BACKGROUND REPORT

POLYTECHNIC EDUCATION

IN FINLAND
# TABLE OF CONTENTS

**INTRODUCTION**

7

**CHAPTER 1: FINLAND IN BRIEF**

9

1.1. History 9

1.2. Finland Today 12

1.2.1. Population 12

1.2.2. Society 14

1.2.3. Economy 17

1.2.4. Labour market 22

1.2.5. The information society 28

**CHAPTER 2: EDUCATION SYSTEM AND POLICY**

31

2.1. The Finnish education system 31

2.1.1. Standard of education 35

2.1.2. Student flows 35

2.2. Higher education 38

2.2.1. Administration of higher education 38

2.2.2. Key objectives and policy priorities 40

2.3. Vocational education and training 42

2.4. Lifelong learning in Finland 43

**CHAPTER 3: THE POLYTECHNIC REFORM PROCESS**

45

3.1. Background to the reform 45

3.2. Goals and methods of the reform 46

3.3. From experiment to establishment 47

3.4. Polytechnic support programme 48

**CHAPTER 4: THE POLYTECHNIC SYSTEM**

51

4.1. The Polytechnic network and educational provision 51

4.1.1. The polytechnic network and structural development 51

4.1.2. Creation of new student places and quantification of educational provision 53

4.2. Polytechnic administration and maintenance 56
Chapter 5: Outcomes of the Polytechnic Reform

5.1. Degree structure and degree programmes
5.2. Students
  5.2.1. Eligibility, student selection and intake
  5.2.2. The status of students and financing studies
  5.2.3. Dropping out and changing discipline
  5.2.4. Student exchanges
  5.2.5 Graduation
  5.2.6. Graduate placement
5.3. Lifelong learning and adult education
  5.3.1. Forms of adult education and adult participation in education
  5.3.2. Degree and non-degree-oriented education
  5.3.3. Adult education at polytechnics
    5.3.3.1. The open polytechnic
    5.3.3.2. Numbers studying in polytechnic adult education
  5.3.4 Polytechnic post-graduate degrees
5.4. Teachers and other staff
  5.4.1. Teachers
  5.4.2 Teacher exchanges
  5.4.3. Other staff
5.5. Development of teaching and learning
  5.5.1. Student guidance and counselling
  5.5.2. The virtual polytechnic
5.6. Library and information services

Chapter 6: Regional Role of the Polytechnics

6.1. Regional impact
  6.1.1. Regional mobility
6.2. Contacts with working life
  6.2.1. Response to the needs of the SME sector
6.2.2. Diploma projects 118
6.2.3. Practical training and career and recruitment services 119
6.3. R&D at polytechnics 119

CHAPTER 7: DEVELOPMENT TRENDS AND CHALLENGES 123

7.1. Globalisation: how to enhance the competitiveness of Finnish higher education 123
7.2. Development of institutions of higher education as centres of innovation 125
7.3. Response to the future needs of the labour market 126
7.4. Structure of the higher education system 128
7.5. Legislation 131
INTRODUCTION

Polytechnics form a new sector in Finnish higher education. The polytechnics were instituted during a development process which took all of the 1990s, with the aim of raising the level and quality of Finnish education and training. It was seen desirable to offer young people another high-standard, more practically and professionally oriented track in higher education. The creation of the polytechnic sector also meant a rapid increase in the provision of higher education. Since 2000, all polytechnics have operated on a permanent basis.

The future of Finland depends on knowledge, the ability to utilise knowledge and the capacity for new innovations. Higher education and research play an important part in the national innovation system. The Finnish Government has requested OECD to review its polytechnic education. The findings will be used to further develop the polytechnic system and to revise legislation.

A high-standard international evaluation is especially needed to find a response to the following questions:

1) The role of polytechnics in the higher education system
- Is the polytechnic role in higher education instruction and r&d clear, distinct, functional, and useful?
- Is the role sufficiently complementary to that of universities?
- Have the polytechnics found their own profile as higher education institutes?
- In what ways do international developments in degree structures clarify the role of polytechnics in Finnish higher education? In what ways do they confuse the role of polytechnics?
- How has the rapid increase in provision of higher education in Finland clarified the role of polytechnics? In what ways has it confused their role?

2) Outcome of the polytechnic reform
- How well have the reforms succeeded in raising the level and quality of courses, programmes, and instruction?
- The effectiveness of the polytechnic network as a whole
- What impact has the reform had on the attractiveness of vocational and technical education?
3) The role of polytechnics in the community, regions, and the world
- How effective a role have polytechnics played in promoting community and regional development and innovation?
- How effective has the interaction been between polytechnics and employers, SMES in particular?
- What role have polytechnics played in r&d; how might that be strengthened?
- What role have polytechnics played in international co-operation, particularly with regard to receiving students from outside Finland, and sending polytechnic students to study in other countries?

4) Steering and financing of the polytechnics
- Are the governance and finance systems of the polytechnics well suited to the roles the polytechnics are intended to play in higher education, and in society at large?

The Finnish background report describes the creation, present state and future challenges and aims and of the polytechnic sector and the lines of its development. The report has been divided into seven chapters. Chapter 1 briefly describes Finnish history, society, economy and labour market, and Chapter 2 the Finnish education system and its administration and the aims and priorities of higher education policy. Chapter 3 discusses the background to the polytechnic reform and the way it was implemented. Chapters 4 to 6 deal with the polytechnic system, the present situation and the role of polytechnics in regional development. The last chapter outlines future challenges from both an international and a national perspective, as well as development needs in Finnish education.
1.1. HISTORY

The first inhabitants settled in Finland after the last Ice Age, about 10,000 years ago, and Finland became part of Sweden during the time of the Crusades. The period of Swedish power lasted for over 600 years and Finland’s social organization and legislation largely derive from that time. King Gustavus Vasa of Sweden created a system of centralized government for Finland in the early 16th century and imposed taxation on land ownership. Religious reformation took place at the same time and this marked the first step in the creation of a national language and literature. Finland’s first university was founded in Turku in 1640.

In 1809, Finland became an autonomous Grand Duchy of the Russian
Empire. During the period of autonomy, Finland’s position was fairly independent. Finland had its own Diet based on the Four Estates and its own legislation inherited from the days of Swedish power. Helsinki became capital of the Grand Duchy and the university was transferred from Turku to Helsinki in 1828.

Mid-way through the 19th century, social, educational and economic development in Finland began in earnest. A sense of Finnish nationalism was aroused and a great interest in the Finnish language and Finnish national culture. The organization of volunteers into various associations to shoulder certain social responsibilities, such as educating the children of the poor, marked the emergence of a civil society. Industrialization in Finland began towards the end of the century, particularly with the sawmill and paper industries, which developed rapidly, and the growth of domestic transport connections.

The crucial event from the point of view of the country’s political system was the parliamentary reform of 1906, when a single-chamber system of parliamentary representation was created. General and universal suffrage for all, including women, came into force, and the majority of the political parties to which the representatives in the first single-chamber parliament belonged, still exist today.

Finland became independent in 1917, but was driven into civil war the following year, with the nation divided into Reds and Whites. Russian soldiers were expelled from the country at the same time. The events of 1918 claimed the lives of over 30,000 people, but Finland became a democratic republic with a parliamentary form of government.

Between the two World Wars, the crucial question for Finland was whether it could maintain its independent status. The worldwide recession came to an end in the 1930s and Finland began to prosper particularly on the basis of the growing forest industry and its exports. With industrialization the population moved to the towns and became urbanized. Social conditions improved through a number of measures, including the enactment of legislation on compulsory education in 1921.

In autumn 1939, Finland got into war when attacked by the Soviet Union, thus becoming involved in the Second World War. The Winter War with the Soviet Union lasted until March 1940 and, when it ended, Finland was forced to cede considerable areas of territory to the USSR, but was
able to preserve its independence and prevent the country from being occupied. Finland went to war with the USSR again in 1941, the year Germany attacked the Soviet Union, to try and regain the territory it had lost. Under a separate peace agreement between Finland and the Soviet Union signed in 1944, Finland was obliged to make further territorial concessions and pay war reparations to the USSR.

In the immediate post-war years, more than 400,000 displaced persons from the ceded territories were resettled in other parts of Finland. In addition to that, the livelihoods of 90,000 war widows and orphans, and almost 60,000 invalid ex-servicemen had to be secured. The war reparations were finally paid off in 1952, but they had the effect of vigorously building up the Finnish metal industry. In the first half of the 1950s, more than 90% of Finnish exports were still based on timber.

After the Second World War, Finland went through a period of great structural change, in which the formerly agrarian country switched over to being an industrial one. This brought with it heavy migration from the countryside to the towns and the population became more and more concentrated, especially in southern Finland. In the 1960s and 1970s many people emigrated from Finland, particularly to Sweden. Finland’s most important source of economic growth was industry, which expanded exports especially after the EFTA agreement was signed in 1961. Sweden and the United Kingdom rose to become Finland’s most important trading partners.

It was thought desirable to distribute growing prosperity evenly by creating a system of social security that included guaranteed health care for all at next to no cost. Educational equality was increased by establishing the same comprehensive education for all, free-of-charge. Finland, too, had become a country within the characteristic Nordic tradition of the rule of law, with good social security and a high standard of living.

In the decades following the Second World War, dramatic changes have taken place in Finland’s international status and operating environment. In 1955, Finland joined the international community by becoming a member of both the United Nations and the Nordic Council. Finland also took part in the integration of Europe from the very beginning by becoming a member of EFTA, the European Free Trade Area, and entering into an agreement on free trade with the EEC, the European Economic Community, in 1973. Following a referendum, Finland joined the European Union in 1995.
Membership of the EU has helped to make Finland more accessible and increased its cooperation with other countries.

Finland’s economic development was characterized for decades by rapid growth coupled with a sensitivity to fluctuations in international trade cycles. In the early 1990s, Finland found itself in a period of deep recession, when the bubble of asset values financed by foreign borrowing burst, as it had done a little earlier in the neighbouring countries and as it did in Asia in the latter half of the decade. The situation was worsened by the fact that there was a decline in the trade cycle in Europe and Finland’s trade with the Soviet Union collapsed when the Soviet Union broke up. Gross domestic product shrank about 10% altogether between 1991 and 1993. At the end of the 1980s, unemployment was less than 3% and there was a shortage of labour in a number of sectors. As a result of the depression, unemployment rose to a record level of 16.5% in 1994. Between 1992 and 1994, incomes of households fell a total of 10.5% in real terms. The level of consumption that had preceded the recession was regained in 1997.

1.2. FINLAND TODAY

1.2.1. POPULATION

In Finland, about 5.2 million people live in an area of 338 000 square kilometres. The average population density is 17 persons per square kilometre. The population is concentrated in the southern parts of the country, especially the Helsinki metropolitan area where almost one million people live, around one-fifth of the population. Indeed, the population density in Uusimaa is over 200 persons per square kilometre, whereas in Lapland it is only 2. Some 64% of the Finnish population lives in built-up areas and there are six towns of more than 100,000 people.

Demographic changes in the regions indicate that population figures have been growing in the Uusimaa region and a few other major growth centres. Northern Finland and Eastern Finland particularly, are regions where the population figures have gone down. The concentration of the population is the result of waves of heavy migration, the most recent of which took place after the beginning of the 1990s. A new characteristic of the migratory flow of the 1990s is that many urban areas as well as rural areas have been faced with net emigration.
By and large the migration is from the countryside to the regional centres and from the regional centres to the principal growth centres. The typical migrant is a young adult, with 15 to 29 year-olds making up over half of all the movements between the regions. The Helsinki Metropolitan Area is far and away the most attractive area for young people, with a net population increase for those aged 20-24 of about 5% per annum in relation to the number of residents in that age group.

According to forecasts by Statistics Finland, the population of Finland will remain above 5 million until 2030, at least. The working-age population will still continue to grow as a proportion of the total population in the early years of the new millennium, but will then shrink rapidly. By 2030, about a quarter of the population will be over 65.

*Table 1. Population by age group, end-1999*

<table>
<thead>
<tr>
<th>Age</th>
<th>Males</th>
<th>Females</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-4</td>
<td>151 759</td>
<td>145 763</td>
<td>297 522</td>
</tr>
<tr>
<td>5-9</td>
<td>167 831</td>
<td>161 544</td>
<td>329 375</td>
</tr>
<tr>
<td>10-14</td>
<td>161 552</td>
<td>154 552</td>
<td>316 104</td>
</tr>
<tr>
<td>15-19</td>
<td>169 996</td>
<td>162 210</td>
<td>332 206</td>
</tr>
<tr>
<td>20-24</td>
<td>167 606</td>
<td>160 460</td>
<td>328 066</td>
</tr>
<tr>
<td>25-29</td>
<td>155 590</td>
<td>148 858</td>
<td>304 448</td>
</tr>
<tr>
<td>30-34</td>
<td>182 321</td>
<td>175 244</td>
<td>357 565</td>
</tr>
<tr>
<td>35-39</td>
<td>194 200</td>
<td>186 739</td>
<td>380 939</td>
</tr>
<tr>
<td>40-44</td>
<td>196 273</td>
<td>190 213</td>
<td>386 486</td>
</tr>
<tr>
<td>45-49</td>
<td>204 582</td>
<td>199 863</td>
<td>404 445</td>
</tr>
<tr>
<td>50-54</td>
<td>213 919</td>
<td>209 647</td>
<td>423 566</td>
</tr>
<tr>
<td>55-59</td>
<td>140 513</td>
<td>143 681</td>
<td>284 194</td>
</tr>
<tr>
<td>60-64</td>
<td>124 103</td>
<td>135 115</td>
<td>259 218</td>
</tr>
<tr>
<td>65-69</td>
<td>103 675</td>
<td>123 488</td>
<td>227 163</td>
</tr>
<tr>
<td>70-74</td>
<td>86 775</td>
<td>121 845</td>
<td>208 620</td>
</tr>
<tr>
<td>75-79</td>
<td>55 966</td>
<td>104 364</td>
<td>160 330</td>
</tr>
<tr>
<td>80-84</td>
<td>27 816</td>
<td>66 183</td>
<td>93 999</td>
</tr>
<tr>
<td>85-89</td>
<td>14 002</td>
<td>41 393</td>
<td>55 395</td>
</tr>
<tr>
<td>90-</td>
<td>4 547</td>
<td>17 114</td>
<td>21 661</td>
</tr>
<tr>
<td>Total</td>
<td>2 523 026</td>
<td>2 648 276</td>
<td>5 171 302</td>
</tr>
</tbody>
</table>
There are relatively few foreigners living in Finland, only about 1.6% of the total population, with the largest group coming from the former Soviet Union. Approximately one-fifth of Finland's foreign residents are from the European Union.

In 2000, a total of 16,800 people moved to Finland, 5,400 from the EU, 4,700 from the Nordic countries and 6,700 from elsewhere. Of those who moved to Finland in 1998, some 2,400 had a higher educational qualification. The majority of these, around 80%, came from another European country and 22% from Sweden alone. Some 1000 fewer people with higher education came to Finland than left, so Finland experienced a net loss of highly trained people.

Finland’s official languages are Finnish and Swedish. Some 93% of the population speak Finnish as their mother tongue and 6% Swedish. Although Swedish speakers are concentrated mainly in the coastal areas, Finnish and Swedish are on an equal footing throughout the country when dealing with the authorities.

The third native language in Finland is Sàmi, with 1700 people (0.03% of the population) speaking it as their mother tongue. The Sàmi people live in the northernmost part of Finland, Lapland, and in their home districts they are entitled to public services in their own language.

There is religious freedom in Finland, which guarantees citizens the right to practice any religion, so long as it does not infringe the law and is not in breach of good manners. The Evangelical-Lutheran Church and the Orthodox Church have special status in Finland’s religious community, as they have the right to levy taxes, for instance. The majority of the population (86%) belong to the Evangelical-Lutheran Church, and 1% to the Orthodox Church. Some 12% of the population do not belong to any religious group.

1.2.2. SOCIETY

Finland is a republic, with a Parliament consisting of 200 members, elected every four years, which is the highest legislative organ. Besides legislation, it decides on the Budget, supervises the Government and audits the administration.

Parliamentary representation 1999-2003:
The Government prepares laws and exercises the supreme executive authority. It can also issue decisions altering existing decrees. The Government must enjoy the confidence of Parliament. The present Government is made up of representatives of the Social Democratic Party, the National Coalition, the Left Alliance, the Green League and the Swedish People's Party.

The President of the Republic, elected by direct popular vote at 6-year intervals, is relatively independent of Parliament. Finland's foreign policy is led by the President in collaboration with the Government. The President submits bills to Parliament and ratifies legislation passed by Parliament. If the President refuses to ratify an act passed by Parliament, the act is consequently post-poned. The President also issues decrees and is the Commander-in-Chief of the Defence Forces.

The administrative system operating under the highest Government organs consists of central government units, and regional and local government.

By tradition, central government is exercised through two channels in Finland: ministries and central agencies. Ministries are led by politically responsible ministers. Central agencies operate under the ministries. Thus there is a separate central agency called the National Board of Education operating under the Ministry of Education. Ministries steer the central agencies in general but do not interfere with their decisions in individual cases. Thus central agencies are relatively independent in their own sectors. Central agencies have played no role in the administration of higher education.

Regional government operates under central government, with
Provincial State Offices handling general administrative duties. There are no elected organs in the six provinces. The Province of Åland is autonomous, its status being based on international agreements and the Act on the Autonomy of Åland. Åland's only official language is Swedish. A Provincial Legislative Assembly with limited legislative powers is elected to govern the province. Åland also has a Provincial State Office for general government.

Local government is in practice handled by municipalities, of which there were 448 at the beginning of 2001. Of these, 67 were urban, 70 densely populated and 311 rural communities. Every Finnish citizen is registered as a resident of a municipality.

Municipal government is traditionally based on the principle of autonomy. In recent years, the autonomous status of municipalities has expanded, with the aim of giving local people sufficient freedom to influence the municipality and its functions. A reform of municipal legislation in 1995 gave the municipalities a free hand to decide on their administrative structure, functions and distribution of power. Municipal autonomy is based on the idea of representational democracy. The highest decision-making organ is the council, elected every four years by direct popular vote. The highest executive power lies with a municipal board elected by the council.

It is the function of the municipalities to guide and provide services for their residents on the basis of law. Some of the most important statutory municipal functions are health care, comprehensive education, social services, the fire and rescue departments, environmental and waste management, and community planning and construction. As society has developed and changed, the functions of the municipalities have increased. Today, municipalities provide approximately two thirds of all public services, and some 60% of their spending goes on training and education, health care and social services.

Each municipality has at least one education committee or a similar organ. Every municipality is required to provide basic education for all children living in the municipality or otherwise to ensure that all children of school age receive such education. The municipal education authorities may also provide upper secondary, vocational, polytechnic and adult education. Municipalities and joint municipal boards must, by law, evaluate their education and its effectiveness.
Municipalities may set up joint municipal boards between a number of municipalities by inter-municipal agreement approved by their respective councils. These joint municipal boards usually look after functions that are expensive to establish and maintain, and that call for a broad population basis. Usually, joint municipal boards are set up to provide health services and vocational and polytechnic education.

The most significant income sources for municipalities are tax revenues, income transfers from the Government and various charges. The Government contributes to the financing of municipal functions through a system of subsidies set using various calculations. During the economic difficulties of the 1990s, the Government reduced its municipal subsidies substantially. The subsidies granted by the Government to municipalities are not tied to a certain function, which means the municipalities can decide how to allocate their funds to social and health care and education and culture, on the one hand, and other municipal functions, on the other.

### 1.2.3. THE ECONOMY

The Finnish economy has grown rapidly in the past few years. Between 1994 and 1998, GDP increased by an average of 5% a year. The post-recession upswing is due to a number of parallel factors. In the years of recession, stabilization of economic policy was set as the basic principle and goal of economic policy. A decision was made to cut public spending in order to stop the continuing increase in government debt. Unparalleled structural change lay behind the rapid growth that followed the recession, and the output and exports of the electronics and electrical industry grew particularly vigorously.

**Table 2. GDP trend**

<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>GDP at market price, EUR billion</td>
<td>106.9</td>
<td>116.3</td>
<td>121.7</td>
<td>130.4</td>
<td>137.5</td>
</tr>
</tbody>
</table>

*Source: Ministry of Finance*
The success of the electronics industry side by side with the traditionally strong forest industry and metal & engineering industry sectors, played a significant role in the diversification of Finland's production structure. The forest industry has always relied on processing domestic timber resources for the export market. There has been a shift of emphasis from mechanical wood processing to paper and pulp. Tighter competition and globalization have had an impact on the forest industry: Finnish companies have expanded their operations abroad and merged to form larger units. The metal and engineering industry has grown recently, both in production and in its employment effect. The role of electronics has strengthened rapidly. Chemicals is Finland's third biggest industrial sector. The food industry used to be mostly domestic until recently, and Finnish agricultural products were used primarily by Finnish consumers, but since Finland's accession to the EU the situation has changed and the entire food sector is now involved in international competition. Product development has been the food industry's answer to the ever keener competitive situation.

Industrial production has grown rapidly since the mid '90s, and productivity has increased, too. There is a positive relation between information technology investments and corporate productivity. Within companies, IT and communications technology have required organizational rearrangements.

Table 3. Volume index for industrial production (1995=100)

<table>
<thead>
<tr>
<th>Year</th>
<th>All industry</th>
<th>Wood processing and paper</th>
<th>Electronics</th>
<th>Other metal engineering</th>
</tr>
</thead>
<tbody>
<tr>
<td>1990</td>
<td>87.3</td>
<td>83.4</td>
<td>49.1</td>
<td>89.7</td>
</tr>
<tr>
<td>1991</td>
<td>79.7</td>
<td>78.1</td>
<td>44.2</td>
<td>75.6</td>
</tr>
<tr>
<td>1992</td>
<td>80.5</td>
<td>80.9</td>
<td>51.7</td>
<td>76.0</td>
</tr>
<tr>
<td>1993</td>
<td>84.8</td>
<td>89.1</td>
<td>62.9</td>
<td>77.4</td>
</tr>
<tr>
<td>1994</td>
<td>94.2</td>
<td>99.5</td>
<td>80.2</td>
<td>87.8</td>
</tr>
<tr>
<td>1995</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
</tr>
<tr>
<td>1996</td>
<td>103.5</td>
<td>97.0</td>
<td>114.2</td>
<td>103.4</td>
</tr>
<tr>
<td>1997</td>
<td>113.2</td>
<td>110.9</td>
<td>136.7</td>
<td>111.3</td>
</tr>
<tr>
<td>1998</td>
<td>122.4</td>
<td>115.2</td>
<td>189.3</td>
<td>115.6</td>
</tr>
<tr>
<td>1999*</td>
<td>129.1</td>
<td>119.1</td>
<td>235.1</td>
<td>114.0</td>
</tr>
<tr>
<td>2000*</td>
<td>143.4</td>
<td>124.3</td>
<td>318.3</td>
<td>122.4</td>
</tr>
</tbody>
</table>

*advance information

Source: Statistics Finland
Deregulation of markets has proceeded rapidly. The basic goals of industrial policy include supporting entrepreneurship and promoting the transparency and functionality of the market. In practice, Finland has abolished all restrictions on foreign ownership, and competition policy is now in line with EU provisions. As a member of the European Union, Finland is part of the single market. EU membership has meant closer industrial connections with Europe, and with Member States in particular.

Entrepreneurship expanded rapidly in the information sector in the ‘90s, but the number of companies in this sector is still low. In 1998 the information sector comprised fewer than 15,000 companies, i.e. 6.5% of the total. On the other hand, every tenth employee works in information sector companies, and the proportion accounted for by net sales and payroll is still greater. Major companies are a common feature in the IT sector. The most important goods produced are radio and television sets and other equipment (such as mobile phones), where net sales have increased fivefold since 1993. The most important employer sector is service production, comprising data processing services and telecommunications. Some 10,000 new jobs were created here between 1996 and 1996.

Operations in the information sector are concentrated geographically. More than half of the sector’s personnel and net sales are accounted for by the Uusimaa region. Other regional concentration centres are Southwest Finland, the Tampere Region and the Oulu region in Northern Ostrobothnia. The number of segments in this sector increased in all regions from 1994 to 1998, and by approximately one third at the national level.
The process by which information and know-how became Finland’s key resource is also reflected in the rapid increase in research and development spending. In 2000, according to preliminary data 3.3% of GDP went into R&D. The communications sector has made substantial inputs in innovation. The proportion of R&D work in the ICT sector is by far the highest in the OECD countries. ICT also influences innovation work in other sectors and has facilitated inter-company research collaboration, and collaboration between companies and the scientific community. Information and innovations also spread more rapidly than before.

Exports by Finland have increased at an extremely rapid rate since the early 1990s, and export growth has been a central element in economic restructuring. Exports accounted for 23% of GDP in 1990, but by 1998 the figure was as high as 39%. Growth has been made possible by competitive prices and expertise in high-tech production and product development. Export volume rose by 17.7% in 2000. Exports of electronics and electricity industry products grew by as much as 50%, as markets expanded rapidly and Finnish exporters won new market shares. Exports of the products of the traditional metal and engineering industry also grew substantially.

Recently, prospects for the world economy have deteriorated significantly, and export growth is expected to be less than 50% of last year’s
figure on account of a decline in international demand. The changing situation is reflected most clearly in the forest industry.

Electronics products accounted for a good 30% of exports, in 2000. Other metal and engineering products on the one hand, and wood processing and paper industry products on the other, each accounted for 25%.

**Table 4. Goods exports by sector, %**

<table>
<thead>
<tr>
<th></th>
<th>1970</th>
<th>1980</th>
<th>1999</th>
</tr>
</thead>
<tbody>
<tr>
<td>Foods</td>
<td>3.5</td>
<td>3.0</td>
<td>1.9</td>
</tr>
<tr>
<td>Textile, clothes, leather, footwear</td>
<td>6.6</td>
<td>7.8</td>
<td>1.4</td>
</tr>
<tr>
<td>Wood processing</td>
<td>15.9</td>
<td>14.7</td>
<td>6.2</td>
</tr>
<tr>
<td>Paper and graphics</td>
<td>40.1</td>
<td>29.8</td>
<td>23.2</td>
</tr>
<tr>
<td>Chemicals 1)</td>
<td>4.3</td>
<td>11.3</td>
<td>7.4</td>
</tr>
<tr>
<td>Metal processing</td>
<td>6.2</td>
<td>6.7</td>
<td>6.9</td>
</tr>
<tr>
<td>Other metal and electronics production</td>
<td>18.8</td>
<td>21.9</td>
<td>46.3</td>
</tr>
<tr>
<td>Other exports</td>
<td>4.6</td>
<td>4.8</td>
<td>6.7</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>100.00</td>
<td>100.00</td>
<td>100.00</td>
</tr>
</tbody>
</table>

*Source: Foreign trade statistics, National Board of Customs.*

1) *Statistical method changed*

**Figure 2. Exports by sector in 2000**

*Source: Statistics Finland*
Most exports go to the EU area, but the fastest growth in recent years has been in developing markets, such as China.

More than 40% of Finnish imports were raw materials and production commodities. A lot of consumer commodities and investment items were also imported.

<table>
<thead>
<tr>
<th>Year</th>
<th>Imports</th>
<th>Exports</th>
<th>Balance of trade</th>
</tr>
</thead>
<tbody>
<tr>
<td>1995</td>
<td>21,622</td>
<td>29,605</td>
<td>7,983</td>
</tr>
<tr>
<td>1996</td>
<td>23,836</td>
<td>31,339</td>
<td>7,504</td>
</tr>
<tr>
<td>1997</td>
<td>27,077</td>
<td>35,797</td>
<td>8,720</td>
</tr>
<tr>
<td>1998</td>
<td>29,066</td>
<td>38,779</td>
<td>9,713</td>
</tr>
<tr>
<td>1999</td>
<td>29,691</td>
<td>39,245</td>
<td>9,554</td>
</tr>
<tr>
<td>2000</td>
<td>36,691</td>
<td>49,387</td>
<td>12,697</td>
</tr>
</tbody>
</table>

\[1\) of total trade turnover
\[2\) advance information

Source: Statistics Finland

1.2.4. LABOUR MARKET

In 2000, the Finnish labour force comprised 2,589,000 people. The proportion of working-age population accounted for by the labour force has always been high in Finland. Though work participation has declined as a result of the recession in the 1990s, it is still above the OECD average. As in other Nordic countries, the figure for women is extremely high, having been supported by extensive welfare services in the public sector. Full-time work is common, and the proportion of women doing part-time work is low, as is the proportion accounted for by the young. The latter is largely explained by the extensive coverage of education provision for young people. The problem is short working careers, since the work participation figures for not only the young but also those in the 55-64 age group are low.

The rapid rise in the educational level of the labour force is reflected in the great differences between the various age groups in their level of education. Among the employed, those with the highest educational level are aged 25-34, about 40% of whom had completed a tertiary qualification.
in 1997. The corresponding figure for the 55-64 age group was a good 28%. The educational level of those leaving the labour force is low and of those entering the labour force high.

Table 6. Educational structure of the employed by age in 1997 (%)

<table>
<thead>
<tr>
<th>Level of education</th>
<th>Total</th>
<th>15-24</th>
<th>25-34</th>
<th>35-44</th>
<th>45-54</th>
<th>55-64</th>
<th>65-74</th>
</tr>
</thead>
<tbody>
<tr>
<td>Below uppersecondary education</td>
<td>25.1</td>
<td>24.2</td>
<td>13.3</td>
<td>18.5</td>
<td>46.9</td>
<td>68.4</td>
<td></td>
</tr>
<tr>
<td>Upper secondary qualif. (ISCED 97:3)</td>
<td>41.8</td>
<td>63.8</td>
<td>46.4</td>
<td>44.2</td>
<td>35.1</td>
<td>24.7</td>
<td>15.5</td>
</tr>
<tr>
<td>Tertiary qualification (ISCED 97:5/6)</td>
<td>33.1</td>
<td>12.0</td>
<td>40.3</td>
<td>37.3</td>
<td>30.6</td>
<td>28.4</td>
<td>16.2</td>
</tr>
<tr>
<td>Total</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Source: Statistics Finland; Register-based Employment Statistics

The organization rate among wage-earners is high in Finland and in the other Nordic countries. Over the last 30 years, pay and other working conditions have been negotiated between central employer and employee organizations. It has been a significant feature of the wage settlement system that the Government has played an integral role in labour market negotiations and that the settlements arrived at have been extensive overall income policy agreements linked to taxation and other policies.

The economic reverberations of a centralized income settlement system have been studied extensively in the Nordic countries. Moderate centralized income settlements in times of economic crisis have played an important part in improving economic status.

Finland does not have a general statutory minimum wage. Instead, minimums for each contracting sector are defined in their respective collective bargaining agreements. Finland’s pay trends were moderate throughout the 1990s. In 1998, monthly earnings for regular working hours among women were on average 82% of the figures for men. A higher educational level raises at least gross income level quite considerably. Those with tertiary education have distinctly higher earnings in all age groups, but secondary education would not appear to raise the level of monthly earnings correspondingly.
Table 7. Monthly earnings by level of education and age, 1998 (Euros/month)

<table>
<thead>
<tr>
<th>Age</th>
<th>Basic level</th>
<th>Secondary level</th>
<th>Lowest level of tertiary education</th>
<th>Undergraduate level</th>
<th>Graduate level</th>
<th>Post-graduate level</th>
</tr>
</thead>
<tbody>
<tr>
<td>15-19</td>
<td>1219</td>
<td>1287</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20-24</td>
<td>1420</td>
<td>1487</td>
<td>1427</td>
<td>1560</td>
<td>1888</td>
<td></td>
</tr>
<tr>
<td>25-29</td>
<td>1600</td>
<td>1677</td>
<td>1649</td>
<td>1896</td>
<td>2203</td>
<td>2241</td>
</tr>
<tr>
<td>30-34</td>
<td>1695</td>
<td>1755</td>
<td>1849</td>
<td>2176</td>
<td>2499</td>
<td>2567</td>
</tr>
<tr>
<td>35-39</td>
<td>1753</td>
<td>1788</td>
<td>1975</td>
<td>2406</td>
<td>2816</td>
<td>2857</td>
</tr>
<tr>
<td>40-44</td>
<td>1758</td>
<td>1805</td>
<td>2020</td>
<td>2516</td>
<td>3081</td>
<td>3301</td>
</tr>
<tr>
<td>45-49</td>
<td>1755</td>
<td>1822</td>
<td>2113</td>
<td>2664</td>
<td>3179</td>
<td>3587</td>
</tr>
<tr>
<td>50-54</td>
<td>1771</td>
<td>1843</td>
<td>2208</td>
<td>2785</td>
<td>3296</td>
<td>3746</td>
</tr>
<tr>
<td>55-59</td>
<td>1764</td>
<td>1837</td>
<td>2274</td>
<td>2768</td>
<td>3376</td>
<td>3857</td>
</tr>
<tr>
<td>60-69</td>
<td>1690</td>
<td>1810</td>
<td>2354</td>
<td>2765</td>
<td>3567</td>
<td>4034</td>
</tr>
</tbody>
</table>

Source: Statistics Finland

Some 72% of all those employed worked in the private sector and 27% in the public sector. More than 70% of the entire public sector, i.e. central and municipal government, are employed by the municipal sector. In many municipalities, a significant proportion of jobs fall within the sphere of public service production, which means that local government is the key employer in the area. In 1995, public services accounted for more than 28% of all municipal jobs in 58 municipalities and 15-20% in 170 municipalities. In the provinces of Lapland, Oulu and North Karelia, public services were the most important employer.

Services provide employment for some two thirds of the labour force. The service sector has expanded particularly fast in finance, insurance, social services, health care and education. The municipalities are largely responsible for the services provided, and the growth that has taken place in the service industries thus also means expansion of the public sector.
The regional mobility of labour is much greater in the other Nordic countries than it is in Finland, while occupational mobility between sectors is fairly brisk in Finland.

The information society has changed Finland’s occupational structure greatly. In 1997, the ICT sector provided employment for 5.5% of all those employed. The increase in employment has been greatest in the production of ICT goods. The role of computer services and the content industry has also become increasingly important in the provision of employment. The growing importance of the information sector as an employer and its special requirements concerning trained staff are putting pressure on Finland’s educational system.

Finland’s employment situation deteriorated rapidly as the country’s economic status declined in the early 1990s. The proportion of unemployed approached 20% of the total labour force and was among the highest in the OECD. Since the late 1990s, rapid economic growth has helped to reduce unemployment although the rate continues to remain higher than before the recession.
Table 8. Unemployment 1990 - 2000

<table>
<thead>
<tr>
<th>Year</th>
<th>Total</th>
<th>Males</th>
<th>Females</th>
<th>Total</th>
<th>Males</th>
<th>Females</th>
</tr>
</thead>
<tbody>
<tr>
<td>1990</td>
<td>82</td>
<td>49</td>
<td>33</td>
<td>3.2</td>
<td>3.6</td>
<td>2.7</td>
</tr>
<tr>
<td>1991</td>
<td>169</td>
<td>106</td>
<td>62</td>
<td>6.6</td>
<td>8.0</td>
<td>5.1</td>
</tr>
<tr>
<td>1992</td>
<td>292</td>
<td>178</td>
<td>114</td>
<td>11.7</td>
<td>13.6</td>
<td>9.6</td>
</tr>
<tr>
<td>1993</td>
<td>405</td>
<td>235</td>
<td>170</td>
<td>16.3</td>
<td>18.1</td>
<td>14.4</td>
</tr>
<tr>
<td>1994</td>
<td>408</td>
<td>235</td>
<td>174</td>
<td>16.6</td>
<td>18.1</td>
<td>14.8</td>
</tr>
<tr>
<td>1995</td>
<td>382</td>
<td>204</td>
<td>178</td>
<td>15.4</td>
<td>15.7</td>
<td>15.1</td>
</tr>
<tr>
<td>1996</td>
<td>363</td>
<td>186</td>
<td>176</td>
<td>14.6</td>
<td>14.3</td>
<td>14.9</td>
</tr>
<tr>
<td>1997</td>
<td>314</td>
<td>160</td>
<td>154</td>
<td>12.7</td>
<td>12.3</td>
<td>13.0</td>
</tr>
<tr>
<td>1998</td>
<td>285</td>
<td>143</td>
<td>142</td>
<td>11.4</td>
<td>10.9</td>
<td>12.0</td>
</tr>
<tr>
<td>1999</td>
<td>261</td>
<td>130</td>
<td>131</td>
<td>10.2</td>
<td>9.8</td>
<td>10.7</td>
</tr>
<tr>
<td>2000</td>
<td>253</td>
<td>122</td>
<td>131</td>
<td>9.8</td>
<td>9.1</td>
<td>10.6</td>
</tr>
</tbody>
</table>

Source: Statistics Finland

Figure 4. Trend in unemployment and long-term unemployment, 1991-1999
Regional differences have been great and persistent in Finnish unemployment, with the highest rates traditionally in eastern and northern Finland and the lowest in southern Finland. However, the risk of unemployment is even more clearly linked with level of education. Groupings lacking vocational education or with only a low level of vocational education face a greater risk of becoming unemployed than people with a higher level of education. This is characteristic of boom and recession periods alike, although downward trends always multiply the number of the unemployed at all educational levels.

The risk of becoming unemployed is linked with educational level in Finland and in other OECD countries. The link between educational level and success in the labour market is underlined by the fact that a high educational level was appreciated in recruitment in the late ‘90s. A degree or diploma was thus a qualification for a large proportion of new vacancies. Employers’ appreciation of education increased substantially in the ‘90s.
1.2.5. THE INFORMATION SOCIETY

The issue of the information society was considered central to the economic and public management reform of the early ‘90s. In its 1995 information society strategy, the Government outlined measures to promote the information society. The strategy prepared comprised five main guidelines:

1) Information technology and information networks as tools in private and public-sector renewal
2) The information industry to become an important future sector of economic activity in Finland
3) Professional expertise in information and communications technology to be maintained at a high overall level, with selected peaks.
4) Access to information society services and basic skills for all
5) Ensuring competitiveness and service capacity for Finland’s entire information infrastructure.

Information society development plays a central role in restructuring the economy, strengthening the content industry and intensifying public services also in the current Government Programme. The goal was to turn Finland into an information society where information and expertise are an integral part of education and a key production factor.

The ICT amenities used by households increased substantially over the past decade, particularly the number of mobile phones. Nearly 80% of all households have a mobile phone, while personal computers and Internet connections have also increased, though more slowly. In the less densely populated areas of northern and eastern Finland, information technology has gained ground more slowly than in other areas. Households have most links with information networks in the Helsinki metropolitan area and other growth centres.
In autumn 1999, 60% of men and women had access to a computer. Approximately one third of all Finns had used a computer at home, at work or in a library. In international terms, banks, schools, libraries and hospitals are also fairly advanced in their utilization of modern information and communications technology.

**Figure 7. Access to a personal computer and the Internet at home, at work or at a place of study in 1997-1999**
In international comparisons of information and communications technology, Finland comes in the top third among EU countries in use of computers and the Internet. When comparing the use of the Internet in the EU and USA, it is evident that the USA is clearly ahead of the average European level. However, the penetration of the Internet both in Finland and Sweden is almost level with the USA. Finland leads Europe in the number of mobile phone connections in relation to population.

Use of and familiarity with various types of hardware is most common in the young age groups. Only 25% of all 16 to 25 year-olds do not use a computer at all, while the equivalent figure in the 36-45 age group is 36%, 47% in the 46-55 age group and 80% in the 56-65 age group. The level of know-how is closely linked with active use. The younger age groups are clearly more skilled in use of the Internet and in Word processing.

In Finland, both the public and the private sectors have made inputs in promoting the information society. Keeping Finland among the leading information societies is a key challenge. Our strengths are a high level of education, a highly advanced communications infrastructure and extensive utilization of ICT in both the private and the public sectors. Finnish libraries also form a well-functioning network that offers links with international library and information service networks and free access to the Internet for all citizens.
II EDUCATION SYSTEM AND POLICY

2.1. THE FINNISH EDUCATION SYSTEM

Figure 8. The education system in Finland
The Finnish education system consists of pre-school education, comprehensive school, post-comprehensive general and vocational education, higher education and adult education.

Pre-school education is provided in a daycare centre or a comprehensive school in the year preceding the beginning of school.

Comprehensive school is a nine-year system (with a voluntary 10th form) providing education for all children of compulsory school age. All Finnish citizens are subject to compulsory education for a period of ten years starting in the year that they become seven years of age. Compulsory education ends when the pupil reaches the age of 17 or when he or she has completed the comprehensive school syllabus, whichever occurs first.

General upper secondary schools and vocational schools give post-comprehensive school education. The general upper secondary schools offer a three-year general education curriculum, at the end of which the pupil takes the national matriculation examination, which is the general eligibility criterion for higher education. The matriculation examination consists of four compulsory subjects and one or more optional ones. Candidates may take it in three consecutive examinations, that is, over a period of 18 months. There are four compulsory tests in the matriculation examination: mother tongue (either Finnish or Swedish, depending on the language of instruction at the school), the other national language, a foreign language, and either mathematics or general studies. In addition, candidates may take optional tests.

The general upper secondary school network covers the entire country. The schools follow a national core curriculum, but recently the range of choice has been broadened. Individual schools can cultivate a more distinct image; some upper secondaries have a specialized curriculum, giving emphasis to the arts or some other field. Upper secondary school has traditionally constituted the main channel to university education.

Finnish vocational education and training is traditionally institution-based to a very large extent. Taught courses form the core of the programmes but on-the-job training is nowadays included in the study programme in all fields. From 2001 onwards all the qualifications will be based on three-year courses and they will produce general eligibility for higher education. An initial vocational qualification can be completed through apprenticeship training also. In addition to these, a vocational qualification
can also be taken as a competence-based examination evaluated by an examination board.

The Finnish higher education system comprises two parallel sectors: universities and polytechnics. The polytechnics were established during the reform process of the 1990s, and now a network of 29 polytechnics covers the entire country. Polytechnic degrees are Bachelor-level higher education degrees with a professional emphasis and take 3.5 to 4 years to complete.

There are 20 universities in Finland, ten of which are multi-faculty institutions and ten specialist institutions. Of the specialist institutions, three are universities of technology, three are schools of economics and business administration, and the remaining four are art academies. In addition, university-level education is provided at one military academy under the Ministry of Defence. All universities engage in both education and research and have the right to award doctorates. The first university degree, which roughly corresponds to a Bachelor’s, can generally be attained in three years of full-time study and the higher, Master’s degree in five years, i.e. a further two years following the Bachelor’s degree. There is also an optional pre-doctoral postgraduate degree of licentiate, which can be completed in two years of full-time study, after the Master’s degree. Full-time studies for a doctorate take approximately four years following the Master’s degree.

Adult education is offered in Finland at about 1,000 educational institutions and universities. By adult education we mean organized training specifically aimed at adults. Indeed, it is typical of Finnish adult education that it is clearly distinct from education designed for young. All levels of the education system except the basic university level offer education and training aimed specifically at adults. It is therefore possible to study for a degree also in adult education. Adult education can also offer apprenticeship training, supplementary and continuing education to update and extend vocational and professional skills, social studies conferring civic and work community skills, and study purely for recreation. Annually some 1 million people participate in adult education.

In Finland, spending on public education accounts for 13% of all public expenditure. Some two thirds of this consists of State funding and one third of municipal funding. Public expenditure on education was 6.2% of GDP in 1997.
The tables below present the percentages of total expenditure for all types of institutions in 2000. In addition to expenditure by educational institutions, the study includes calculated payments to pension insurance funds and pensions paid to comprehensive and upper secondary school teachers and the cost of pre-primary education for 3-6 year-olds at daycare centres.

**Figures 9 and 10. Educational, research and cultural appropriations in the State budget and supplementary budgets and their distribution by sector in 2000 (%).**
Instruction is usually free of charge at all levels of education; there are no tuition fees at any level. Compulsory education is completely free of charge for the pupils, but at higher levels of education, students may have to pay for study materials, meals and transport.

2.1.1. STANDARD OF EDUCATION

The standard of education in Finland has risen sharply in recent decades. By international comparison, Finland is currently at the general European level. Young people are more likely to have completed a certificate, diploma or degree than their elders. In the 25-34 age group, 83% have completed a qualification at least at the upper secondary level; the corresponding figures are 37% for the 55-64 age group. The rising trend still continues, and the proportion of young people in education is very high.

The principle in planning educational services is to offer the entire age group completing comprehensive school a study place in either general upper secondary education or upper secondary vocational education. Openings in higher education will be offered to about 65% of the age group.

With the exception of certain areas (e.g. engineering, social services, health sciences), sexual equality can be considered to have been achieved in Finnish education. There is less differentiation by sex in the university disciplines than at other levels of study.

There are still regional differences in education: the proportion of people aged 15 or more who have a degree at least at the upper secondary level varies locally from 50% to 60%, while the rate for the whole country is 55%. Social background still affects educational choices: children of blue-collar workers and farmers tend to opt for vocational education, whereas the children of white-collar workers usually go to university. However, the rising education level of parents should gradually affect their children’s choices: the more highly educated the parents are, the more willing their children usually are to obtain a higher qualification.

2.1.2. STUDENT FLOWS

Comprehensive school 9-graders numbered approximately 67,300 in 1999. 93% of them continued their studies as follows: 55% at upper secondary school, 35% in initial vocational education and training and 3% in the optional 10th grade at comprehensive school. 7% did not immediately continue their
studies after comprehensive school, compared with 8% the year before.

In 1999, 34,500 completed upper secondary school. 79% of them applied, and 21% did not apply, for further studies the year they completed their matriculation examination. Less than half of those who completed their matriculation examination in 1999 applied for university, less than a third for a polytechnic and slightly over 1% for vocational education and training. Only 37% of those who completed their matriculation examination in 1999 were able to continue in further education: 19% started at university, 13% at polytechnics and 5% in vocational education and training. 63% of them did not continue their studies immediately. Less than 40% gained immediate entry to further education throughout the 1990s.

First-year places in higher education are allocated as follows: every year about 66% of the average 19-21 age group has a place at either a university or polytechnic. On average, however, it takes 2-3 years to enter a university or polytechnic. 49% of new polytechnic and 62% of new university students were in the 19-21 age group in 1999. Over 20% of new university and polytechnic students were at least 25 years of age.

In 1999, 47% of those with a vocational qualification entered the labour market. 16% continued their studies, one third of these going to a polytechnic. Approximately 25% of those with a vocational qualification were unemployed at the end of the year. In 2000, 69.5% of the young people who accepted a place at a polytechnic had completed upper secondary school, and 29.5% came through the vocational channel.
Figure 11. Student flows among school leavers in 1999

*1 people who have been working or engaged in other activity while studying are counted as students

Source: Statistics Finland
2.2. HIGHER EDUCATION

2.2.1. ADMINISTRATION OF HIGHER EDUCATION

Parliament enacts laws on education and determines the overall lines of education policy. The Government and the Ministry of Education are responsible for implementing these principles in central government. The Government adopts a Development Plan for Education and University Research for a six-year period every four years.

Nearly all publicly funded education, from primary to higher, is steered or supervised by the Ministry of Education. Training related to national defence, law and order, and some aspects of communications and transport is administrated by other ministries. Most existing private institutions are in the vocational sector, but they, too, rely heavily on public funding, and the education they provide is subject to public supervision.
The Ministry of Education is charged with the administration of education, research, culture, youth issues and sports; its remit includes all universities and polytechnics. In matters related to comprehensive and upper secondary school, vocational institutions and adult education, the Ministry is assisted by an expert agency, the National Board of Education.

The Finnish Higher Education Evaluation Council (FINHEEC) advises the Ministry of Education and assists the universities and polytechnics in matters relating to evaluation.
The Academy of Finland takes care of central research administration and finances most university research. The Academy has four research councils appointed for three-year terms, which are responsible for financing research in their disciplines. Another important task for the Academy is to evaluate research. Public funding for technology and development is channelled through the National Technology Agency (Tekes), which also plays a major role in external funding of the universities.

The Science and Technology Policy Council is responsible for promoting major issues related to science, technology and scientific training. The Council advises the Government and Ministries on the orientation and coordination of science and technology policy, the general development of scientific research and training and Finnish participation in international scientific and technological cooperation.

2.2.2. KEY OBJECTIVES AND POLICY PRIORITIES

Education and research are crucial to Finland’s strategy for the future, which aims at the wellbeing of its citizens, cultural diversity, sustainable development and prosperity.

The watchwords in education policy over the next few years will be high quality, educational equality and the principle of lifelong learning. Finland is to be developed into a humane knowledge-based society through education and research. The Government is committed to maintain the high level of public funding to the education and research system. Special attention will be paid to developing teaching and learning at all levels of education through teacher education and guidance services.

In order to meet the needs of the regions, the higher education institutions must pay special attention to developing their regional responsiveness through intensified cooperation with local business and industries and by facilitating transfer of expertise to working life. The higher education system will be developed as a whole, comprising the two sectors in which universities and polytechnics complement each other.

The system of higher education degrees will be developed to correspond to the needs of working life and also in view of the international development of degree structures.

The key targets of education policy in the near future were laid down in a development plan for education and university research between 1999
and 2004, which was approved by the Government on December 29, 1999. In a nutshell, development of education and research in the early 2000s will focus on:

- **basic educational security**: no tuition fees at any level of education, regionally and linguistically covering school and higher education network, students’ financial aid schemes

- **principle of lifelong learning**: pre-school education for all, large provision of education at all levels, better financial opportunities for liberal education and professional upgrading, raising the level of education among the middle-aged population, development of vocational competence-based qualifications, targeting educational services for third-age students

- **implementing the information strategy for research and education**: securing knowledge and skills in the knowledge-based society for all, developing initial and in-service teacher training, virtual school and virtual university project, expansion and diversification of content production and strengthening the necessary infrastructure in education and research

- **internationalization**: intensified international cooperation at all levels of education; approx. every third higher education student is expected to take part of his or her degree abroad

- **improving mathematics and science skills**: supporting the development of knowledge-based society, sustainable development, business and citizens’ mathematical and scientific knowledge and know-how

- continuing the policy of **rewarding centres of excellence** and further developing researcher training: quality through evaluation and competition, further development of graduate school system

- **strengthening the status of evaluation** as an integral part of a steering and development policy emphasizing the importance of quality: monitoring the overall performance of schools and higher education institutions, rewarding good performance in education and adult education.
2.3. VOCATIONAL EDUCATION AND TRAINING

In Finland, initial vocational education and training is mainly institution-based. At the beginning of 2000 there were 226 providers of training leading to vocational qualification: 51 of the providers were local authorities, 68 municipal federations and 107 private. Additionally, the government runs five special-needs institutes and a training centre in the Saami region in Lapland.

Initial vocational training programmes take three years to complete. The programmes provide both broad-based and job-specific competence.

The programmes consist of 120 credits, including at least 20 credits of on-the-job learning: 90 credits of vocational studies, 20 credits of core subjects and 10 credits of free-choice studies. On-the-job learning is guided and target-oriented training given at the workplace; it provides part of the work-based skills included in the qualifications.

Vocational training programmes are built on the comprehensive school curriculum. Matriculated students can also opt for initial vocational education and training; their studies are shorter owing to credit transfer.

Vocational education and training is provided in the following sectors: natural resources, technology and transport, business and administration, hotel, catering and home economics, health and social services, culture, and leisure and physical education.

The qualifications provide comprehensive basic competence for different occupations in the field concerned and more specific competencies in some area. The three-year qualification also gives formal eligibility for further education in polytechnics and universities.

It is also possible to take a competence-based examination to gain a vocational qualification. This track is mainly intended for the needs of the adult population. Training preparing for competence-based examinations is provided by vocational institutes and in the form of apprenticeship training.

Vocational education and training has undergone intense development in Finland throughout the 1990s. Legislative measures were taken to enlarge the eligibility provided by vocational education for further education with a view to enhancing its attractiveness and appreciation.

The Development Plan for Education and Research adopted by the government stresses the development of secondary vocational training into a more viable track to higher education. The aim is that one third of polytechnic graduates have come through the vocational track. The Ministry
of Education has stressed this aim in its negotiations on target outcome with polytechnics.

2.4. LIFELONG LEARNING IN FINLAND

In its development plan for education and research in 1999-2004, the Government set the following targets for lifelong learning: practically the entire age group should complete comprehensive school; young people entering the work market should have wide and professionally flexible competence and better learning skills than before; and their average level of education should be better than before. In the case of adults, the Government’s targets are to help provide adults with the necessary skills to survive in the modern changing work climate, and as a practical measure to focus on raising the basic educational level of the middle-aged population particularly, and to maintain both social cohesion and democratic values through training.

For employment, the Government’s target is to raise the employment rate close to 70% in 2003 from the current rate of 67%. Another long-term target is to raise the average age of leaving the labour market by 2-3 years from the current 59 years closer to the general pensionable age of 65.

The population’s older age structure will have a major impact on the balance and functioning of the labour market. By the middle of the decade, the age group of those entering the labour market will be smaller than those leaving it. The difference will be an annual 10,000-20,000 between 2005 and 2015, the greatest discrepancy coming at the end of this decade and the beginning of the next. We will already have to prepare for problems with poor labour force availability as a result of this development in the very near future.

The key to raising the employment rate and to solving labour force availability problems is how effectively the unemployed and people outside the labour market can be brought into the labour market. Probably the best way to do this is to increase opportunities for women and those over 50. The employment rate among women is currently 64%. The employment rate would also be raised if young people were brought into the labour market a little earlier. Ways should also be found to employ people with limited work opportunities. Labour supply bottlenecks and problems with structural employment must be treated simultaneously. In order to reach
the employment targets, lifelong learning measures must be used.

According to the OECD’s recent Education Policy Analysis 2001, Finland and the other Nordic countries are at the forefront of lifelong learning, although clear areas of improvement can still be found.

By ‘lifelong learning’ we primarily mean a principle that underlies labour policy ensuring that people are given opportunities for continuous learning. The key element here is to provide young people entering the labour market, on the one hand, and adults already in it, on the other, with a good level of basic training and skills. People should also be motivated to learn new things.

The Ministry of Education has set up a parliamentary adult education committee to study the targets and funding of adult education, and to try to make educational supply and demand meet. The deadline for the committee to complete its work is January 31, 2002.

By lifelong learning we secondarily mean a policy line ensuring that people can learn new things whatever their age and using all possible environments. Conclusions as to how successful these measures have been can be drawn by, for instance, analysing where adults are studying, how well young people and adults are able to utilize what they have learnt outside the current education system, and how successful people are in finding information and making informed choices concerning their education.

The number of adults of working age (25-64 yrs) taking part in adult education is very high — 57% — and remains high all the way up to the 46-55 age group. The lower participation in the over-55 age group is mainly in adult education financed with public funds.

There are some major differences in participation between different groups, however. Only one third of those with only comprehensive school behind them take part in adult education, while the figure in the group with a tertiary qualification is some 80%. Two-thirds of working people participate, but only one third of the unemployed.

Finland has recently been participating in an international study on adult education by the OECD. The results of this study will help to form a basis for the work of the Finnish parliamentary committee, which is also studying aspects of participation.
III THE POLYTECHNIC REFORM PROCESS

3.1. BACKGROUND TO THE REFORM

Systematic action was taken to develop vocational education and training in the 1970s and 1980s. When the OECD made its 1981 review of Finnish educational policy, one of the recommendations was that polytechnics should be established, side by side with the existing universities. At the time, the official response was that the proposal was not practicable in terms of the future development of the education system. Finland had in fact just launched an important large-scale reform of vocational education that also included post-secondary education.

By the end of the ‘80s, however, the situation had changed. It was felt that the education and training structure did not respond to the rapidly changing needs in the labour market or the changing international environment. A new evaluation of the situation was made by the Ministry of Education, which proposed not just the establishment of polytechnics, but also closer cooperation between upper secondary schools providing general education and post-comprehensive vocational schools.

The aim was to channel the increase in higher education provision to polytechnics rather than universities and at the same time diversify higher education. Initially, the justifications offered for the polytechnic reform were tied up with general problems in the national education system, specifically the ever-growing demand for university-level education (though post-secondary vocational education had been developed partly as a follow-up to upper secondary school), and the structural rigidity of vocational education in general. Vocational education was divided up into separate fields, each with its own schools and institutes. These were often very small and there was little cooperation between fields of study. It was only later that international considerations came to the fore, bringing a need for comparisons with the education systems in other countries. The Finnish vocational education system was difficult to describe and grasp, and in particular there was little understanding of the role of post-secondary vocational education and its standing.
3.2. GOALS AND METHODS OF THE REFORM

The main goals of the polytechnic reform, as laid down at the beginning of the ‘90s, were as follows:

- To raise the standard of the education provided.
- To respond to new demands for vocational skills.
- To increase the attractiveness of vocational education.
- To improve international comparability.
- To improve the operating capacity of the vocational education system.
- To decentralize the administration and rationalize the network of schools and institutes.
- To improve the regional coverage of the education.

The main methods used in the reform can be summarized as follows:

- Integrating several schools and institutes to form polytechnics.
- Reforming the degree system.
- Raising the standard of teaching.
- Improving teaching methods.
- Promoting interaction between school and work.
- Making education and training more international.
- Improving library and information services.

The Ministry’s proposal for the reform came as a surprise to politicians, the press, the universities and the vocational institutions themselves, and considerable doubts were expressed. Up to that point, the whole higher education concept had been understood solely in terms of university study, and there were major doubts about the country’s potential for creating professionally oriented institutes of higher education. The Government therefore proposed that the reform should begin with an experimental phase.

Basic preconditions for launching the reform were otherwise good, however, because post-secondary vocational education had been systematically developed in every field during the ‘70s and ‘80s. Thus the new polytechnic-level teaching did not have to start out from scratch; it had a strong qualitative and quantitative foundation that could be built on to create a prime component in the overall system of higher education.
3.3. FROM EXPERIMENT TO ESTABLISHMENT

The polytechnic reform began in 1991 with the issue of legislation on an experimental period, under which 22 temporary polytechnics were set up in the early ‘90s. The aim of the experiments was to gain experience that could be used later in building up a permanent system, and the temporary polytechnics were given the chance of eventually gaining permanent status. A number of research projects were also launched for monitoring the experimental phase.

The good experience gained of the experiments, international evaluations, and concurrent changes in the occupation structure and in working life all speeded up progress towards a permanent system and passing of the necessary legislation. It was then also judged that an unsustainable situation would arise very rapidly if education that was basically similar was to go on being part of both the vocational education system and the higher education system. Parliament approved permanent legislation on a polytechnic system in February 1995.

The review of Finnish higher education policy made by the OECD in 1994 led not only to the passing of this permanent legislation — which the report recommended — but also to aspects of the actual reform process. The report recommended that the planned permanent system should be set up gradually, over the course of at least five years, with the education authorities providing special support measures as called for by the quality criteria set.

The plan for the future development of education and research approved by the Government in 1995 defined the strategy for carrying out the polytechnic reform. This was to take place by 2000, with most post-secondary vocational education taking the form of polytechnic studies. At the same time, it was decided to close down vocational education at the intermediate (post-secondary) level. The establishment of each new polytechnic still had to be preceded by an experimental and developmental stage. The basic assumption was that licences for permanent polytechnics would only be granted after they could demonstrate high quality and good performance during this experimental stage. The core of the strategy would thus be constant development, and gradual attainment of permanent status. Politically, this line meant that it was not essential to decide on the system’s scale and overall form in detail at too early a stage.
The first permanent polytechnics went into operation in August 1996 under licences granted by the Government. Throughout the second half of the ‘90s the Government continued to grant new polytechnics operating licences every year. The Finnish Higher Education Evaluation Council assessed the applications and made a recommendation on them to the Ministry of Education. Thus the polytechnics had to do considerable development work before they succeeded in winning the right to a permanent licence.

Since August 2000, all Finnish polytechnics have been permanent. In the course of a process that took a full decade, about 80% of volume of education provided by the old post-secondary vocational schools and institutes was raised to a standard high enough to qualify for admission into the polytechnic system. The remaining 20% continued to function in initial vocational education.

Before the reform, Finland had about 250 post-secondary vocational institutions. In the reform, 29 polytechnics were formed, most of them multidisciplinary.

3.4. POLYTECHNIC SUPPORT PROGRAMME

A financial support programme was launched to back up the polytechnic reform, aiming to ensure attainment of the goals set and reinforcement of the overall polytechnic infrastructure. When the experiments were first launched, this support went mainly into improving the qualifications of teachers at the temporary polytechnics and into internationalization.

As the system became more permanent, the support programme expanded and grew more systematic. Integral elements included raising teachers’ qualifications, developing library and information services, developing online learning environments and information networks, career and recruitment services, and internationalization. The Ministry of Education has made additional annual grants for these purposes, agreed on jointly in the objective and result negotiations between the Ministry and individual polytechnics. The programme will remain in effect in the early years of the 21st century. Over a ten-year period a total of some EUR 170 millions will be devoted to this programme of supplementary public support.

The goal set for 2001-2003 is that an average of some 1500 polytechnic teachers a year should be working on Master’s, Licentiate’s or Doctor’s
degrees. In internationalization, the aim is for an average of 7000 students a year to study or work as trainees abroad. In the longer term, the aim is to set up a reciprocal exchange system. For 2001-2003, the objective is to have an average of 4000 foreign students studying at Finnish polytechnics every year. In library and information services, one goal is for the polytechnics to devote at least 5% of their running costs to such services.

The polytechnics have built up various joint networks in order to develop their operations, and many are already well-established. The Ministry of Education has provided separate grants for the polytechnics coordinating these networks.
Figure 13. Finland’s polytechnics
IV THE POLYTECHNIC SYSTEM

4.1. THE POLYTECHNIC NETWORK AND EDUCATIONAL PROVISION

4.1.1. THE POLYTECHNIC NETWORK AND STRUCTURAL DEVELOPMENT

The polytechnic network has taken shape in phases since the first were put on a permanent footing in 1996. Since 2000 the entire polytechnic system has been permanent. Altogether 29 polytechnics situated all over the country now operate under the Ministry of Education. In addition, there is a Police Polytechnic under the Ministry of the Interior, and a polytechnic in Åland.

The polytechnic network has taken on its present scale in stages, following a process guided by both national and local factors. The parties involved in the process are the cities, the municipalities and joint municipal boards, the provinces, the regional councils and other regional organizations. Many stakeholders have played an important role in building up the overall network.

This network was built up in accordance with set guidelines, by creating groupings of different schools and institutes in which the institutions themselves, the bodies maintaining them and the above-mentioned regional organizations all play an influential role. The administrative organizations behind such ‘consortia’ are also important. Initially, there was considerable uncertainty at the local level about the direction and form that the polytechnics should take. This found particular reflection in planning work on the institutional basis for the polytechnics, which was extremely fragmentary in places.

In terms of structure, the polytechnics are regional and multidisciplinary. Because there are several in many regions, numerous forms of cooperation have naturally developed between them. Collaboration has been actively promoted, especially in large regions such as Uusimaa and Pirkanmaa. In the interests of efficient functioning, it has also proved useful to rationalize the division of labour between polytechnics, and in many fields, they have themselves agreed on the distribution of training and education between them. Their objective and result agreements with the government also agree on various developmental, work-sharing and collaborative issues related to their structural development.
Finland’s new network of polytechnics covers the whole country. One goal of the reform was to promote regional development and meet regional needs for higher education. From this viewpoint, a network extending into every one of the country’s 19 regions is justified. Regions with a large population often have several polytechnics. Their basis in former vocational colleges and institutes is reflected in the fact that the polytechnic network generally takes many forms and is geographically dispersed even within individual regions.

The present polytechnics have been formed from some 215 individual institutes. In some, what used to be different and separate institutions have merged to form a compact whole operating as a single unit in a single locality. On the other hand, many polytechnics comprise a number of separate regional units viewed primarily as individual institutions, and only secondarily as components in a much larger polytechnic body.

Integrating numerous separate institutions under the umbrella of a single polytechnic was viewed as a task calling for very close collaboration between them. When the temporary polytechnics were put on a permanent footing, one important criterion was how well the component parts succeeded in working together and generating mutual cohesion. This cohesion is illustrated, for instance, by the proportion of combined studies and how easily students can also choose to study in areas outside their own particular sectors. An important factor here has been the creation of study modules that cross internal boundaries between different areas of education and training. The research and development that is increasingly viewed as part of the polytechnics’ remit is seen by the Ministry of Education as rational and effective only in sufficiently large units that can draw on multidisciplinary resources. To make the creation of this kind of polytechnic body possible, the Ministry has worked to help the polytechnic network to develop into coherent entities.

However, the main responsibility for a well-functioning network of individual units is carried by the polytechnics themselves, and they have certainly done much to improve the functioning of their own communities, either by integrating and centralizing units, or by promoting cooperation between units in some other way. One way of increasing cohesion is the widely used breakdown into ‘result areas’.
4.1.2. CREATION OF NEW STUDENT PLACES AND QUANTIFICATION OF EDUCATIONAL PROVISION

The overall scale of the new polytechnic system was an open question right up to the final stages of work on the reform. Because the goal had been set of integrating most post-secondary vocational education into the polytechnic network, the permanent system is naturally very extensive. In 2000, over 90,000 students were studying within the system, plus a further 20,000 adult students. There were some 24,000 new study places.

The education provided by the polytechnics falls into seven main sectors. The largest is technology and communications, where first-year places in 2001 account for about a third of the total. Next in terms of first-year places come business and administration (27% of the total supply), and health care and social services (21%). Culture accounts for 8%, tourism, catering and institutional management for about 6%, while the smallest sectors are natural resources (3%) and humanities and education (2%).

![Figure 14. New study places in various sectors of education, 2001](image-url)
Table 9. The trend in new study places in these fields has been as follows in 1998-2001

<table>
<thead>
<tr>
<th>New study places at polytechnics (Adults not included)</th>
<th>1998</th>
<th>2001</th>
<th>Change</th>
<th>Change %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nat.resources</td>
<td>663</td>
<td>750</td>
<td>87</td>
<td>13</td>
</tr>
<tr>
<td>Techn. &amp; communications</td>
<td>5610</td>
<td>7955</td>
<td>2345</td>
<td>42</td>
</tr>
<tr>
<td>Business and administration</td>
<td>5846</td>
<td>6510</td>
<td>664</td>
<td>11</td>
</tr>
<tr>
<td>Tourism, catering &amp; institutional management</td>
<td>1012</td>
<td>1540</td>
<td>528</td>
<td>52</td>
</tr>
<tr>
<td>Health care &amp; social services</td>
<td>5258</td>
<td>5060</td>
<td>-198</td>
<td>-4</td>
</tr>
<tr>
<td>Culture</td>
<td>1129</td>
<td>1930</td>
<td>801</td>
<td>71</td>
</tr>
<tr>
<td>Humanities and education</td>
<td>456</td>
<td>485</td>
<td>29</td>
<td>6</td>
</tr>
<tr>
<td>Total</td>
<td>19974</td>
<td>24230</td>
<td>4256</td>
<td>21</td>
</tr>
</tbody>
</table>

About 88% of all new study places are in Finnish-speaking education, about 6% in Swedish-speaking and 6% in some foreign language, mostly in English.

According to the education and research development plan up to 2004 approved by the Government, the basic aims in scaling education provision are to meet the competence and culture needs of the whole population, to ensure balanced regional development and to take the changing needs of society and working life fully into account. According to the plan, education must react rapidly to the training and education needs caused by the ageing population and retirement. The aim is to expand the range of education and training offered by the polytechnics and to increase the number of new study places, especially in fields within the culture industry. There are no plans to expand the overall educational provision by the universities; instead, expansion in higher education will be channelled into polytechnics. The aim is to have 25,000 new study places for school levers at polytechnics by 2004. From 2000 onwards, 250 places will be added every year, ensuring that the Government objective is reached in 2004. At that point, also including the universities, there will be student places for around 70% of the average 19 to 21 year-old age group.

The rapid increase in provision in technical and technological sectors between 1998 and 2001 has mainly been motivated by the surge in labour demand in the information industry and the programme of supplementary measures introduced in response to these needs, which has increased basic capacity in the field by about 1,250 new study places. This programme will
end in 2002. Most of the increase in training in tourism, catering and institutional management is because courses in tourism have only been included in this sector since 2001, and some training used to come under business and administration. In accordance with the strategies of the Government development programme, the biggest relative increase between 1998 and 2001 has been in the sector of culture, particularly focusing on training in communications to meet the needs of the culture industry.

The objective and result agreements between the Ministry of Education and the polytechnics specify the number of new study places to be offered at each polytechnic in each sector of study. By contrast, the polytechnics decide independently about their syllabus in each degree programme, within a framework of the sector’s overall provision. As a basis for decision-making, the polytechnics chart the local need for training and education, using anticipation methods and by collaborating closely with business and industry. Course planning is often organized within degree programme committees on which the business world is represented.

In terms of size, the polytechnics have between 600 and 6,500 students. There are seven with under 2,000 students and eight with over 4,000. The number of new study places ranges between 245 and 1,785. One third of all polytechnics have under 600 new study places, one third 600-900 places and the remaining third over 1,000 places.

The specializations of the original institutions from which the polytechnics were formed has tended to decide the degree courses that they offer. Thus, with some exceptions, the number of new study places were also ‘transferred’ as such to the new polytechnics. Consequently, there are sometimes large disparities between the different regions in terms of educational provision.

Special attention is therefore now being focused on creating a better regional balance in the polytechnic education offered, so as to ensure a strong and well-functioning overall system and ensure equal educational opportunities. In 1999-2001, the process has specifically used the additional polytechnic allocations to help promote this balance and greater equality.

Nationwide, new study places represented 37% of the whole 19 to 21 year-old age-group. Efforts have been made to reduce regional differentials here, and in 2001 the spread is 28-50%, compared with 19-45% only three years ago. The situation is even better in Swedish-language education,
where there were new study places for 45% of the age-group in 2000, compared with 35% in Finnish-language education.

The biggest questions related to polytechnic educational provision in the future are the overall scale of provision at the tertiary level, how to ensure equal educational opportunities everywhere, how to promote balanced regional development, and how to respond to educational needs arising from the ageing of the population and the consequent exit from the workforce.

4.2. POLYTECHNIC ADMINISTRATION AND MAINTENANCE

Polytechnics are mainly municipal or private, as this was seen as the best way to promote the development of the institutional network and the ownership structure. Seven polytechnics are maintained by municipalities, eleven by joint municipal boards, eight by limited companies and three by foundations.

The main issue in terms of the autonomy of polytechnics is the relationship between the maintaining administration and the internal, ‘autonomous’ administration of the polytechnic. Another important question is the kind of organs running this autonomous administration, and how they are constituted and selected.

The administration of polytechnics, which is dealt with only in general terms in the legislation, is largely left to the organization running them. The Polytechnics Act only provides that each polytechnic must have a board and a rector. All other matters are left to the individual polytechnic and its maintaining body. The legislation does not guarantee either students or staff any representation in the polytechnic’s administrative organs. However, the law does state that representatives elected by the polytechnic’s full-time teachers, other full-time staff and full-time students may belong to its board or other multi-member administration organ. As a result, there are considerable variations between the polytechnics as regards their administration.

The body maintaining the polytechnic usually decides on the following: the major objectives and lines of operation; the main principles of its administration and organization; the appointment of the board and management; the procedures for adopting the economic plan and the budget; the accounting; overall payments policy; and participation in negotiations with the Ministry of Education on objectives and results.
Polytechnics themselves have autonomy concerning the following: degree programmes and syllabi; educational arrangements; degree regulations; student selection; study administration; students’ legal protection; the appointment of teachers; budgetary responsibility; operational strategies (internationalization, contacts with working life, etc.); and participation in negotiations with the Ministry of Education on objectives and results.

Figure 15. Polytechnic maintenance

As debate about polytechnic autonomy has often stressed, though the maintaining administration may set up the polytechnic’s autonomous administration, it may not select its members, which is a matter for the individual polytechnic. Under the principles of democracy in higher education, the majority of members of multi-member organs should represent the members of the community, i.e. teachers, other staff, and students. In view of the nature of a polytechnic, it is also advisable to include members from outside the study community. On the other hand, bodies representing the municipalities argue that each polytechnic’s ‘background body’ should be free to organize the polytechnic as it sees fit, and to decide the relative authority of the maintaining body and the polytechnic as best suits the particular situation.

From the point of view of the polytechnic’s autonomous administration, it is important that, when the maintaining body approves the budget, it should give the autonomous administration the financial authorizations it
needs to manage its functions independently.

The rector of the polytechnic usually represents the maintaining administration and chairs the polytechnic board. The rector also has quite broad powers in the polytechnic’s internal affairs.

The municipalities and joint municipal boards maintaining the polytechnics feel some uncertainty about whether they should apply the provisions of the Polytechnics Act to polytechnic administration, or those of the Local Government Act, one reason being that the former Act contains no basic provisions concerning polytechnic autonomy.

In practice, the administrations of the polytechnics maintained by municipalities and joint municipal boards have been set up in a way that does not make a clear distinction between the administrative powers of the maintaining body and those of the polytechnic itself. When multi-member administrative bodies have been set up, they have failed to include staff and student representation in their composition and exercise of power. Staff and students often have only the right to be present and express opinions, but not to vote.

The division of administrative functions and power between the maintaining and the autonomous administrations is clearer at polytechnics maintained by private bodies, companies and foundations, even if the actual owner of the company concerned is a municipality. Obviously enough, factors related to municipal self-government contribute to the administrative differences between municipal and private polytechnics.

4.3. STEERING AND FUNDING

4.3.1. STEERING SYSTEMS

The provisions governing polytechnics can mainly be found in the Polytechnics Act and Decree. The legislation deals with issues such as the status of polytechnics in the higher education system, studies and degrees, administrative principles, eligibility for studies, education free-of-charge, and teachers. The criteria according to which the Government decides to grant a polytechnic an operating license are also laid down by law.

The main policy guidelines and development targets are determined at a general level in the Government development plan for education and research which is adopted for every six years. Management by objectives and results constitutes the most important tool for the Ministry of Education in steering the operations of the polytechnics. This is strategic steering
aimed at promoting the national polytechnic policy. The Ministry of Education and the polytechnics have agreed on these objectives and results since 1994. Initially, the agreements were made for one year, but now the first three-year agreement has been concluded, for 2001-2003. Funding and educational provision are decided on annually.

The agreements on targets and performance are formulated as the result of a year-round process:

- In October, a seminar is held on objectives and management by results, which is attended by representatives of the Ministry of Education, polytechnic management and the organizations running polytechnics.
- In December, the Ministry issues guidelines to help the polytechnics draw up their proposals.
- In early February, the polytechnics submit their proposals.
- In March, there is a meeting of rectors, who discuss the most important issues to be negotiated.
- The Ministry of Education gives feedback to each polytechnic individually.
- Further negotiations are held in March-April.
- In September, after the negotiations are concluded and the Government has published its budget proposal, the agreements are signed.

The structure of the agreements between the Ministry of Education and the polytechnics is as follows:

- A self-evaluation of performance
- Objectives common to the polytechnic system as a whole
- The mission of the individual polytechnic
- Goals for structural development
- Number of study places by fields of study, including adult education
- Other development objectives
- Internationalization
- Staff development
- Library and information services and information networks
- Relations with business and industry
- R&D
- EU strategy
- Development as laid down in the operating licence
- Resources: core funding, project funding, performance-based funding.
4.3.2. FUNDING

In Finland the main responsibility for public services, including education and training, rests with the local authorities. Private educational institutions complement the public education provision. They receive their core funding from the government, but the local authorities also contribute to their financing with the same share as in public education provision. Polytechnics are also financed according to this system. Universities are the only exception to the rule: they are state-run, and local authorities do not contribute to their core funding.

The providers of polytechnic education (local authorities, joint municipal boards or private) receive all their core funding through the government. Under legislation, the government provides 57% of the core funding and the local authorities the remaining 43%. The 43% share of each local authority is based on the number of residents. This means that the local authority's share does not depend on how much education it provides or how many of its residents are participating in education. It is determined solely on the basis of its population.

The state budget records the government's 57% share of the overall educational funding as a net sum. However, the municipalities' financing share also goes through the government to the educational providers. If the education provider is a local authority, its own share (based on the number of residents) is deducted from the sum allocated by the government, whereas joint municipal boards and private educational providers receive all their core funding.

The local authority is not obliged to use all the educational funding it receives from the government specifically on education and training, but can allocate it to any other purpose it deems important. The purpose of this arrangement is to promote cost-efficiency. The funding (unit cost per student) to be allocated to different forms of education in the future depends on how much the education providers actually spend on education today.

The polytechnics are an exception to this in that, in their negotiations on target outcome, the Ministry of Education and the polytechnics have agreed that the polytechnics will use their core funding on operational costs in full.

Polytechnics obtain almost all their financing for degree programmes from public funds, and charge no tuition fees. They also get some external funding, mainly for continuing education services and R&D. This funding
makes up some 22% of their budgets.

In 2000, the income and expenditure of the polytechnics were as follows:

**Table 10. Polytechnics’ income and expenditure in 2000**

<table>
<thead>
<tr>
<th>Income</th>
<th>All polytechnics</th>
<th>Smallest *)</th>
<th>Largest</th>
</tr>
</thead>
<tbody>
<tr>
<td>Establishment projects (over FIM 2m)</td>
<td>22 796 EUR 1 000</td>
<td>3.3 %</td>
<td>0 EUR 1000</td>
</tr>
<tr>
<td>- building investments</td>
<td>17 054</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- other fixed assets</td>
<td>5 742</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operating income, total</td>
<td>563 330 EUR 1 000</td>
<td>2.961 %</td>
<td>37 617 EUR 1000</td>
</tr>
<tr>
<td>unit price financing</td>
<td>440 923 EUR 1 000</td>
<td>63.3 %</td>
<td>31 842 EUR 1000</td>
</tr>
<tr>
<td>sep. Government financing</td>
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<td>3.9 %</td>
<td>1 780 EUR 1000</td>
</tr>
<tr>
<td>other funding</td>
<td>18 320 EUR 1 000</td>
<td>2.6 %</td>
<td>1 449 EUR 1000</td>
</tr>
<tr>
<td>charged services</td>
<td>77 183 EUR 1 000</td>
<td>11.0 %</td>
<td>2 546 EUR 1000</td>
</tr>
<tr>
<td>operating deficit+ maintainer funding</td>
<td>110 343 EUR 1 000</td>
<td>15.9 %</td>
<td>13 817 EUR 1000</td>
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<tr>
<td>Total income</td>
<td>696 469 EUR 1 000</td>
<td>100.0 %</td>
<td>51 434 EUR 1000</td>
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</table>

<table>
<thead>
<tr>
<th>Expenditure</th>
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<tbody>
<tr>
<td>Establishment projects (over FIM 2m)</td>
<td>39 172 EUR 1 000</td>
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<td>618 EUR 1000</td>
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<td>- building investments</td>
<td>29 894</td>
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<tr>
<td>- other fixed assets</td>
<td>9 278</td>
<td></td>
<td></td>
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<tr>
<td>Operating expenses, total</td>
<td>648 459 EUR 1 000</td>
<td>2.848 %</td>
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<td>core functions</td>
<td>555 153 EUR 1 000</td>
<td>80.7 %</td>
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<td>charged services</td>
<td>78 359 EUR 1 000</td>
<td>11.4 %</td>
<td>3 650 EUR 1000</td>
</tr>
<tr>
<td>other expenses</td>
<td>14 947 EUR 1 000</td>
<td>2.1 %</td>
<td>3 539 EUR 1000</td>
</tr>
<tr>
<td>Total expenses</td>
<td>687 631 EUR 1 000</td>
<td>100.0 %</td>
<td>45 402 EUR 1000</td>
</tr>
</tbody>
</table>

*) Operated as permanent from summer 2000. Includes only half year income and expenditure figures.

The polytechnics receive three kinds of government funding:

**Core funding**

Generally speaking, the educational financing system covers both statutory funding and support for running costs and new establishment projects. This government funding is calculated on the basis of unit prices.

The main characteristics of the unit price system are as follows:
- Unit prices are determined in advance for the next year; decisions concerning educational arrangements and financing made by a municipality or other owner of an institution do not influence the unit prices.
- Actual use of funds granted is not tied to the criteria for granting and calculating them, which means that municipalities and other providers of services can make independent decisions when allocating funds for various purposes. Effectively, this in turn means that the recipient can decide how to allocate its resources within its educational system.
- The municipalities’ contribution to funding educational services (43% of total expenses) is calculated using per capita unit prices. Total expenses include the calculated expenses of educational institutions run by the municipalities, joint municipal boards, private organizations and foundations, and State-run institutions.
- The unit price is the same in every municipality.
- Statutory government subsidy is laid down for comprehensive and upper secondary schools, and for initial vocational education, polytechnic degree education, and long-term specialization programmes at polytechnics.
- The unit prices on which the statutory government subsidy towards running costs is based are calculated per student. The subsidy is paid directly to the owner of the institution which has admitted the student.
- The unit prices are calculated once every two years, based on actual total expenses at the national level. They are higher in more costly fields of study.
- The amount which forms the basis for the following year’s statutory government subsidy is reached by multiplying the totals referred to above (number of students) by the unit prices set for these totals.

**Project funding**

The Government also grants the polytechnics additional ‘project funding’. Most of this project funding has been allocated to support the polytechnic reform (continuing education for teachers, internationalization, library and information services, development of information networks and digital learning environments, and career and recruitment services). The intention is to shift the priority gradually to financing R&D, new development projects and individual projects, however.
Performance-based funding

Some funding is allocated on a performance basis according to general criteria such as efficiency and cost-effectiveness, impact, international activities, equal opportunity, and capacity for future functioning and renewal. Some performance-based funding has also been allocated to polytechnics on the basis of evaluations made by the Finnish Higher Education Evaluation Council. In 1999 these evaluations were made at centres of excellence in teaching, and in 2000 at centres of excellence in regional impact. In 2001, EUR 1.7 million was allocated on the basis of general performance criteria and EUR 1.7 million went to centres of excellence selected on the basis of the evaluations.

The Government allocates central funding for certain national projects of a permanent nature, as in the university sector. These include networks and information networks, the polytechnic monitoring and evaluation database, the student selection system, and library systems.

The pilot phase in the establishment of polytechnics is now over, and all the polytechnics have operated on a permanent basis since autumn 2000. According to a survey made in 1999-2000, the polytechnic funding system is quite diversified, which must be considered an advantage. However, the polytechnics themselves criticized some aspects of the main form of funding, based on unit prices. The special rapporteur referred to earlier laid down five criteria which the funding system must meet: profitability, autonomy, steering, equity and sufficiency. The Ministry of Education appointed a committee at the end of 2000 to study the question of polytechnic funding, and this is due to submit its report on December 31, 2001.

4.4. QUALITY ASSURANCE AND EVALUATION

The polytechnics are individually responsible for the quality of their educational provision and other operations, and for continuously developing them. They also have to submit themselves to external quality evaluation. In 1996, an independent expert body, the Finnish Higher Education Evaluation Council was established to assist institutions of higher education and the Ministry with matters related to evaluation.

The Ministry of Education appoints the Council for four years at a time. Its members represent the polytechnics, the universities, various
sectors of working life, and students at the institutions concerned. The Council has its own secretariat for preparatory and executive work.

The aim of the Council’s operations is long-range development of higher education by means of evaluation. In planning its activities, the Council consults various stakeholder groups, such as the institutions, the Ministry of Education and various organizations. Its evaluation processes are transparent, and its reports are published in its own publication series. The reports deal with the evaluation process, feedback and ideas for development, and with good practices. The Council also supports institutes of higher education when they are setting up their own quality and evaluation systems, providing expert assistance and financial support. The latter is mainly available only for Finnish and international projects involving several universities/polytechnics. The results of individual institutions’ own development work are also made available to other interested universities/polytechnics through the publication series.

In its action plan, the Council set itself the goal of providing nationwide data allowing international comparisons related to higher education, and of ensuring right information for students, specifically in lifelong learning programmes, through a system of accreditation. These Council accreditations apply to continuing education and specialist programmes comprising at least 20 credits offered by the universities and polytechnics to supplement basic degrees.

The approach adopted by the Council is based on the principle of improving the quality of teaching and is based on nationally tailored assessments of sectors of study, degree programmes and subjects, and of various individual themes. A further principle followed is that, whenever technically possible, education and theme assessments are made simultaneously in both the university and the polytechnic sectors.

One of the Council’s tasks has been to evaluate polytechnic operating licence applications and their extensions. A special section was set up at the Council for this purpose in 1996. Operating licence evaluations are made to ensure that new polytechnics and the education they provide meet the quality criteria for higher education. Each evaluation incorporates proposals for measures to develop the particular polytechnic’s operations. If an experimental project fails to meet the Council’s criteria, a new application has to be submitted the following year. This means that evaluation of operating licence applications comprises a process of great significance.
for educational development throughout the sector.

When new polytechnic operating licences are being considered the main criteria are the following: 1) the operating principle (mission), 2) the topicality and need for the planned degree programmes, 3) how well the sectors of study fit together, 4) the main area of strength, 5) adequate size relative to educational function, 6) the qualifications of the teaching staff, 7) library and information services, 8) relations with working life, 9) cooperation with universities/other polytechnics, and with other educational institutions, 10) international cooperation, 11) educational and service function in the region, 12) arrangement of evaluation, 13) the learning environment, and 14) the working environment. Most of these criteria are mentioned in the Polytechnics Act.

Apart from this evaluation task, the Council has so far carried out four evaluations of polytechnic education: programmes in industrial management, vocational teacher training, the information industry, and health care. Evaluations are currently in progress on programmes in mechanical engineering and communications & media. Theme evaluations include the international activities of polytechnics, libraries, teaching in foreign languages, and cooperation with working life. An evaluation project is currently in progress on student guidance in higher education.

Now that individual operating licence evaluations have ended, more comprehensive evaluations of polytechnics are also being launched. The Council has also evaluated the operations of the Police Polytechnic and Åland Polytechnic, which do not come under the Ministry of Education. The Council has likewise been commissioned by the Ministry to evaluate and nominate centres of excellence in teaching in universities and polytechnics.

The Council also carries out assessments of individual polytechnics’ quality projects on a voluntary basis. This function differs from quality system auditing in that each polytechnic devises the quality system that suits it best. It is then logical to evaluate the quality work carried out, to support the polytechnic’s own quality development and assessment.

4.5. MONITORING AND EVALUATION DATABASE (AMKOTA)

AMKOTA is a statistical database containing essential data on polytechnic activities, which has been developed by the Ministry of Education for its
own use and that of interest groups. The data are used to develop, monitor, evaluate and steer polytechnic activities.

The data for AMKOTA are obtained from Statistics Finland, requested directly from polytechnics and transferred from other databases containing information on polytechnics. The validity of the data transferred is the responsibility of those providing it. The polytechnics update information concerning their activities directly in the database. The Ministry of Education and the polytechnics have jointly created a data-collection form and software available via the Internet.

The database contains the following sets of data:

- degree programmes
- study places
- applicants
- students
- language teaching
- teaching in foreign languages
- virtual studies
- theses
- degrees
- teachers
- other staff
- international student, trainee and teacher exchanges
- graduate placement.

The data are available by polytechnic and by sector of education. The database content is based on information generated in connection with various functions (decision-making, performance agreements, application, student selection, funding, expenditure). Statistics Finland provides annual data on students and polytechnic graduates, and on their placement in working life and postgraduate education.
5.1. DEGREE STRUCTURE AND DEGREE PROGRAMMES

The polytechnics all grant Bachelor level degrees, comprising 160 credits (=4 years of full-time studies) in the sectors of natural resources, technology and culture, and 140 credits (= 3.5 years) in business and administration, tourism, catering and institutional management, and health care and social services. The degree in music (under culture) demands 180 credits (=4.5 years).

In summer 2001 Parliament passed an act on experimental postgraduate polytechnic degrees, and from autumn 2002 onwards those with a polytechnic Bachelor’s degree followed by at least 3 years of relevant work experience will experimentally be offered the opportunity to complete a 40-60 credit (= 1-1.5 year of full-time studies) post-graduate degree. It will also be possible to complete this post-graduate degree side by side with normal work. Polytechnic post-graduate degrees are also dealt with in section 5.3.4.

The studies leading to a polytechnic degree at the Bachelor level are organized into degree programmes designed and arranged by the individual polytechnics, targeted at a particular job area in working life calling for professional expertise and its development. Each polytechnic submits a proposal for its own degree programmes for approval by the Ministry of Education. The Ministry decision states the name of the programme, its extent in credits, the compulsory practical training component in credits, the name of the degree, and the title that the graduate is authorized to use. The practical training is usually 20 credits, but 30 in the social welfare sector and 50 in health care. The polytechnic itself decides on the curriculum for each programme and how the courses will be arranged. The Polytechnic degrees all include a diploma project, which is normally counted as 10 credits.

The polytechnic education underlines relevance to working life more than the universities. Universities focus more on academic basic research and researcher training and teaching based on theory, while polytechnic teaching and other activities serving the community rely on close links with local business and industrial development.
For courses starting in 2001 and thereafter, the Ministry has approved altogether 85 degree programmes in Finnish, 41 in Swedish and 24 in foreign languages, mainly in English.

At the start of the polytechnic reform it was considered extremely important for the experimental institutions to develop their course structures and content energetically. They were also encouraged to combine skills in a variety of sectors to form new kinds of multidisciplinary programmes, and polytechnics have succeeded very well in this respect. However, one consequence was that the range of variously titled degree programmes provided by the different polytechnics was at risk of becoming too great, with new programmes being added every year. The Ministry of Education decisions also included a large number of specialization options.

Though the degree programme structure of individual polytechnics was clear enough, it was no longer clear within the system as a whole. The system was felt to be excessively complex from the point of view of the study and careers guidance given prior to entrance to polytechnics and from the point of view of working life. Both the Ministry of Education and the polytechnics also felt that such detailed regulation by the Ministry was unnecessary, particularly in the case of specialization options.

In 1998, at the request of the Ministry of Education, the Rectors’ Council of Finnish Polytechnics, ARENE, set up a degree programme project to rethink the overall structure needed. The aim was to find a structure that would effectively reflect the areas of expertise needed in working life, while allowing individual polytechnics greater freedom to profile and develop their own educational provision for those areas. The project was arranged into sectoral groups involving all the polytechnics that offered the education in question. As a result of the work done within the project, the Ministry has now approved for each polytechnic a degree programme structure that is valid indefinitely from 2001 onwards. The individual polytechnics can apply for changes in the structure if necessary.

The following table shows the number of differently named degree programmes in the various sectors of education. It also shows trends in the number of different programmes in foreign languages. In 2001 the polytechnics are offering 24 differently tittled foreign language programmes, and several polytechnics have programmes with the same names. Altogether, there are 61 programmes in foreign languages. One of these is in German,
and two are combined English/German programmes. The remainder are all in English.

Table 11. Number of polytechnic degree programmes by sector, 1992 - 2001

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<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td><strong>Natural resources</strong></td>
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<td></td>
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</tr>
<tr>
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<tr>
<td>- Swedish</td>
<td>1</td>
<td>5</td>
<td>6</td>
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</tr>
<tr>
<td>- Foreign language</td>
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<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td><strong>Technology and communications</strong></td>
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<td></td>
<td></td>
<td></td>
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<tr>
<td>- Swedish</td>
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<td>18</td>
<td>11</td>
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<td>- Foreign language</td>
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<td>13</td>
<td>6</td>
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<td></td>
</tr>
<tr>
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<td>- Foreign language</td>
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<td>14</td>
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<td>- Swedish</td>
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<td>- Foreign language</td>
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<td>- Foreign language</td>
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<td>5</td>
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<td>- Foreign language</td>
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<tr>
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<td></td>
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<tr>
<td>- Foreign language</td>
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<td>24</td>
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</table>
University degree structure

The university degree system has been undergoing reform since the mid-1990s. The decisions on revising the degree programmes were made on the basis of evaluations carried out by the universities and the Council for Higher Education, the objective being to set up broad, flexible and internationally compatible programmes.

As a result of the reform, a clearly subject-based syllabus was adopted in most fields. The new degree structure usually combines studies in one main, or major, subject and in one or more subsidiary, or minor, subjects. Studies are measured in credits, one credit being defined as the amount of work (average 40 hours) required from the student to attain the required objectives.

Lower academic degrees (usually called kandidaatti/kandidat) are first degrees of the Bachelor level, and consist of 120 credits (minimum). Higher academic degrees are second-cycle Master’s degrees (usually called maisteri/magister). They consist of a total of 160 or 180 credits, or a Bachelor’s syllabus plus 40-60 credits. The minimum duration of full-time studies for a lower degree is three years; for a higher degree it is five years, or a further two years following the Bachelor’s degree. In practice, the median time taken to complete a Master’s degree is about 6 years. In medicine, dentistry and veterinary medicine, the degrees are more extensive and take six years of full-time study to complete.

Studies in a subject (or a degree programme) are usually classified as basic, intermediate or advanced. A lower (Bachelor’s) degree consists of basic and intermediate studies in the major subject, including a Bachelor’s thesis, studies in one or more minor subjects, and language studies. For the higher (Master’s) degree, students must complete an advanced study module and prepare a Master’s thesis in addition to completing the Bachelor’s syllabus (or in addition to basic and subject studies in a degree programme). Some degrees require compulsory practical training; for others it is optional.

Doctoral studies

Operation of the Finnish university sector is based on the unity of research and teaching. Scientific postgraduate education, in particular, is closely linked with the research work performed at universities and research institutions.

In the present degree structure, students can start working for a
doctorate as soon as they have obtained the Master’s degree. The licentiate is an optional degree, and is not offered in all fields of study. In certain cases, licentiate programmes may include specialist training. The aim of the Ministry of Education is to develop the Licentiate degree into more professionally oriented postgraduate degree which could be offered for adults with Master’s degree and relevant work experience.

The graduate schools established in 1995 have greatly increased the opportunities for full-time postgraduate education and the number of doctorates has risen considerably. The students in graduate schools are paid and they receive top-level intensive courses and research tutoring in Finland’s leading research teams collaborating through networking with other national and international research centres.

The graduate schools cover all the main areas of research. Together they form a network ranging from units concentrated in a single faculty or locality to nation-wide establishments combining the resources of several faculties.

5.2. STUDENTS

5.2.1. ELIGIBILITY, STUDENT SELECTION AND INTAKE

Students may apply to polytechnics after completing upper-secondary education. The general qualification is completion of upper secondary school/the matriculation examination or at least three years of initial vocational education and training, or corresponding studies abroad. Vocational qualifications of less than three years or corresponding studies abroad qualify the student for that particular sector.

Each polytechnic decides on its own selection criteria, usually taking account of earlier success in studies, working experience and level of interest. In many sectors there is also an entrance examination. Qualification required for adult studies at a polytechnic may vary more including, for example, vocational training in a given sector. The student’s earlier studies and acquired skills can thus be taken into account in the arrangements.

As the polytechnic system has become established, its student figures have risen. Between 1992 and 1999 the number of applicants rose nearly fourfold, while the number of first-year students increased almost fivefold.
There were altogether 24,040 new study places at polytechnics in 2000, for which nearly 89,700 young people applied. The most popular sectors of education were business and administration, technology and communications, and health care and social services, which also offered most places. Applications are accepted twice a year. Far more degree programmes start in the autumn than in January, so the numbers of applications received differ greatly. There were over 116,000 applications for degree programmes starting in autumn 2000, while the figure for spring 2000 was only something over 18,000. Study places for young are sought through a joint application procedure which allows applicants to list four preferences.

The attractiveness of polytechnics varies greatly in respect of first preferences in different parts of the country. Those in the metropolitan area and other large cities benefit from the general appeal and high service standards of their locations. Differences are also found at later phases, when students move from one polytechnic to another.

**Figure 16. Number of applicants and students in polytechnics 1992-1999**

*Source: AMKOTA database*
Table 12. Number of applications and new students at the polytechnics in 2000

<table>
<thead>
<tr>
<th>Polytechnic</th>
<th>Applicants</th>
<th>Total % of Applicants</th>
<th>% of Total</th>
<th>New students</th>
<th>% of total % of total total % of total yrs</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Men</td>
<td>Women</td>
<td>total</td>
<td>% of applicants</td>
<td>Total number</td>
</tr>
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<td>Arcada Polytechnic</td>
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<td>683</td>
<td>1442</td>
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<td>Diaconia Polytechnic</td>
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<td>671</td>
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<td>2 130</td>
<td>3 454</td>
<td>3.9</td>
<td>1 477</td>
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<tr>
<td>Espoo-Vantaa Institute of Technology</td>
<td>1 771</td>
<td>1 508</td>
<td>3 279</td>
<td>3.7</td>
<td>913</td>
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<td>South Carelia Polytechnic</td>
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<td>920</td>
<td>1 570</td>
<td>1.8</td>
<td>576</td>
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<td>Haaga Institute Polytechnic</td>
<td>1 164</td>
<td>2 037</td>
<td>3 201</td>
<td>3.6</td>
<td>580</td>
</tr>
<tr>
<td>Helsinki Polytechnic</td>
<td>2 990</td>
<td>5 396</td>
<td>8 386</td>
<td>9.3</td>
<td>1 762</td>
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<tr>
<td>Helsinki Business Polytechnic</td>
<td>2 276</td>
<td>3 893</td>
<td>6 169</td>
<td>6.9</td>
<td>958</td>
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<td>Humanities Polytechnic</td>
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<td>1 243</td>
<td>1.4</td>
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<td>1 110</td>
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<td>6 142</td>
<td>6.8</td>
<td>1 166</td>
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<td>370</td>
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<td>0.9</td>
<td>406</td>
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<tr>
<td>Kemi-Tornio Polytechnic</td>
<td>469</td>
<td>559</td>
<td>1 028</td>
<td>1.1</td>
<td>571</td>
</tr>
<tr>
<td>Central Ostrobothnia Polytechnic</td>
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<td>771</td>
<td>1 421</td>
<td>1.6</td>
<td>726</td>
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<tr>
<td>Kymenlaakso Polytechnic</td>
<td>836</td>
<td>1 007</td>
<td>1 843</td>
<td>2.1</td>
<td>909</td>
</tr>
<tr>
<td>Lahti Polytechnic</td>
<td>1 551</td>
<td>2 471</td>
<td>4 022</td>
<td>4.5</td>
<td>862</td>
</tr>
<tr>
<td>Mikkeli Polytechnic</td>
<td>891</td>
<td>1 197</td>
<td>2 088</td>
<td>2.3</td>
<td>882</td>
</tr>
<tr>
<td>Oulu Polytechnic</td>
<td>2 722</td>
<td>3 915</td>
<td>6 637</td>
<td>7.4</td>
<td>1 390</td>
</tr>
<tr>
<td>Pirkanmaa Polytechnic</td>
<td>517</td>
<td>2 358</td>
<td>2 875</td>
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<tr>
<td>North Karelia Polytechnic</td>
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<td>980</td>
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<td>2.1</td>
<td>744</td>
</tr>
<tr>
<td>Pohjois-Savo Polytechnic</td>
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<td>2 405</td>
<td>4 199</td>
<td>4.7</td>
<td>1 412</td>
</tr>
<tr>
<td>Rovaniemi-Savo Polytechnic</td>
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<td>1 878</td>
<td>2.1</td>
<td>601</td>
</tr>
<tr>
<td>Satakunta Polytechnic</td>
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<td>1 530</td>
<td>2 762</td>
<td>3.1</td>
<td>1 276</td>
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<tr>
<td>Seinäjoki Polytechnic</td>
<td>711</td>
<td>1 144</td>
<td>1 855</td>
<td>2.1</td>
<td>879</td>
</tr>
<tr>
<td>Swedish Polytechnic</td>
<td>347</td>
<td>310</td>
<td>657</td>
<td>0.7</td>
<td>395</td>
</tr>
<tr>
<td>Tampere Polytechnic</td>
<td>2 863</td>
<td>2 056</td>
<td>4 919</td>
<td>5.5</td>
<td>1 001</td>
</tr>
<tr>
<td>Turku Polytechnic</td>
<td>3 310</td>
<td>4 899</td>
<td>8 209</td>
<td>9.2</td>
<td>1 991</td>
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<tr>
<td>Vaasa Polytechnic</td>
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<td>1 209</td>
<td>2 222</td>
<td>2.5</td>
<td>705</td>
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<tr>
<td>Sydväst Polytechnic</td>
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<td>321</td>
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<td><strong>ALL POLYTECHNICS</strong></td>
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<td></td>
<td></td>
<td></td>
<td>25772</td>
</tr>
</tbody>
</table>

Source: AMKOTA database
The appeal of different sectors of education and of individual degree programmes varies greatly. The most popular sectors are generally culture, and humanities and education. Within culture, the most popular programmes are media, design and handicrafts and applied arts. There are also some very popular programmes in technology and communications, and in health care and social services, such as IT, physiotherapy, emergency care and social welfare. Programmes responding to a specific national need for labour, where there are usually very few new study places, are also popular.

Some 4,000 new study places are also available every year in adult education. In 2000, altogether 14,520 adults applied for studies leading to a degree, two thirds of them women.

Students with a matriculation certificate or initial three-year vocational education are also eligible for university studies. Since the 1999-2000 academic year, the ‘one study place’ principle has applied, which means that an applicant for higher education can only accept one study place leading to a degree in the same academic year. The aim is to ensure that as many applicants as possible get a study place. Subsequent monitoring has found that applicants are usually well aware at the application stage of the differences between polytechnic and university studies and degrees. In autumn 2000, for instance, only 21% applied both for a polytechnic and a university. 47% of all applicants applied only for a polytechnic and 32 only for a university. In autumn 1999, too, only 22% applied for both sectors.

At the moment, about 70% of polytechnic students have a matriculation certificate and 30% a vocational qualification. The aim is to keep the access channel via vocational education open, and to raise the percentage of such students to 35%. In 2000, 69.5% of those accepting a place had a matriculation certificate or had completed upper secondary school.

5.2.2. THE STATUS OF STUDENTS AND FINANCING STUDIES

Students are accepted for a particular polytechnic, a specific degree programme or in exceptional cases directly for some specialization option. Each student gains the right to study for the programme and degree specific to the first-year place concerned, and must complete the degree within the time set, depending on its extent, though up to a year of extra time can be granted. Under a new law enacted in summer 2001, students are entitled to register as absent for up to two years, and this period is not counted in
the time taken for their degrees. If there is some special reason for having to prolong their studies, students can apply for an extension from their own polytechnic, which has discretionary powers in this respect.

The legislation contains no detailed provisions on the status of students within the polytechnic body. Consequently, students and student unions have no official standing within the polytechnic administration. However, student participation in the administration, and in the development of polytechnic studies, is considered vital. The polytechnics have usually arranged for student representatives to be involved in their administration, and ensure student representation separately in various development projects. Most also encourage their students to belong to a student union.

At the national level, polytechnic students belong to SAMOK, the central organization of polytechnic student unions, through their own institution’s student union. SAMOK watches over student interests by contributing to national debate on higher education policy and to development work on teaching. In summer 1999 SAMOK had about 40,000 members.

Students are also entitled to financial aid from the Finnish government, comprising a student grant, a housing supplement and a government-guaranteed study loan. This aid is intended for full-time students, so the amount received by any individual student depends on any other income they may have. The period for which it is paid depends on the extent of the degree concerned, and is the student’s personal entitlement, which can be used at his/her discretion. The only precondition is that students must make adequate progress in their studies. Many students also work side by side with their studies, and combining government aid with earned income sometimes causes problems, as does the insufficiency of the aid when studies are protracted.

Financial aid is granted for the duration of full-time studies but is subject to a maximum of 70 months. At universities, financial aid is granted for 55 months for studies towards a Master’s degree. At polytechnics financial aid is available for 45 to 55, months depending on the extent of the degree. The remaining time up to 70 months can be granted for other higher education studies. The average study grant and housing allowance has been EUR 404 per month in recent years. The amount of the student loan was EUR 219 per month.

Financial aid for adult education is granted to students aged 30 to 54
for up to two years. The size of the study grant for mature students depends on the student’s income level before starting to study, but ranges from EUR 259 to EUR 471. In 1999, 1,650 mature students received study grants.

Foreign students may qualify for financial aid if they have resided in Finland for a minimum of two years for purposes other than study, or if they have a permanent residence permit in Finland. Finnish students may also receive aid for studies abroad, provided that the studies correspond to Finnish studies that would be covered by the financial aid provisions, or for part of a Finnish degree programme. In 1999, 5,227 students received financial aid for higher education studies abroad.

Consistent efforts have been made to provide reasonably priced rental accommodation for all students in need of it. Construction has been financed mainly by State-subsidized low-interest loans; local authorities have also encouraged housing production by making land available free of charge or on reasonable lease terms. Housing is also available for foreign students.

5.2.3. DROPPING OUT AND CHANGING DISCIPLINE

Since autumn 2000, students at polytechnics had to register as present or absent at the beginning of the academic year or particular programme. Absence is possible for up to two years without affecting the statutory study period. The main reasons for such temporary absence among polytechnic students are performance of military service, maternity or care leave, and periods at work.

In 2000, about 6% of all students drop out of polytechnic studies, 1.2% of all polytechnic students transferred to another polytechnic, while 0.5% changed their study sector or programme within the same polytechnic. Statistics have been kept on the reasons for drop-outs since 1998.
In 2000, 22% of drop-outs from polytechnics went on to study at university, a vocational or other institution, or abroad, with university being the most popular, attracting 13% of drop-outs. 20% dropped out in order to take up a job. It is difficult to discover the real reason for dropping out if the student does not wish to give it, and no reason is given in over half of all cases.
The drop-out rate varies from one polytechnic to another, and the Ministry of Education uses the rate as one criterion for granting performance-based funding. There are also differences between sectors of education. Students drop out less frequently in the humanities and education (2.4% in 2000), health care and social services (4.5%) and culture (4.7%). The rate is above average in technology and communications (6.9%) and business and administration (6.8%). In natural resources and in tourism, catering and institutional management, the most common reason is to take up a job. Transfer to university is one key reason in humanities and education, culture, and business and administration.

The Institute for Educational Research at the University of Jyväskylä has studied reasons for dropping out from polytechnics, using a questionnaire addressed to the heads of sector at polytechnics. The main reasons reported were that students took up jobs, preferred to study at university, or proved to have chosen the wrong sector. One common feature was lack of motivation, though drop-outs included students who had succeeded both well and poorly in their studies. In technology, particularly, one important reason for dropping out seemed to be poor academic success and insufficient mastery of mathematics. One aspect of the rapid increase in first-year places in the technology sector is that many of its students really wanted to
study something else. The survey showed that most drop-outs occur during the initial phase of studies.

Another finding was that the polytechnics are not always fully aware of the problems that lie behind a decision to drop out. More thorough investigation of reasons and consultation with students are therefore required. The best way of preventing unnecessary drop-outs was considered to be better student guidance, especially at the beginning. Another approach would be to improve the structure of degree programmes to ensure more practical instruction initially. Better teaching and consistent high quality were also felt to be important. In the student selection procedure, the heads of sector underlined the importance of establishing applicants’ motivation and thorough testing of their commitment to the sector concerned.

According to the Government-approved development plan, “With a view to ensuring a flexible education system and students’ legal rights, it is essential that prior studies are recognised in an adequate and fair way when students transfer from one sector of higher education to another. The recognition of prior studies is a task for the higher education institutions. When a graduate transfers from one sector of higher education to another, the aim is to count about half of studies in the same field towards the second degree.” Each university and politechnic, however, decides on the recognition of prior studies. This is often done to a far lesser extent than recommended by the Government.

5.2.4. STUDENT EXCHANGES

The polytechnics have expanded their international activities very rapidly, partly thanks to conscious efforts to promote internationalization, such as the development funds granted by the Ministry of Education, and specifically the opportunities to take part in EU exchange programmes opened up by Finnish membership of the Union. These find reflection in a constant increase in student and teacher exchanges and in the growing number of programmes and courses in foreign languages.

In international cooperation, a key role is played by agreements with institutions of higher education abroad and consequent opportunities for students to spend time at foreign universities and other institutions. Trainee exchanges have also come to be an important part of international activities. The polytechnics’ international cooperation networks were initially specific
to individual institutes and sectors, and international operations focused for a long time on student and teacher mobility within degree programmes.

Students can apply to study abroad through their own polytechnic’s exchange programmes, or independently apply to a foreign institution direct. Finnish students also get financial aid from the government to study abroad. In addition, various exchange programmes provide small grants for students going abroad on student or trainee exchanges.

International cooperation in education aims to raise the quality of education and provide students with study opportunities abroad. International exchanges have made students more internationally minded, and improved their language and communication skills. The objective of the Government development programme is that at least one third of all students in higher education should complete part of their degree studies abroad. Student and trainee exchanges at the polytechnics aim specifically to increase the proportion of long-term exchanges lasting over three months.

Rapid progress has been made in such student mobility at polytechnics, and the number of students involved in various kinds of exchanges rose rapidly, by a total of over 2000, up to 1999. Since then, the increase seems to have levelled off, however.

**Figure 19. Student exchanges in polytechnics, 1997 -2000**

*Source: AMKOTA database*
Efforts have also been made to increase the number of exchange students coming to Finland, and the total has in fact risen steadily. The long-term objective is to achieve reciprocity in student exchanges. The joint development targets for polytechnics in 2001-2003 aim to raise the number of foreign exchange students to 4000 a year.

In autumn 2000 the Finnish Centre for International Mobility and Exchange did a survey of exchange students at polytechnics and universities which established why they had chosen specifically Finland as a country to study. The respondents underlined the appeal of the large number of courses available in English, the good reputation of Finland’s higher education institutions, opportunities for studies not available in their home country, specialist know-how in areas of technology and industrial design, and particular interest in Scandinavian countries.

In 2000 the polytechnics engaged in student and trainee exchanges with nearly a hundred foreign countries. Altogether 6300 students studied or did trainee work abroad. Just over half of these exchanges were periods of over three months. Most Finnish polytechnic students went to Britain, Germany, Sweden and Russia. 2600 foreign students studied and did trainee work in Finland, mostly from Germany, France, Russia, Britain and the Netherlands.

The number of students on university exchanges rose throughout the ‘90s, but has levelled off in recent years, as have polytechnic exchanges. However, it is significant that polytechnic students have participated just as actively as university students in international exchanges recently. In 2000 only something over 400 more university students than polytechnic students took part in exchanges lasting over three months. By contrast, the number of foreign students at Finnish universities is still higher than those at polytechnics. The volume of both incoming and outgoing exchange students at universities has levelled off considerably recently.
A recent survey showed that students value the opportunity offered by international exchange programmes to learn about their own profession abroad, to increase their knowledge and skills in a multicultural environment, to gain added familiarity with their degree programme content, and to enhance their vocational skills. The importance of international student cooperation is also growing in inter-polytechnic activities.

5.2.5. GRADUATION

Completing a polytechnic degree takes 3.5 to 4.5 years of full-time study. According to the national decree on polytechnics, the polytechnic must arrange its courses so that students can graduate in that time, and students, in turn, must complete their degrees within the period set, plus a maximum of one extra year. Earlier studies approved and recognised by the polytechnic or special summer study courses may shorten the time taken to graduate.

In 2000 the average completion time of studies was 3.9 years. No major changes have taken place in recent years, though some differences have emerged between sectors of education. The longest study periods are in natural resources, culture, and technology and communications, while students of health care and social services, and of humanities and education complete their studies more quickly than average.
In 1995-2000 nearly 44,000 degrees were taken at the polytechnics, and the number has risen all the time with the expansion of the polytechnic system. In 1995 the total was less than 2000, but had reached well over 14,000 by 2000.

Figure 21. Degrees taken at polytechnics, 1995-2000

Source: AMKOTA database

A sectoral study of polytechnic degrees shows that most have been in health care and social services, business and administration, and technology and communications. In 2000, women accounted for 65% of all polytechnic degrees taken. There is considerable gender segregation in health care and social services and in technology studies at Finnish polytechnics, as there is in other education, and this is reflected in the degrees taken. In 2000, men accounted for only 8% of polytechnic degrees in health care and social services, while women accounted for only 18% of technology and communications degrees the same year.
Some 16,800 degrees were taken at the universities in 2000, and the total has ranged between 16,000 and 17,000 during the last few years. Women account for 59% of all university degrees. Most university degrees were Master’s, and the percentage of Bachelor’s degrees has remained low. The average time taken to complete a Master’s degree in 1996-1999 was 6.5 years, but there is considerable sectoral variation. The average time is exceeded in sectors such as technology, the humanities, and agriculture and forestry, while degrees in commercial sectors take a shorter time than average, i.e. 5.5 years.

Table 13. Polytechnic degrees 1999-2000 by sector of education

<table>
<thead>
<tr>
<th>Sector</th>
<th>1999</th>
<th>2000</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>men</td>
<td>women</td>
</tr>
<tr>
<td>Natural resources</td>
<td>181</td>
<td>146</td>
</tr>
<tr>
<td>Technology and communications</td>
<td>2,095</td>
<td>509</td>
</tr>
<tr>
<td>Business and management</td>
<td>886</td>
<td>2,077</td>
</tr>
<tr>
<td>Tourism, catering and institutional</td>
<td>39</td>
<td>301</td>
</tr>
<tr>
<td>management</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Health care and social services</td>
<td>231</td>
<td>3,002</td>
</tr>
<tr>
<td>Culture</td>
<td>87</td>
<td>329</td>
</tr>
<tr>
<td>Humanities and education</td>
<td>1</td>
<td>12</td>
</tr>
</tbody>
</table>

Some 16,800 degrees were taken at the universities in 2000, and the total has ranged between 16,000 and 17,000 during the last few years. Women account for 59% of all university degrees. Most university degrees were Master’s, and the percentage of Bachelor’s degrees has remained low. The average time taken to complete a Master’s degree in 1996-1999 was 6.5 years, but there is considerable sectoral variation. The average time is exceeded in sectors such as technology, the humanities, and agriculture and forestry, while degrees in commercial sectors take a shorter time than average, i.e. 5.5 years.

Figure 22. University degrees 1995-2000

Source: KOTA database
Reducing the time taken to graduate and raising the completion rate are key objectives of the Government’s higher education policy. One of the targets of its development programme for education and research is for 80% of polytechnic students to gain a degree in the required time and 75% of university students to complete a Master’s in five years.

Calculating completion times using successful graduates does not give a comprehensive picture of the effectiveness and functioning of the higher education system, however, and the progress made with all students’ studies should be reviewed. Polytechnic student and degree figures have risen rapidly in recent years because of the progress of the reform, and this makes it difficult to assess the actual completion rate. Individually-based statistics are currently being compiled for this purpose, however.

5.2.6 GRADUATE PLACEMENT

Polytechnic graduate placement in working life is monitored, primarily using a register of placements produced by Statistics Finland which monitors people’s main activity at the end of the year. This material gives a comprehensive picture of the placement of all graduates in working life, unemployment, and any further studies or other activity, but has the disadvantage of always being a year behind the times.

The Ministry of Education uses data on graduate placements as one criterion for granting performance-based funding to the polytechnics. Job placement is assessed sector by sector, relative to other polytechnics. Any change compared with the previous year is also noted. This makes it possible to take account of the different conditions in various parts of Finland and allows a clearer picture to be gained of the effect of the polytechnic’s own activities on the employment rate.

At the end of 1999, 75.5% of all polytechnic students graduating in 1995-1999 had found jobs, 12.1% were unemployed, 6.6% were still studying, and the remaining 7.6% were doing military service, were mothers at home or had emigrated. Of those in jobs, 73.7% were wage-earners and 2.2% entrepreneurs. Analysed by sector of education, the most successful in finding jobs were graduates in technology and communications (85.8%). The lowest employment rate (61.1%) was among health care and social services graduates. The number of entrepreneurs among graduates also varied from sector to sector, most being found among natural resources
(12.8% of the total) and culture graduates (6% of the total).

Any analysis of polytechnic graduate placement must note that some 1999 graduates did not actually complete their degrees until the very end of the year, so had no time to look for a job. In the statistics, this fact is reflected in the high percentage of unemployed.

The longer the time from graduation, the more easily people find jobs. At the end of 1999, 82.6% of those who graduated from polytechnics in 1997 had found jobs, while only 6.3% were unemployed and 4.7% were still studying. At the same date, 72.7% of 1997 graduates in health care and social services and 89.7% of technology and communications graduates were employed.

Academic unemployment has declined in Finland in recent years. The following tables show the main activity of holders of university Master’s degrees and polytechnic degrees at the end of the calendar year following graduation. The number of polytechnic graduates before 1996 was so low that they are not included in the comparison.
Table 14. Main activity of holders of Master’s degrees one year after graduation

<table>
<thead>
<tr>
<th>graduation year</th>
<th>total degrees</th>
<th>wage-earners</th>
<th>entrepreneurs</th>
<th>students</th>
<th>others</th>
<th>unemployed</th>
</tr>
</thead>
<tbody>
<tr>
<td>1995</td>
<td>9784</td>
<td>77.6</td>
<td>1.5</td>
<td>7.5</td>
<td>7.2</td>
<td>6.2</td>
</tr>
<tr>
<td>1996</td>
<td>10227</td>
<td>81.8</td>
<td>1.3</td>
<td>7.7</td>
<td>3.8</td>
<td>5.3</td>
</tr>
<tr>
<td>1997</td>
<td>10661</td>
<td>83.2</td>
<td>1.7</td>
<td>6</td>
<td>4.9</td>
<td>4.2</td>
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<tr>
<td>1998</td>
<td>11306</td>
<td>83.3</td>
<td>1.1</td>
<td>5.1</td>
<td>5.1</td>
<td>3.7</td>
</tr>
</tbody>
</table>

Source: KOTA database

Table 15. Main activity of holders of polytechnic degrees one year after graduation

<table>
<thead>
<tr>
<th>graduation year</th>
<th>total degrees</th>
<th>wage-earners</th>
<th>entrepreneurs</th>
<th>students</th>
<th>others</th>
<th>unemployed</th>
</tr>
</thead>
<tbody>
<tr>
<td>1996</td>
<td>4541</td>
<td>75.5</td>
<td>2.1</td>
<td>6.8</td>
<td>5.1</td>
<td>10.4</td>
</tr>
<tr>
<td>1997</td>
<td>5868</td>
<td>77.8</td>
<td>2.3</td>
<td>5.3</td>
<td>5.2</td>
<td>9.4</td>
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<tr>
<td>1998</td>
<td>6912</td>
<td>78.3</td>
<td>2.1</td>
<td>5.4</td>
<td>6.5</td>
<td>7.8</td>
</tr>
</tbody>
</table>

Source: AMKOTA database

Holders of Master’s degrees from university seem to find jobs more easily than polytechnic graduates, especially graduates in medicine and technological sciences, where the unemployment rate is under 2%. Graduates in drama, dance and art find it most difficult to get jobs. A larger proportion of polytechnic graduates than university graduates end up as entrepreneurs. In 1999 just over half of the previous year’s university graduates who had found employment were working for central and local government. By contrast, about 74% of employed polytechnic graduates had jobs in the private sector. Some 20% of polytechnic graduates with jobs in the public sector worked for municipalities and only some 5% for central government.

The new polytechnic degrees first gave rise to some questions in the labour market. Employers did not know what exactly they were and what competencies the graduates had. The situation has improved in recent years.

A University of Jyväskylä research project analysed placement of polytechnic graduates in business, technology, and health care and social services. The graduates involved said their training gave them a wide range of skills and good potential for finding jobs. In particular, they considered
that joint projects, on-the-job training and diploma projects between the polytechnics and local business and industry helped them with the transition to working life after graduating. Over 90% of the respondents thought that they would probably be in paid employment five years after graduating. The placement of polytechnic graduates in the labour market is monitored by means of surveys and other studies, most of which are based on the graduates’ own views of the nature of their jobs.

The placement of polytechnic graduates in different parts of the country is dealt with in section 6.1 ‘Regional impact’.

5.3. LIFELONG LEARNING AND ADULT EDUCATION

In the ‘90s, adult education was used in Finland as a way of raising the population’s educational level and of improving skills and knowledge in response to the changes going on in working life and leisure. The mass unemployment suffered in the ‘90s and its consequences – specifically marginalization trends from the main arenas of modern society - face the adult population with particular demands. On the other hand, Finland is an ageing society, which poses new challenges to the adult education system. Not the least of these is the rapid advance of new communications and information technology into most areas of public life.

Side by side with these social challenges, Finnish adult education has been strongly influenced by the principle of lifelong learning. This should be understood broadly, as a principle guiding educational policy which covers the whole span of life and all levels of education, from pre-school to old age. It means that government and interest groups influencing education are pursuing a policy of learning promotion that offers the individual the potential for intellectual, aesthetic, moral and social growth, promoting the acquisition of information and knowledge throughout life and in various different operating environments. In addition, organizations (work communities and NGOs) are arranging their operations so as to promote learning, while the learning content embodies support for personal development, endorsement of democratic values, maintenance of social cohesion and promotion of innovation and productivity.

Finnish adults have quite a high level of education by international standards. An OECD comparison in 1998 showed that 68% of Finnish 25 to 64 year-olds had completed at least upper secondary education, against
an OECD average of only 61%. On the other hand, the percentage of those with a tertiary type A education 1) in the same age group (13%) was slightly below the OECD average (14%). However, the education breakdown among the Finnish population is marked by great differences between age groups. These make it quite difficult to raise the overall level of competence, education and skill, especially among ageing adults.

According to an international literacy survey published in 2000, Finland comes second, after Sweden. The more formal education a person has, the higher his level of literacy.

In spring 1995, the Government declared that its general education policy strategy was to raise the educational level of the whole population in accordance with the principles of lifelong learning. Various documents setting Government targets and objectives have since outlined concrete ways of raising the educational level and skills of the adult population. By providing education for the whole nation, the Government aimed to safeguard the capacity of the individual, society and business life equally to respond to international challenges and the new emphasis on the importance of knowledge and information. The nation’s ability to respond to change was viewed as depending essentially on its basic education, special skills and creativity.

5.3.1. FORMS OF ADULT EDUCATION AND ADULT PARTICIPATION IN EDUCATION

Adult education is quite extensive in Finland. As a concept it covers adult education aiming at a degree at any level, general liberal education, and what is usually, in the European context, called ‘labour market training’. In all cases, it is education and training for people of working age. It includes teaching leading to a basic qualification at all levels, component studies forming part of a degree or qualification, training for competence-based examinations, apprenticeship training, supplementary and continuing education to update and extend vocational and professional skills, social studies conferring civic and work community skills, and study purely for recreation.

The vocational and other education offered by Finnish institutions is

1) Including engineers’ degrees from technical institutes, and forestry engineers’ and ship’s captains’ qualifications.
not tied to age, and anyone with the desire and opportunity can take part\(^2\). Though access to adult education is ‘age-neutral’, tailored courses to meet the special needs of adults are common. There are some mature students on courses intended for young people, most of them at institutes of higher education, i.e. universities and polytechnics. Indeed, some 51% of students doing basic degrees at universities, and 43% of those doing undergraduate courses at polytechnics are over 25. Adult learning totally outside educational organizations is also common in Finland.

**Table 16. Number of training organizations under the educational administration which can arrange education and training for adults**

| Adult upper secondary schools and courses | 54 |
| Summer universities                      | 20 |
| Study centres                            | 11 |
| Physical education courses               | 14 |
| Music institutes                         | 89 |
| Various specialist institutes            | 54 |
| Vocational adult education centres and national specialist institutes | 45 + 8 |
| Vocational institutes                    | 382\(^*) |
| Polytechnics                             | 29 |
| Universities                             | 20 |
| Civic colleges                           | 274 |
| Folk high schools                        | 91 |

\(^*) About 200 bodies maintaining vocational institutes.

Adult education is provided at roughly 1000 institutions, including every polytechnic. It strives to take the student’s former qualifications, skills and work experience into account. Consequently, it is usually possible to complete adult education degrees in a shorter time. All in all, there are well over three million attendances at adult education courses every year, and some 12.5 million hours of instruction.

By international standards, Finnish adults are eager to educate themselves. About 57% of all 25 to 64 year-olds have taken part in some kind of organized education in the previous 12 months.

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\(^2\) Access to education may, of course, be limited by other factors, such as the individual’s earlier educational background, the labour market situation (in labour market training with age limits), or the employer’s willingness to pay for staff training and education.
Adult education is attended by 20% of the population annually. This compares with 43% of the workforce who participated in job-related education in 1995, some 40% of which was self-motivated rather than employer-determined (Ministry of Education, 1998). Workers’ institutes gained a real hold in Finland, unlike Sweden, where the idea originated. Traditionally, therefore, there has always been a strong emphasis on the educational needs of workers. This is still in evidence today in the weight given to adult vocational education. Perhaps the most striking feature of adult learning today is the regulated market, heavily subsidised by the Government and regional administrations. There is a marked absence of the thriving commercial provision that characterizes learning opportunities for adults in many other OECD countries.

Between 1980 and 1995 the number of participants in adult education increased from 600 000 to 1.6 million. Rinne and Vanttaja (2000) attribute this increase mainly to rising active participation in vocational education. They feel that present policy expects adults to respond to globalisation and technical change, and to automatically renew their skills.

Appreciation of the Finnish situation should be seen against the background of its performance in relation to other OECD countries (Table 17). On overall learning participation, regardless of job status, Finland performs best. Curiously though, when one looks at job-related training it comes out third from the top overall (with 40%), though at least part of the explanation for the discrepancy lies in the fact that overall adult education numbers are bloated by initial education students who start their studies later than average.
### Table 17. Participation in learning of 25-64 year-olds according to type of training and job status, 1994-1998 (Percentage)

<table>
<thead>
<tr>
<th>All types of training</th>
<th>All Job Status</th>
<th>Employed</th>
<th>Unemployed</th>
<th>Out of the Labour Force</th>
</tr>
</thead>
<tbody>
<tr>
<td>Germany</td>
<td>18.1</td>
<td>23.2</td>
<td>26.7</td>
<td>6.9</td>
</tr>
<tr>
<td>Australia</td>
<td>35.6</td>
<td>42.2</td>
<td>28.3</td>
<td>16.1</td>
</tr>
<tr>
<td>Belgium (Flanders)</td>
<td>21.5</td>
<td>26.8</td>
<td>16.6</td>
<td>9.8</td>
</tr>
<tr>
<td>Canada</td>
<td>36.4</td>
<td>41.9</td>
<td>30.1</td>
<td>23.1</td>
</tr>
<tr>
<td>Chile</td>
<td>19.1</td>
<td>22.9</td>
<td>22.9</td>
<td>11.1</td>
</tr>
<tr>
<td>Denmark</td>
<td>56.2</td>
<td>60.7</td>
<td>51.1</td>
<td>39.0</td>
</tr>
<tr>
<td>United States</td>
<td>41.5</td>
<td>48.5</td>
<td>30.2</td>
<td>16.9</td>
</tr>
<tr>
<td>Finland</td>
<td>58.2</td>
<td>69.9</td>
<td>29.4</td>
<td>32.1</td>
</tr>
<tr>
<td>Hungary</td>
<td>18.1</td>
<td>27.7</td>
<td>9.5</td>
<td>2.2</td>
</tr>
<tr>
<td>Ireland</td>
<td>22.0</td>
<td>29.4</td>
<td>8.6</td>
<td>14.5</td>
</tr>
<tr>
<td>Netherlands</td>
<td>36.3</td>
<td>43.2</td>
<td>38.8</td>
<td>21.8</td>
</tr>
<tr>
<td>Norway</td>
<td>48.4</td>
<td>54.1</td>
<td>33.2</td>
<td>21.8</td>
</tr>
<tr>
<td>New Zealand</td>
<td>46.4</td>
<td>53.1</td>
<td>31.4</td>
<td>29.7</td>
</tr>
<tr>
<td>Poland</td>
<td>14.1</td>
<td>20.5</td>
<td>7.9</td>
<td>2.8</td>
</tr>
<tr>
<td>Portugal</td>
<td>13.0</td>
<td>16.7</td>
<td>9.8</td>
<td>5.4</td>
</tr>
<tr>
<td>Czech Republic</td>
<td>27.2</td>
<td>33.5</td>
<td>14.3</td>
<td>7.8</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>44.9</td>
<td>56.0</td>
<td>33.1</td>
<td>14.3</td>
</tr>
<tr>
<td>Slovenia</td>
<td>33.3</td>
<td>42.9</td>
<td>13.7</td>
<td>10.5</td>
</tr>
<tr>
<td>Switzerland</td>
<td>41.5</td>
<td>45.7</td>
<td>32.3</td>
<td>27.3</td>
</tr>
<tr>
<td>Sweden</td>
<td>54.3</td>
<td>60.1</td>
<td>45.6</td>
<td>28.7</td>
</tr>
<tr>
<td>Average</td>
<td>34.9</td>
<td>42.8</td>
<td>26.4</td>
<td>13.6</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Job-related training ***)</th>
<th>All Job Status</th>
<th>Employed</th>
<th>Unemployed</th>
<th>Out of the Labour Force</th>
</tr>
</thead>
<tbody>
<tr>
<td>Germany</td>
<td>14.9</td>
<td>20.1</td>
<td>25.1</td>
<td>3.1</td>
</tr>
<tr>
<td>Australia</td>
<td>30.3</td>
<td>38.1</td>
<td>23.8</td>
<td>6.9</td>
</tr>
<tr>
<td>Belgium (Flanders)</td>
<td>14.0</td>
<td>19.8</td>
<td>8.6</td>
<td>0.9</td>
</tr>
<tr>
<td>Canada</td>
<td>29.6</td>
<td>37.5</td>
<td>22.0</td>
<td>9.9</td>
</tr>
<tr>
<td>Chile</td>
<td>11.7</td>
<td>17.0</td>
<td>9.3</td>
<td>2.5</td>
</tr>
<tr>
<td>Denmark</td>
<td>48.7</td>
<td>54.6</td>
<td>38.8</td>
<td>26.9</td>
</tr>
<tr>
<td>United States</td>
<td>37.6</td>
<td>45.2</td>
<td>28.5</td>
<td>10.1</td>
</tr>
<tr>
<td>Finland</td>
<td>40.0</td>
<td>51.1</td>
<td>11.6</td>
<td>15.8</td>
</tr>
<tr>
<td>Hungary</td>
<td>12.8</td>
<td>19.8</td>
<td>6.1</td>
<td>1.4</td>
</tr>
<tr>
<td>Ireland</td>
<td>15.8</td>
<td>23.5</td>
<td>7.1</td>
<td>6.6</td>
</tr>
<tr>
<td>Netherlands</td>
<td>24.1</td>
<td>32.5</td>
<td>29.4</td>
<td>5.9</td>
</tr>
<tr>
<td>Norway</td>
<td>44.4</td>
<td>50.9</td>
<td>26.7</td>
<td>14.5</td>
</tr>
<tr>
<td>New Zealand</td>
<td>38.4</td>
<td>46.9</td>
<td>24.1</td>
<td>16.3</td>
</tr>
<tr>
<td>Poland</td>
<td>10.6</td>
<td>16.5</td>
<td>2.4</td>
<td>1.1</td>
</tr>
<tr>
<td>Portugal</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Czech Republic</td>
<td>21.7</td>
<td>27.3</td>
<td>11.9</td>
<td>4.4</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>39.7</td>
<td>51.8</td>
<td>24.0</td>
<td>7.0</td>
</tr>
<tr>
<td>Slovenia</td>
<td>25.6</td>
<td>34.4</td>
<td>9.1</td>
<td>4.4</td>
</tr>
<tr>
<td>Switzerland</td>
<td>26.3</td>
<td>31.8</td>
<td>26.9</td>
<td>6.0</td>
</tr>
<tr>
<td>Sweden</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Average</td>
<td>29.3</td>
<td>37.6</td>
<td>21.4</td>
<td>6.9</td>
</tr>
</tbody>
</table>

*Less than 30 cases in the cell./ ***)Not available for Portugal and Sweden.

Source: International Adult Literacy Survey (IALS) - Second IALS (SIALS) (prepared by the authors).
Participation in adult education varies greatly from region to region. Those living in southern Finland participate most and those living in Lapland least. The finding that there is such regional inequality reflects the fact that adult education is targeted at specific population groups. As by far the majority of all adult education comprises participation in staff training supported by the employer, and specifically concerns higher trained personnel groups in positions of authority, regional inequality reflects differences in the distribution of industry, and in the educational level and vocational structure of the population, in various parts of the country. If we look at participation in other than work-related adult education, the differences decrease. However, there is on average less participation in northern Finland than elsewhere, and this may indicate problems connected with the supply.

5.3.2. DEGREE AND NON-DEGREE-ORIENTED EDUCATION

Basic university degrees are not arranged separately for adults and young people, and all students study for the same degrees irrespective of age. In fact, the majority of the overall student population (c. 51%) are adults (25 or over), and adults even account for 18% of first-year university students.
Unlike the universities, the polytechnics provide degree programmes for adults, which account for about a fifth of their total provision.

Both the universities and the polytechnics arrange open education available to all at basic degree level. The open university instruction is already well-established, but the open polytechnic only started in the late '90s. Anyone who wishes to study can do so, regardless of age and previous education. It is possible to complete individual parts of degree courses. Students with certain number of credits from open university are eligible for regular university degree courses.

![Figure 25](image_url)

**Figure 25. Participation in adult education in 1980, 1990 and 1995, by previous education (%)**

A large number of people over 25 take basic university degrees. In actual fact, continuing education and the open university are considered to be the forms of adult education provided by the universities, but this is more of an administrative definition, as the open university has become a very popular form of studying among young people.
Figure 26. Student numbers on continuing education and open university courses provided by universities, 1995-1999

The universities’ centres of continuing education mostly provide opportunities for academically trained people to update and broaden their professional skills without aiming at any degree. They also arrange specialization courses which supplement the universities’ degree systems and further professional development. These comprise at least 20 credits and are available to graduates and for others with an adequate existing bases for the required studies.

Adults can also take specialization courses at a polytechnic. These are extensive continuing education programmes designed to promote professional development which are arranged for holders of a degree, a vocational diploma or other vocational tertiary-level qualification, and other individuals with an adequate existing bases for the required studies.

5.3.3. ADULT EDUCATION AT POLYTECHNICS

Quite soon after they started operating, the polytechnics adopted adult education as one of their basic functions, and polytechnic adult education is now the most extensive form of adult education. Today, about one fifth of all courses leading to a polytechnic degree are aimed specifically at adult students. Student numbers have risen every year and at the moment the polytechnics are unable to increase their provision to meet the demand because of the stringent budget.
All the polytechnics arrange the same education leading to a degree for adults as for young. In practice, a large proportion of mature students already have a diploma from a vocational institute or some other upper-secondary qualification, and are taking supplementary courses to upgrade earlier qualifications to a Polytechnic degree.

Over one fifth of all polytechnic places, i.e. around 18,600 study places FTE (a statistical term equal to 40 credits, and a 20-credit period of specialization studies equals half a year-student), are in adult education. Some 14,600 of these student places are in adult education leading to a polytechnic degree, and 4,000 doing professional specialization courses.

A large number of mature students attend courses aimed at a polytechnic degree which are intended primarily for the young.

As well as their degree programmes for adults, the polytechnics also arrange professional specialization courses of 20–40 credits for adults who already have a degree. These are mostly in the sectors of technology and health care. Some 2,900 students were taking professional specialization courses at the end of 1999, but by 2000 the figure was already nearly 5,400 students.

The polytechnics can also arrange other continuing education, for instance as a charged service for companies and work communities direct.

5.3.3.1. THE OPEN POLYTECHNIC

It is possible to take individual courses contributing to a polytechnic degree at the open polytechnic. This is intended for everyone with an adequate existing basis for completing the required studies, regardless of their previous formal education. Students who want to complete a whole degree must apply for admittance at the polytechnic via the normal application procedure. If they are accepted, the polytechnic concerned credits the courses already completed at the open polytechnic.

All polytechnics already offer at least some open courses. In 1999, altogether 2,869 students were registered with the open polytechnic, and by 2000 the figure had already risen to around 6,300. The numbers registered with individual polytechnics range from under 20 to nearly 1,200.
5.3.3.2. NUMBERS STUDYING IN POLYTECHNIC ADULT EDUCATION

Figure 27 shows the number of adult students in degree-oriented programmes and specialization courses, and students doing open polytechnic studies in 1994-1999.

Figure 27. Participation in polytechnic adult education, 1994-2000

Source: Ministry of Education, AMKOTA database

Between 2001 and 2004, a total of 18,600 average FTE-students (statistical unit) per annum are expected to take part in polytechnic adult education, 14,600 of them in programmes leading to a degree and 4,000 on specialization courses.

5.3.4. POLYTECHNIC POST-GRADUATE DEGREES

In 2001 Parliament passed a bill concerning experimental higher, i.e. post-graduate, studies at polytechnics. The experiment will be made possible through a fixed-term Act in force from January 2002 to the end of July 2005, which will allow post-graduate studies to start on August 1, 2002 at the earliest. Individual polytechnics can apply to the Ministry of Education for permission to launch such programmes.

Polytechnic post-graduate degrees will comprise 40-60 credits, and will be launched gradually in certain fields where working life has particular
needs, i.e. technology, business and administration, and health care and social services. Post-graduate degree programmes will begin at polytechnics meeting the highest quality criteria. The condition for a trial licence is that the polytechnic has already awarded polytechnic degrees in the fields determined for the pilot or in closely related fields. The polytechnic is required to have provided professional specialist education in the field concerned. In addition, the polytechnic must have senior lecturers in the field who can assume responsibility for the postgraduate education and who fulfil the qualification requirements determined for principal lecturers in the Polytechnics Decree. The assessment of the applications will be based on the quality of the education provided by the polytechnic; the objectives set for the experiment; the relations the polytechnic has with working life; R&D supporting the postgraduate trial; educational and labour needs in the field; and the requirement that the experiment forms a balanced whole on the national level in terms of both regional development and the two language groups in Finland, and that all the three fields listed above are represented in the experiment. The student volume has been set at 300 new places a year.

The post-graduate degrees are a new form and channel of adult education designed for mature students, and are intended for graduates already in working life. The programmes will be arranged so that they can be completed side by side with a full-time job, and will have a strong orientation towards working life. The final thesis will essentially relate to a research or development project tied intimately to the needs of the student's own work environment and employer.

So far the polytechnic system has been able to offer professional specialization courses as well as degree programmes. Because the former do not lead to a higher degree, however, polytechnic graduates have often moved on to do further studies at university. The new polytechnic post-graduate degrees designed to meet the needs of both the individual and working life are expected to reduce this pressure on the universities.

In the preparation of the postgraduate polytechnic degrees, several labour market organisations have aired their doubts about the need for such degrees at this stage and about the demand for holders of such degrees. The Finnish Higher Education Evaluation Council will evaluate the results of the experiment in 2003 or 2004. Decisions on the future
status of and policy concerning post-graduate polytechnic degrees will be made by the Government and Parliament on the basis of the experience gained.

5.4. TEACHERS AND OTHER STAFF

5.4.1. TEACHERS

According to the Polytechnic Act, polytechnics have tenured posts for senior lecturers and lecturers. They may also use non-tenured teachers and lecturers, and other personnel.

Senior lecturers are required to have a Licentiate or Doctorate, and lecturers a Master’s degree. Rectors are required to have a Licentiate or Doctorate, to be familiar with polytechnics and to have previous administrative experience. A person with a Master’s degree can also be appointed if he/she is otherwise considered to be especially well qualified for the job. Rectors must also have proficiency in the language(s) of instruction at the polytechnic concerned.

When the polytechnics were first set up, a large number of teachers transferred to them who had been working at the former institutes and colleges and fulfilled the requirements of those earlier institutions but not those laid down in the legislation on polytechnics. In their case, a special five-year transition period was provided for, during which these teachers were allowed to hold a post at a polytechnic. The aim was to give them the opportunity to acquire the qualifications required of a polytechnic teacher. The Ministry of Education has also assisted with the training of polytechnic teaching and other staff as part of its support programme for the new polytechnics.

In 2000 altogether some 5300 full-time teachers were employed at polytechnics: 900 senior lecturers, 3000 lecturers and 1350 full-time non-tenured teachers. There were also nearly 1900 part-time non-tenured teachers. The same year, 130 person work-years of teaching by outside lecturers were recorded, most of these teachers being experts from working life. In this way the polytechnics ensure stronger links with industry and business, and guarantee that their teaching is up-to-date. It is also a way of responding to changes and new requirements deriving from working life, and of ensuring direct feedback from the field.

The educational background of polytechnic teachers is slowly approaching the goals set. 46% of senior lecturers have a Doctorate or
Licentiate. 86% of lecturers and 66% of full-time non-tenured teachers have at least a Master’s degree. In 2000 91.3% of all full-time teachers had the required pedagogical training. The last of the temporary polytechnics were not made permanent until autumn 2000, so the five-year transition period guaranteed in the legislation is still not up, and many polytechnic teachers are currently working on their degrees.

Table 18. Students, degrees and teachers, 2000

<table>
<thead>
<tr>
<th>Sector of education</th>
<th>Full-time teachers</th>
<th>Part-time teachers</th>
<th>No. of students (full-time)</th>
<th>Degrees completed (full-time)</th>
<th>Students to full-time staff</th>
<th>Degrees to full-time staff</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>5 268</td>
<td>1 869</td>
<td>114 147</td>
<td>14 153</td>
<td>21.7</td>
<td>2.7</td>
</tr>
<tr>
<td>Natural resources</td>
<td>206</td>
<td>42</td>
<td>3 958</td>
<td>505</td>
<td>19.2</td>
<td>2.5</td>
</tr>
<tr>
<td>Technology &amp; communications</td>
<td>1 522</td>
<td>671</td>
<td>36 495</td>
<td>3 601</td>
<td>24.0</td>
<td>2.4</td>
</tr>
<tr>
<td>Business &amp; administration</td>
<td>1 093</td>
<td>392</td>
<td>33 755</td>
<td>3 896</td>
<td>30.9</td>
<td>3.6</td>
</tr>
<tr>
<td>Tourism, catering &amp; inst. management</td>
<td>203</td>
<td>157</td>
<td>6 099</td>
<td>460</td>
<td>30.0</td>
<td>2.3</td>
</tr>
<tr>
<td>Health care &amp; social services</td>
<td>1 596</td>
<td>144</td>
<td>25 039</td>
<td>4 889</td>
<td>15.7</td>
<td>3.1</td>
</tr>
<tr>
<td>Culture</td>
<td>466</td>
<td>433</td>
<td>7 118</td>
<td>730</td>
<td>15.3</td>
<td>1.6</td>
</tr>
<tr>
<td>Humanities &amp; education</td>
<td>182</td>
<td>30</td>
<td>1 683</td>
<td>72</td>
<td>9.2</td>
<td>0.4</td>
</tr>
</tbody>
</table>

In 2000 there were an average of 21.7 students and 2.7 degrees to every full-time teacher, though there are great variations between sectors. Culture, and health care and social services, for instance, need far more teaching staff than business and administration, where there was an average of 30.9 students per full-time teacher, compared with 15.3 in the culture sector. There are also great differences within the field of culture itself, in that drama and dance, for instance, largely demands face-to-face teaching in very small groups.

5.4.2. TEACHER EXCHANGES

The internationalization of polytechnics has diversified their teaching approaches and improved the pedagogical skills of teachers. Teacher exchanges aim primarily at long-term exchanges lasting over one month.
The long-term objective is that every year one fifth of all polytechnic teachers should spend at least a month abroad, with the same volume of foreign teacher exchanges to Finland. The joint polytechnic development targets set for 2001-2003 by the polytechnics and the Ministry of Education aim at 500 teacher exchanges a year.

The number of teachers taking part in such international exchanges rose appreciably between 1997 and 1999. Since 1998, far more Finnish teachers have gone abroad than foreign teachers have come here. In the review years the number of exchanges lasting over one month did not rise as rapidly as the overall number of exchanges. In the case of long periods, however, polytechnic teacher exchange has reached an almost reciprocal level.

In 2000 just over 2000 polytechnic teachers went abroad, with well over a hundred of these taking part in long-term exchanges lasting over one month. About 1200 foreign teachers worked in Finland, of these nearly a hundred for over a month.

![Graph showing teacher exchanges 1997-2000](image)

**Figure 28. Teacher exchanges 1997-2000**

*Source: AMKOTA database*

The targets for teacher exchanges have not been completely achieved, though much progress has been made. It has proved difficult to arrange for teachers to be away, especially for longer periods, at such an intensive stage of polytechnic development.
5.4.3. OTHER STAFF

There were altogether 1,400 non-teaching staff at polytechnics in 2000, employed in a wide range of categories, including personnel administration, library and information services, teaching support, teaching administration, and financial and general management. They also include staff responsible for the polytechnics’ business operations and for projects with public funding.

The biggest categories of other staff are: teaching support (368), general administration (264), project personnel (212) and business services (142). The polytechnics also outsource some functions that would otherwise involve other staff, and in 2000 bought in the equivalent of 258.4 person work-years. IT and other information management services, and teaching administration services are examples of areas where this is common.

The number of non-teaching staff has risen sharply along with the polytechnic reform. Various kinds of planning and development work are far more extensive at polytechnics than at the old colleges and institutes. Similarly, new student administration functions call for far more additional resources. The educational level of non-teaching staff has risen in response to the complexity of the work, and attention is also being given to their continuing and supplementary training.

5.5. DEVELOPMENT OF TEACHING AND LEARNING

The aim of all development of polytechnic teaching is to improve teaching quality and expand individual choices, taking professionalism and the needs of working life as the basis. Teaching at polytechnics is arranged in programmes leading to Polytechnic degrees. Degree programmes are units designed and organized by the individual polytechnics, aiming to meet the need for advanced vocational expertise in some area of working life. Each polytechnic is responsible for drawing up its own degree programme curricula.

In their teaching provision and in planning the content of individual degree programmes, the polytechnics strive to cater to the needs of industry and business in their own geographical areas. They use various modes of operation to chart these needs, such as feedback questionnaires, advisory committees, alumni activities and teacher/company partnerships. The polytechnics usually have very close relationships with industry and business at
all levels in their area. In some cases, the most important stakeholders in working life are also represented in the administration. The needs of working life are also taken into account in planning the content of teaching. The polytechnics have also established ways of ensuring that student feedback is collected. Indeed, apart from working life itself, students are the most important source of feedback in the development of teaching. In the best cases, students are also involved in the work of developing teaching. Opportunities for student participation vary greatly from one polytechnic to another, however, depending on the organization and operating culture.

Most polytechnics already have well-established quality and evaluation systems in place. The Finnish Higher Education Evaluation Council has so far audited internal quality systems or quality work at fourteen polytechnics. Polytechnics can participate in external evaluations, arranged by the Council.

Closeness to working life is an integral aspect of development at polytechnics and of their various forms of teaching. Each degree involves a 20-50 (in midwifery 90) credit period of practical training during which the student is familiarized with actual situations and working tasks ‘on the job’. Some students do their practical training abroad. The Government helps the polytechnics with arranging these traineeships. In their diploma projects, students make a close study of a particular problem in the sector concerned. Every effort is made to carry out this diploma project, too, in ever closer cooperation with working life. In some sectors, such as technology and communications, over 90% of all theses are commissioned by industry or business, and are directly linked with company projects, development work or projects in the work community.

The polytechnics underline the importance of a development approach as a key element in professional competence. Thus project-based R&D work serving working life and regional development is an integral and growing element in studies. In future, one important approach will be to forge an effective link between such R&D and polytechnic teaching to ensure, for instance, that new information generated in projects is also utilized in teaching. This will allow R&D to be drawn on in a way that enriches and enhances teaching. R&D also has the effect of broadening the scope of teachers’ work and strengthening their links with working life. New teaching methods include project-based learning and problem-based learning, and every effort is made to extend multi-method teaching.
and self-directed teaching. Lectures are also made more stimulating using study over the Internet or various parallel materials.

A further third feature given prominence in development of polytechnic teaching is support for internationalization. The aim is that teaching should provide the skills that working life needs in an increasingly international world. Building of international contacts and student participation in international exchanges are encouraged. Degree courses are also provided in programmes held entirely in English, and courses in foreign languages are provided in all key areas of polytechnic competence. Such courses also further international exchange programmes.

5.5.1. STUDENT GUIDANCE AND COUNSELLING

As the polytechnics develop more and more into institutions of higher education, student guidance is moving away from the counsellor-based approach typical of earlier vocational institutes, and towards the provision of more student-oriented services. Various forms of guidance have been devised, including more help and advice over the Internet and support for independent decision-making.

Another feature reflecting the increasing tendency to adopt higher-education-level practices at polytechnics is the preparation of personal study programmes. Increasingly, the old ‘school-like’ study model, demanding mandatory attendance at lectures and courses, is being replaced by independent study and study involving a variety of methods and situations. This means putting more emphasis on the student’s own sense of responsibility, and facing guidance provided and made available by the polytechnic with new challenges. In particular, staff advising students planning and revising their study programmes now play a much more important role. A further factor essentially influencing efforts to improve study guidance and advice is the fact that polytechnic students have become much more heterogeneous as the range of teaching has expanded. They are no longer all the same age, with the same basic abilities, and studying in the same way. Their age, experience and backgrounds differ, and to some extent their skills. This means producing a much wider range of guidance services able to meet the growing diversity of student needs. In future, it will be important to offer students even more wide-ranging services within which personal help from the staff expands to meet the need.
In the new model, traditional study guides and information sessions, with information and guidance over the Internet, would help most students with the common problem situations. But the amount of personal help available would increase specifically when it is needed most, e.g. when students are drawing up their personal study plan, making subject choices and planning career moves. Guidance by teachers is particularly essential in matters related to study content and career planning, but students also need intensive help with matters calling for special know-how, such as situations related to practical training or international exchange. In a ‘graded’ guidance system, the student’s ability to find his own way becomes particularly important. It also means guidance services can be made available to increasing numbers of students. If guidance is to succeed, the whole polytechnic staff must be aware of how it is organized, so as to be able to guide the individual student in the right direction. At the moment no polytechnic has a completely self-guided guidance system, but some are clearly moving that way, though planning and organization are still at an early stage.

At many polytechnics, responsibility for student guidance is still carried by a number of full-time study counsellors. Apart from them, the only members of staff involved in student guidance are the office personnel who provide basic information. The main obstacle to better guidance at polytechnics today continues to be the low importance attached to the matter, and thus problems with resources. However, appreciation for student guidance is growing, mainly because an increasing body of research shows that guidance has a clear link with success and with dropping out.

In 2000 the Ministry of Education set up a three-year study promotion and support project to find ways to help polytechnic students with their studies, to prevent drop-outs and to help with career guidance. The project team is seeking good practices and measures to deal with the following: to raise the study completion level and keep the time taken to get a degree reasonable; to find ways of preventing unnecessary drop-outs; to give support for the right choice of career; and to find ways of increasing student motivation. The project is broken down into part-projects at various polytechnics, and also involves networking, information exchange and training for staff at polytechnics responsible for student guidance.

Most polytechnics have adopted the concept of the ‘teacher-tutor’
side by side with traditional study counsellors, and allocate students their own ‘responsible teacher’ to whom they can turn with problems related to their studies. The use of student-tutors is already widespread. There is also a new emphasis on career guidance, and Ministry of Education policy has recently focused on improving careers and recruitment services at polytechnics. They all already have such services, which also provide personal guidance and help and training with jobseeking.

Polytechnic students also have access to the polytechnics’ joint Internet-based job service ‘Jobstep’, through which they can apply for vacancies entered by employers. In turn, employers can access student CVs and thus find the employees they need.

5.5.2. THE VIRTUAL POLYTECHNIC

One feature of the 2000-2004 education and research strategy was a decision to set up a joint virtual polytechnic among the polytechnics in Finland. This project got under way this year, and should be ready in 2003. The aim is to produce an Internet-based higher education service that provides competitive services of a high international standard via an Internet study system.

Teaching in the virtual polytechnic will be based on the multi-method distance learning approach. It will integrate the wide range of know-how available through the polytechnics and at the same time improve the skills of those participating in the scheme in the realm of network learning and teaching. The virtual polytechnic’s services will be made available to students through a common portal. The study material will be produced by different production circles representing various sectors or subjects, and will involve every polytechnic.

The project will also ensure that the various polytechnics’ learning platforms, materials and study units are properly standardized so that the student can utilize the virtual polytechnic effectively in his own studies and degree work. Similarly, ready transfer of information to the polytechnics’ own information systems will be ensured. Other services accessible via the portal will include joint student and financial administration systems, information services and evaluation tools. The Ministry of Education is financing construction of the portal and at the early stage will also subsidize materials produced by the production circles.
5.6. LIBRARY AND INFORMATION SERVICES

All polytechnics have their own libraries, which both serve students and teachers, and support research and development. Since 2000, these libraries have been open to all, and thus supplement the library network and information provision in their area.

Basic library services include lending, maintenance of an up-to-date collection, and information retrieval services and instruction. These are mainly free to the user, though charged services designed for local business and industry are sometimes provided. About 1.5% of all library finance came from such services in 2000.

Polytechnic libraries often comprise several separate outlets that may be far apart geographically, though they usually have a central administrative unit. In 2000 these employed over 300 people, some 130 in posts calling for a Master’s degree.

Library collections comprised over two million publications in 2000. It is also possible to arrange for inter-library loans. The libraries also archive the theses produced by polytechnic students.

The libraries are becoming more integrated as part of the polytechnic teaching and learning process. Library and information service staff provide user training for students at all polytechnics, aiming to help with independent study and information retrieval. They also provide good facilities for various forms of study, e.g. by computer.

The development of polytechnic library and information services is one part of the support programme launched to back up the polytechnic reform, and special project funding has been available for the purpose. It became clear at the experimental stage that the temporary polytechnics did not have adequate library and information services, but since then these services have been intensively developed, with a marked increase in staffing and improved IT capabilities. One of the joint targets set for polytechnics in 2001-2003 is to raise spending on library and information services to at least 5% of total operating costs.

A joint library system for polytechnics is under development. So far, library material has been in several different databases, which has hampered its efficient use. Decision has already been taken that The Ministry of Education is to meet 70% of the costs of setting up the joint system.

In recent years polytechnic library and information services have
been developed in close cooperation with university, scientific and other libraries. Most polytechnics belong to FUNET, the joint telecommunications network of Finnish universities, polytechnics and research centres. They have also been actively involved in the operations of the national electronic library (FinELib), a programme launched by the Ministry of Education aimed at improving conditions for research and education in Finland.

The polytechnic libraries also collaborate closely. A library and information project was set up at the Rectors’ Conference of Finnish Polytechnics, and this acts as the cooperation body between polytechnic libraries. Its functions include setting up and steering joint projects.
VI REGIONAL ROLE OF THE POLYTECHNICS

6.1. REGIONAL IMPACT

From the outset, the goal of the polytechnic system has been to boost regional expertise by means of a network of polytechnics throughout Finland offering diversified tertiary education designed to meet the needs of working life.

In the 1990s, polytechnics have evolved from post-secondary educational establishments into institutions of higher education promoting regional development. The swift advancement of research and development (R&D) at polytechnics has been of major importance. Such development is required by their mission: to engage actively in the development of working life and to produce relevant new knowledge.

In accordance with the Government development plan for 1999-2004, the regional role and impact of the polytechnics will be enhanced and, as a related measure, their capacity to produce new knowledge relevant to working life, professional expertise and its development potential will also be improved. Applied R&D cooperation between polytechnics and working life is regarded as the main means to achieve these goals. The objective is to channel increased R&D resources to regional development, the promotion of entrepreneurship in the SME sector, and improved welfare services.

The importance of polytechnics for regional development is increasing. At a quickening pace, they are becoming important actors alongside industry and services in regional growth and development. Other indications of this trend include the concentration of centres of expertise around institution of higher education, national programmes for centres of expertise, technology centres, science parks and other organizations benefiting from the expertise of higher education institutions. These concentrations have been termed ‘regional innovation systems’, covering a region’s education and research in toto as well as entrepreneurship and related expert and financial services.

Active participation in strategic planning is a prerequisite if polytechnics are to be able to undertake successful regional development. Accordingly, they are seeking to adjust to their new role, and taking an active part in the planning of regional development strategies. A high-quality skilled workforce and R&D at institutes of higher education are key factors in regional strategies. The importance of polytechnics in R&D is expected to grow.
Polytechnics have introduced and implemented several practical regional development projects. The content, goals and methods employed vary, depending on the polytechnic, the region and the forms of funding available.

Regional development is one of the strategic focus areas of the Government Programme, which emphasizes the need to increase expertise in the various regions and promotes the competitive capacity of viable regional and sub-regional centres. The Government is devoting particular input to developing eastern and northern Finland and to solving structural problems on the basis of the resolutions and strategies it has arrived at. Consequently, the polytechnics in eastern and northern Finland have been granted EUR 6.73 million in extra resources for regional development projects for 2001-2003.

The target and performance agreements governing polytechnics stress their role in regional development in both the targets common to all polytechnics and the individual EU strategy of each polytechnic. Polytechnics have also drawn up their own EU strategies, mainly to support use of ESF and ERDF programmes. The polytechnics' own strategies detail their particular areas of focus and their viewpoints on regional development.

In spring 2001, in acknowledgement of the importance of polytechnics as regional actors, the Ministry of Education appointed the first centres of expertise in regional development at polytechnics following a submission from the Higher Education Evaluation Council. Attention was given to definition of the regional development mission of a polytechnic in its overall strategy, to forms of cooperation between a polytechnic and local actors in its area, and to results achieved by a polytechnic locally and its activeness in developing its region. Factors cited as strengths of those polytechnics that were selected as centres of expertise include a dense network of connections with their environment, response to regional labour market needs through educational provision and the creation of a foundation for growth industries. Extensive adult education was also seen as a benefit. A focus on the implementation of regional strategies in project work was also seen as a strength. Other factors important for the evaluation of regional development impact were the construction of clusters of expertise jointly with local authorities and businesses in the region, and the assumption of a central role in regional strategy development, EU programme work,
internationalization of the region and development of a regional innovation system.

The impact of polytechnics is a current topic in evaluation of the regional development impact of centres of expertise and the work of polytechnics in general. The impact of their educational provision is initially reflected and shown in the employment of polytechnic graduates, but in the long term the impact will also become evident in trade and industry structures and the rate of social change. Impact can be active, i.e. consist of conscious measures and anticipative action, or passive, i.e. involve the knock-on effects of education and training on economy or culture, for instance. Impact derives primarily from interaction, from cooperation between various actors. What is vital is to identify the factors through which training and education can promote positive development trends. These issues are being investigated, for instance by a working group appointed by the Ministry of Education to study the role played by institutions of higher education in regional development.

6.1.1. REGIONAL MOBILITY

The subsequent employment and placement of polytechnic graduates have been considered the most important indicators of impact in the evaluation of the polytechnic sector. The latter may be examined by activity and geographic area. What is more difficult to measure is interaction and indirect impact on a particular region’s trade and industry.

The activeness and competitiveness of regions and polytechnics are testified to by the figures reflecting the attractiveness of the education offered. The latter can be assessed by factoring the number of first-year new places over the number of applicants stating that particular programme to be their first choice. This can be examined at various regional levels, by polytechnic, by polytechnic sub-division, by sector of education, by degree programme, etc. The following table shows a breakdown by region:
### Table 19. Attractiveness of polytechnics by region 1998-2000

<table>
<thead>
<tr>
<th>Region</th>
<th>Ratio of new study places to first-choice applicants</th>
<th>1998</th>
<th>1999</th>
<th>2000</th>
<th>Change in percentage points 1998-2000</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>1998</td>
<td>1999</td>
<td>2000</td>
<td></td>
</tr>
<tr>
<td>Total for entire country</td>
<td></td>
<td>23 %</td>
<td>27 %</td>
<td>29 %</td>
<td>6</td>
</tr>
<tr>
<td>Uusimaa</td>
<td></td>
<td>19 %</td>
<td>24 %</td>
<td>26 %</td>
<td>7</td>
</tr>
<tr>
<td>Eastern Uusimaa</td>
<td></td>
<td>29 %</td>
<td>31 %</td>
<td>32 %</td>
<td>3</td>
</tr>
<tr>
<td>Southwest Finland</td>
<td></td>
<td>19 %</td>
<td>23 %</td>
<td>22 %</td>
<td>3</td>
</tr>
<tr>
<td>Satakunta</td>
<td></td>
<td>37 %</td>
<td>43 %</td>
<td>47 %</td>
<td>10</td>
</tr>
<tr>
<td>Kanta-Häme</td>
<td></td>
<td>26 %</td>
<td>35 %</td>
<td>36 %</td>
<td>10</td>
</tr>
<tr>
<td>Tampere region</td>
<td></td>
<td>16 %</td>
<td>22 %</td>
<td>22 %</td>
<td>6</td>
</tr>
<tr>
<td>Päijät-Häme</td>
<td></td>
<td>19 %</td>
<td>18 %</td>
<td>20 %</td>
<td>1</td>
</tr>
<tr>
<td>Kymenlaakso</td>
<td></td>
<td>36 %</td>
<td>39 %</td>
<td>53 %</td>
<td>17</td>
</tr>
<tr>
<td>South Karjala</td>
<td></td>
<td>27 %</td>
<td>36 %</td>
<td>36 %</td>
<td>9</td>
</tr>
<tr>
<td>Southern Savo</td>
<td></td>
<td>33 %</td>
<td>43 %</td>
<td>42 %</td>
<td>9</td>
</tr>
<tr>
<td>Northern Savo</td>
<td></td>
<td>29 %</td>
<td>33 %</td>
<td>34 %</td>
<td>5</td>
</tr>
<tr>
<td>North Karjala</td>
<td></td>
<td>31 %</td>
<td>41 %</td>
<td>40 %</td>
<td>9</td>
</tr>
<tr>
<td>Central Finland</td>
<td></td>
<td>14 %</td>
<td>16 %</td>
<td>18 %</td>
<td>4</td>
</tr>
<tr>
<td>Southern Ostrobothnia</td>
<td></td>
<td>34 %</td>
<td>41 %</td>
<td>47 %</td>
<td>13</td>
</tr>
<tr>
<td>Ostrobothnia</td>
<td></td>
<td>49 %</td>
<td>45 %</td>
<td>45 %</td>
<td>4</td>
</tr>
<tr>
<td>Central Ostrobothnia</td>
<td></td>
<td>38 %</td>
<td>49 %</td>
<td>46 %</td>
<td>8</td>
</tr>
<tr>
<td>Northern Ostrobothnia</td>
<td></td>
<td>20 %</td>
<td>21 %</td>
<td>22 %</td>
<td>2</td>
</tr>
<tr>
<td>Kainuu</td>
<td></td>
<td>50 %</td>
<td>57 %</td>
<td>57 %</td>
<td>7</td>
</tr>
<tr>
<td>Lapland</td>
<td></td>
<td>35 %</td>
<td>37 %</td>
<td>40 %</td>
<td>5</td>
</tr>
</tbody>
</table>

1) does not include programmes in foreign language and adult education
A general decline in popularity is mainly due to an increase in educational provision. Changes in attractiveness in each region to some extent reflect changes in its competitiveness relative to other regions. We should note, however, that sector and degree programme structures also affect the attractiveness of training.

The role of the polytechnics as regional actors can be studied by examining regional polytechnic student flows, the regional relationship between educational provision and demand, and the placement of polytechnic graduates. In 1999, an average of 60% of those starting polytechnic studies did so at a polytechnic in their home region. The exceptions to this rule were Uusimaa, where 80% of all starters came from the region, and Central Ostrobothnia, where the figure was only 34%. There are great differences between regions. These cannot be explained only by differences in the volume of educational provision; the behaviour of young people entering programmes is also relevant.
Polytechnic graduates often find employment in or near the region where they completed their degree. The polytechnics’ own regions and nearby regions seem to be preferred, but Uusimaa (the region in which the metropolitan area of Helsinki is situated) shows a net gain in polytechnic graduates.

Nationally speaking, over one quarter of all polytechnic graduates settle in Uusimaa. Generalizing from the breakdown by polytechnic, we may observe that, of those completing a degree at a polytechnic outside Uusimaa, about one in five eventually settle there (in Uusimaa). The comparable figure for polytechnics in Uusimaa is 90%. The sector-specific breakdown shows that particularly those who complete a degree in business and administration settle in Uusimaa. The highest incidence of graduates settling in the region where their polytechnic is located is in the health care and social services sector, regardless of whether the graduates actually find jobs there.

Table 20. Placement of polytechnic graduates (1995-1999) at the end of 1999

<table>
<thead>
<tr>
<th>Total polytechnic graduates</th>
<th>Employed Employee</th>
<th>Unemployed</th>
<th>Student</th>
</tr>
</thead>
<tbody>
<tr>
<td>No.</td>
<td>%</td>
<td>No.</td>
<td>%</td>
</tr>
<tr>
<td>Uusimaa</td>
<td>7344</td>
<td>26.9</td>
<td>6315</td>
</tr>
<tr>
<td>Southwest Finland</td>
<td>1382</td>
<td>5.1</td>
<td>1042</td>
</tr>
<tr>
<td>Satakunta</td>
<td>1380</td>
<td>5.0</td>
<td>950</td>
</tr>
<tr>
<td>Häme</td>
<td>677</td>
<td>2.5</td>
<td>529</td>
</tr>
<tr>
<td>Tampere Region</td>
<td>2197</td>
<td>8.0</td>
<td>1723</td>
</tr>
<tr>
<td>Päijät-Häme</td>
<td>1344</td>
<td>4.9</td>
<td>981</td>
</tr>
<tr>
<td>Kymenlaakso</td>
<td>801</td>
<td>2.9</td>
<td>571</td>
</tr>
<tr>
<td>South Karjala</td>
<td>649</td>
<td>2.4</td>
<td>458</td>
</tr>
<tr>
<td>Southern Savo</td>
<td>725</td>
<td>2.7</td>
<td>510</td>
</tr>
<tr>
<td>Northern Savo</td>
<td>1421</td>
<td>5.2</td>
<td>976</td>
</tr>
<tr>
<td>North Karjala</td>
<td>1050</td>
<td>3.8</td>
<td>682</td>
</tr>
<tr>
<td>Central Finland</td>
<td>1106</td>
<td>4.0</td>
<td>777</td>
</tr>
<tr>
<td>Southern Ostrobothnia</td>
<td>1202</td>
<td>4.4</td>
<td>785</td>
</tr>
<tr>
<td>Ostrobothnia</td>
<td>790</td>
<td>2.9</td>
<td>589</td>
</tr>
<tr>
<td>Central Ostrobothnia</td>
<td>434</td>
<td>1.6</td>
<td>255</td>
</tr>
<tr>
<td>Northern Ostrobothnia</td>
<td>2642</td>
<td>9.7</td>
<td>1843</td>
</tr>
<tr>
<td>Kainuu</td>
<td>600</td>
<td>2.2</td>
<td>356</td>
</tr>
<tr>
<td>Lapland</td>
<td>876</td>
<td>3.2</td>
<td>508</td>
</tr>
<tr>
<td>Eastern Uusimaa</td>
<td>231</td>
<td>0.8</td>
<td>189</td>
</tr>
<tr>
<td>Åland</td>
<td>25</td>
<td>0.1</td>
<td>17</td>
</tr>
<tr>
<td>Not known</td>
<td>452</td>
<td>1.7</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>27328</td>
<td>100.0</td>
<td>20056</td>
</tr>
</tbody>
</table>
The sector-specific placement breakdown shows whether the educational provision of a polytechnic corresponds to the needs of trade and industry and of the labour market in its region. If polytechnic graduates in all sectors settle and find employment in the region where the polytechnic is located, the polytechnic may be considered to meet the labour market needs of the region well. However, if a considerable proportion of graduates in a particular sector move to other region or remain unemployed, the question of the appropriateness of the polytechnic’s educational provision to the needs of the region presents itself.

Figure 30. Placement of polytechnic graduates (1995-1999) at the end of 1999 by region

Polytechnics and their respective regions can be grouped according to student flow. Several such groupings have been proposed, one being as follows:

- Self-sufficient (e.g. Uusimaa and Northern Ostrobothnia)
  Many students from the region, and graduates generally find employment in the region itself.

- Labour recruiters (e.g. Tampere Region and Central Finland)
  The number of graduates finding employment in the region is larger than the number of starters from that region.

- Labour donors (e.g. Southern Ostrobothnia)
  Students come from the same region but find employment elsewhere.
- Trainers (e.g. Häme, Southern Savo)

Many students come from outside the region, and graduates find employment elsewhere.

Future challenges for polytechnics relate particularly to regional development. The significance of polytechnics is increasing as attempts are made to encourage growth spurts in areas outside the Helsinki metropolitan area. One particular government measure for the near future is to increase the number of growth centres of various sizes. Tangible measures related to this are highly likely to impinge on the domain of the polytechnics. Polytechnics cooperate actively with business, and the aim is to encourage focus on this approach in the future too. Enhancing R&D to cater to the labour market in the polytechnics’ respective regions will also be important. The aim of polytechnics is to become an important component in the regional innovation system. Their role as actors in regional development has strengthened, but is still not consolidated. In some sectors, this work is only beginning. Achieving regional impact requires cooperation between polytechnics as well as between universities and polytechnics.

6.2. CONTACTS WITH WORKING LIFE

Polytechnics are, more than universities, oriented towards practical working life and closely connected with their respective regions and regional development prospects. In the Government’s education and research development plan this is expressed as follows: “Polytechnics should strengthen their links with working life and their competence in workplace development, especially as regards the needs of SMEs and regional development. Polytechnics should also promote R&D in cooperation with working life. Universities should focus on scientific basic research, scientific researcher training and basic teaching.” Thus, the basis for development of polytechnics’ teaching and other community service functions is closely connected with the working life of the region and its development.

The central principle in teaching leading to degrees is to enhance students’ connection with working life gradually as their studies progress. This, along with other cooperation with working life, has been promoted in a number of ways. However, the responsibility for the teaching and its development lies primarily with each polytechnic.

The target and performance agreements between the Ministry of
Education and the polytechnics feature ‘Relations and research & development with working life’ as a point focusing on the improvement of this area individually at each polytechnic.

Polytechnics have sectoral advisory committees which discuss issues related to curricula, arrangement of teaching and other cooperation with working life. In addition to participation in these formal bodies, representatives of working life have various other opportunities for influencing the work of a polytechnic.

Polytechnics and the different sectors within them are at widely varying stages of development as regards cooperation with working life. At the simplest level, relations involve practical training placements, finding subjects for diploma projects and giving feedback on teaching and its development. At a deeper level, cooperation includes international cooperation, project-oriented diploma projects, exploitation of the competence of both parties (personnel training, teachers from businesses, etc.), systematic business services, increased assessment and feedback cooperation, and minor joint projects in R&D. At the deepest level of all, cooperation involves polytechnics and businesses sharing premises and equipment, concluding agreements on sub-contracting or partnership projects, engaging in extensive coordinated international projects, involving the polytechnic continuously in the internal competence development of companies, and pursuing continuous R&D.

6.2.1. RESPONSE TO THE NEEDS OF THE SME SECTOR

Although Finland has been able to make good use of the globalization trend in economies and technology, retaining existing development potential requires increased investment in competence and its use. Companies are increasingly moving towards locations where high-quality knowledge and competence are available.

The lack of competence in demanding expert and management positions in emerging companies is, in many cases, an outright obstacle to business growth, according to studies conducted by Suomen Yrittäjät ry. Only 20% of Finnish SMEs can be described as growth-oriented. The lack of high-level knowledge in the management and development of SMEs is seen as a major problem in business growth. The number of people trained by universities is considered to be inadequate in view of the future needs of
SMEs. The demand for highly educated personnel is also growing because of the constant increase in the contribution made by SMEs to turnover and employment in the private sector. Polytechnics thus have an essential role in increasing competence in SMEs and creating development potential.

Because the polytechnics form a comprehensive network, they can fulfil the needs of the SME sector in their respective regions. Producing skilled labour for SMEs in areas outside growth centres is a particular challenge for polytechnics.

6.2.2. DIPLOMA PROJECTS

In general, the aim is as far as possible to conduct diploma projects in cooperation with industry and business, and to ensure that they relate to actual development challenges in working life. The target and performance agreements between the Ministry of Education and the polytechnics incorporate targets up to 2000 regarding the proportion of working-life-oriented diploma projects in the total number. It was therefore not considered necessary to enter a similar target in the most recent target and result agreements. A new item entered for monitoring in the AMKOTA database is the project-oriented diploma project. The purpose here is to promote diploma projects with a broader orientation towards working life. A ‘project-oriented diploma project’ is one that fulfils one of the following criteria: 1) industry or business pays either the polytechnic or the student for doing the project; 2) a representative of working life is appointed to supervise the project; 3) a workplace community is intended from the start to make use of the results of the project in its own activities, and this is agreed before the diploma project begins. The first data on the proportion of such diploma projects in the total number are available for 2000.
Table 21. Polytechnic diploma projects by sector in 2000

<table>
<thead>
<tr>
<th>Sector</th>
<th>Total</th>
<th>Project-oriented</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>11 936</td>
<td>8 221</td>
</tr>
<tr>
<td>Natural resources</td>
<td>515</td>
<td>399</td>
</tr>
<tr>
<td>Technology and communications</td>
<td>3 596</td>
<td>3 402</td>
</tr>
<tr>
<td>Business and administration</td>
<td>3 472</td>
<td>2 373</td>
</tr>
<tr>
<td>Tourism, catering and institutional management</td>
<td>414</td>
<td>278</td>
</tr>
<tr>
<td>Health care and social services</td>
<td>3 163</td>
<td>1 322</td>
</tr>
<tr>
<td>Culture</td>
<td>712</td>
<td>413</td>
</tr>
<tr>
<td>Humanities and education</td>
<td>64</td>
<td>34</td>
</tr>
</tbody>
</table>

6.2.3. PRACTICAL TRAINING AND CAREER AND RECRUITMENT SERVICES

All polytechnic degree programmes include practical training worth 20 to 50 credits and a thesis usually worth 10 credits. Development of the practical training included in the degrees has been discussed particularly extensively. Training practices vary greatly between sectors. In some cases, the training is not considered to provide enough new content. Many polytechnics are therefore giving special attention to improving supervision of practical training.

In addition to unit price funding, the Ministry of Education has granted polytechnics extra funding through the target and result agreements in order to develop their career and recruitment services, among other things. A total of EUR 790,000 will, however, be used for this purpose in 2001. Also, the polytechnics have undertaken to increase their basic funding for this purpose by the same amount.

6.3. R&D AT POLYTECHNICS

In recent years, R&D has been one of the main areas of focus in the development of polytechnics. The institutions that were the predecessors of the polytechnics rarely did anything that could be described as R&D. On the other hand, some of them had a strong tradition of cooperation with business, including selling training services to companies and providing other business services.
The government education and research development plan for 1999-2004 includes the following target: “The capacity of polytechnics for producing new knowledge about working life, professional expertise and its development will be improved. To this end, measures will be taken to develop professional postgraduate degrees and applied R&D jointly undertaken with business and industry. The increase in R&D will be especially geared to promoting regional development, supporting the SME sector and developing welfare services.”

In 1999, EUR 3.89 billion was spent on R&D in Finland; this is equivalent to 3.2% of GDP. Research expenditure amounted to EUR 0.7 billion at universities and EUR 27 million at polytechnics. The percentage of outside funding was 48% at universities and 73% at polytechnics. The total number of research personnel at higher education institutions was about 20,000, of which 470 were employed at polytechnics.

By the end of 1999, all polytechnics had drawn up an R&D strategy of their own, on funding from the Ministry of Education. Subsequently, most polytechnics have reorganized this function. In 2001, the Ministry of Education for the first time allocated a total of EUR 5 million in funding to polytechnics to create a basic R&D framework. Furthermore, in the target and performance agreements the polytechnics and their maintaining bodies undertook to increase their own funding allocations to R&D by a total of EUR 3.4 million. The Ministry of Education will be increasing basic R&D funding for 2002 by a further EUR 0.8 million, and the polytechnics have likewise undertaken to increase their own funding. The Ministry of Education funding is intended to lay the foundation for R&D; the funding for actual research must be found from other public and private sources. R&D at polytechnics is now experiencing a period of strong growth.

R&D at polytechnics is applied R&D based on the actual needs of working life. It focuses on practical issues in working life and aims to promote regional development, particularly by promoting and reinforcing SMEs and welfare services. The practical goals include creating new or improved products, production tools or methods and services.

On the other hand, R&D forms an important basis for improving the competence of polytechnics and thus part of the knowledge being taught. R&D also supports the study process by providing opportunities for examining phenomena in the relevant sector. R&D is a component of the
service aspect of polytechnics; its results benefit the immediate vicinity of the polytechnic and, more generally, society as a whole.

In R&D, polytechnics focus not only on new SMEs but also on traditional ones that pursue little or no R&D of their own. Extending innovation and the principles and practice of R&D to this rather large group of companies is an important challenge for polytechnics. Problems found in the SME sector are different from the problems and development needs of large companies. Polytechnics may provide expert help in addressing these problems and help develop the business of SMEs.

The regional aspect is a central feature of R&D at polytechnics, the main aim being to serve the region in which an individual polytechnic is located. In most cases, the objectives of R&D at polytechnics have been linked to regional objectives, with an emphasis on supporting industrial SMEs and service production.

Multi-skilling is also considered a resource and strength of R&D at polytechnics. As examples we might mention the production of welfare services, cultural services and various technology productization and commercialization projects.

R&D is usually organized at the degree programme level at polytechnics.

Cooperation and networking related to R&D at polytechnics are only just emerging, which is why the focus is now on creating a network that would make the best possible use of the results of R&D at polytechnics and coordinate the work of universities and polytechnics on the regional and national levels.
VII DEVELOPMENT TRENDS AND CHALLENGES

7.1 GLOBALISATION: HOW TO ENHANCE THE COMPETITIVENESS OF FINNISH HIGHER EDUCATION

With rapid globalization, progressive European integration, and the advance of information and communications technology, national education systems are now facing a wholly new competitive situation in Europe and elsewhere.

International producers of education services, both commercial and non-commercial, are challenging national institutions. The international supply of education may be expected to expand considerably in future years as the volume of online teaching increases and its quality further improves.

Finland’s extensive and geographically comprehensive network of higher education institutions is a competitive provider of education to Finnish young people and adults. The absence of tuition fees, the good infrastructure and the reliably uniform high quality have ensured the continued interest of students, despite the increasing range of foreign study options available.

Ensuring the quality of Finnish education and its international competitiveness will be vital in the near future in order to prevent a brain drain of talented students and scientists from Finland.

Thanks to decisive policy and changes in the operating environment, Finnish higher education has become internationalized rapidly. Student exchange numbers have increased sharply beginning in the 1990s, thanks particularly to major EU programmes. International R&D cooperation has also increased and expanded into new fields. Still, in international comparison the Finnish higher education is seen as a rather closed system. Number of foreign students is still low.

Finland has stressed the need to further cooperation and interaction in its internationalization of education policy, and the aim of international operations is primarily to improve the quality of education and broaden its range. International cooperation has also been used to enhance the international skills of Finnish students and researchers, including their language and cultural skills.

Rapid shifts in the labour market mean Finland has to compete for
the availability of foreign labour along with other industrialized countries. The situation is particularly challenging for Finland in a number of respects. Although awareness of Finland has increased considerably with our membership of the EU, the country is still not very well known outside Europe.

One way of bringing foreign labour into the country is to increase the provision of education for foreign degree students and to provide them with the opportunity to get a job in Finland after completing their degree, at least for a fixed period. This new approach requires more determined PR for Finnish competence, to make it better known and more attractive in Europe and beyond. In practice, this requires the creation of a specific marketing strategy for higher education and research, creating generally accepted national principles for succeeding on the global education and labour market.

This strategy must be based on the principle of maintaining the high quality of teaching and research, allowing the results to speak for themselves. It should be possible to market Finnish education worldwide, although we should have carefully selected target areas in which we aim to raise awareness. Finland should also identify the sectors in which we can offer special expertise, and this expertise must be commercialized, at least in part.

On the one hand, the potential of Finnish higher education institutions for offering education to international students in Finland should be increased. This requires more and better teaching in English. On the other hand, Finnish higher education should in some respects be developed so that it can be provided elsewhere too, either virtually or by traditional means. How all this fits into the national principle of providing education free of charge must, of course, be very carefully considered.

Finland cannot remain passive, waiting to see what its competitors do, or looking on as foreign organizations increase their supply in Finland; our higher education system must be adapted to the changing market situation.
At the national and regional levels, international economic and technological developments have a strong impact on business and industry structures, company business models and the demands for competence made of employees and of society as a whole. This development is being guided and its new potential exploited through innovation policy, i.e. broad, determined development of the resources of innovation across sectoral boundaries. A functional and efficient national innovation system and regional systems are becoming increasingly important in the generation of economic growth and welfare.

Finland has all the potential for exploiting present trends. The economic outlook remains good, employment is improving, and unemployment has decreased. Investment in R&D has increased considerably, particularly in the private sector. Government has launched several measures to keep the public-sector education and research system up to speed with the changes going on in society.

The public research investments implemented in the late 1990s were well aimed and productive for the economy, employment and business. The aim is to continue this trend. New, complementary and well-aimed development measures will ensure the competitiveness of our national innovation system in the future, too.

Competence development is seen as the main tool for influencing the development of the regions. Investments in competence can be seen to have a positive impact on regional employment, development of the business and industry structure, reinforcement of regional economies and other indirect social and cultural knock-on effects. The fact that society is becoming more open and more globalized means that the success of the regions is increasingly dependent on their position amid international competition. Success here requires investment in quality and a smooth innovation-to-product chain.

New innovations emerge from a foundation of broad high-quality basic research, the main responsibility for which lies with universities and research centres. Ensuring the quality of basic research requires sufficient resources and international cooperation among universities. Units undertaking
university-level research must be sufficiently large and diversified if they are to do successful research. The polytechnics have a natural role in innovation alongside the universities, complementing them particularly in the area of applied research. Finnish higher education policy makes regional development a particular responsibility of the polytechnics. It is also important to take education in entrepreneurship skills from the SME point of view sufficiently into account in education and research. The polytechnics have a central role in improving SME operations and entrepreneurship.

Basic research, new innovations and their productization require the creation of expertise networks involving other regional actors. Universities and polytechnics must increasingly network with trade and industry partners and other actors in their respective regions. From the national point of view, it is also important that regions profile themselves on the basis of their respective strengths.

Finding new growth sectors is a major factor in innovation. At the moment, the transfer of technology and other expertise and the development of business competence are seen as important features in regional development. In the future, growth development will focus on ‘substance fields’ and content production, where technology and business competence have a complementary role to play. To succeed in the future, something beyond IT and biotechnology must be found, so the courage to put venture capital into R&D is needed.

R&D is a rapidly developing field at polytechnics. Unlike universities, they have no tradition in this field, however. They also do not yet have established monitoring, quality control or funding systems.

7.3. RESPONSE TO THE FUTURE NEEDS OF THE LABOUR MARKET

Finland’s social and industrial policy rests on the principle that knowledge and expertise are the basis of economic competitiveness and the welfare of society as a whole. Finland can only be a success through high-quality education and research, innovative expertise and the use of up-to-date information and communications technology.

Globalization and the ‘new economy’, which might be described as an economy of expertise, highlight these principles and make increasingly high demands of education, research and development of the innovation system.
Raising the level of the population’s education in general and that of the labour force in particular must continue. Higher education plays a vital role in this, but alone it is not sufficient; attention must also be paid to general education, secondary-level general and vocational education, and adult education.

As early as 1995, the Finnish Government set the goal of scaling the number of new places in higher education to correspond to 60% to 65% of each new age group. At the moment, the supply corresponds to about 65%. If we estimate that 80% of all students complete their education, we find that about half (52%) of each age group will complete a higher education degree with this level of provision. However, this result will not be achieved until about 2005.

Studies conducted by Finnish industry concerning the demand for new labour in the present situation also demonstrate that new recruits consist of roughly equal numbers of those with secondary-level post-comprehensive vocational qualifications, on the one hand, and those with university or polytechnic degrees, on the other. At the moment (1999), the exact proportion is 52% vocational qualifications and 48% tertiary-level. The latter figure does not directly equate with actual higher education degrees, because it also includes higher vocational qualifications not transferred to the higher education system due to the transition period in introducing the polytechnics.

Expansion of higher education provision from its present volume may become necessary quite soon. As age groups become smaller, the strategic significance of young labour — crucial for the economy — will increase, and more must be invested in safeguarding their education level.

The evolution of the business and industry structure and changes in production and working methods call for a rise in the overall level of education. Jobs in the service sector, the information industry, other high-tech fields and the culture industry are increasing. This trend, which is already visible in the Helsinki area, will spread in stages to all regions, considering the emphasis on the balanced development of all regions in the country. Increasing expectations are focused on improving the quality of services. As the population ages, this applies particularly to welfare services.

Finland has considerable scope for improving the application of new information and communications technology and business expertise, which
in turn faces all higher education with new challenges. The roll of R&D-oriented knowledge-based work is increasing in all sectors, and this requires not only a rise in the general level of education but reinforcement of the position of R&D at polytechnics in particular. Post-graduate polytechnic degrees will probably play a significant role in achieving these goals.

An education system with high-level quality goals dovetails excellently with Finland’s social and industry policy development strategy. In view of the demands of today, the population and the labour force should be appropriately overeducated if we are to ensure the availability of resources for meeting new challenges and adapting to constant change. There should always be something in reserve.

In view of the new needs of society and working life and new opportunities — such as the virtual university — it is not difficult to envision a future where education policy can be summarized as “tertiary education for all”, though without meaning that everyone should complete a degree.

7.4. STRUCTURE OF THE HIGHER EDUCATION SYSTEM

Finnish higher education policy is based on the widely accepted principle of two mutually complementary sectors. It has been considered self-evident that the demands of working life have developed and are developing in a way that justifies the provision of professional higher education. This policy is also supported by the fact that it has not been considered appropriate to encumber universities with an even greater training burden.

Diversification of higher education has been one of the most important goals of polytechnic reform. Another significant factor behind the reform has been the need to improve the international comparability of Finnish education. This, it was considered, would make the international mobility of students and researchers easier, and enable graduates to find jobs on the international labour market, particularly in Europe.

This goal has been well achieved: Finnish polytechnic graduates have had no problem in going on to study or work abroad. By contrast, graduates from the former post-secondary vocational colleges often experienced major difficulties in international mobility.

A reform of university degrees was carried out in parallel with the polytechnic reform. Three-year lower university degrees (Bachelor) were
introduced in nearly all sectors around the middle of the ‘90s. This generated considerable debate immediately, since it was considered that graduates with university Bachelor degrees and graduates with polytechnic degrees would be competing for the same jobs. On the other hand, reform of the university degree system was considered necessary because of internal problems in the system, on the one hand, and greater international comparability on the other. In the past, Finnish university graduates had had difficulty in getting their first degree accepted as equivalent to a Master’s degree when studying or working abroad.

Now that significant numbers of polytechnic graduates are already in the labour market, an assessment of the functionality of the entire higher education degree structure may be undertaken. As was observed earlier, polytechnic graduates have been successful in finding employment. At university, it is not compulsory to take a Bachelor’s degree; in most fields, students are accepted directly into a Master’s degree programme. Consequently, neither students nor universities see the Bachelor’s degree as a ‘real’ degree, and few students actually take it, at least within the time or on the scale intended. Thus, the fact that both higher education sectors offer degrees at the same level has not been seen as a problem in the labour market.

The Ministry of Education wishes to strengthen the status of the university Bachelor’s degree. In practice, this means that the Government would like to reduce the number of students leaving university without any degree at all. On the other hand, the Government has also stressed the need to develop cross-disciplinary Master’s degrees to meet the needs of working life. The underlying principle here is that a degree structure incorporating two ‘cycles’ allows more flexibility and also enables students to combine work with study better than at present. Still, the main goal remains for the majority of university students to complete a Master’s degree before entering the labour market.

Experiences at the polytechnics have led the Ministry of Education to assess that strengthening the status of the university Bachelor degree does not conflict with developing the polytechnics. The basic task of the polytechnics was and is to prepare students primarily to enter the labour market immediately after graduation. Ultimately, there are only a few fields in which the binary model might be a problem — business and administration,
and technology in principle — since elsewhere the educational and career structure are clearly diversified. In practice, however, there is not likely to be a problem in business or technology either, since in these fields university students aim primarily to complete a Master’s degree, and the Bachelor’s degree is seen only as an intermediate stage.

The educational responsibility of polytechnics in their own area of expertise has been further strengthened by the new arrangement for postgraduate studies at polytechnics. It is evident that there is a demand on the labour market for holders of professional post-graduate degrees. The Finnish polytechnic post-graduate model is special also in the sense that it is clearly intended for adults who already have a career, and in this sense it does not aim to duplicate the university degree structure. This approach is expected to reinforce the identity of the polytechnics and the difference between their expertise and that of the universities, helping to further profile the two sectors.

No clear status has yet been defined in the national degree system for polytechnic post-graduate degrees. This is may be a problem not only on the national level but internationally too. It remains to be seen whether polytechnic post-graduate degrees will become a competitive path for students if the formal further qualification they represent is not unambiguously recognized. This is an obvious problem in competing for international students.

So far, the aim has been to keep these two higher education sectors rather strictly apart in Finnish higher education policy. Cooperation between universities and polytechnics has been taking shape, and potential has been found for feasible extensive regional education cooperation. What is problematic is that there is no clear national policy, for instance regarding the recognition of prior studies and degrees within higher education.

Movement between polytechnics and universities has been slight so far. From the point of view of the feasible use of resources, it would be desirable to reach a situation where earlier studies would be accepted for inclusion in a new degree to as full an extent as possible. A national policy on recognition of credits should exist to safeguard students’ legal rights.

However, maximum acceptance of credits should not lead to any merging of education content: one-to-one correspondence is not the aim. In the present system, where polytechnics cannot provide a competitive
alternative to the Master’s degree programmes of the universities, there is a
danger that polytechnic basic degrees may be taken too far towards the
university Bachelor’s degree in the hope of ensuring that students have
the capability to pursue further studies. On the other hand, there is also a
danger that university Master’s degree programmes may become too
professionally oriented if a large share of students enter them from the
polytechnics.

Internationally, the trend seems to be towards eliminating administrative
and other formal differences between higher education sectors or different
higher education degree programmes. Finland must, in order to maintain
competitiveness, monitor trends in higher education structures closely,
particularly in Europe. A more flexible system might be appropriate in Fin-
land, too. Different regions have different needs, and it is difficult to pinpoint
a single model for university-polytechnic cooperation that would be
appropriate for everywhere in the country; the system should in and of
itself allow for a variety of approaches.

7.5. LEGISLATION

According to the Government Programme, the legislation on polytechnics
will be revised during the term of the current Government. The aim is for
the Government to submit a bill for new polytechnic legislation to Parliament
during the autumn session, 2002. The education and research development
plan for 1999-2004 notes that the legislation will be revised with regard to
the international evaluation to be made of the polytechnic reform.

The development plan states that the polytechnics will be developed
as a part of the international higher education community, emphasizing
their role as high-quality experts in working life and its development.
Autonomy and democracy at polytechnics will be enhanced, and steering
procedures reduced.

The existing Polytechnics Act was approved in 1995, and was the
foundation for the polytechnic reform. However, the stronger status of the
polytechnics and clarification of their functions and practices have created
a need for new legislation.

The university legislation was revised and came into effect in August
1998. It has been considered justified in Finland for these two sectors to be
governed by separate legislation partly to highlight their different profiles
but also to ensure a difference in the way that universities, on the one hand, and polytechnics, on the other, are maintained. Nevertheless, it is important that the new polytechnic legislation be prepared with reference to the context of the university legislation.

A working group on revision of the polytechnic legislation was set up in autumn 2001. This work will have to address several key issues in the operation of polytechnics. When the current Act was being prepared, there was much discussion about its basis: was it only to address the provision of education or also to describe the polytechnic as an institution. Both these aspects are in fact incorporated in the Act, although it does not lay down provisions on the mission of the polytechnics. Now that the polytechnics have become more established and are increasingly taking on external functions, their mission will have to be defined in the new Act.

The new legislation will have provisions on the basis for studies and degrees, with regard to prior development, including the current experiments with polytechnic post-graduate degrees. The development of European and international degree structures must also be taken into account. The growing contribution of the polytechnics to R&D, regional development and teacher training requires a clearer definition of these functions. In 1995, there were considerable reservations about the role of polytechnics in R&D, for instance; now, R&D is seen as a basic function, and polytechnics are considered key actors in the regional innovation system.

The new legislation needs to address the steering of polytechnics, particularly as regards other than statutory control. The target and performance negotiations between the Ministry of Education and the polytechnics have emerged as a major steering tool, though the procedure is not provided for in the current legislation. This steering structure has been modified through a move to three-year target and performance agreements, although the provision of education and resources are still agreed on annually. From the Ministry’s point of view, the target and performance agreement procedure is a significant tool in governing higher education policy. It also offers an opportunity for regular dialogue and operative assessment with each individual polytechnic. The municipalities spokesmen, however, take the view that, in the Finnish context, this level of polytechnic steering, as practiced by the Ministry, is too prescriptive and argues that local authorities should themselves control the polytechnics. In
order to clarify the situation, the Ministry of Education would like to see the steering system to be outlined more clearly in the future legislation.

The current legislation includes rather broadly defined provisions regarding the administration of polytechnics. The body maintaining a polytechnic has considerable latitude in organizing its administration. When the legislation is revised, it is important to consider the relationship between and functions of the maintaining body’s administration and the autonomous administration of the polytechnic. The aim is to ensure that the new legislation strengthens the autonomy of polytechnics, democracy and the status of students.

The new legislation should also include clearer provisions on polytechnic adult education.

The polytechnic funding system is being overhauled. This work must be feasibly linked to the new polytechnic legislation package to increase its transparency in relation to university funding, among other things.
Tässä sarjassa ovat aiemmin ilmestyneet:

1 The Academy of Finland, An International Evaluation 1992
2 Suomen biotekniikan ja molekyylibiolgin
ekhiittämisohjelma 1994-1996
3 Luonnontieteiden koulutuksen
arviointi Luonnontieteiden
koulutuksen arviointityöryhmän
loppuraportti
4 Comet Evaluation in Finland
A National Evaluation for the
Comet Info Centre Finland
5 Aika, paikka ja hinta, Avoin
opintojärjestelmä yliopiston
perusopetuksen
toimeenpanijana
6 Taulukoita
KOTA-tietokannasta 1992
Tunnuslukija 1992
7 KOTA 1992
8 Korkeakoulujen sisäisen
hallinnon kehittäminen
Selvitysmiehen raportti 1993
9 Evaluation of the University
of Jyväskylä Report of External
Visiting Group
10 Taustaraportti
korkeakoululropolitiikan
maatutkimaa varten
11 Evaluation of the University
of Oulu Report of External
Visiting Group
12 Kadonnutta imperiumia
etsimää Hallintotieteiden
koulutusalan arviointi
13 Taulukoita KOTA-
tietokannasta 1993
Tunnuslukija 1993
14 Educational Studies and
Teacher Education in Finnish
Universities 1994
15 A, B ja C koulutusyksiköistä
osaamisverkostoihin
Korkeakoulujen
äydenyksikoulutuskeskusten
muutoksesta
16 Kasvatusala kohti
tulevaisuutta Kasvatus-
tieteellisen alan tutkintojen
arviointi- ja kehittämisprojektin
loppuraportti
17 Kouluussetelit
korkeakouluisia Opiskelijan
asemaa korkeakoulujen
rahoituksessa
18 Kaupallinen ja
kauppatieteellinen koulutus
19 Opinto-oikeus, liikkuvuus,
koulutuspaikkojen käytö ja
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tietokannasta 1994
Tunnuslukija 1994
28 Evaluation of the University
of Vaasa Report of External
Visiting Group
29 Tampereen yliopiston
opetuksen arviointi
30 Korkeakoulujen
kustannuslaskennan
kehittäminen-jatkokontakti
31 Utvärdering av Lapplands
universitet
32 Evaluation of the Sibelius
Academy
33 Ammattien kielet ja kielen
ammatit
34 Korkeakoulujen
opiskelijavalinnat
35 Tohtorikoulusta tutkijaksi
36 Taulukoita KOTA-
tietokannasta 1995
37 Evaluation of
Undergraduate Medical
Education
38 Suomalaisten matematiikan
ja luonnontieteiden
osaamisen
vuonna 2002
Finländarnas skraper i
matematik och
naturvetenskaper år 2002
Finnish Know-how in
Mathematics and Natural
Sciences in 2002
39 Yhteistyötä
tietohallintos-
strategioiden kautta
40 Korkeakoulujen
kustannuslaskentakokeellisu
41 Suomi kansainvälistyy
- kielen opetus vastaa
haasteeseen
42 Suomi eurooppalaisessa
kielityöesittäessä
43 Mielekkyyttä
epävarmuuteen
opiskelun ja ansioityön
vaoroaikutuksella
44 Taulukoita KOTA-
tietokannasta 1996
Tabeller
från KOTA-
databasen 1996
45 KOTA The Database on
University Sector Statistics
1996
46 Opiskelija-asuntojen
muutototervelasket
muutokset
1997–2006
88 AMK-kirjastojen laadullisesta arvioinnista
Mittareita ja mietintää

89 Education for sustainable development in Finland

90 Koulutustoimikuntien katsaukset

91 Työssä oppimisen laatukäsitteitä

92 Suomen aikuiskoulutuspolitiikan teematutkinta

Katsaus suomalaiseen aikuiskoulutukseen ja OECD:n arviointiraportti