due to a lack of suitable training supply and inadequate individual counselling. For appropriate use of educational resources and judicious time use by individuals, educational demand should be directed at maximally effective programmes. In some cases, further training and continuing education may be a good alternative for those who already have a qualification. The dynamics of the labour market warrant that retraining and further education leading to a qualification promote individual career development. Currently, the following proportions of entrants already have a qualification of the same or a higher level (For each sector, the proportion of entrants with either the qualification in question or a higher qualification is described. For example, one in every five entrants in vocational education and training has an initial, a further or a specialist vocational qualification, or a higher education qualification):

20% of all entrants studying for initial vocational qualifications

- 10% of all entrants in curriculum-based vocational education and training
- 56% of all entrants in training preparing for competence-based vocational education and training (Including apprenticeship training)

23% of all entrants studying for further vocational qualifications (Including apprenticeship training)

46% of all entrants studying for specialist vocational qualifications (Including apprenticeship training.

Only includes cases where entrants have a post-secondary, higher vocational or higher education qualification)

3% of all entrants in polytechnics

- 2% with a polytechnic degree in education for young people
- 9% with a polytechnic degree in adult education

15% of all entrants in universities

(Includes polytechnic graduates and B.A. level university graduates. Approximately 4% of entrants in university education have an M.A. level university degree)

Table 4. Retention rates by duration of studies, %¹

	<i>Start year</i>	<i>3 years</i>	<i>4 years</i>	<i>5 years</i>	<i>6 years</i>	<i>7 years</i>	<i>10 years</i>
General upper secondary schools ²	2000	77,0	88,9	90,8			
Vocational education and training ³	2000	56,6	65,4	68,7			
Polytechnics	1999		42,8	58,4	65,4	72,5	
Universities ⁴	1996		25,6	42,1	55,2	63,7	69,3

1) Source: Statistics Finland. | 2) All the qualifications completed in the curriculum for young people. | 3) Curriculum-based education and training. | 4) Including B.A. and M.A. level university degrees. For reasons of statistical technique, those who have studied for 4 years refers to those who have studied for less than 5 years, those who have studied for 5 years, to those who have studied for less than 6 years, etc.

The objective is to reduce inappropriate multiple education by 2012. Nevertheless, multiple education will not be curtailed by legal means, and care will be taken to ensure that there is a sufficient supply of training leading to change of occupation/profession.

The models for individuals' training must be as appropriate as possible for each situation. Many of those studying for another vocational qualification of the same level are already in working life and cannot necessarily apply the same methods or study at the same rate as those completing their first qualification. Many of them also have knowledge and skills that can be counted towards the new qualification.

Those intending to study for a different vocational qualification of the same level will be encouraged to apply for adult education programmes, such as preparatory training for competence-based qualifications, adult education in polytechnics or Master's programmes at universities. Continuing education at universities will be developed to provide a genuine alternative to education leading to a qualification.

Structural development

Measures to enhance the quality and efficiency of operations and changes in the operating environment, particularly demographic change, require that networks of education institutions, education and training providers and higher education institutions be developed. The changes in the municipal structure and municipal cooperation effected through the "PARAS" (Project to restructure municipalities and services) project will influence the networks of institutions and providers.

The public authorities have a constitutional obligation to guarantee equal opportunity for everyone to receive education in accordance with their ability and special needs, and for self-development irrespective of their financial situation.

Pre-primary, basic and general upper secondary education

The premise in basic education is a uniform comprehensive school and a system of municipal schools supplemented by private schools. A diverse range of municipal and private schools enables families to choose the most suitable education for their child. The role of private schools is to enhance the pluralism of the Finnish education system and to give parents an

active role in school selection. The number of private schools has stabilised in Finland. Less than 3% of pupils in basic education are taught in private basic schools.

As the number of children decreases, the school network will become even sparser. The future challenge will be to design teaching and educational services in a way that guarantees a high standard of teaching and a diverse supply of services for everyone, as required by legislation. The utilisation of information and communications technology through a supply of distance and online teaching will possibly be a key means to this end in the future. The starting point in pre-primary and basic education, morning and afternoon extracurricular activities, general upper secondary education and basic (extracurricular) education in the arts is to guarantee the basic educational and cultural rights of all children and young people, regardless of their place of residence, language and financial standing. In addition, the development of the upper secondary school network must accommodate the educational needs of the adult population. By cooperating, education providers can improve the availability of education.

Pre-primary and basic education will be safeguarded as a neighbourhood service. The availability of voluntary additional basic education will be safeguarded. The barriers to attending school in neighbouring municipalities will be lowered. The development of the upper secondary school network will be informed by wider regional training needs and supply.

Developments in the time spent on school travel and relevant arrangements will be monitored. The aim is to keep transportation times reasonable for young pupils.

Measures will be taken to secure a high quality of teaching, student welfare and guidance counselling services and the availability of professional staff.

The role and tasks of the state special schools and reform schools will be reviewed. The position of special needs education in Swedish will be secured. Measures to provide teaching for children and young people in care by virtue of the Child Welfare Act will be stepped up, as required by the Basic Education Act.

The administration of early childhood education will be reviewed in cooperation with the Ministry of Social Affairs and Health. The aim is to consolidate the continuum of early childhood education and basic education.

Networking between upper secondary schools and regional cooperation between vocational institutions and general upper secondary schools will be supported to ensure access to education.

Vocational education and training

Changes in the world of work, such as growing competence requirements, rapidly changing work tasks and contents, changing job descriptions and the growing significance of innovation, will mean growing challenges for the quality and provision of vocational education and training services. Placement on the

job market requires solid knowledge and skills that make it possible to work in varying jobs, that provide a basis for further development of knowledge and skills and that can be utilised in different working environments. Those active in working life must be offered opportunities to upgrade and update their competence. Training for the employed must take place on the job as far as possible. Enterprises and public organisations, particularly SMEs, also need different development services. In addition to quality enhancement, measures must be taken to step up the efficiency and productivity of education supply and development services. Similarly, care must be taken to ensure sufficient availability of education.

With a view to enhancing the service capacity of the network of training providers in accordance with the vocational college strategy, providers will be merged into regional or otherwise strong training providers, whose operations cover all vocational education and training services, development activities and teaching units. The operations of highly specialised training providers will be safeguarded. As training providers, vocational colleges can organise their operations freely, according to the requirements of their fields or their regions, and decide on their institution networks and other services. Providers must ensure that the organisation they choose helps maintain and continually develop high-quality services geared both to those about to start their working life and to those already active in the world of work.

The arrangements and the division of work in special needs vocational training provided by government will be reviewed as part of structural development. The decisions will be taken by the end of 2008. The state special vocational institutions will be developed as resource centres and centres of expertise.

Measures will be taken to ensure that the provider network in initial and further vocational education and training guarantees a high-quality and diverse supply of both youth and adult training that meets the needs of both the world of work and individuals.

Enhancing the service capacity of vocational education and training entails that training providers have an overall strategy, within which they develop and implement the operational processes and provide training and development services based on customers' needs. Key development targets in the strategy are better matching with working life needs and stronger links with the world of work; the anticipation of training needs; arrangement of on-the-job learning; consideration of the individual training needs of the broadening clientele in the planning and provision of training and development services; quality management; the management of vocational institutions and strategy work; and the development of teachers' competence. The development of the operations of training providers will be supported in accordance with the vocational college strategy.

In regions where the young age groups will decline during the plan period, the demand for vocational education and training will also decline. As this will coincide with an increase in the demand for vocational adult education and training, some teachers will transfer to adult education, which requires different competencies.

Steps will be taken to boost the capability of training providers to meet the knowledge and development needs of individuals and different sectors of industry and to assure a high quality of vocational education and training.

Teachers' competencies will be enhanced, and the potential in teacher resources will be put to a more diverse use. As well as knowledge of working life, teachers working in vocational education and training will be encouraged to acquire the special pedagogic competence needed in guiding different clientele groups.

Higher education institutions

Changes in the operating environment pose many challenges to higher education institutions. These particularly relate to their profiling, structural development, the financing reform, internationalisation, and the current emphasis on the quality of education and research. In addition, crucial reforms in universities relate to their larger financial autonomy and an administrative overhaul geared to improve the competitiveness of the university system, which will make for more professional management.

Three significant mergers have been implemented in polytechnics and the unit network has been streamlined. In addition, education supply has been retargeted in view of foreseeable demographic development and the needs of working life. The focus in universities has been on internal development, such as a reform of the department and faculty structure and projects for pooling and centralising support and other services.

Universities and polytechnics will continue to be developed as a dual system, which means different missions, degrees, and degree titles. The objective is to increase international top expertise and establish stronger and more effective higher education units.

The profiling and priorities of higher education institutions will be strengthened. In the development of the higher education network, overlapping supply will be pruned, administration and support services

will be pooled and centralised and infrastructure cooperation will be stepped up. Cooperation between higher education institutions will be strengthened both nationally and internationally. In particular, cooperation with research institutes will be intensified.

With a view to enhancing the quality and impact of higher education, national and international strategic alliances between higher education institutions will be supported. The degree of alliance varies from institutional mergers to closer cooperation in teaching, research, support services and the use of materials and equipment.

In 2012 the higher education system will consist of universities and polytechnics in accordance with the dual model. Each university and polytechnic will have a distinct profile in terms of teaching, research, links with working life and regional development.

The profiles of universities and polytechnics will be sharpened in target and performance negotiations, in order to bring strategic priorities into clear relief, which will facilitate the targeting of research funding and competition for international research funding. Universities' research prerequisites will be strengthened in the selected strategic priority areas and especially in research-intensive universities.

The innovation university to be created through an alliance of the Helsinki University of Technology, the Helsinki School of Economics and the University of Art and Design Helsinki will be prepared so that the university will be operational on 1 August 2009. In this context, the possibilities for Swedish-speaking students to study in their own language will be secured at the current level. The joint consortium of the University of Turku and the Turku School of Economics will be launched in the autumn of 2008 and the new university will be operational in 2011. The University of Eastern Finland comprising the Universities of Kuopio and

Joensuu will start operating by 2010. In addition, the structural development projects of other higher education institutions will be supported and encouraged.

University centres will be developed into regional resource and coordination centres geared to increase the adult population's competence level in close cooperation with the region and its enterprises. The quality and effectiveness of these operations will be evaluated during 2008.

The emphasis in polytechnics will be on high-quality work-related education and on R&D that particularly supports small and medium-sized enterprises and the service sector. Polytechnics are primarily responsible for responding to regional employment needs.

In areas of negative demographic development, in particular, the aim is closer administrative cooperation and joint strategic decision-making amongst universities and polytechnics. The cooperation agreements between university centre partners will be revised to include polytechnics.

The different contents and emphases of university and polytechnic degrees will secure a diverse response to the knowledge needs of society and the world of work. However, with a view to appropriate use of resources and for quality assurance, specific educational contents may be provided and acquired in regional cooperation.

Social interaction indicators will be developed for employment, innovation and regional impact.

The Ministry of Education will prepare a detailed action plan for the structural development of higher education in 2008. It will also cover Swedish-language higher education. Indicators will be prepared for monitoring the structural development of higher education (including the size and appeal of a higher education institution, its departmental, unit and degree programme structures, graduate placement, research activity and efficient use of resources).

Adult education and training

Changes in the world of work, the demographic development, and efforts to increase productivity highlight the tasks of adult education and training. It is not enough to simply increase the participation rate; measures are also needed to improve quality, matching and efficiency.

The competencies of the working population must be updated and upgraded on a continual basis. In addition, situations of change in the world of work highlight the need for retraining.

The maintenance and development of the competencies of the working-age population require a well-performing adult education and training system. According to the Government Programme, the adult population will be encouraged to maintain and develop their knowledge with increased opportunities for in-service training, especially in situations of change. To this end, a comprehensive reform of vocationally oriented adult education will be implemented in order to clarify the decentralised administration, funding, benefits and education and training provision. Vocationally oriented adult education means vocational adult education, adult education in higher education institutions, labour market training and staff development training paid for and provided by the employer.

An overall reform of vocationally oriented adult education is being prepared by a broad-based organisation led by the Ministry of Education and including key Ministries, central labour organisations and adult education providers.

The education system will be developed to better support the updating and upgrading of competence and retraining. The different further education and training needs of employees, the unemployed and the inactive will be identified, and supply will be developed correspondingly.

Adult education and training opportunities will be improved. Learning and qualification studies alongside work, in particular, will be promoted. The vocational qualifications system will be developed as a working-life-oriented high-quality channel of study. Measures will be taken to consolidate the status of adult education as part of the mission of higher education institutions and to expand graduates' opportunities for continuing professional education. The provision of open polytechnic education will be expanded. The use of apprenticeship training in continuing education will be explored. The financing base of further vocational training and continuing education at higher education institutions will be simplified.

Steering and financing

Government transfer system

The government transfer system will be reformed as of the beginning of 2010. The transfers within sectors will be combined and paid to municipalities. In the education sector, this will mean per capita government transfers for pre-primary and basic education and basic education in the arts. The transfers in the financing of general upper secondary schools, vocational institutions and polytechnics will continue to be paid directly to education and training providers.

Predictable long-term financing will be secured for all education and training providers. Care will be taken to make sure that changes in the financing system will not infringe on the right to freely choose an educational establishment.

Pre-primary, basic and general upper secondary education

A review will be undertaken to determine the need to develop the steering system in consequence of the government transfer reform. Necessary amendments will be made to operational legislation. Care will be taken to ensure that the reform will sufficiently accommodate factors relating to municipalities' different circumstances and service needs and that the prerequisites for the operation of private education institutions are secured. Measures will be taken to safeguard the financing of special needs education, hospital education and education for disabled children, reform schools and the education of children in care.

Statutes will be amended to enable that a raised unit price in upper secondary education can continue to be paid to small municipalities in the case of municipal mergers or other changes in school ownership. The increase can be maintained only if the amendment is implemented between 1 January 2008 and 31 December 2012.

Measures will be taken to clarify the tasks of general upper secondary schools for adults and adult sections of upper secondary schools and the funding criteria.

Vocational education and training

The funding of training providers will be developed to take into account the quality and extent of the operations and to provide an incentive for improving performance. Performance-based steering will be intensified to continuously improve the quality of performance.

The share of performance-based funding will be increased in the funding of vocational education and training. The effectiveness of education and training, particularly in terms of employment and customer satisfaction, will be taken into account in the evaluation of performance. The indicators and measurement methods in performance-based funding will be further developed.

The majority of providers offer both initial and further vocational education and training. The regulatory framework will be developed to support the providers in their operations and the provision of vocational education and training and the targeting of training supply as a coordinated entity. The development of the regulatory framework must comprise the development of electronic transactions between providers and the Ministry of Education as an integral part and to cover application for training, funding and the regulation of education and training.

The steering system will be developed to allow vocational education and training to be steered as an entity, with due consideration of the special features of vocational education and training.

The steering of vocational education and training will be made more flexible to enable free allocation of resources to youth or adult training for qualifications in accordance with knowledge or labour needs. Electronic transactions will be developed between training providers and the Ministry of Education with regard to operational steering and the provision of training.

Currently, the funding of vocational education and training for adults is based on the number of student working years. This financing system does not encourage providers to develop operational models conducive to shorter study times.

Performance-based funding will be adopted in vocational further education and training as of 2009. More focus will be placed on the qualifications awarded as a funding criterion. An electronic student feedback system concerning competence-based qualifications will be taken into use in 2008.

Higher education institutions

The new operational structures of higher education institutions will be in use in 2012. The new structures require a stronger financial and administrative status for the institutions, which will make for high-quality, cost-efficient and more effective operations and appropriate institutional and operational structures.

The diverse ownership structure of polytechnics will be preserved, and they can still be run by foundations, limited liability companies, joint municipal authorities and municipalities. With a view to enlarging their financial autonomy, universities will be made legal persons under public law or foundations under private law. The management of higher education institutions will be developed in a more professional direction, and the internal administration and management of the

universities will be overhauled. The implementation of national higher education and science policy will require sufficient government steering. It will be overhauled, as appropriate, with due consideration of changes in the organisation, administrative, financing and ownership structures and by means of conditions conducive to acquiring supplementary funding.

An amendment to the Universities Act and other relevant statutes providing for a larger financial and administrative autonomy of universities will be drafted to be ready for discussion by Parliament in the spring term of 2009.

Universities will be empowered to have assets outside the state budget.

Donations to scientific research will be made tax deductible on a broad basis.

In order to provide more incentive, the financing of polytechnics will be developed to take more account of the degree targets, the number of degrees awarded and the quality of education.

The steering of polytechnics will be made more flexible to allow resources to be allocated freely to young people's or adults' degree education within the degree targets.

The Ministry of Education will reform the university and polytechnic steering systems during the plan period, focusing on the quality and impact of education and research. The monitoring of the performance and impact and the feedback procedure relating to it will be developed. Funding will be based on indicators that comprehensively describe the performance of higher education institutions: the quality, impact and efficiency of education and research.

The youth admissions in higher education will significantly decrease by 2020. At the same time, the expectations of the knowledge-based economy

are growing with regard to R&D in universities and polytechnics and innovations based on it. As a result of the foregoing and the structural reform of higher education, the role of adult education and training will grow in efforts to upgrade and update knowledge and skills and to enhance the impact of education and training.

The resources freed by the decrease in higher education for youth will be targeted to improve the quality of education and to enhance R&D and adult higher education.

In the structural development of higher education and the preparation of the university reform, due attention will be paid to the mission and special features of adult education and the demand for adult education, and to the objectives of development policy.

Liberal adult education

In May 2007, the Finnish Education Evaluation Council published a review of the steering and social impact of liberal adult education.

The recommendations of the national evaluation will inform the creation of a programme for developing liberal adult education in 2008–2012, which will be drawn up in cooperation with the national organisations in the field. The reform of the financing system and the legislation needed to develop the mission, prerequisites and structure of liberal adult education will be undertaken in accordance with the development programme.

The steering of liberal adult education will be overhauled on the basis of experiences gained in the system of steering based on guidelines introduced in 2005–2008 and the policy outlined in the Government Programme. As regards adult education centres, steering based on guidelines will be discontinued in 2009.

Research, development and innovation

In accordance with Finland's national strategy, the competence base will be strengthened by reforming education and training, by increasing the resources of research and development and by enhancing their utilisation in the economy and society. Cooperation between sectors will be increased in research and development, innovation and research infrastructures.

The aim is to increase public and private R&D financing to 4% of the GDP during the development plan period.

National competence bases will be supported by enhancing broad-based basic research. The aim is to increase basic funding and competitive funding for universities. The Academy of Finland will reform its funding criteria to support the new legal personality of universities.

Measures will be taken to clarify cooperation between innovation organisations and to streamline the entity of regional organisations and programmes. Universities, polytechnics and other research institutes within the administrative sector of the Ministry of Education will play a key role in implementing the National Innovation Strategy. Universities and

polytechnics will contribute to the development of regional innovation systems by drawing on the centre of expertise programmes and the Structural Funds.

The role of polytechnics in research and development to cater for the needs of the regions and working life will be enhanced. In this context, R&D financing for polytechnics will be increased to better allow them to develop their R&D activities.

The Academy of Finland will carry out an evaluation of artistic research, which will form the basis for decisions on the development of artistic research and further education.

Strategic centres for science, technology and innovation, which will aim to be the best in the world, will be created in Finland by enhancing existing structures and by promoting co-financed cooperation between stakeholders. Steps will be taken to boost and clarify sectoral research in different fields and the universities' role in research cooperation. The aim in closer cooperation is to create large innovative project entities and to increase international cooperation. Another aim is to better meet the research needs of society.

Within their profiles and priorities, universities and polytechnics will be involved in the strategic centres for science, technology and innovation and increase their participation in sectoral research through closer cooperation with sectoral research institutes.

Decisions on the structural development of sectoral research will be taken by the end of 2008. Preparations will be made by the Advisory Council for Sectoral Research, which operates under the Ministry of Education.

Public research financing bodies will develop their interaction and cooperation with private and foreign financing bodies in order to enhance and increase top-level R&D and to promote the utilisation of research results.

Internationally competitive, high-quality teaching and research require that higher education institutions have up-to-date infrastructures and apply international methodologies, including data materials, library and data services, and the methodologies of computational science.

Financing for research infrastructures will be increased on the basis of the recommendations of the Science and Technology Policy Council of Finland. The Academy of Finland and the Finnish Funding Agency for Technology and Innovation (Tekes) will expand their activities towards equipment financing in building scientific infrastructures.

The development of research infrastructures will be guided by the proposals of the Research Infrastructure Committee.

The data materials and library and data services required by research will be developed to meet the changes in the operating environment. Computational science will be enhanced as part of research infrastructures.

Higher education institutions, other research organisations and research financing bodies will contribute to open access publishing and free access to publicly financed research materials. The Ministry of Education will update the relevant recommendations.

There has been a rapid increase in the number of researchers in Finland. Research currently employs nearly 80,000 people, whereas the figure 10 years ago was less than 50,000. Researchers comprise almost 2.5% of the employed in Finland, which is by far the largest figure among the EU and OECD countries. This development is due to the rapid growth of research activity in the Finnish information industry, the diversity of higher education in relation to the population and increased research funding.

The target for doctoral degrees will be maintained at the current level. The target is to increase the relative share of doctorates to 20% of all researchers by 2020. An increasing portion of doctoral degree holders should be employed outside the university system in research and other tasks.

A co-financed four-stage researcher career system will be developed in cooperation with various stakeholders to enable a professional researcher career and a sufficient number of researchers for the needs of the research and innovation system.

The Academy of Finland will allocate additional resources to develop the researchers' post structure and especially to increase the number of postdoctoral researchers and Academy research fellowships.

Universities will increase cooperation in researcher training with research institutes, other universities and businesses by providing joint training, by engaging in research cooperation and by establishing joint graduate schools, and they will also promote the cross-sectoral mobility of doctoral students.

Measures will be taken to increase cooperation in researcher training with foreign universities, research organisations and researcher training programmes.

The graduate school system will be further developed, graduate schools will be empowered as the primary channel for researcher training conducive to a professional researcher career, the internationalisation of graduate schools will be enhanced, and career planning and guidance for doctoral students will be developed.

The places for doctoral students in graduate schools will be increased, with 2,000 places as the target by 2012. More postgraduates will thus have access to more efficient researcher training. The proportion of foreign students within graduate schools will be increased to 20%.

Steps will be taken to increase the size of graduate schools, to reduce their number and to strengthen national networking. Measures will be taken to better cater for the researcher training needs of sectoral research in developing the graduate school system. The Academy of Finland will take over the administration of graduate schools in 2010. The Academy of Finland, universities and research institutes will significantly increase funding for graduate schools. The increase in the Academy of Finland's research financing will be partly allocated to the financing of overhead costs.

Strong vocational skills are essential in the efficient utilisation of the latest innovations in production, services and society in general. In addition, training providers will play an increasing role in developing business and working life and in the service sector.

Measures will be taken to increase the role of training providers in developing the innovation system through the vocational college strategy, by expanding on-the-job learning and by more closely combining training and workplace development. The training and development services of training providers will support the development of production and service innovations in enterprises and at workplaces and the creation of business based on innovation.

Internationalisation

The internationalisation of the education system and international research cooperation are key factors for success in global competition.

A high quality increases the international appeal of Finnish education and research. Finland's success in the OECD's Pisa research programme has aroused broad international interest towards the Finnish education system. International cooperation and internationalisation are prerequisites for improving quality and strengthening the innovation base. Internationalisation will also create the basis for work-related immigration.

The EU's Lifelong Learning Programme and the Lisbon Strategy constitute an important framework for international cooperation in the field of education.

The targets and areas for international cooperation are selected on the basis of national priorities, foresight and operators' own interests.

General education

The aim is to increase cooperation and mobility between schools and education institutions and to enhance the quality of education. International competence rests on good and diverse linguistic skills, and the foundation is built during basic education.

The number of schools and education institutions involved in European school cooperation projects through the Comenius Programme will be increased to 500 projects. The share of language projects in the Comenius Programme should be increased to 25% of the programme's national budget. Attempts should be made to increase the number of assistant teachers coming to Finland through Comenius. Centralised operations are aimed at increasing the number of Finnish participants.

The language selection in schools and education institutions and the continuum of language studies will be examined. Steps will be taken to advance language immersion in schools.

Measures will be geared to diversify schools' language programmes and to develop the quality of language teaching.

The appeal of rare foreign languages will be increased through club activities and by developing cooperation between schools, cultural centres and organisations. Language education will be integrated into operational contents in early childhood, pre-primary and initial education, where applicable.

The Nordic agreement on upper secondary school cooperation will be put into broader use.

Measures will be taken to develop suitable learning environments, teaching methods, working methods, teaching materials and tools for language learning and teaching.

It will be explored, in cooperation with universities, whether additional points could be awarded in student selection to students who have completed exams under the advanced syllabus of rare languages in the matriculation examination and who wish to study these languages at a university. It will also be examined whether the exam of Finnish/Swedish as a second language could be equated to the mother-tongue exam when applying to a university.

Vocational education and training

European cooperation in upper secondary vocational education and training has increased through the Copenhagen Process. The aim is to improve the performance and quality of vocational education and training and to increase its appeal and the comparability of vocational competence in Europe and, thus, to promote the mobility of those studying for or holding a vocational qualification.

In order to advance the mobility of those in vocational education and training and to improve the comparability of qualifications, the European Union is developing the European Qualifications Framework (EQF) and the European Credit System for Vocational Education and Training (ECVET). Quality assurance in

vocational education and training will be strengthened using the Common Quality Assurance Framework (CQAF). Vocational education and training has also become an important priority within the OECD. International cooperation in developing vocational education and training will continue.

Efforts will be made to increase the mobility of students, graduates and teachers in vocational education and training. The possibilities of international benchmarking for training providers will also be promoted. The aim is to increase annual mobility by 30% during the plan period. Special attention will be paid to teachers' international work periods.

Active part will be taken in European cooperation in vocational education and training and in the definition and implementation of the objectives of the Copenhagen Process. Preparations will be made for the introduction of the European Credit System for Vocational Education and Training (ECVET).

Cooperation in vocational education and training will also be increased with countries outside the European Union.

Higher education institutions

Student, teacher and researcher mobility, international research and development projects and the development of joint and double qualifications are some of the international priorities of higher education institutions.

Finland is an attractive destination for student exchange in higher education, and the target is to further increase the share of foreign students and personnel. Special investments will be made to expand the recruitment base for researcher training. In addition, support measures will be taken to commit foreign students and researchers to Finland.

Higher education institutions will enhance cooperation to develop the export of competence within their areas of expertise. The collection of tuition fees will be piloted with students coming from outside the EU and EEA in international second-cycle study programmes leading to a higher education degree. The pilot project will include a scholarship system for foreign students of limited means. Criteria will be prepared for the tuition pilot project in order to evaluate its success and to decide whether the collection of tuition fees should be continued or stopped. Measures will be taken to facilitate tailor-made education targeted abroad.

Language teaching in higher education will face two types of challenges. Students and staff in Finnish higher education institutions must be provided with sufficient linguistic skills for international cooperation in studies and working life. Teachers must have sufficient linguistic skills for continuous teaching in a foreign language.

Foreign students coming to Finland must be provided with a sufficient amount of Finnish and Swedish studies to enable them to enter the Finnish labour market.

Together with universities, polytechnics and stakeholders, the Ministry of Education will prepare a national strategy for the internationalisation of Finnish higher education institutions.

The aim is to develop an internationally strong and attractive higher education and science community in Finland.

Measures will be taken to promote the international utilisation of Finnish competence by preparing the necessary legislative amendments, which should enter into force by 1 August 2009.

The Ministry of Education will authorise any programmes at the suggestion of higher education institutions.

Higher education institutions will draw up language strategies covering their entire operations during 2009. Higher education institutions will require that teachers teaching in a foreign language demonstrate their skills in the teaching language with a language proficiency certificate or in another recognisable manner.

Higher education institutions will enhance cooperation and agree on the division of tasks to safeguard the supply of less studied languages.

Higher education institutions will ensure that foreign students acquire sufficient Finnish-language and Swedish-language skills and cultural knowledge during their studies. The language supply must be appropriate in terms of both studies and working life.

Measures will be taken to centralise the coordination of and research on the language teaching policies of higher education institutions, considering, however, the special needs of education in Swedish.

On 23 October 2006, the European Commission issued its Communication "Adult learning: It is never too late to learn". The Commission sees that the challenges faced by the Union – competitiveness, demographic change and social inclusion – will require an efficient adult learning system integrated into the lifelong learning strategy from the Member States. The key messages of the Communication for developing adult learning include: lifting the barriers to participation; ensuring the quality of adult learning (teaching methods, quality of staff, quality of providers and quality of delivery); recognition and validation of learning outcomes; investing in the ageing population and migrants; and developing indicators and benchmarks. The Commission is currently preparing an implementation plan of the Communication.

An active part will be taken in the preparation of the implementation plan of the Communication on adult learning, and a national implementation plan will be drawn up.

Science and research

The internationalisation of science and research has continued and its forms have diversified. Alongside the OECD and EU countries, developing economies are strongly investing in science and research. The majority of new information is produced abroad, which means that it must be possible to utilise and process new information and knowledge. Currently, Finland is a member of key international research organisations.

A strategic objective in the internationalisation of science and research is to support Finland's development and competitiveness and responsibility for solving global problems and challenges.

International science and research cooperation is an integral part of R&D within higher education institutions.

Attempts will be made to better utilise the opportunities provided by international organisations, projects and cooperation arrangements.

The European Union is the key framework for Finland's international operations. In order to promote the internationalisation of research, responsible Finnish organisations must be more active as regards the EU's research and innovation policy and the research carried out within the EU. International cooperation should also improve the utilisation of resources. Expensive research infrastructures, in particular, require close international cooperation.

Finnish higher education institutions will systematically utilise the 7th Framework Programme for Research. Finland will take an active part in developing European research and innovation cooperation.

Finnish higher education institutions, science institutes and other key operators will take an active part in preparing and implementing projects of the European Strategy Forum on Research Infrastructures (ESFRI).

Graduate schools and centres of excellence are good examples of Nordic research cooperation. Nordic activities will become an integral part of broader research cooperation in the Baltic Sea region and in other international contexts, such as the EU's Northern Dimension.

Measures will be taken to develop Nordic research cooperation and research cooperation in the Baltic Sea region and Arctic areas on the basis of common interests and national priorities. Universities will participate in the operations of Nordic graduate schools and the centres of excellence of NordForsk.

Immigrants and multiculturalism

The Government's objective for immigration policy is to develop an active, comprehensive and coherent policy, with due consideration of the need for labour, immigrants' diverse backgrounds and international obligations.

According to the Government Programme, where the domestic workforce cannot match the shortages in skilled labour, work-motivated immigration will be promoted. The integration and employment of immigrants will be promoted through training, steps will be taken to develop the system of recognising foreign diplomas and to expand supplementary training, and educational opportunities for immigrants will be developed. A pilot programme for integrating immigrants into, and improving their access to, the labour market will be jointly prepared by the central government and local municipalities for the Helsinki Metropolitan Area, the Turku region and other major immigration areas.

An action plan will be drawn up within the sector of the Ministry of Education to support work-related immigration and the employment of immigrants. The plan will be prepared in close cooperation with the Ministry of the Interior and the Ministry of Employment and the Economy.

Social multiculturalism has increased the need for mastering multicultural skills. Human rights and children's rights, communication skills, tolerance and democracy education and minority-related issues are an essential part of developing multicultural skills.

The teaching of multicultural skills will be enhanced as part of pre-primary and basic education, vocational education and training and general upper secondary education.

General education

Pre-primary, basic and general upper secondary education must take account of the increased number of children and young people with immigrant backgrounds. Schools have a significant impact on the integration of children with immigrant backgrounds into Finnish society.

Municipalities can provide instruction preparing for basic education for immigrant pupils who do not yet have sufficient Finnish or Swedish language skills to study in a basic education group. There are large regional differences in the availability of and arrangements for preparatory instruction.

Good Finnish or Swedish language skills are prerequisites for integration into Finnish society, success in studies and employment. Immigrant pupils whose Finnish or Swedish skills are not assessed to be equivalent to mother-tongue skills in all areas are taught Finnish or Swedish as a second language instead of Finnish or Swedish as a mother tongue.

Fewer young immigrants continue in general upper secondary education compared with Finnish- and Swedish-speaking pupils. The key reason is that they find their linguistic skills insufficient.

All pupils must be able to maintain and develop their mother tongue in addition to learning Finnish or Swedish. A strong linguistic and cultural identity will help pupils and students adapt into a foreign society.

The aim is to provide all immigrant pupils with sufficient support and a foundation for succeeding in basic education and general upper secondary studies and for integrating into Finnish society.

Measures will be taken to support the equal provision of instruction preparing for basic education, the teaching in the mother tongue and the teaching of Finnish or Swedish as a second language.

Vocational education and training

There has been a slight increase in the number of immigrants and students with immigrant backgrounds in vocational education and training. Immigrants are given preparatory training for vocational education and training in order to provide them with sufficient linguistic, cultural and other necessary skills for vocational studies.

Immigrants' participation in vocational education and training will be promoted by securing a sufficient supply of education and training and preparatory training and by developing preparatory training, flexible selection procedures and support services.

Higher education institutions

The growing number of immigrants is also reflected in the number of applicants to higher education.

The study possibilities for foreign-language students and students with immigrant backgrounds in Finnish higher education institutions will be increased by removing barriers to student selection and studies for these students. Special attention will be paid to the adequate provision of Finnish and Swedish teaching and cultural teaching. Supply must be appropriately focused in terms of studies and employment.

Steps will be taken to increase preparatory training for polytechnic studies and to secure its funding by including it as part of basic polytechnic funding.

The target is for the share of immigrants among students in higher education to correspond to their share of the entire population.

Adult education and training

A key message in the European Commission's Communication on adult learning for the Member States is to support immigrants so that they can integrate into society and the economy and utilise their previous competence and education as far as possible.

Work-related immigration and the employment of immigrants will be supported through adult education and training, first within construction, the metal industry, the service sector, healthcare and the welfare of the aged and later in other fields, according to labour needs.

The utilisation of skills and competencies acquired abroad will be enhanced by more flexible accreditation of prior learning, so that supplementing studies providing a qualification could be offered through the Open University and continuing education. Measures will be taken to increase the possibilities for demonstrating qualification through tests and to develop the recognition procedures for qualifications other than higher education degrees.

Language training opportunities will be promoted among the inactive, particularly mothers of immigrant families.

Connections between education and working life and the promotion of entrepreneurship education

Close connections between education and working life are necessary at all levels, particularly in vocationally specialised education and training. Cooperation between education and the world of work ensures that the content of education meets the needs of both working life and individuals and promotes the employment possibilities of those with a qualification.

The significance of businesses and entrepreneurship as engines of economic growth and employment is increasing. Own initiative and entrepreneurship will also increase the students' success in society, further studies and working life. The promotion of entrepreneurship requires the diversification and expansion of entrepreneurship education and the strengthening of related education and training.

General education

The acquisition of knowledge on entrepreneurship and the world of work and associated skills should start during basic education. Enshrined in the national core curriculum, active citizenship and entrepreneurship support the objectives of entrepreneurship education.

Entrepreneurship has been given a more prominent role in general upper secondary education through the curriculum reform. The new curriculum allows the implementation of entrepreneurship in a diverse manner by taking account of local conditions.

The creation of links between the world of work and basic education will be promoted, and workplaces will be increasingly utilised as learning environments.

Measures will be taken to increase links between general upper secondary education and the world of work.

Vocational education and training

The matching of vocational education and training and the needs of working life has been improved by expanding on-the-job learning, by constantly reforming and developing initial and competence-based qualifications and through performance-based funding. The matching of education and training with the needs of working life must be further strengthened particularly by expanding and developing on-the-job learning.

Work-based learning will be further strengthened by developing on-the-job learning, vocational skills demonstrations and apprenticeship training in vocational education and training. The incentives and financing arrangements for expanding work-based learning and strengthening the role of employers will be studied and piloted. Special attention will be paid to steering on-the-job learning and to quality assurance.

Vocational teachers' vocational skills and competence and their knowledge of modern practices in the workplace will be secured, and the continuous updating of competence will be ensured through work periods, continuing training and development projects. Measures will be taken to develop the training of workplace instructors and to secure a sufficient supply.

Entrepreneurship studies will be expanded in connection with the reform of curricula for initial vocational education and training.

Higher education institutions

Interaction between higher education institutions and the world of work will be strengthened. The goal is that students could already orientate towards their future tasks during their studies and that the contents of education could sufficiently anticipate future competence needs. This will be supported by R&D projects between higher education institutions and working life. Graduates will be activated to become entrepreneurs.

Entrepreneurship studies will be offered as optional studies to all students in higher education institutions. Entrepreneurship studies can also be included in researcher training.

The education provided by higher education institutions will be kept up to date, so that it can best serve the changing competence needs of the world of work. This requires close interaction with the world of work, businesses and regions. The needs of graduates who have already entered working life will be emphasised alongside degree education.

Guidance counselling and individual curricula will focus on paving the student's working career during studies. This will be supported by developing work training and by connecting final projects to R&D projects in the service of the needs of working life.

The quality of polytechnic education will be enhanced by increasing the links between polytechnics and working life and by connecting work-related R&D more closely to teaching. The development of the world of work will be emphasised in polytechnic studies. The priority in developing polytechnic teaching is to systematically deepen the relationships between students and working life during the studies.

Efforts will be made to secure an adequate representation of the world of work in the administration and advisory councils of higher education institutions and to adequately take into account changes in the world of work in study contents.

Studies will be increasingly linked to R&D within higher education institutions. The annual number of credits completed by polytechnic students in R&D projects will be doubled.

In their curricula and guidance counselling, polytechnics will ensure that students' connections to working life will systematically deepen during studies.

Adult education and training

The key objective of the overall reform of vocationally oriented adult education and training is to improve the educational possibilities of the working-age adult population and the matching between education and the world of work. The reform is discussed under 'Structural development'.

Further and specialist vocational qualifications and other education for working-age adults will be developed with due consideration of the competence needs of entrepreneurs and of the personnel of small enterprises.

Further and continuing education will be targeted to support enterprises' generation change processes, the creation of entrepreneurship based on a different competence base and the renewal of business.

The training of supervisors and managers will be developed in cooperation with vocational adult education and training and polytechnics, so that polytechnics will participate in preparatory training for a specialist vocational qualification.

Qualifications

The European Qualifications Framework (EQF) has been developed through European cooperation into a tool for comparing qualification levels between countries. Its purpose is to promote mobility within Europe through common European tools. The Member States should classify their national qualifications using the eight levels of the framework by 2010. To allow transparent classification, both the framework levels and national qualifications must be defined in the form of learning outcomes.

The functioning and clarity of the Finnish qualifications system will be enhanced by preparing a national framework based on the description of competence produced by qualifications and other competence by 2010.

General upper secondary education

The matriculation examination was developed in 2005–2007 by reforming its structure, by introducing different exams for the humanities and natural sciences, by adding a new health education exam and by renewing the mother-tongue exam. The objective is for the matriculation examination to better measure

whether students have acquired the information and skills of the upper secondary curriculum and achieved sufficient maturity and eligibility for further studies in accordance with the objectives. The possibilities provided by technology are not yet adequately utilised in the exams.

It will be established whether there is a need to develop the matriculation examination.

The possibilities for utilising IT in the examinations and the related costs will be explored.

Vocational education and training

The vocational qualifications structure consists of three basic elements: initial vocational qualifications, further vocational qualifications and specialist vocational qualifications, which usually form a continuum in different fields in terms of competence requirements. Initial vocational qualifications are the primary qualifications required when entering the labour market, a field or a profession, and they produce the professional skills and competence required for the transfer to the world of work. They are particularly suited for those entering working life and

those changing their profession. Further vocational qualifications mainly require more advanced skills than initial qualifications but, depending on working life needs, some further vocational qualifications also serve to enter the field. Specialist vocational qualifications require advanced competence in the field. When developing the requirements of vocational qualifications, all qualifications within a certain field of vocational education and training or vocational field will be examined as an entity, so that they efficiently and consistently respond to field-specific competence needs.

The vocational qualifications structure will be developed to ensure that the qualifications flexibly and efficiently support the acquisition of professional skills required for the transfer to the labour market and working in a profession and that they promote the renewal of competence of the working-age adult population, professional development and occupational mobility.

The vocational qualifications system will be developed as an entity in view of the competence needs of the world of work and individuals, so that qualifications comprise general vocational and sector-specific competencies.

The matching of initial vocational qualifications with the world of work will be improved, so that they produce the field-specific vocational competence required by working life and broad vocational skills and competence for further studies.

The flexibility of the vocational qualifications system will be increased by diversifying the possibilities to include modules of other vocational qualifications in initial vocational qualifications. Measures will be taken to ensure that increased optionality will not reduce the vocational competence produced by the qualifications.

In order to respond to the competence and labour needs of the world of work, as many as possible in a specific age group should undergo vocationally specialised training. Therefore, efforts should be made to diversify the opportunities for obtaining initial vocational qualifications. The primary objective is to promote the acquisition of initial qualifications. Modules of a qualification can also be used to respond to competence needs, when appropriate for business, the world of work and individuals. Those completing a module may complete the qualification later, as prior learning will be fully accredited. The acquisition of initial vocational qualifications will be promoted within the steering and financing system through performance elements and by expanding work-based training.

Possibilities for obtaining initial vocational qualifications will be diversified by allowing the completion of a qualification producing the vocational competence required by working life one module at a time and by increasing opportunities for deepening professional competence during studies. The steering and financing system will be used to ensure that the acquisition of a qualification is the primary objective.

Those with an initial vocational qualification will have general eligibility for further studies at universities or polytechnics. However, there is at least a partial dead-end in terms of eligibility for further studies with regard to further and specialised vocational qualifications.

Cooperation will be continued between vocational education and training and general upper secondary education in planning and implementing study supply, study programmes and training supply.

General eligibility for further studies at universities and polytechnics will be expanded, as appropriate, to include those with a further and specialised vocational qualification.

Higher education institutions

More and more students complete new Bachelor's degrees and participate in separate Master's programmes at universities. Master's programmes are being developed as multidisciplinary and international entities.

The qualifications structure of polytechnics has two tiers. Higher polytechnic degrees are the primary channel for further studies for polytechnic degree holders.

As far as education provided in cooperation with foreign higher education institutions is concerned, the focus is on the development of high-quality double and joint degrees.

Study periods for higher education degrees will be reduced, and student mobility within the higher education system and between education and the world of work will be facilitated by improving the accreditation of prior learning.

Higher education institutions will increase the number of double and joint degrees completed in international cooperation.

The implementation of the university degree reform will be evaluated in 2010.

Quality and quality assurance

General education

The national objectives, distribution of lesson hours and national core curricula for pre-primary and basic education, general upper secondary education and basic education in the arts have been revised. The aim was to increase national coherence in education and to improve the learning opportunities and legal protection of pupils and students. Pupil assessment was specified when reforming the curricula.

It is important for further studies to ensure that pupils have acquired the information and skills defined in the national core curricula. It has been found that national core curricula guide and support daily schoolwork less than expected. In the final assessment of basic education, pupils' grades do not always reflect their true competence level and assessments are not uniform between schools.

The functioning of national core curricula will be examined. Preparatory measures will be taken to revise the national objectives, distribution of lesson hours and national core curricula for education. Municipalities will be encouraged to increase the number of arts and crafts lessons and to provide them as optional subjects.

Any shortcomings in pupil assessment will be rectified to standardise the criteria for grading and to improve the pupils' legal protection, particularly when moving on to further studies.

Studies will be undertaken to identify the suitability of various quality systems for developing the quality of basic education. Quality criteria will be prepared for basic education to support the implementation of legal provisions concerning basic education, quality enhancement and the improvement in the prerequisites for learning.

Vocational education and training

The quality of vocational education and training is becoming increasingly important, as education services should respond to the changing and growing competence needs of the world of work and individuals. Quality assurance in vocational education and training will be developed on the basis of common European guidelines in the light of the special features of the national education system.

A national quality strategy for vocational education and training will be drawn up to support providers in continuing quality enhancement.

The role of performance-based funding will be strengthened in quality assurance by taking customer satisfaction better into account in measuring performance. Quality awards will continue to be used to promote quality enhancement and to spread best practices.

Higher education institutions

Higher education institutions have the primary responsibility for the quality of the education they provide and its enhancement. They are responsible for evaluating their operations, for quality assurance and for developing quality assurance systems. Steps will be taken to develop quality assurance indicators for higher education.

The auditing of the quality assurance systems of higher education institutions will be established and developed into a national external quality assurance system for all higher education institutions.

Measures will be taken to increase international cooperation and the comparability of evaluations within higher education institutions.

Evaluations by field and discipline will be continued to enhance the quality and effectiveness of education and research.

Development of university and polytechnic education and research in technology

Education and research in technology play a key role in the development of new technological information and competence and innovation. The technological competence level and utilisation capability within the information society have a decisive impact on Finland's competitiveness in the global economy. There is a growing need for broader multidisciplinary applications of technology.

With a view to enhancing the quality of education in technology, study programmes will be transformed into larger entities that better meet the needs of working life. The renewal of competence will be secured by developing continuing education in technology as a national entity.

Higher education in technology will be renewed in collaboration with the working group on engineering education which represents key players and stakeholders in the field. The division of tasks between universities and polytechnics will be further clarified in engineering education. Unit structures in engineering education will be combined into larger units that specialise in specific

competence areas. New units will not be established. Investments will be made in improving the retention rates in engineering education. The competence of young people in mathematics and science will be promoted and the share of women among students will be increased.

The profiles of universities of technology will be developed to allow the largest university units to invest in research and in strengthening their priorities. The innovation university will be developed into a high-quality research university for developing competence in technology, business and the arts. Close cooperation with business is the strength of higher education in technology and will be further developed. Work training to support studies and on-the-job learning will be developed for quality enhancement. The educational contents and forms of continuing education in technology will be developed with due consideration of the changing competence needs of individuals and the world of work.

The Academy of Finland will use the methods at its disposal to strengthen scientific research in technology and its prerequisites.

Development of teaching

General education

The premise in developing general education is to secure basic educational rights for all pupils and students according to their abilities and special needs. The objective of teaching and education is to support growth towards humanity and becoming a member of society. Teaching should provide pupils with the basis for a broad all-round education.

High-quality pre-primary, basic and general upper secondary education and basic education in the arts all require professional and diverse teaching and guidance and a safe learning environment. The entire school community must support children's growth and learning in a safe and socially considerate environment. Creativity, different talents and innovativeness will be advanced starting from early childhood education. The first school experiences are very important for children's development and will impact on their attitudes in many ways. The quality of teaching and learning outcomes can be efficiently influenced through sufficiently small teaching groups where the teacher has time for every pupil. In smaller teaching groups, it is easier to identify and prevent bullying, to help those in need, to apply diverse teaching methods, to contact parents and to reduce drop-out rates. Pre-

primary and basic education, morning and afternoon activities and basic education in the arts are the foundation for children's and young people's growth, learning and comprehensive well-being.

Cooperation between pre-primary and initial education will be further developed by securing a flexible transition to school and a positive and encouraging start to school.

The resources freed due to diminishing age groups will be used for quality enhancement with the objective of reducing basic education group sizes, strengthening support and special needs education for quality enhancement and preventing exclusion among children and young people. Smaller teaching groups allow early intervention in learning and attendance problems and enable the diversification of teaching and working methods, the development of innovative and creative learning environments and the consideration of pupils' different talents. The development of group sizes will be monitored as part of regular data collection. The tools for monitoring quality in basic education will also be developed for the needs of national and local decision-making.

The aim is to develop schools into communities that promote children's and young people's well-being. The role of schools in developing children's emotional and social skills will be strengthened. With a view to improving children's and young people's well-being, bullying will be prevented, drop-outs will be activated, early support will be provided in learning problems, schools will be strengthened as part of children's leisure-time environment by developing morning and afternoon activities, and children's participation and opportunities to influence will be supported to develop school work. Measures will be taken to diversify pupils' club activities. Cooperation between schools and homes will be enhanced.

The possibilities for Sami-speaking pupils to participate in pre-primary, basic and general upper secondary education in their mother tongue will be supported. The preservation of Romani pupils' culture, their linguistic development and their participation in education will be improved.

Actions will be taken to ensure that all young pupils have the opportunity to participate in morning and afternoon activities. An evaluation will be made of the effectiveness of the legislation on pupils' morning and afternoon activities and the quality of operations. The evaluation will identify why activities have fallen short of the objectives. Furthermore, it will be identified how the transfer system, tendering and fixed-term agreements affect the possibilities of the third sector to provide activities and how these possibilities could be improved. The evaluation will be carried out in 2008.

The teaching of the second national language will be developed in accordance with Government decisions.

Studies in the second national language and the associated teaching materials and methods will be further developed to strengthen Finland's bilingualism and general competence in both national languages. In 2010, there will be an examination of the types of exams taken by students for the matriculation examination.

Mathematics and science skills are part of an all-round education and the foundation for lifelong learning. Everyone should have the technical skills required in the everyday life of an information society, and a sufficient number of young people should have the desire and skills to advance technology.

The need for diverse mathematics and science skills will be emphasised in teachers' basic and continuing education.

Pupils with minor learning or adjustment problems have the right to receive special needs education alongside other teaching. Pupils are admitted or transferred to special needs education if they cannot otherwise be provided with teaching because of a disability, an illness, delayed development or an emotional problem. An increasing proportion of pupils in basic education in municipalities are classified as special needs pupils. The number of special needs pupils varies significantly by municipality and region. This partly results from different administrative procedures and criteria for transfer decisions.

Strategic special needs education work by the Ministry of Education in the field of pre-primary and basic education will be used to prepare the necessary legislative amendments, to develop administrative procedures for special needs education and to enhance teachers' basic and continuing education.

Measures will be targeted to support the early identification of learning and adjustment problems and the development of teaching arrangements.

Each year, about 12,500 young people are in danger of remaining outside the public education system. They complete basic education with poor grades, drop out from basic education, do not apply for upper secondary education or drop out during the first year. There are an increasing number of students who have completed basic education but who lack the knowledge and skills required in future society, the world of work and a high-quality life. Problems can be seen in their insecurity in selecting the educational route or field and in drop-out rates.

The forms of basic education will be developed to better respond to young people's individual needs, so that study methods and support for young people contribute to the completion of basic education and the transition to upper secondary education.

Flexible basic education activities will be expanded to cover a larger portion of students in the higher grades of basic education, and this operational model will also be offered to seventh-grade pupils. The operational model will be established as part of the activities in the higher grades of basic education during 2009–2011.

High-quality teaching methods and learning environments are prerequisites for learning and they promote positive learning outcomes. Learning environments will be examined from a broad perspective as an entity that supports the attainment of the objectives and contents of the national core curricula. Quality enhancement in learning environments aims to promote pupils' creativity, social skills, innovativeness and problem-solving capabilities and to develop their information management skills.

Steps will be taken to improve the opportunities for utilising various learning environments and for diversifying learning methods.

The attainment of the objectives and contents of the national core curricula will be promoted by utilising various didactic learning environments and places and areas outside the school as learning environments. Technology, information and communications technology and digital learning environments will also be used in teaching.

Cooperation forms between schools and culture, sports and youth services will be established as a natural part of school work.

Measures will be taken to contribute to diverse research on learning environments and teaching methods in support of quality enhancement in teaching.

The foundations of a sustainable lifestyle and environmental awareness are created during pre-primary and basic education. Teaching must develop abilities to take responsibility for sustainable development for the well-being of the natural environment and people. The aim is to develop the knowledge, skills, abilities and values required for adopting a sustainable lifestyle.

Education to promote sustainable development will be enhanced.

In pre-primary and basic education, pupils have the right to receive the support and student welfare services required for attending education free of charge. There have been shortcomings in the availability and quality of student welfare and the support services, and student welfare work has focused excessively on remediation activities.

Student welfare and support and guidance services will be secured for all children and young people in need throughout the country, as required by legislation.

Measures will be geared to enhance and establish the quality of student welfare and its service structure as part of the service system for children and young people. Cooperation structures will be strengthened between early childhood, pre-primary and basic education and the social and health services. The emphasis of student welfare work will be on prevention.

Measures to bridge the gaps in health among children and young people and to promote a healthy lifestyle will be supported. The aim is for the operational culture and practices of schools and education institutions as a whole to support the health and well-being of pupils and the entire staff.

Children's and young people's use of media has changed over the last few years. The use of interactive Web services has increased rapidly among children and young people. However, television continues to be the most widely used medium among children. A responsible and social use of the Internet, the critical assessment of media content, the difference between commercial and non-commercial communications, the separation of media for information and entertainment purposes, the utilisation of learning games and the acquisition of other key media skills require good media education.

Materials and operational models to support media education and literacy will be developed for education institutions. Development actions will be launched to improve the equal availability of media education and teachers' media education skills.

In international comparison, Finnish children and young people feel that they have little influence at school. In order to develop a social operational culture within schools, pupils' opportunities to influence and participate should be strengthened in the planning, implementation and evaluation of school work.

Structures that increase pupils' and students' opportunities to influence and participate will be established as part of the operational forms of schools and education institutions.

The distribution of lesson hours and the national core curriculum for general upper secondary education were revised and introduced gradually as of 1 August 2005. Consequently, upper secondary schools have various possibilities for specialisation, cooperation between education institutions and profiling.

Linguistic oral skills will be strengthened when one national specialised course in the languages starting in grades 1–6 and 7–9 of basic education will become an oral skills course. Linguistic oral skills as part of diverse linguistic skills will be emphasised in the future. Oral exams have been offered to schools for 15 years. However, they have targeted a relatively small group of students.

The function of upper secondary schools as a general education channel preparing for further studies will be strengthened.

The functioning of the distribution of lesson hours and curricula of upper secondary schools will be evaluated. The need for special needs education and support services among upper secondary school students and their capabilities will be evaluated from the perspective of further studies.

The national evaluation of linguistic oral skills will be developed as part of specialisation studies, and preparations will be made for the assessment of oral skills as part of obligatory upper secondary studies.

Action proposals will be drawn up to develop general upper secondary education.

Cooperation between education providers will be encouraged to increase students' individual choices.

General upper secondary studies are mainly completed in three years. The optionality and modular curriculum of general upper secondary schools, combined with the possibility of spreading matriculation examinations over several sessions, have increased the need for guidance counselling. Many schools do not provide sufficient support and guidance services for students. In some cases, the modular curriculum has reduced the sense of belonging to a social group.

Measures will be taken to improve the availability of guidance counselling. Guidance counselling will be developed with due consideration of individual counselling needs. Adequate training of guidance counsellors will be ensured.

The development of social approaches will be supported in upper secondary schools.

Distance general upper secondary schools were introduced as a national development project in 1997–2004. The emphasis has been on adult students, for whom these activities are best suited. Various distance and online learning methods have been less frequently used in general upper secondary education for young people. For young people, online learning can supplement contact teaching and support teaching in rarer languages, thus promoting the availability of general upper secondary education. It also diversifies students' studying capabilities and skills.

Steps will be taken to utilise distance and e-learning technologies in teaching and to develop teaching methods.

The number of students studying for a qualification in general upper secondary education for adults has been on the decline because of the rising educational level. There has been an increase in the number of subject students in general upper secondary schools. This development will probably continue. Basic education and general upper secondary education for adults suits the educational needs of many special groups. Education supports, inter alia, the integration of immigrants into Finnish society.

The special features of basic education and general upper secondary education for adults will be taken into account in developing general upper secondary education.

Students with immigrant backgrounds will be encouraged to start general upper secondary studies for young people and adults, and their performance will be promoted by strengthening their competence in the study language.

The Finnish National Board of Education has confirmed the national core curriculum for the advanced syllabus of basic education in the arts for music, dance, theatrical arts, visual arts (architecture and handicraft) and circus arts. A new national core curriculum for the basic syllabus has also been introduced for audiovisual arts and literary arts.

The availability and diversity of basic education in the arts will be ensured by increasing the government transfer per lesson hour for different fields of art.

The evaluation of basic education in the arts will be implemented once experiences of the curriculum reform have been gained. The regional availability of basic education in the arts and the development of the network of institutions will be monitored. In addition to cooperation between music and art institutions, the aim is to increase cooperation with day-care centres and schools.

Vocational education and training

The transition from basic to upper secondary training will be supported. Application and selection procedures, guidance and communication must be developed and preparatory training must be expanded to secure successful educational choices.

The electronic application and information service system will be developed and expanded to cover electronic transactions between providers and the administration.

Measures will be taken to establish careers guidance and preparatory training for vocational education and training and to expand supply.

Guidance counselling will be further developed. Professional skills competitions will be promoted to support quality enhancement in professional competence.

Special needs education will be developed by placing students in need of special support mainly in the same learning environments with other students. Training for the severely disabled will focus on special vocational institutions.

According to the recommendation on education in prison, approved by the Council of Europe's Committee of Ministers in 1990, the right to education is a fundamental and important part of the development of the individual and the community. The prison rule

approved by the Council of Europe's Committee of Ministers in 2006 emphasises the education of young prisoners and those with special needs.

Vocational education and training for prisoners will be developed by increasing and diversifying supply and by increasing cooperation among providers.

Higher education institutions

The completion of higher education studies will be supported by developing guidance counselling, so that degrees are completed within the normative time and students can more quickly progress to working life and further studies.

Individual study plans will be systematically implemented and monitored to support students at different stages. Electronic systems will be developed for monitoring purposes.

The development of student selection in higher education aims at a speedy transition from the upper secondary level to higher education. Attempts will be made to streamline student selection in universities through cooperation.

Student selection in universities will gradually transfer to a joint application system. The first stage with electronic applications will start from selections for the 2008–2009 academic year, and the full joint application system will be operational starting from selections for 2010–2011. Matriculation examination grades will be increasingly utilised in student selection. Universities will increase communication on student selection, particularly towards upper secondary institutions.

Adult education and training

The appropriateness and efficiency of adult education and training will be improved with customer-based information, guidance and counselling services and by developing arrangements for the accreditation of prior learning.

The good practices created during the Noste Programme will be expanded to cover all adult education and training.

The development of the competence required in the working life development and service task, which is particularly geared to small enterprises, will be further supported in education institutions. The operational model of the working life development and service task will be subject to an independent evaluation by the end of 2010.

Online learning will be developed particularly with a view to ensuring regional access.

Social coherence and active citizenship

Liberal adult education shall secure the conditions for lifelong learning for citizens and support the resources for social coherence, equality, active citizenship and civil society. However, securing the conditions for active citizenship and civil society must not be the task of liberal adult education alone. The entire education system must support an individual's ability to act as an active citizen in a democratic society.

According to the Government Programme, the resources for liberal adult education will be secured. Furthermore, educational opportunities for immigrants and people at risk of exclusion will be developed. In terms of guideline steering, the Government Programme includes a policy that the priorities of adult education centres will be determined at local level.

The steering system will ensure that a sufficient share of liberal adult education focuses on education that supports immigrants' linguistic skills and their integration into society, to education that improves the participation and quality of life of the senior population and to other operations that prevent exclusion and strengthen active citizenship. The number of study vouchers will be increased.

The opportunity for completing basic education in a primary school or an adult education centre will be secured for young people at risk of exclusion and adults with few skills. Some of the immigrants are illiterate. Alongside institutions of liberal adult education, upper secondary schools provide immigrants with opportunities for acquiring the competence required in the world of work and eligibility for further studies.

The opportunities of the adult population for completing basic education in a primary school or an adult education centre will be secured to prevent exclusion. The distribution of tasks and funding responsibilities between Ministries will be clarified in education for illiterate immigrants.

Student financial aid

The purpose of student financial aid is to secure an income during studies for full-time students in need of financial support. On the basis of educational policy objectives, the student financial aid scheme will be developed to promote equality between levels of education and students and efficient completion of degrees. Student financial aid for students in higher education should encourage full-time studies and contribute to shorter study periods. The amount of student financial aid should be regularly adjusted in accordance with the development of living costs in order to secure sufficient aid. Student financial aid and other support forms intended to secure income should be coordinated to promote self-motivated education and to reduce the drop-out rate resulting from the shortage of student financial aid.

Parliament has been issued a Government proposal for an Act amending the Act on Financial Aid for Students. According to the proposal, the study grant should be increased, as required by the Government Programme, at all levels of education by 15% and at least EUR 16 as of 1 August 2008 and the maximum allowable student earnings should be raised by 30% as of 1 January 2008. A sufficient

amount of student financial aid will promote entrance to studies and efficient study.

The amount of student financial aid and the applicable income limits should be regularly adjusted in accordance with the development of living costs in order to secure sufficient aid.

About 8% of all students of age have children. Having children during studies means financial encumbrances that cannot be covered by student financial aid. Financial difficulties are particularly faced by single parents and by families where both parents are studying. Student financial aid differs from other cause-based benefits in that the applicant's family status or the number of children is not taken separately into account when granting aid. Income testing for student financial aid is not affected by whether a student has dependent children. As a general principle, any expenses arising from the support of children fall within the scope of family policy, whereas the purpose of student financial aid is to support the studies of individuals. In addition to student financial aid, students with children may be granted a housing allowance in

accordance with the Housing Allowance Act to cover housing costs. The size and income of the household will be taken into account when granting the allowance.

The possibilities for improving the financial standing and study possibilities of students with dependent underage children, for instance by developing student financial aid, will be identified.

There are differences in the means testing of student financial aid between levels of education: parental income is not taken into account for students in higher education, whereas parental income is considered in upper secondary studies up to the age of 20. The basic amount of student financial aid for students living with their parents and aged 18 or under is small compared with other forms of income security for young people. The child allowance for one child is EUR 100 per month. The payment of the child allowance, which is higher than student financial aid and is paid without any means testing, is terminated at the beginning of upper secondary studies. EUR 580 per month in labour market subsidy is paid to those under 25 during work training, and the basic amount of social assistance allowance for people living alone is EUR 382.70 per month.

It will be investigated whether means testing based on parental income could be abandoned when the student is not living with his/her parents and has turned 18.

Student financial aid for young people will be streamlined and its level will be increased to encourage them to study. The aim is for the level of student financial aid to at least equal the child allowance.

The rent limit for the housing supplement in student financial aid was last adjusted on 1 November 2005. For more than half of those receiving the housing supplement, the rent exceeds the current maximum limit. The aim is to keep the rent limit for the housing supplement at the same level with the standard housing allowance of part-housing for people living alone.

Spousal income is taken into account when granting the housing supplement. The need to take spousal income into account means a lot of administrative work because it is difficult to determine those living in conditions comparable with a marriage. Young people living together do not always think that living together also requires providing the other person with financial support.

The development of other support systems for housing will be monitored, and the rent limit for the housing supplement will be increased, if necessary.

Means testing based on spousal income will be abandoned when granting the housing supplement.

The income limit for interest subsidy was last increased in 1996. The income limit is currently EUR 775 per month. Some student loan recipients may have financial difficulties in repaying the student loan because of unemployment. The income limits for interest subsidy should be sufficiently high, so that it would be safe for students to take out a loan for situations of risk. An increase in the income limits for interest subsidy reduces the risk of the student loans being paid on the basis of the government loan guarantee and the resulting government expenditure.

The income limit for interest subsidy will be increased.

The use of student loans is low compared with the use of student financial aid and the housing supplement. Students often prefer working to taking out a student loan to secure their income.

Information will be provided on the flexible repayment of the student loan, on the tax deductibility of interest on student loans and on the tax deduction for student loans.

Taxable persons who started higher education on 1 August 2005 or later and completed their degree within the normative time are entitled to the tax deduction. The amount of the benefit is 30% of the student loan amount exceeding EUR 2,500. Information on the use of the tax deduction for student loans will be received once those receiving the benefit have graduated. In practice, they will graduate in 2009 and afterwards.

Measures will be taken to monitor the effect of the introduction of the tax deduction for student loans and to further develop the tax deduction, if necessary.

It is necessary to increase the maximum price of meals entitling students in higher education to the meal subsidy and the maximum amount of the additional meal subsidy to the operator of a student restaurant located outside the premises of the institution on the basis of cost development in the sector.

The maximum price of student meals and the maximum amount of the additional meal subsidy should be adjusted on the basis of cost development in the sector. In addition, the amount of the meal subsidy should be adjusted.

Students in general upper secondary education and vocational education and training have been granted school transport subsidies since 1997. As stated in the communication issued by Parliament on the Government's educational policy report, an overall evaluation will be made of the school transport subsidy and the functioning of the system and necessary action will be taken to remove any shortcomings in the system.

The functioning of the school transport subsidy system will be evaluated and proposals will be made to develop the system accordingly.

Teachers

Quantitative need for teachers

Because of current demographic trends, preparations will be made in teacher education for a reduced need for teachers at the end of the decade and afterwards. The reduced need for teachers will first affect the quantitative need for day-care centre and class teacher education. The need for subject teachers will start to decrease at the beginning of the next decade. The need for personnel will increase in special needs education, particularly in guidance counselling. The largest need for teachers in vocational education and training will be felt in technology, communications and transport because of the teachers' age structure. The need for teachers in adult education and training will increase. The need for teachers in all types of institutions will be affected by immigration policy solutions. The key aim is to secure a sufficient number of competent teachers at all levels of education.

On the basis of the national situation and foresight information, the need for admissions in class teacher education will be 830–840 in 2008–2009. In 2010–2012, the number of required admissions will be 740–760. The annual number of admissions

for studies specialising in special needs education (including special day-care teacher studies) and guidance counselling tasks should be at least 650 in 2008–2012. The annual need for pedagogic teacher studies will be about 1,550 students in 2008–2009, whereas in 2010–2012 the annual need for pedagogic studies will be about 1,300 students. The annual need for admissions in day-care teacher education will be 390–420 in 2008–2009 and 360–390 in 2010–2012. The annual need for admissions in vocational teacher, special needs teacher and guidance counsellor education will be 1,700. Vocational teacher education will particularly emphasise teacher education in technology, communications and transport. The need must be reassessed if competence requirements change.

The national teacher statistics will be next compiled in 2008. It will include the need for day-care teachers and the need arising from teaching students with immigrant backgrounds. The anticipation of the quantitative and content-based need for teachers will be carried out in 2010.

The structural development of teacher education aims at close cooperation between day-care, class and subject teacher education, more diverse research cooperation in teacher education, improved operational conditions for research communities and more diverse minor subject selections.

Actions will be taken to meet the need for teachers required by teaching children, young people and adults with immigrant backgrounds. Growing personnel needs in special needs education and guidance counselling and the need for teachers for linguistic minorities will be taken into account in the sizing and resources of teacher education.

Development of teacher education

Student selection and pedagogic studies are key development targets in teacher education at universities and vocational teacher education colleges.

Selection research and education will be used to develop the assessment of suitability and commitment. Universities will develop selection and education models that enable entry into teacher education at different stages of university studies, after completing a degree and from other professions. Steps will be taken to improve the opportunities for students with immigrant backgrounds to participate in teacher education. When developing the selection for vocational teacher education, it will be examined how suitability for and commitment to the teaching profession could be taken into account.

Universities will diversify guided work training included in teacher education in cooperation with the municipalities' school services. Contents for the development and management of education institutions will be increased and strengthened in teacher education. Special attention will be paid to IT skills. Interaction

and cooperation with the world of work will be highlighted in vocational teacher education.

The need to increase awareness of the UN Convention on the Rights of the Child will be taken into account in basic, further and continuing education for teachers.

Continuing education for teachers

Teachers have the right and obligation to maintain and develop their professional skills. Employers are primarily responsible for providing teachers with continuing education. The government is responsible for teachers' pedagogic studies and other studies leading to a qualification. The government also finances continuing education that is significant in terms of educational policy.

Providers will have the obligation to ensure that their staff regularly receive continuing education to improve their professional skills. The reform will be prepared in cooperation with providers and social partners so that it can be taken into account in the 2009 Budget.

The Ministry of Education will launch a broad network project for developing the quality of the working conditions of teaching and educational staff.

Teachers' continuing education will be made more systematic and regional cooperation in continuing education will be promoted.

Resources for government-funded teaching staff training will be increased. The supply will emphasise work community-specific training and diverse support for developing institutions. Resources will be allocated to the national and regional networks for developing continuing education and institutions. Training for the management of institutions will be developed. The

evaluation of quality and effectiveness will be integrated into the monitoring of continuing education.

Further and continuing education for teachers will focus on education that:

- enables the introduction of participatory, active and operational working methods and different learning environments,*
- improves teachers' capabilities to face different learners,*
- develops the skills required in a multicultural society and the teaching of immigrants, and*
- develops online learning skills.*

Measures will be taken to specify and clarify the tasks of the Finnish National Board of Education and the division of tasks between organisations engaged in continuing education in teaching staff training. The position and tasks of the National Centre for Professional Development in Education will be revised.

The Ministry of Education will set up an Advisory Council for Teaching Staff Training to coordinate national development activities.

Support for evidence-based decision-making

To enable the efficient implementation, monitoring and impact assessment of the objectives set for the education system, it is important to have sufficiently well analysed evidence on the education system and environmental factors. The fact that the consequences of the solutions made can be assessed as comprehensively as possible in advance will facilitate educational policy decision-making. A comprehensive and diverse knowledge base will contribute to understanding the functioning of the education and science system to support political decision-making, facilitate the impact assessment of the solutions made and allow high-quality legislative work. The knowledge base on education has developed strongly over recent years.

Basic information on education and students is collected by Statistics Finland. This information is utilised by the Finnish National Board of Education in its databases and communications to the general public and by the Ministry of Education in the performance management of different sectors. Research institutes also produce information on education and the education system. Development needs include the availability of language group-specific information.

Data production on education will be developed with the objective of improving availability and usability.

The evaluation of education and higher education institutions plays an important role in producing the information required in decision-making. Key objectives of the evaluation are to develop education and support learning, to secure the quality of education and to produce the information required in local, regional and national development work, decision-making and international comparisons. In addition, assessments produce information for students and parents to support study choices.

Funding for and participation in adult education and training are supported by several Ministries. Adult education and training is also funded by employers in the form of staff training. In order for the evaluation of adult education and training to produce information that supports decision-making as diversely as possible, account must be taken of the wide variety of providers and interests influencing it.

Decisions on the external evaluation of education, including the role of the Finnish National Board of Education, will be made during 2008.

Measures will be taken to increase the effectiveness, stability and foreseeability of the external evaluation of education. The Ministry of Education will prepare a national evaluation plan at regular intervals.

Priorities for the external evaluation of education include the effectiveness, quality, efficiency and economy of education. Special targets for monitoring include the impacts of the municipal and service structure reform.

Horizontally comprehensive models will be developed in cooperation with various Ministries and interest groups for the evaluation of adult education policy and the conditions for lifelong learning.

The production of international indicators for education is continuously increasing. Internationally comparable indicators enable the functioning of the education system to be analysed in a larger framework than the national level. However, they also guide discussions. It is important to try and influence the international production of information on education, so that the indicators produced are relevant for national development and the national features are adequately taken into account.

An active part will be taken in the international production of indicators, and the utilisation of results will be promoted in developing the national education system.

The foresight of educational needs is developing into an increasingly significant form of information production. Because of rapid changes in the labour market and working life, current foresight models need to be complemented with foresight that focuses

on analysing connections between changes in occupations and their educational contents.

Qualitative foresight will be developed as a special priority in the foresight of educational and competence needs. The utilisation of foresight results will be increased, and connections with the strategic steering of the education system will be strengthened.

The Finnish National Board of Education will produce quantitative and qualitative foresight data and support regional foresight.

During 2008, the Ministry of Education will invite stakeholders' representatives and experts in the field of education to participate in a broad-based forum to discuss long-term educational development needs and objectives.

In order to develop the education and science system and to promote research in this field, it is important that research on education and science be carried out to a large extent both in separate research institutes and in university departments. Research on education must be versatile, covering pedagogic research and education-related research in other fields of science, such as psychology, the social sciences and economics. In addition to research that directly supports decision-making, a sufficient amount of resources will be ensured for basic research.

As part of the sectoral research programme and basic funding for science institutes, measures will be taken to ensure that research on education and science is produced in large quantities and that its quality is at an internationally high level.

Appendices



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Appendix 1. Educational level of the population: targets for 2015 and 2020

	<i>2005</i>	<i>Target 2015</i>	<i>Target 2020</i>
Share of those with a post-primary qualification			
- of 25-34-year-olds	85 %	92,5 %	95 %
- of 25-64-year-olds	76 %	85 %	90 %
Share of those who completed the matriculation examination (incl. those simultaneously completing an initial vocational qual.)			
- of 20-24-year-olds	51 %	52 %	53 %
- of 25-34-year-olds	46 %	49 %	52 %
- of 25-64-year-olds	32 %	41 %	45 %
Share of those with a vocational qualification			
- of 25-34-year-olds	45 %	45 %	46 %
- of 25-64-year-olds	52 %	52 %	51 %
Share of those with a higher education degree			
- of 25-34-year-olds	28 %	38,5 %	42 %
- of 25-64-year-olds	19 %	25 %	30 %
Share of those with a vocational qualification or a higher education degree			
- of 25-34-year-olds	73 %	83,5 %	88 %
- of 25-64-year-olds	71 %	77 %	81 %
Share of those with a postgraduate degree			
- of 25-34-year-olds	0,5 %	0,8 %	1,0 %
- of 35-39-year-olds	1,1 %	1,4 %	1,7 %
- of 25-64-year-olds	0,9 %	1,2 %	1,5 %

- Those with a post-primary qualification include all those with an upper secondary or a tertiary qualification.
- Those who completed the matriculation examination include all those who completed the examination even if they also had another qualification (e.g. an upper secondary vocational qualification or a tertiary qualification).
- Those with a vocational qualification include those with an upper secondary vocational qualification or a tertiary ISCED 5B qualification, excluding those with both a vocational qualification and a tertiary ISCED 5A qualification.
- Those with a higher education degree include all those with a polytechnic degree, a higher polytechnic degree and a B.A. or an M.A. level university degree.

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Appendix 2. Entrant targets presented by field in table 1 by subfield

FIELD OF EDUCATION Subfield	Target 2012	New students 2006 ¹
Education sector		
HUMANITIES AND EDUCATION	5 480	5 792
Leisure activities and youth work		
Vocational education and training	450	475
Polytechnics	300	225
Languages		
Vocational education and training	50	27
Polytechnics	50	59
Universities	1 300	1 584
History and archaeology		
Universities	280	340
Philosophy		
Universities	70	98
Educational sciences and psychology		
Universities	830	957
Teaching and education		
Vocational education and training	350	342
Universities	1 400	1 252
Theology		
Universities	300	323
Other education in humanities and education		
Universities	100	110
CULTURE	5 170	7 780
Crafts and design		
Vocational education and training	1 300	2 172
Polytechnics	500	691
Universities	320	383
Information and communication		
Vocational education and training	700	1 326
Polytechnics	500	833
Universities	300	253
Literature		
Universities	150	176
Theatre and dance		
Vocational education and training	20	61
Polytechnics	80	110
Universities	60	71
Music		
Vocational education and training	250	342
Polytechnics	300	368
Universities	250	276
Visual arts		
Polytechnics	120	157
Universities	50	44
Cultural and arts research		
Universities	170	341
Other education in culture		
Polytechnics	100	175
SOCIAL SCIENCES, BUSINESS AND ADMINISTRATION	14 620	15 331
Business and commerce		
Vocational education and training	5 200	5 238
Polytechnics	4 600	5 068
Universities	2 400	2 533
Economics		
Universities	150	185
Administration		
Polytechnics	200	206
Universities	350	411
Statistics		
Universities	50	71
Social sciences		
Universities	870	728
Political sciences		
Universities	200	330
Law		
Universities	600	506
Other education in social sciences, business and administration		
Universities	-	55

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FIELD OF EDUCATION		
Subfield		<i>New students</i>
Education sector	<i>Target 2012</i>	<i>2006¹</i>
NATURAL SCIENCES	6 100	6 913
Mathematics		
Universities	500	633
Computing and software		
Vocational education and training	1 500	2 177
Polytechnics	1 500	1 421
Universities	1 000	927
Earth and space sciences and astronomy		
Universities	90	71
Physics		
Universities	450	421
Chemistry		
Universities	400	441
Biology		
Universities	550	622
Geography		
Universities	110	156
Other education in natural sciences		
Universities	-	44
TECHNOLOGY, COMMUNICATIONS AND TRANSPORT	32 000	31 511
Architecture and construction		
Vocational education and training	4 200	3 697
Polytechnics	1 400	1 208
Universities	550	428
Mechanical, metal and energy engineering		
Vocational education and training	4 200	3 127
Polytechnics	1 250	1 209
Universities	580	622
Electrical and automation engineering		
Vocational education and training	4 000	4 259
Polytechnics	1 200	957
Universities	720	824
Information and telecommunications technology		
Vocational education and training	200	-
Polytechnics	1 400	2 048
Universities	720	881
Graphics and communications technology		
Vocational education and training	450	334
Polytechnics	100	260
Food sciences, food industry and biotechnology		
Vocational education and training	550	663
Polytechnics	150	195
Universities	80	114
Process, chemical and materials engineering		
Vocational education and training	2 800	2 716
Polytechnics	500	654
Universities	430	482
Textiles and clothing technology		
Vocational education and training	600	716
Polytechnics	50	73
Universities	20	28
Automotive and transport engineering		
Vocational education and training	4 000	3 496
Polytechnics	600	605
Industrial management		
Polytechnics	100	318
Universities	300	355
Other education in technology, communications and transport		
Vocational education and training	500	647
Polytechnics	200	451
Universities	100	150
NATURAL RESOURCES AND THE ENVIRONMENT	3 940	3 912
Agriculture		
Vocational education and training	1 500	1 109
Polytechnics	450	293
Universities	120	121
Horticulture		
Vocational education and training	550	585
Polytechnics	150	116
Fishery		
Vocational education and training	50	33
Polytechnics	20	27
Forestry		
Vocational education and training	500	696
Polytechnics	250	268
Universities	90	140

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FIELD OF EDUCATION		
Subfield	<i>Target 2012</i>	<i>New students 2006¹</i>
Education sector		
Nature and the environment		
Vocational education and training	100	272
Polytechnics	30	61
Universities	130	133
Other education in natural resources and the environment		
Vocational education and training	-	46
Universities	-	12
SOCIAL SERVICES, HEALTH AND SPORTS	18 000	14 987
Social services		
Polytechnics	1 700	1 655
Healthcare		
Polytechnics	3 800	3 287
Universities	350	438
Healthcare and social services		
Vocational education and training	7 400	5 131
Polytechnics	20	38
Dentistry and other dental services		
Vocational education and training	50	26
Polytechnics	150	125
Universities	160	112 ²
Rehabilitation and sports		
Vocational education and training	300	238
Polytechnics	700	824
Universities	150	119
Technical health services		
Polytechnics	730	474
Pharmacy and other pharmacological services		
Vocational education and training	250	94
Universities	420	301
Medicine		
Universities	700	648 ²
Veterinary medicine		
Universities	70	39
Beauty care		
Vocational education and training	1 000	1 396
Polytechnics	50	42
TOURISM, CATERING AND DOMESTIC SERVICES	7 600	8 408
Tourism		
Vocational education and training	700	1 006
Polytechnics	550	843
Universities	50	49
Hotel and catering		
Vocational education and training	5 000	5 077
Polytechnics	450	421
Domestic and consumer services		
Vocational education and training	300	367
Polytechnics	100	20
Universities	50	11
Cleaning services		
Vocational education and training	200	121
Other education in tourism, catering and domestic services		
Vocational education and training	1	106
Polytechnics	200	387
TOTAL	92 910	94 634

1) New students in 2006 in curriculum-based vocational education and training (Statistics Finland), young people's education leading to a polytechnic degree (AMKOTA) and education leading to a B.A. and an M.A. degree (Statistics Finland).

2) New students in dentistry and medicine are students who have accepted a study place (HAREK).

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