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VOCATIONAL EDUCATION AND TRAINING

Kristina Wiemann

Mexico

UNIVERSITÄT OSNABRÜCK

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Philipp Grollmann, Dietmar Frommberger, Ute Clement,
Thomas Deißinger, Uwe Lauterbach, Matthias Pilz, Georg Spöttl (eds.)

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Editorial

Mexico is firmly embedded within the North American Economic Area whilst also displaying a separate Central American culture. This makes it a bridge between the Anglo-Saxon-influenced countries in North America and the Latin countries in the south of the continent. Mexico is also an important trading partner for German and European companies, which have been investing and manufacturing there for a considerable period of time. In strategic terms, Mexico is seeking to expand the export orientation of its economy. Achievement of this objective is, however, being impeded by an issue which has been identified on a recurring basis – a shortage of skilled workers.

As a result, vocational education and training is a particular object of policy attention in Mexico. The promotion of vocational education and training is firmly established at a high political level in various documents. One example of the kind of initiative being pursued is a project aimed at the introduction of a dual Mexican training model [Modelo Mexicano de Formación Dual, MMFD] launched in 2013. It will be interesting to observe the further development of this model.

No detailed and systematic publication dealing with vocational education and training in Mexico which is similar in form to the present country study currently exists. This country study thus provides a basis for gaining familiarisation with vocational education and training and for the classification of present reform projects.

Bonn, Osnabrück, Bremen, Frankfurt am Main, Kassel, Cologne and Konstanz
On behalf of the editors
Philipp Grollmann and Dietmar Frommberger

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Basic data [2016]

United Mexican States/Estados Unidos Mexicanos/MX

Area [km²]			1,943,950
Population density [inhabitants/km²]			65.6
Population [millions]			127.5[1]
of which foreign nationals [in %]			0.9[2]
Age [proportion of total population] [in %]			27.3
0 – 14 years			17.7
15 – 24 years			40.7
55 – 64 years			7.4
Aged 65 and older			6.9[3]
Working age population [population aged 15 and older] [in %]			
	Total	m	f
Total [in % of the age group]	57.4	74.7	41.7
15–24 years	40.8	53.1	28.5
25–54 years	71.2	91.1	53.6
55–64 years	55.0	75.8	37.1
Aged 65 and older	27.1	41.5	15.0
Unemployed persons [population aged 15 and older] [in %]			
	Total	m	f
Total [in % of the age group]	3.9	3.9	3.9
15–24 years	7.7	7.2	8.8
25–54 years	3.4	3.4	3.4
55–64 years	2.1	2.5	2.5
Aged 65 and older	1.0	1.3	0.3[4]
Literacy rate [2015] [population aged 15 and older] [in %][5]			
	Total	m	f
Total [in % of the age group]			
15–24 years	98.94	98.87	99.01
Aged 15 and older	94.47	95.55	93.49
Aged 65 and older	77.03	81.58	73.14

1 Source: The World Bank (year of publication not stated).

2 This figure relates to persons born abroad. Source: Federal Statistical Office (Destatis) (2017) with values from the World Bank Indicator.

3 Estimate or forecast, source: Germany Trade and Invest GmbH (GTAI) (2017b).

4 Source: International Labour Organization (ILO) (year of publication not stated).

5 Source: UNESCO Institute for Statistics (UIS) (year of publication not stated). Figures are stated to two decimal figures because of the small differences between the male and female population.

Main economic focuses [2016] [in %][6]

Sector	Labour demand [in %]	Gross added value [in % of GDP]
Primary/agriculture and forestry, fishery	13.5	3.8
Secondary/manufacturing industry	25.2	32.7
Tertiary/services	61.3	63.4

Economic output [2016][7]

Gross Domestic Product [in € billions]	993.9
Gross Domestic Product per capita [in €]	7,792.6

6 Source: The World Bank (year of publication not stated), rounding differences occur in the original in some cases.

7 Source: The World Bank (year of publication not stated), exchange rate as at 31/12/2016: 1 € = 1.0525 USD.

Index of abbreviations

Abbreviation	Original term in German or Spanish Translation into English
AA	Auswärtiges Amt German Federal Foreign Office
AEVO	Ausbildereignungsverordnung Ordinance on Trainer Aptitude
AHK	Auslandshandelskammer German Chamber of Commerce and Industry Abroad
AMEXCID	Agencia Mexicana de Cooperación Internacional para el Desarrollo Mexican Agency for International Development Cooperation
ANUIES	Asociación Nacional de Universidades e Instituciones de Educación Superior National Association of Universities and Institutions of Academic Education
ARMO	Servicio Nacional de Adiestramiento Rápido de la Mano de Obra en la Industria National Service for the Efficient Training of Workers in Industry
ASPA	Asociación de Pilotos Aviadores de México Pilots' Trade Union
BMBF	Bundesministerium für Bildung und Forschung German Federal Ministry of Education and Research
BMZ	Bundesministerium für wirtschaftliche Zusammenarbeit und Entwicklung German Federal Ministry for Economic Cooperation and Development
CAM	Centro de Atención Múltiple Institution in the special school system
CAMEXA	Cámara Mexicano-Alemana de Comercio e Industria German-Mexican Chamber of Commerce and Industry
CAN	Consejo Nacional Agropecuario National Agriculture Council
CANACINTRA	Cámara Nacional de la Industria de Transformación National Chamber of Manufacturing Industry

CAPEP	Centro de Atención Psicopedagógica de Educación Preescolar Centre for Psychopedagogical Support in Primary Education
CBTA	Centro de Bachillerato Tecnológico Agropecuario Centre for the Technical Upper Secondary School Leaving Certificate in Agriculture
CBTA	Centro de Bachillerato Tecnológico Agropecuario Centre for the Technical Upper Secondary School Leaving Certificate in Forestry
CBTIS	Centro de Bachillerato Tecnológico Industrial y Servicios Centre for the Technical Upper Secondary School Leaving Certificate in Industry and Services
CCE	Consejo Coordinador Empresarial Umbrella Organisation of the Employer Associations
CECATI	Centro de Capacitación para el Trabajo Industrial Training Centre for Industrial Work
CECyT	Centros de Estudios Científicos y Tecnológicos Centre for Scientific and Technical Education
CECyTE	Centro de Estudios Científicos y Tecnológicos Estatales Centre for Scientific and Technical Education of the Federal States
CEDUAL	Centro de Especialización Dual Training centre of the company Schuler in Puebla
CENAPRO	Centro Nacional de Productividad National Centre for Productivity
CENEVAL	Centro Nacional de Evaluación para la Educación Superior National Centre for the Evaluation of Higher Education
CEPAL	Comisión Económica para América Latina y el Caribe Economic Commission for Latin America and the Caribbean
CEPPEMS	Comités Estatales para la Planeación y Programación de la Educación Media Superior Federal State Commission for Planning and Programme Design in Upper Secondary Education
CERTIDEMS	Certificación de Competencias Docentes para la Educación Media Superior Certification of Teaching Competences for Upper Secondary Education
CET	Centro de Estudios Técnicos Centre for Technical Education

CET	Colegio de Estudios Tecnológicos College for Technological Studies
CETAC	Centro de Estudios Tecnológicos de Aguas Continental Centre for Technical Inland Waterways Studies
CETI	Centro de Enseñanza Técnica Industrial Centre for Technical Industrial Education
CETIS	Centro de Estudios Tecnológicos Industrial y de Servicios Centre for Technical Industrial Studies and Services
CETMAR	Centro Tecnológico del Mar Centre for Sea Studies
CG	Coordinación General Coordination Office
CGUTyP	Coordinación General de Universidades Tecnológicas y Politécnicas Coordination Office for Technological and Polytechnic Universities
CIA	Central Intelligence Agency (United States of America)
CIMO	Programa de Calidad Integral y Modernización Programme for Integral Quality and Modernisation
CINTERFOR	Centro Interamericano para el Desarrollo del Conocimiento en la Formación Profesional Inter-American Centre for Knowledge Development in Vocational Training
CNCTI	Conferencia Nacional de Ciencia, Tecnología e Innovación National Conference for Knowledge, Technology and Innovation
CNP	Comité Nacional de Productividad National Committee for Productivity
COEFD	Comité de la Opción Educativa de la Formación Dual de Tipo Medio Superior Committee of Dual Training as part of Upper Secondary Education
CONACYT	Consejo Nacional de Ciencia y Tecnología National Council for Science and Technology
CONAEDU-EMS	Consejo Nacional de Autoridades Educativas, Capítulo Educación Media Superior National Council of the Education Authorities for Upper Secondary Education
CONAFE	Consejo Nacional de Formento Educativo National Council for the Promotion of Education

CONALEP	Colegio Nacional de Educación Profesional Técnica National College for Technical Vocational Education and Training
CONAPASE	Consejo Nacional de Par ticipación Social en la Educación National Council for Social Participation in Education
CONCAMIN	Cámaras Industriales de los Estados Unidos Mexicanos Chambers of Industry of the United Mexican States
CONCANACO-SERVY TUR	Cámaras Nacionales de Comercio, Servicios y Turismo National Chambers of Commerce, the Service Sector and Tourism
CONEVAL	Consejo Nacional de Evaluación de la Política de Desarrollo Social National Council for the Evaluation of Social Development Policy
CONEVyT	Consejo Nacional de Educación para la Vida y el Trabajo National Council for Life and Work
CONOCER	Consejo Nacional de Normalización y Certificación de Competencias Laborales National Certification Body for Professional and Occupational Competences
COPAES	Consejo para la Acreditación de la Educación Superior Council for the Accreditation of Higher Education
COPARMEX	Confederación Patronal de la República Mexicana Mexican Employers' Association
COPEEMS	Consejo para la Evaluación de la Educación del Tipo Medio Superior Council for the Evaluation of Upper Secondary Education
COSDAC	Coordinación Sectorial de Desarrollo Académico Sectoral Coordination Body for Academic Development
CSES	Centro Sindical de Estudios Superiores Trade Union Centre for Higher Education
CTM	Confederación de Trabajadores Mexicanos Federation of Mexican Workers
DG	Dirección General General Directorate
DGAIR	Dirección General de Acreditación, Incorporación y Revalidación General Directorate for Accreditation, Credit Transfer and Revalidation
DGB	Dirección General del Bachillerato General Directorate for the General Upper Secondary Certificate

DGCAPLl	Dirección General de Capacitación, Adiestramiento y Productividad Laboral General Directorate for Vocational Education and Training and Labour Productivity
DGCFT	Dirección General de Centros de Formación para el Trabajo General Directorate of the Work Training Centres
DGECyTM	Dirección General de Educación en Ciencia y Tecnología del Mar General Directorate for Education in Marine Sciences and Technology
DGETA	Dirección General de Educación Tecnológica Agropecuaria General Directorate for Technical Agricultural Training
DGETI	Dirección General de Educación Tecnológica Industrial General Directorate for Technical Industrial Training
DIHK	Deutscher Industrie- und Handelskammertag Association of German Chambers of Commerce and Industry
DOF	Diario Oficial de la Federación Mexican Federal Law Gazette
ECODEMS	Evaluación de Competencias Docentes para la Educación Media Superior Evaluation of Competences of Teachers in Upper Secondary Education
ENLACE	Evaluación Nacional del Logro Académico en Centros Escolares National Assessment of Academic Achievement in Schools
ETH	Eidgenössische Technische Hochschule Swiss Federal Institute of Technology
EXCALE	Examen de la Calidad y el Logro Educativo Examination for Assessment of Educational Quality and Success
FAM	Programa de Formación de Agentes Multiplicadores Programme for the Training of Multipliers
FLACSO	Facultad Latinoamericano de Ciencias Sociales Latin American Faculty of Social Sciences
FONE	Fondo de Aportaciones de Nómina Educativa y Gasto Operativo Fund for Educational Policy Spending
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit German Agency for International Cooperation
GOVET	German Office for International Cooperation in Vocational Education and Training Central Office of the Federal Government

GTAI	Germany Trade and Invest GmbH Company for foreign trade and location marketing
ICAT	Instituto de Capacitación para el Trabajo Institute for Vocational Education and Training for Work
ICIA	Instituto de Capacitación de la Industria Azucarera Training Centre of the Sugar Industry
IDB	Inter-American Development Bank
IEEA	Instituto Estatal de Educación para Adultos Federal State Institute for Adult Education
ILO	International Labour Organization
IMSS	Instituto Mexicano del Seguro Social Mexican Institute for Social Security
INEA	Instituto Nacional para la Educación de los Adultos National Institute for Adult Education
INEE	Instituto Nacional para la Evaluación de la Educación National Institute for the Evaluation of Education
INEGI	Instituto Nacional de Estadística y Geografía National Institute for Statistics and Geography
IPN	Instituto Politécnico Nacional National Polytechnic Institute
ISCED	International Standard Classification of Education
ISSSTE	Instituto de Seguridad y Servicios Sociales de los Trabajadores del Estado Institute of Social Security and Social Benefits for State Employees
JA	Escuelas de jornada ampliada Schools offering extended teaching
JICA	Japan International Cooperation Agency Japanese government authority
KOPLAN	Kooperationsplattform Lateinamerika Nord North Latin American Cooperation Platform
LCED	Ley de Coordinación de la Educación Superior Law on the Coordination of Higher Education
LFT	Ley Federal del Trabajo Labour Act

LGE	Ley General de Educación Education Act
LGSPD	Ley General del Servicio Profesional Docente Law for School Services
LINEE	Ley del Instituto Nacional para la Evaluación de la Educación Law of the National Institute for the Evaluation of Education
MCC	Marco Curricular Común Joint Curricular Framework
MEVyT	Modelo de Educación para la Vida y el Trabajo Education Model for Life and Work
MMC	Marco Mexicano de Cualificaciones Mexican Qualifications Framework
MMFD	Modelo Mexicano de Formación Dual Mexican Model of Dual Vocational Education and Training
MT	Escuelas de medio tiempo Half-day schools
NAFTA	North American Free Trade Agreement
NC	El Nuevo CONOCER The new CONOCER
NGO	Non-governmental organisation
OEI	Organización de los Estados Iberoamericanos Organisation of Ibero-American States
PAN	Partido Acción Nacional Party of National Action
PANAL	Partido Nueva Alianza Party of the New Alliance
PCMO	Programa de Capacitación de Mano de Obra VET project by the STPS
PEF	Presupuesto de Egresos de la Federación National Budget Plan
PEMEX	Petróleos Mexicanos Mexican company group in the energy sector
PLANEA	Plan Nacional para la Evaluación de los Aprendizajes National Plan for the Evaluation of Learning

PMACE	Programa Multifase de Apoyo a la Capacitación y el Empleo Multiphase Project for the Support of Vocational Education and Training and Employment
PMETyC	Proyecto para la Modernización de la Educación Técnica y la Capacitación Project for the Modernisation of Vocational Education and Training
PMML	Proyecto de Modernización del Mercado Laboral Project for the Modernisation of the Labour Market
PMMT	Proyecto de Modernización de los Mercados de Trabajo Project for the Modernisation of the Labour Market
POA	Programa Operativo Anual Budget Plan of the Educational Institutions
PRD	Partido de la Revolución Democrática Party of the Democratic Revolution
PRI	Partido Revolucionario Institucional Party of the Institutionalised Revolution
PROBECAT	Programa de Becas de Capacitación para Trabajadores Scholarship Programme for the Retraining of Workers
PROCADIST	Programa de Capacitación a Distancia para Trabajadores Programme for Vocational Education and Training via Distance Learning for Workers
PROFORDEMS	Programa de Formación Docente Teacher Training Programme
PROFORHCOM	Programa de Formación de Recursos Humanos basadas en Competencias Competence-based Programme for the Training of Human Resources
PVEM	Partido Verde Ecologista de México Green-Ecological Party of Mexico
REDNACECYIT	Red Nacional de Consejos y Organismos Estatales de Ciencia y Tecnología National Network of Federal State Councils and Organisations for Science and Technology
RENIECYT	Registro Nacional de Instituciones y Empresas Científicas y Tecnológicas National Registry of Research Institutions

RIEMS	Reforma Integral de la Educación Media Superior Comprehensive Reform of Upper Secondary Education
RISEP	Reglamento Interior de la Secretaría de Educación Pública Internal Regulations of the SEP
ROCO	Reconocimiento Oficial de la Competencia Ocupacional Recognition of competences
RVOE	Reconocimiento de Estudios de Validez Oficial Official Recognition of Examination Achievements
SEP	Secretaría de Educación Pública Ministry of Education
SEGOB	Secretaría de Gobernación Ministry of the Interior
SEMS	Subsecretaría de Educación Media Superior State Secretariat for Upper Secondary Education
SFP	Secretaría de la Función Pública Ministry of Public Service
SHCP	Secretaría de Hacienda y Crédito Público Ministry of Finances and Public Spending
SIMAPRO	Sistema Integral de Medición y Avance de la Productividad System for Integrated Measurement and Improvement of Productivity
SITIAVW	Sindicato Independiente de Trabajadores de la empresa Automotriz Volkswagen Volkswagen Trade Union in Puebla
SNB	Sistema Nacional de Bachillerato National Upper Secondary Certificate System
SNC	Sistema Nacional de Competencias National Competence System
SNTE	Sindicato Nacional de Trabajadores de la Educación National Teachers' Trade Union
SPEC	Subsecretaría de Planeación, Evaluación y Coordinación State Secretariat for Planning, Evaluation and Coordination
SRE	Secretaría de Relaciones Exteriores Foreign Ministry
STPS	Secretaría del Trabajo y Previsión Social Ministry of Labour and Social Security

STRM	Sindicato de Telefonistas de la República Mexicana Telephonists' Trade Union
STUNAM	Sindicato de Trabajadores de la Universidad Nacional Autónoma de México Trade Union of the Employees of the National Autonomous University of Mexico
TC	Escuelas de tiempo completo Full-time schools
TecNM	Tecnológico Nacional de México Competent Body for the National Technological Institutes
TPP	Transpazifische Partnerschaft Trans-Pacific Partnership
UIS	UNESCO Institute for Statistics
UNAM	Universidad Nacional Autónoma de México National Autonomous University of Mexico
USAER	Unidades de Servicios de Apoyo a la Educación Regular Offices for the Support of Regular Education
VET	Vocational education and training

Introduction

Mexico has many faces. Although the country forms part of North America geographically and its northern regions are significantly influenced by the neighbouring USA, Mexico forms part of Latin America in political and cultural terms and has particularly close cultural and language ties with the lands of Central and South America. The country also has a mixed image. In Germany, we frequently associate Mexico with drug-related criminality and armed violence. On the other hand, ancient cultural sites, pyramids and picturesque landscapes also all come to mind. The existence of these multiple facets can be explained by the size and ethnic diversity of the country. Regional differences and particular characteristics are revealed in almost all parts of life.

Mexico is a young country. 65.8 per cent of its 127.5 million inhabitants are between 15 and 64 and thus of working age. 17.7 per cent are aged between 15 and 24 and are frequently in the transitional phase between school and the labour market (cf. GTAI 2017b). However, this demographic starting point will only offer an inherent competitive advantage over the constantly ageing populations of the industrialised countries and deliver opportunities for economic and social development if potential can be used in the right way. Education is a key factor in this regard and has grown significantly in importance in Mexico over the past few decades. Bringing about an improvement in general educational policy conditions has been and remains the objective of many reforms undertaken at federal state level (cf. Cruz Ruiz/Hahm 2013, pp. 266ff.). Examples include the extension of mandatory schooling and tendencies towards standardisation with the aim of reducing regional differences. The relevance of vocational education and training has also increased, and the promotion of this sector has been enshrined in the 2013-2018 National Education Plan.

Despite these favourable demographic conditions and the reform endeavours, the fact that young people are not a good match for the demands of the companies is a regular object of complaint. There is talk of a skills shortage, which is making it more difficult for both Mexican and multinational firms to cover requirements. During a speech given at a round table on the topic of youth unemployment staged by the Americas Society and Council of the Americas in 2012, Miguel Ángel Carreón[8], then Director of the Mexican Youth Institute [Instituto Mexicano de Juventud], made reference to Mexico's deficits with regard to technical competence. He stated that the deployment of new technologies in particular was leading to a growing demand for complex competences which the educational and training systems in the Latin American region were virtually unable to provide (cf. Horna/Santana 2012).

Academic education is a valuable commodity in Mexico and is often associated with the idea of social and economic advancement. Vocational education and training rep-

8 José Manuel Romero Coello has been Director of the Institute since 2013.

resented a marginal aspect for a long period of time, or, to put it another way, was seen as a possibility for those unable to afford a long school and university career. It is still frequently the case that the benefits of vocational education and training over direct entry to the labour market are frequently slight. Many young people continue to opt for unskilled jobs or for employment in the extensive informal sector.

General and vocational provision in upper secondary education were strictly separated for a long time. This changed materially around the turn of the millennium. The majority of vocational education and training (VET) programmes now also permit academic pathways, whilst vocational aspects have also been integrated into the curricula of general educational provision.

However, the low esteem in which vocational education and training is held by pupils, their families and by the companies cannot be rapidly reversed. School and the labour market continue to be poorly aligned to each other. In the past, the quality of school-based vocational training was considered to be low, and significant quality differences still exist between the various forms of provision down to the present day. A lack of transparency in respect of learning outcomes and a multitude of public and private providers are resulting in moderate comparability between the different qualifications. The full-time school-based VET system was long characterised by a strict provision orientation. Coordination processes with representatives from the employer side in order to accord better consideration to actual need were almost entirely absent (cf. Minowa 2000, p. 331).

The Mexican Government has recognised these deficits and is currently working to bring about material change to vocational education and training structures in the country. A first pilot project to introduce a dual Mexican training model [Modelo Mexicano de Formación Dual, MMFD] was launched in 2013. Although initial successes were already being achieved at the time of publication, the MMFD remained in the midst of the institutionalisation process. The future will show the extent to which these initial approaches become established and are able to tackle deficits which have prevailed for a long period of time.

German stakeholders are playing an important part in the development of the dual training model. Both countries enjoy close relations in general terms, and this is reflected in a mutual partnership in respect of economic, political and social aspects. However, day-to-day dealings also constantly reveal clear differences which exert an impact on VET cooperation.

The present country study looks at Mexico through a “German lens” and provides a compact summary of vocational education and training in the country and of the prevailing general conditions by which it is governed.

In Mexico, “vocational education and training” is not a clearly defined term. It encompasses various versions of VET, ranging from career preparatory courses of a few hours’ duration to three-year full-time school-based training and also extends to include

company-based advanced training activities. For this reason, the following text always explains relevant activities against the background of the respective perspective. The Spanish terms may vary. Analogous translations have frequently been used in order to improve readability, and the original language terms have been added wherever this seemed useful.

Because Mexican vocational education and training is currently undergoing a process of constant change, the facts and circumstances set out here often represent a snapshot in many regards. They are currently being affected by various different regional and local interpretations. Cross references between ongoing and completed reforms and current implementations have been included with the aim of helping readers to understand the complex developments. A certain critical caution is advised in respect of the data situation since the results of statistical surveys may deviate significantly from one another in some cases.

As this is the translation of the German edition published in 2018, some information might no longer be up to date (completion/status: Aug. 2017).

1. Country-specific context

1.1 General social and cultural conditions

Mexico's history stretches back to approximately 1200 BC. Its early history was dominated by indigenous peoples who settled in the various regions across the country. The largest and best known groups include the Maya, the Aztecs and the Zapotecs. Spanish colonial rule began after the arrival of Christopher Columbus in 1492. In 1519, Spanish *conquistadores* under the command of Hernán Cortés reached the east coast of Mexico, where they initially received a friendly welcome from the Aztec ruler Moctezuma II. Cortés took control of the Aztec Empire and of further areas two years later, and the indigenous population remained under Spanish command for almost the next three centuries.

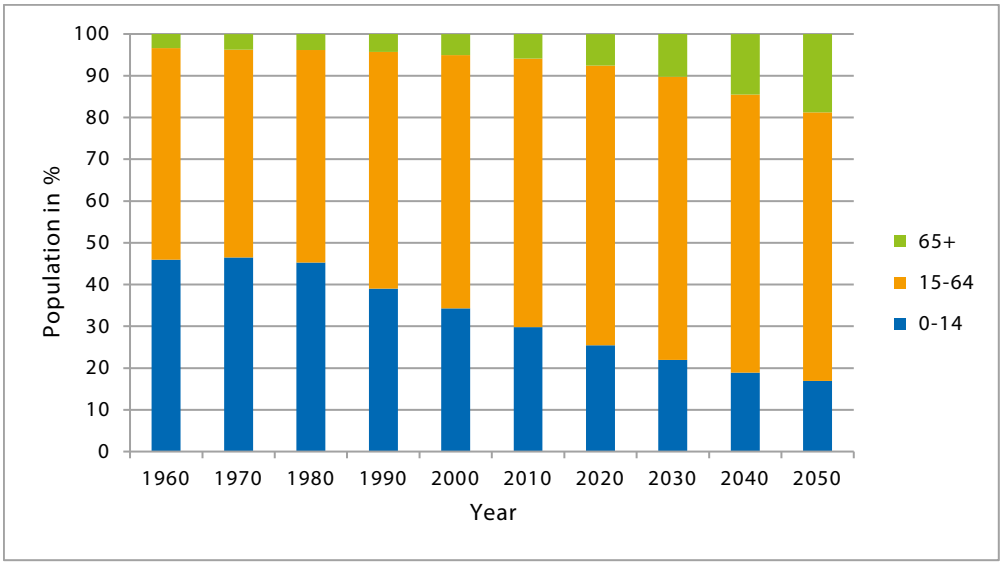
On 16 September 1810 (now celebrated as Independence Day), the priest Miguel Hidalgo delivered his famous "Grito de Dolores" speech. This was ultimately to lead to the official proclamation of a republic eleven years later. To begin with, Mexico's newly gained sovereignty contributed very little towards the removal of the country's prevailing differences. The Mexican-American War broke out some years later following the annexation of swathes of Mexican lands by the USA. At the end of the conflict, large parts of Mexican territory were ceded to the country's northern neighbour.

Mexico made great strides towards industrialisation under the presidency of Porfirio Díaz (1877–1910). However, the population suffered greatly under his dictatorial style of leadership. In 1910, the exploitation that took place led to a revolution that was to go on for some ten years. The political situation finally stabilised in the 1930s (cf. Bernecker et al. 2007).

Even though the revolution brought individual successes in terms of combating exploitation, Mexico is still a country that is characterised by considerable inequality. This becomes apparent at a geographical level if we compare the differences between the individual federal states (31 states and Mexico City). The north of the country is heavily influenced by the USA and is characterised by industry. Tourism is an important economic factor in the south. Most Mexicans are drawn to the cities. The most significant conurbations are Mexico City, Guadalajara, Monterrey and Puebla. According to the International Labour Organization (ILO), 78.5 per cent of the working age population lived in urban areas in 2016. However, small village-type communities remain intact in more rural regions. In 2015, more than a fifth of the total population lived in villages with 2,500 or fewer inhabitants (cf. National Institute for Statistics and Geography [Instituto Nacional de Estadística y Geografia, INEGI] 2015b, p. 5). 27.3 per cent of the 2016 population were aged under 14. 65.8 per cent of the 127.5 million inhabitants are between 15 and 64 and thus of working age. 17.7 per cent of the population are aged between 15 and 24 years (cf. GTAI 2017b). Nevertheless, the assumption is that Mexican

society will be subject to an increasing ageing process (Figure 1). The ILO estimates that the proportion of the population aged between 0 and 14 will shrink to 16.9 per cent in 2050. School leavers and career entrants aged between 15 and 24 will then only account for 12.2 per cent of the population (cf. ILO year of publication not stated). One of the reasons for these developments is a decline in the birth rate. In 2015, each woman produced an average of 2.2 children. The corresponding figures for 2010, 2005 and 2000 were 2.4, 2.5 and 2.7 respectively (cf. The World Bank, year of publication not stated a). Growing life expectancy is a further aspect which fosters ongoing ageing in Mexican society. In 2015, life expectancy was 74.6 years for men and 79.4 years for women. Figures for 2010 were 73.7 years (men) and 78.5 years (women), whilst life expectancy in 2005 was 72.9 years (men) and 77.8 years (women) (cf. The World Bank, year of publication not stated a).

Figure 1: Population development



Source: Own representation based on The World Bank (year of publication not stated d, values up to 2010) and (year of publication not stated b, values from 2010).

Ethnic diversity is a further significant characteristic of Mexico. About twelve million members of 62 different indigenous groups live in the country, and there are also approximately four to five million Mexicans of European origin (cf. AA 2016c). Spanish is the official national language, but 68 indigenous tongues are recognised. These are mainly to be found in more southerly regions, although they are disseminated right across the country. In 2015, 6.6 per cent of the population aged five and older, or almost 7.2 million Mexicans, spoke at least one indigenous language. More than one tenth

of this proportion of the population was unable to speak Spanish (cf. INEGI 2015b, p. 58). This exerts a major influence on educational biographies and on the illiteracy rate, which stood at 5.5 per cent in 2015 (by way of comparison, the corresponding figure for the year 2000 was 9.5 per cent) (cf. UIS year of publication not stated). According to a study conducted by Sandoval-Forero and Montoya Arce (2013, p. 5), the indigenous population accounted for 27.3 per cent of the group of illiterate persons. 36.9 per cent of this population group are aged between five and nine, i.e. are subject to mandatory schooling. The indigenous languages and their associated traditions and lifestyles are particularly nurtured in more rural areas. In 2015, 60.5 per cent of the non-Spanish speaking population lived in villages or communities with fewer than 2,500 inhabitants (cf. INEGI 2015b, p. 61).

In 2015, the average school attendance period of Mexicans aged between 15 and 64 was 9.6 years. The corresponding figures for 2010 and 2000 were 9.1 years and 7.8 years respectively. However, actual statistics deviate sharply from this average if we consider individual cities and regions. An average of only 3.2 years was, for example, recorded for the town of Cochapael Grande in the Federal State of Guerrero. By way of contrast, the capital city district of Benito Juárez achieved an average figure of 14.2 years (cf. INEGI 2015b, pp. 36ff.).

Differences also continue to exist between the genders, even though these have reduced significantly over past decades. The average length of school attendance has strongly assimilated. The figures in 2015 were 9.0 years for women and 9.3 years for men. In 1990, the corresponding difference was still as much as 0.6 years (cf. INEGI 2015b, p. 35). With regard to the illiteracy rate, values have equalised and have even been reversed in some cases. In 2015, the illiteracy rate amongst men aged between 15 and 24 was 0.14 per centage points higher than for women in the same age group. In the case of the over-65s, the illiteracy rate of women exceeds that of men by 7.96 percentage points (cf. UIS year of publication not stated).

Many Mexicans attach great importance to religion. 82.7 per cent are Catholic (cf. Central Intelligence Agency (CIA) year of publication not stated). This Catholic faith finds its expression in strong veneration for the *Virgen de Guadalupe*, held to be the Mother of God. The multitudinous magnificently decorated churches in the country are regularly visited by many Mexicans. Even if differences are being revealed in the case of the younger generation, religious practice continues to constitute an important societal ritual.

Family is an equally significant component of society. Several generations frequently live together in extended families. Children mostly remain with their parents until they marry. As well as being a result of the close ties that exist between family members, such behaviour is also influenced by the strong financial dependency created by higher education study fees and the low earning prospects for career entrants. Nevertheless,

deviations are also being revealed in this regard in the younger generations, who are seeking greater independence.

Financial burdens do not, however, merely represent a problem for young Mexicans. According to estimates by the Organisation for Economic Co-operation and Development (OECD), around 27.4 per cent of the country's population were living in poverty in 2010. Significant differences are also displayed between the lowest level of poverty recorded for the capital city district (5.4 %) and the highest rate, which was revealed in the Federal State of Chiapas (48.9 %) (cf. OECD 2015a, p. 28). These differences are the largest within OECD countries and also apply in respect of countryside and urban regions. In 2014, around two thirds of Mexicans affected by poverty lived in rural areas. Kühlmann and Lamping (2005, p. 53) describe the typical poor Mexican household. It is likely to have several children, indigenous roots and a number of unemployed adults and will live in a rural part of a southern federal state.

The OECD (2015b) investigated societal well-being at a macro level using its Better Life Index. In comparison to the other 34 OECD countries, Mexico achieved a satisfactory result in only a few measurement parameters for quality of life. The country's below average per capita income plays an important part in this regard. The figure of €10,585 recorded for Mexico[9] (adjusted net disposable income) is the third worst after South Africa and Brazil. The OECD average is €23,983[10] per year (cf. OECD 2015b). The poor result for the indicator of "Community" should also be emphasised. Mexico is in last place amongst OECD countries in this regard. Only 75.3 per cent of respondents stated that they had a friend or relative on whom they could rely in an emergency. Although the meaningfulness of this value certainly needs to be viewed critically against the background of strong family ties, it perhaps provides an indication of considerable mistrust within society. The low score achieved for the indicator of "Safety" is easier to understand. One of the aspects taken into consideration here was the average number of murders reported per 100,000 persons in 2012. Mexico's rate of 23.4 cases of murder is far above the OECD average of 4.1. The number of unreported cases may also be assumed to be high. Another question posed was whether people feel safe when they return home alone at night. Mexico achieved a very poor outcome in this respect too, with only 39.9 per cent agreeing with the statement (OECD average 68 %) (cf. OECD 2015b).

9 Original information: 12,806 USD, exchange rate as at 31/12/2014 1 € = 1.2099 USD.

10 Original information: 29,016 USD, exchange rate as at 31/12/2014 1 € = 1.2099 USD.

1.2 General political and legal conditions

Mexico is a federal country. It comprises 31 federal states plus the capital of Mexico City, which largely received federal state treatment following a constitutional amendment adopted in 2016.[11] The federal states are divided into approximately 2,400 municipalities, and these represent the smallest political unit. Enrique Peña Nieto from the Party of the Institutionalised Revolution [Partido Revolucionario Institucional, PRI] has been President and Head of State since 1 December 2012 (as at: 2017).[12] Political management is based on a Five-Year Plan [Plan Nacional de Desarrollo], which contains specific objectives and implementation strategies (for the period from 2013 to 2018, see Gobierno de la República 2013).

The Mexican Parliament comprises two chambers. These are the Senate and the Chamber of Deputies. In its capacity as the upper house, the Senate represents the 32 federal states and has 128 members who are elected for a period of office of six years. The Chamber of Deputies (lower house) has 500 members elected for a three-year term. It represents 300 constituencies (cf. AA 2016a).

Three political parties are of particular importance nationally. The PRI is a centre-left quasi-state party which provided the president from the time of its establishment in 1929 to the year 2000 and has done so again since 2012. At the time when research was conducted, a majority of federal state governors belonged to the PRI. Some have formed alliances with smaller parties such as the Green-Ecological Party of Mexico [Partido Verde Ecologista de México, PVEM] and the liberally aligned Party of the New Alliance [Partido Nueva Alianza, PANAL]. The PRI also forms the largest parliamentary group in the Chamber of Deputies. The most important opposition parties are the Conservative-Catholic Party of National Action [Partido Acción Nacional, PAN], which has links to business, and the left-leaning Party of the Democratic Revolution [Partido de la Revolución Democrática, PRD], founded in 1989. The PRI lost a presidential election for the first time in the year 2000, when Vicente Fox Quesada from PAN became the new Head of State. Felipe Calderón, also from PAN, took on the office in the following legislative period. The PAN is particularly well represented in the regions of the north, in central Bajío and in urban areas outside Mexico City (cf. AA 2016a).

Mexico is centralised to a very high degree compared to other federalist countries in Latin America. The autonomy of the federal states and local government authorities is strictly limited, a move that was largely initiated by the PRI government. This was followed in the 1990s by a strengthening of the areas of responsibility of the individual federal states (see section 3.2 on implementation in the education system). Contrary to expectations, which were originally positive, these tendencies towards decentralisation have exacerbated the differences between the individual federal states and local gov-

11 For this reason, reference is made below to 32 federal states.

12 The next general elections for the State President, Senate and Lower House of Parliament take place on 1 July 2018.

ernment authorities still further (see section 1.1). Conflicts regularly occur in respect of taxation rights, spending obligations and distribution of state resources (cf. Groll 2015).

Mexico's precarious inner security situation exerts a perpetual effect on politics, society and the media. During the period from 2006 to 2015, over 80,000 people fell victim to the fight between state security services and organised crime (cf. Bechle 2015). Drug smuggling is held to be the root cause of these conflicts. Drug criminality is especially high in the areas of northern Mexico which border the USA and in the regions along the Pacific coast and the Gulf of Mexico. Rival cartels are involved in a constant struggle to secure control of the most significant territories. Even though the government has been able to achieve a number of successes against individual key figures in recent years, virtually no sustainable progress in combating the cartels has been made. State institutions are frequently not able to absolve themselves of blame for criminal developments. Civil servants, magistrates and security officials are often deemed to be corrupt. It is not uncommon for them to accept bribes or at least to be unable to confront criminal acts. Serious offences and breaches of human rights constantly go unhindered or unpunished. In September 2014, the disappearance of 43 trainee teachers in Iguala (Federal State of Guerrero) provoked worldwide criticism. This crime had also not been cleared up by the time of publication. The assumption is that the victims were murdered and, if the suppositions are to be believed, government officials were involved in these events (cf. AA 2016a).

It is also likely that the prevailing corruption exerts an impact on Mexico's trade union movement, which is a constant object of media coverage thanks to the protest campaigns conducted by the SNTE, the teachers' trade union. Apart from their frequently violent strike actions (which are particularly occurring presently because of the new Teacher Training Act, see section 5.4.1), Mexican unions have significantly less public effect otherwise. Despite being able to look back on a history stretching back for over 150 years, their social achievements tend to be thin on the ground. Today, the Mexican trade union movement manifests itself as being weak, splintered and disunited (cf. Manz 2015). Around 4.7 million workers in Mexico are registered trade union members. This does not even represent 10 per cent of the labour demand. More than half of these are employed in the public sector. The extent of the fragmentation becomes clear if we consider the number of different trade unions. There are 39 separate trade union headquarters and national associations. In the private sector alone, the number of unions is estimated to be around 2,500. Most of these are company based and occupational unions (cf. Aguilar García 2010; Manz 2015).

The foundations for a corporatist trade union model in Mexico were laid by the Revolutionary Constitution of 1917. Article 123 sets out and enshrines important basic principles for this model such as maximum daily working time, minimum wage payable, the right to strike and freedom of association. However, a strong right of intervention by the state was also implemented. These basic elements were retained following the most

recent employment law reform of 1 December 2012. Right of association requires a state registration procedure. Labour jurisdiction lies outside the justice system, and collective bargaining law contains many loopholes (cf. Manz 2015). One example is the necessity to obtain registration from the Ministry of Labour and Social Security [Secretaría del Trabajo y Previsión Social, STPS], a mechanism referred to as *toma de nota*. Trade unions are not permitted to take action until authorisation has been acquired. Approval is, however, often preceded by a protracted and bureaucratic assessment process which lacks transparency and is informed by vested political interests. The state thus affords itself the opportunity to control trade union activity and to prevent the emergence of independent unions (cf. Buen Lonzano 2009; Manz 2015). Legally legitimised so-called exclusion clauses [cláusulas de exclusión] which may be stipulated in collective wage agreements constitute a further example of the low level of effectiveness of the trade union organisation. These allow employers to recruit members of the respective trade union only and thus afford them protection against employees who may take a critical stance. Prior to the labour market reform of 2012, it was also possible to dismiss workers who had left or had been excluded from the trade union (cf. Manz 2015). López-Acevedo (2002, p. 18) shows that membership of a trade union does not deliver any benefits for individual employees with regard to remuneration. This study, which involved workers in manufacturing industry, even revealed that the contrary was the case. Their earnings were lower than those achieved by employees who were not trade union members.

To all intents and purposes, the focus of the work undertaken by trade unions today is directed towards a broadly disseminated practice of 'protective agreements' rather than towards attempts to achieve higher wages and better working conditions. This practice has its basis in work carried out by organisations which may be registered but which do not truly represent employees. Fees are paid to keep active trade unions at bay, and the collective wage agreements concluded are aligned to the minimum statutory standard. Nevertheless, some trade unions enjoy genuine esteem within society and are actively involved in supporting their members. These include the Telephonists' Trade Union [Sindicato de Telefonistas de la República Mexicana, STRM], the Pilots' Trade Union [Asociación de Pilotos Aviadores de México, ASPA], the Trade Union of the National Autonomous University of Mexico [Sindicato de Trabajadores de la Universidad Nacional Autónoma de México, STUNAM] and the Trade Union of the Employees of Volkswagen in Puebla [Sindicato Independiente de Trabajadores de la Empresa Automotriz Volkswagen, SITIAVW] (cf. Manz 2015).

The trade unions are faced by a multitude of employer associations, such as the Mexican Employers' Association COPARMEX [Confederación Patronal de la República Mexicana]. In representing the interests of their members, the latter mostly focus on certain regions or sectors. Some are organised within the scope of the Umbrella Organisation of the Employer Associations [Consejo Coordinador Empresarial, CCE]. Since the introduction of the MMFD, the employer associations have also been significantly

involved in the objectives of initial and advanced vocational education and training (see section 4.3.2).

1.3 General economic conditions

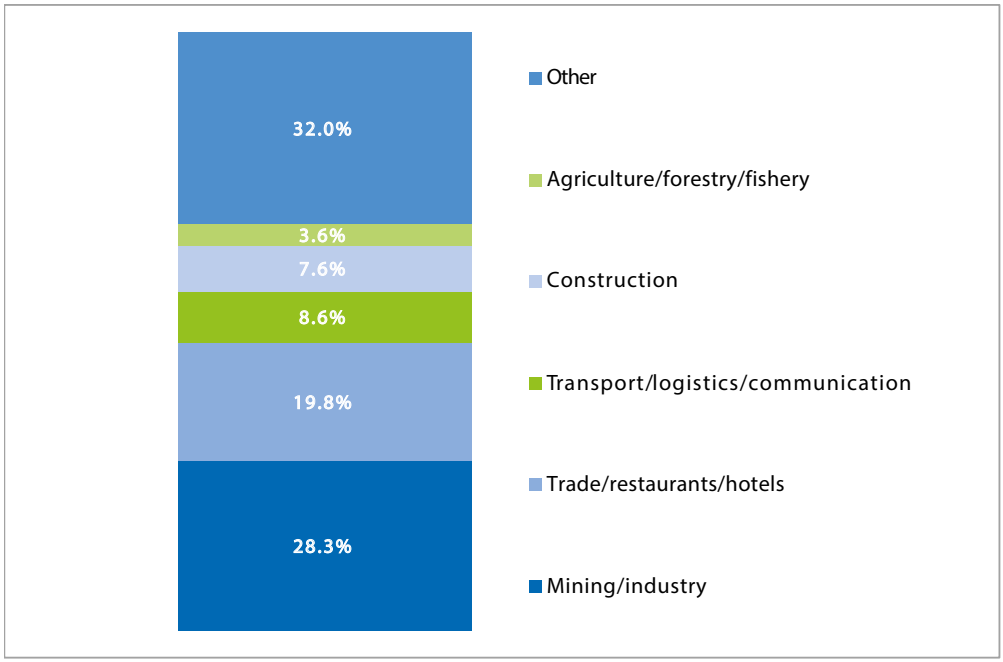
In 2016, GDP at current prices was €993.9 billion[13]. 3.8 per cent of this was produced by agriculture, forestry and fishery, 32.7 per cent by manufacturing industry and 63.5 per cent by the services sector. This percentage distribution of gross added value has remained largely stable over recent years (Figure 2 provides a differentiated representation using information from the GTAI) (The World Bank year of publication not stated a). Economic growth has proved to be relatively weak since the beginning of the 1990s. The ILO calculated an average annual rate of 2.6 per cent between 1994 and 2014 (cf. ILO 2014, p. 4).

Exports are of central importance to Mexico's macro economy. Free trade agreements with over 50 countries have created a comprehensive network of export relationships (cf. AA 2016b). Particular mention should be made in this regard of the North American Free Trade Agreement [NAFTA], which entered into force in 1994. The USA is Mexico's most important export partner and took 81 per cent of export goods in 2016. Germany is the most significant export outlet in Europe (1.1 %). The USA is also the country's most important trading partner in terms of imports, supplying 46.5 per cent of goods. China is the second most significant importer to Mexico (18.0 %). Germany is in fourth place, supplying 3.6 per cent of imports (cf. GTAI 2017b).

In 2009, economic dependency on the USA placed a considerable strain on Mexico during the worldwide financial and economic crisis. Change in GDP in real terms in 2009 was -4.7 per cent compared to the previous year. This fuelled fears of inflation amongst the population and led to unemployment. Exports were the main reason for the economic upturn which occurred in the next year. This crisis led to the instigation of the following consequences on the part of the Mexican Government.

13 Original information: 1,046.00 USD, exchange rate as at 31/12/2016: 1 € = 1.0525 USD.

Figure 2: Origin of GDP [in %] [2015]



Source: Own representation based on GTAI (2017b).

Despite the increasing opening up of the Mexican economy, monopolies or oligopolies still exist in core sectors such as energy, telecommunications and finance. President Enrique Peña Nieto has instigated wide-ranging reforms in these areas. A comprehensive energy reform was adopted in 2013 with the particular aim of breaking up the monopoly of the state-owned group Petróleos Mexicanos (PEMEX). Riots and demonstrations within the population ensued because of a fear that state revenues would fall and that this would be to the benefit of private (international) investors. However, changes are taking place only very sluggishly. One of the reasons for this at the time of publication of this country study was the low oil price (cf. AA 2016b).

In 2016, motor vehicles and motor vehicle parts were the main export drivers, making up 23.5 per cent of all exports. Mexico is one of the most important production locations for the international automobile industry. The country is considered to be the seventh largest automobile manufacturer in the world and the largest such producer in Latin America. It is also the fourth largest exporter in the automobile sector. Electronics (16.5 %), machines (10.4 %), electrical engineering (10.2 %) and foodstuffs (6.3 %) are also all important export goods (cf. GTAI 2017b; German-Mexican Chamber of Commerce and Industry [Cámara Mexicano-Alemana de Comercio e Industria, CAMEXA] year of publication not stated b).

The mining sector and metal extraction are further mainstays of the Mexican economy. Between 2005 and 2014, for example, 733 tonnes of gold and 42,000 tonnes of silver were mined. In international comparative terms, Mexico is also in the top ten nations with regard to the extraction of other metals (cf. CAMEXA year of publication not stated b).

According to surveys conducted by the INEGI[14], 5,664,515 companies were located in Mexico in the year 2013. By way of comparison, the corresponding figure for 2008 was only 5,144,056. This represents an increase of more than ten per cent. The INEGI cites that these companies have 29,893,584 registered employees.[15] The national structure of companies is characterised by the smallest category of company and by small firms. 95.4 per cent employ no more than ten workers. Only 0.2 per cent of companies have more than 250 employees (Table 1). If we consider the total number of employees and their distribution across the respective type of companies, firms with a maximum of ten workers are of central significance (39.7 %). 28.6 per cent of employees work for companies with more than 250 staff (Table 2). Most of these are located in the Central Highlands, and 11.8 per cent are in the Federal State of Estado de México alone (Table 3).

Table 1: Distribution of firms by company size [2014]

Company size by number of employees	Proportion of total companies [in %]
0–10	95.4
11–50	3.6
51–250	0.8
>250	0.2

Source: Own representation based on INEGI (2014).

Table 2: Distribution of employees by company size [2014]

Company size by number of employees	Proportion of total companies [in %]
0–10	39.7
11–50	15.1
51–250	16.6
>250	28.6

Source: Own representation based on INEGI (2014).

14 Every five years, the INEGI publishes a survey of key indicators relating to numbers of companies, numbers of employees and geographical distribution alongside a series of further data (censo económico). The most recent publication took place in 2014 and contained data from the previous year.

15 This data needs to be treated with caution. A significant difference is revealed in respect of the labour demand values stated. This can be explained by incorporating the extensive informal sector (see below). Particularly with regard to numbers of employees, it is frequently the case that not all workers are reported by the companies. Even if the figures are only representative to a limited extent, they still display clear tendencies.

Table 3: Federal states with the most companies [2014]

Federal state	Number of companies	Proportion of total number of companies [in %]
Federal State of Estado de México	666,795	11.8
Mexico City	449,989	7.9
Jalisco	405,116	7.2
Veracruz de Ignacio de la Llave	369,628	6.5
Puebla	341,194	6.0
Guanajuato	293,194	5.2

Source: Own representation based on INEGI (2014).

Real wages[16] have risen only slightly over the past few years (Table 4). According to investigations undertaken by the GTAI (2015, 2017a), the rate of change in 2013 compared to the previous year was -0.1 per cent. The corresponding figures for 2014, 2015 and 2016 were 0.3 per cent, 0.5 per cent and around 1 per cent respectively. Such figures (like those stated in the following tables) are average values which may only exhibit tendencies because of considerable regional, company-related and task-related fluctuations.[17]

Table 4: Average gross monthly wages by region [2016][18]

Region	2016 [in Mex. peso]	2016 [in EUR]	Nominal change 2015/2016 [in %]
Country average	12,474.6	635.5	+3.8
Centre	14,480.7	737.8	+3.5
North	12,236.1	623.1	+4.7
West	11,181.1	569.4	+4.3
South	11,321.5	576.8	+1.7

Source: Own representation based on GTAI (2017a).

16 Information regarding wage structure comes from investigations conducted by the GTAI, which in some cases make use of direct surveys and in other cases draw on further sources. All information should serve as a guide only and does not constitute a representative database.

17 In addition, INEGI data on wages and their development is only robust to a limited extent. It is based on information on wages registered with social security, on information from the monthly industry survey and on other annual surveys. These encompass only a small number of companies and are therefore not representative (cf. GTAI 2017a, p. 5).

18 Calculations of the GTAI on the basis of data from the INEGI – conversion to net earnings takes place on the basis of gross wages plus 29 per cent for employer contributions. Exchange rate as at 31/12/2016: 1 € = 21.82 Mex. peso.

Sectors with the highest gross monthly wages include mining (€1,069[19]), the chemical industry (€1,034[20]) and metallurgy (€791[21]). Table 5 and Table 6 offer valuable insights into earning opportunities in various positions on the basis of data from the GTAI.

Table 5: Average gross monthly wages by selected positions [2015]

Position	2015 [in Mex. peso]	2015 [in EUR][22]	Nominal change 2014/2015 [in %][23]
Managing director of a large branch	230,000	12,311	+4.5
Managing director of a small to medium-sized enterprise	165,000	8,832	+4.5
Head of sales	70,000	3,747	+4.5
Engineer	40,000	2,141	+4.5
Programmer	20,000	1,071	+4.5
Secretary with knowledge of foreign languages	22,500	1,204	+4.5
Accountant	45,000	2,409	+4.5
Driver	12,500	669	+4.5

Source: Own representation based on INEGI (2015)[24].

19 Original information: 19,067 Mex. peso, exchange rate as at 31/12/2014 1 € = 17.8328 Mex. peso.

20 Original information: 18,436 Mex. peso, exchange rate as at 31/12/2014 1 € = 17.8328 Mex. peso.

21 Original information: 14,104 Mex. peso, exchange rate as at 31/12/2014 1 € = 17.8328 Mex. peso.

22 Exchange rate as at 31/12/2015: 1 € = 18.7561 Mex. peso.

23 A uniform figure of +4.5 per cent is stated because estimations are involved (see also in the following table).

24 The data of the GTAI includes information from estimates made by HR advisors, Boege & Business, Michael Page, Barbachano International and the Mexican Central Bank.

Table 6: Average gross monthly wages by selected production tasks [2015]

Production tasks	2015 [in Mex. peso]	2015 [in EUR][25]	Nominal change 2014/2015 [in %]
Semi-skilled workers (tasks which can be learned in a few days and for which no special vocational education and training is required)	3,952	212	+4.5
Employees who carry out, under supervision, a task for which several years of vocational education and training is required	7,000	375	+4.5
Trained employees with several years of practical occupational experience who carry out tasks reliably without supervision and who can set up production processes	11,000	589	+4.5
Employees with several years of experience and management authority who are supervisors responsible for the work carried out in production divisions	16,000	856	+4.5

Source: Own representation based on GTAI (2015) with information from estimates made by HR advisors, Boege & Business, Michael Page, Barbachano International and the Mexican Central Bank.

The fact that Mexico is a young country is revealed in its employment structure as well as in the make-up of the population. Of the total of 51,595,000 employees[26] aged at least 15, 41 per cent are younger than 35 (Table 7). 61.8 of the labour demand are men. In 2015, the largest employment potential lay in the sectors of trade and transportation, accommodation and food, and business and administrative services. These areas accounted for 38.4 per cent of the total labour demand (Table 8).

Table 7: Age structure of labour demand [2016]

Age	Amount of labour demand [in thousands]	Proportion of labour demand [in % of total employment]
Total	51,595[27]	100
15-24	8,777	17.0
25-34	12,39	24.0
35-44	12,479	24.2
45-54	9,878	19.2
55-64	5,430	10.5
65+	2,631	5.1

Source: Own representation based on ILO (year of publication not stated).

25 Exchange rate as at 31/12/2015: 1 EUR = 18.7561 Mex. peso.

26 The INEGI (see above) registered a significantly lower number. The extensive informal sector is the reason for this.

27 The total of the individual age classes does not precisely represent the value of all age classes. A rounding difference of 1 occurs. This has been taken from the original source.

Table 8: Employment by economic activity [2016]

Economic activity	Amount of labour demand [in thousands]	Proportion of labour demand [in % of total]
Total	51,595	100
Agriculture	6,710	13.0
Manufacturing	8,412	16.3
Construction	4,242	8.2
Mining and quarrying, electricity, gas and water supply	403	0.8
Trade, transportation, accommodation and food, business and administrative services	19,806	38.4
Public administration, community, social and other services and activities	11,746	22.8
Other	276	0.5

Source: Own representation based on ILO (year of publication not stated).

Official unemployment in Mexico is relatively low. The ILO puts the 2016 unemployment rate at 3.9 per cent (3.8 % of the male population, 3.9 % of the female population) (cf. ILO year of publication not stated). Whereas an increase to 5.4 per cent took place in 2009 in the wake of the worldwide financial and economic crisis, the pre-crisis level was almost achieved once more in 2016. The level of youth unemployment is significantly higher. In 2016, 7.7 per cent of young people aged between 15 and 24 were unemployed (7.1 % of young males, 8.7 % of young females). However, the ILO's definition of unemployment only includes persons who were unemployed within a certain period, were available for work and were also expressly looking for work (e.g. are officially registered as job seekers). Because no comprehensively functioning system of financial support for unemployment is as yet in place[28], we may assume that only a small number of Mexicans are officially registered as job seekers[29] and are therefore taken into account in these statistics.

According to a study by the ILO (2014), almost 60 per cent of employees work in the informal sector (cf. ILO 2014). This figure is also subject to significant regional fluc-

28 The establishment of a national system of unemployment insurance was being planned at the time when this study was being prepared. This was already introduced in Mexico City in 2007 (cf. Quiroz Cuenca/Salgado Vega 2014).

29 The results of the Better Life Index of the OECD (2015b) put these figures into perspective. In 2015, the OECD assumed that 61.1 per cent of the working age population between 15 and 64 were in paid employment. Mexico is thus below the OECD average of 67.1 per cent. However, as well as including unemployed persons, this figure also takes account of the proportion of the population which is not available to take up employment (e.g. parents raising children).

tuations. Although the national average in 2013 was 59.1 per cent, the highest value of 81.2 per cent was recorded in the Federal State of Oaxaca. The figure for the Federal State of Nuevo León was 39.5 per cent (cf. ILO 2014, p. 5). This large number of informal employees provides a large potential workforce for companies which are expanding, but also inhibits economic growth and work productivity. Informal employees and companies operating informally frequently invest very little in training. They therefore tend to foster a low wage sector in which productivity is low. According to the OECD, estimated productivity value for the year 2015 is 18.5 (contribution to GDP in USD per hour of work performed, constant prices, 2010 Purchasing Power Parities). This represents the lowest level for any OECD member state (cf. OECDStat year of publication not stated). The country's complex social security legislation provisions may also be viewed as one of the reasons for the existence of such a marked informal sector. These are stipulated under Social Security Law [Ley del Seguro Social]. Social security contributions (e.g. for pension and health insurance and for the Infonavit building loan fund) are calculated on the basis of net wages. Some employers seek to avoid such costs and the expense of proper payroll accounting. They therefore opt not to register employees with the Mexican Institute for Social Security [Instituto Mexicano del Seguro Social, IMSS] or else do so only to a limited extent. The Institute of Social Security and Social Benefits for State Employees [Instituto de Seguridad y Servicios Sociales de los Trabajadores del Estado, ISSSTE] is responsible for the social security of state workers (cf. IMSS year of publication not stated, GTAI 2017a).

Significant differences are also revealed in Mexico with regard to preparation for entry to the labour market. A relatively small very well-off stratum of society contrast with a large number of people who belong to the lower middle class or live in poverty. For the former, a university qualification offers access to well-paid positions. A number of expensive private universities such as the *Tecnológico de Monterrey* and the *Iberoamericana* are available, and these are known for the high level of quality they provide. Such training is often viewed as laying the foundation to progress to management positions as quickly as possible. The cheaper public universities exhibit significant differences in quality, although the National Autonomous University of Mexico [Universidad Nacional Autónoma de México, UNAM] enjoys an excellent reputation. Society generally holds academic education in very high esteem. Families with the requisite financial means send their children to the most respected university possible and are frequently prepared to accept high costs. A clear hierarchy is shown within the different types of training provision. Vocational education and training, whether formal or informal, represents an alternative for those who cannot afford an academic career. This also exerts an effect on placement on the labour market. Direct entrants to employment and those who have completed formal vocational measures tend to be earmarked for less demanding tasks. More complex tasks are mostly reserved for persons with academic qualifications. Because very little value is attached to prior vocational education and training in the low

wage economy (particularly in the technical sector), many young Mexicans opt to enter the formal or informal labour market directly upon completion of mandatory schooling.

The result of this concentration on alignment to academic qualifications on the one hand and on rapid entry to the labour market on the other is that companies bemoan the absence of qualified skilled workers. The main demand is for well-trained technical specialists who have achieved a training level under that of an academic qualification and are in possession of marked practical knowledge. This shortage of skilled workers is especially revealed in the automobile industry, in engineering and toolmaking, in the petrochemical sector and in the search for specialist staff in the oil industry. Training is typically theory oriented, and this means that practical experience needs to be gained in everyday working life. For this reason, companies frequently poach experienced employees from other firms. In some regions, this is leading to a genuine salary battle to secure the services of qualified staff.

2. Typical vocational education and training processes or training programmes

This chapter outlines three fictitious curricula vitae, each of which represents an example of typical training processes in Mexico. The institutions and education and training programmes mentioned in the curricula vitae will be explained accordingly in the following chapters.

2.1 Learning in the informal sector

Juan is 25 years old. He lives in the small coastal village of Mazunte in the Federal State of Oaxaca. His family has been here for many generations and has always made a living from fishing. Juan can still remember how his great-grandparents constantly used to complain about the hard work and their uncertain income situation. However, increasing numbers of tourists began to arrive in the village at some point. Many people found this an unwelcome development to begin with because it ruined the peace and quiet. But the visitors also brought plenty of money with them. And this, of course, had benefits. His grandparents had initially accommodated some of these travellers in their own home. Juan's parents then decided to carry out a thorough renovation of the grandparents' residence and open a small boarding house. Juan was not in agreement with this plan at the outset because his father had to move to the USA for several months in order to earn money for the renovation work. After a few start-up difficulties, the boarding house is doing very well and the family is back together. The possibility of making online bookings has given a particular boost. But the boarding house creates a lot of work. For this reason, the whole family helps out.

Juan left school early just before the end of his lower secondary education. Although he had many friends at school, he had never really enjoyed learning. His parents also needed his additional help in the boarding house. The family is earning a good living because of the money provided by the tourists. Juan now feels ready to start his own family. In a few weeks' time, he will marry a girl from the neighbourhood on whom he had been keen for a long time. Her father runs a taco stall in the immediate vicinity of the boarding house, and the family often sends guests there for meals. Of course, Juan's future wife will also help out in the family business. Ultimately, the couple will take it over. In overall terms, Juan and his fiancée have very good prospects in life. However, they definitely want their own children to have better education and training. It would be ideal if this were connected with tourism. This would enable the small boarding house to be developed still further.

2.2 School-based training and the difficult entry to the labour market

Ricardo is 27 years old and lives in an outlying district of Mexico City. He occupies a small house together with his parents, wife and ten-month old daughter. Although there is not much space, everyone gets on well together. Ricardo's father is a taxi driver and his mother is a cleaner at a hospital.

Ricardo himself works in a factory which manufactures cleaning products. He has been employed there for four years. His cousin also works in the firm and originally recommended Ricardo to the boss. Ricardo is very grateful to his cousin for helping him out in this way. There are not many companies in the surrounding area, and it is always difficult to find a good job without contacts. Before joining his present employer, Ricardo worked in a company which manufactures cables. This was an acceptable position, but the journey to work was long. Every morning it took Ricardo several hours to negotiate his way through Mexico City by bus and underground. This meant that he was often late. For this reason, he was delighted when his cousin told him of the vacancy in the cleaning products factory.

He had had a chance to work there before, just before completing his lower secondary schooling. His father supported the idea, having started work in an industrial company at the age of 14 himself. Ricardo's father only began working for the taxi company three years ago, when he started to experience increased problems with his back. His mother, however, was strictly against the plan. She still had a very clear memory of how dissatisfied her husband had always been because he had only ever been recruited to perform poorly paid but physically demanding tasks. Another factor was that the mother was suffering from a long-term illness. Because Ricardo's father had to look after her, he was often prevented from attending work and constantly lost jobs. Ricardo's mother wanted him to have an easier time. To this end, it would be better if he stayed at school for longer. Together, the family decided that he should begin full-time school-based vocational education and training in the field of motor vehicle mechanics. This training led to an upper secondary school leaving certificate. Ricardo also took a part-time job in a grocery store in order to support his family. This also helped to pay for his school fees, although these were actually very low.

Three years later, Ricardo had obtained an acceptable qualification. Unfortunately, it was not easy at all to find a good job. He would have loved to have started working in a large car repair workshop. However, most employers were not interested in his prior technical training. They wanted someone with experience. In fact, Ricardo had not learned all that much during his training and certainly had not acquired any practical skills. He thus initially began as an auxiliary worker in the cable manufacturer before moving on to his cousin's company, where he is very happy. During his first year, Ricardo was only responsible for bringing materials into the factory and for shifting filled containers of cleaning products into the warehouse. He was, however, always punctual and

polite and carried out his work conscientiously. The supervisor held him in high regard and entrusted more and more tasks to him. Today, Ricardo operates one of the bottling plants and is earning good money. Maybe he will become a supervisor himself one day.

2.3 Elite academic training

Marisol is 22. She was born and grew up in a wealthy district in the Federal State of Querétaro. She always enjoyed going to school and achieved brilliant marks. She passed her general upper secondary school leaving certificate at an affordable private Christian school, where she was one of the best in the class. This was a source of great pride to her parents. Marisol's father has worked in an administrative role at one of the federal state's government offices for about 20 years. This enables him to look after his family well. Because past changes in government have regularly made it difficult for him to be employed on new projects, Marisol's mother decided that she would try to boost the family's earnings. When Marisol and her brother were a little older, she opened a small garage-based restaurant close to the school, serving breakfast and lunch. Children would come after classes to have something to eat and to complete their homework.

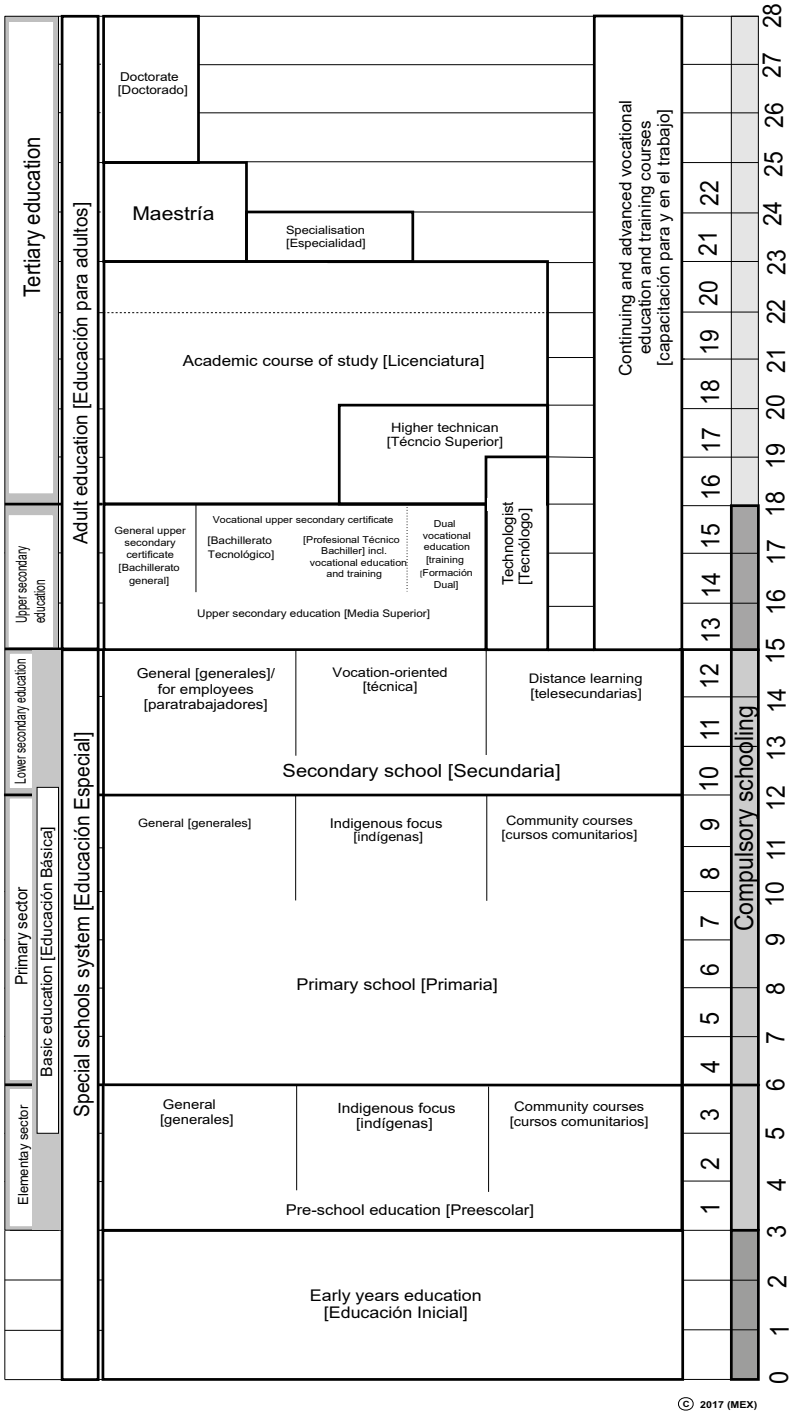
Marisol has always been interested in technology. Her mother would have liked her to assist with cooking traditional dishes, at least on public holidays. Marisol, however, preferred to help out in her uncle's car repair shop. Some customers were amazed to see a woman in such an environment. Others, however, sought her out specifically because she worked just as effectively as the boss himself.

After achieving her upper secondary certificate, Marisol was sure that she wanted to do something involving technology. She also wished this to be as practically oriented as possible. After spending many nights conducting research, she opted for a two-year course of study at a public Technological University leading to the qualification of higher technician [Técnico Superior Universitario]. But her parents were not pleased. Even though neither has studied, it is very important to them that Marisol and her elder brother Miguel receive high quality education. Miguel has been working for an IT company in California for seven years. Even in his second year of employment there he was earning more money than his parents put together. After a number of discussions, Marisol allowed her family to persuade her that she should continue to build on her very good upper secondary certificate by starting a degree in Engineering at the Querétaro site of the *Tecnológico de Monterrey*, a private university which is one of the best institutes of higher education in the entire country. With the help of her brother, she was able to pay the study fees.

Marisol really enjoyed the course. She was even able to spend the sixth semester of the programme in Spain, thanks to a scholarship. She has now completed her studies and is employed in the Product Design Department of a major international automobile manufacturer. Although she still has plenty to learn about the practical tasks involved in

this job, she is confident that she will be able to do so. Fortunately, the company operates a location in Querétaro. This means that Marisol has been able to stay in the region. She will be looking to have children at a later date and wants them to grow up with their grandparents.

3. Overview of the educational system



Source: Own research.

Basic data

Table 9: Pupils and students by educational sectors [in thousands][30]

	1990	2000	2010	2016
Primary sector	14,402	14,793	14,888	14,812
Secondary sector	6,291	8,305	10,325	12,122
Tertiary education	1,252	2,048	2,981	4,244

Source: Own representation based on Secretaría de Educación Pública (SEP) (2016b; 2012, p. 12).[31]

Table 10: School attendance rate by educational sectors [in % of the respective age group, gross enrolment ratio][32]

	2006	2010	2014
Primary sector	101.8	103.4	103.4
Secondary sector	80.9	83.2	90.6
Tertiary education	23.6	26.2	29.9

Source: Own representation based on UIS (year of publication not stated).

Table 11: School attendance rate by educational sectors [in % of the respective age group, net enrolment ratio][33]

	2006	2010	2014
Primary sector	93.6	94.7	95.1
Secondary sector	65.3	68.8	68.8 (2012)
Tertiary education	-	-	-

Source: Own representation based on UIS (year of publication not stated).

30 The values for the secondary and tertiary education includes students who are registered for distance-learning or distance courses.

31 The data from the USI (year of publication not stated) show a varying tendency. This provides the following values for the year 2014 (latest figures). Primary sector: 14,074,349, secondary sector: 14,345,589 and tertiary education: 11,533,390.

32 The UIS defines the term 'gross enrolment ratio' as the "Number of pupils or students enrolled in a given level of education, regardless of age, expressed as a percentage of the official school-age population corresponding to the same level of education. For the tertiary level, the population used is the 5-year age group starting from the official secondary school graduation age" (UIS year of publication not stated).

33 The UIS defines the term 'net enrolment ratio' as the "Total number of pupils or students in the theoretical age group for a given level of education enrolled in that level, expressed as a percentage of the total population in that age group" (UIS year of publication not stated).

Table 12: Working age population by educational attainment [in % by aggregated ISCED levels] [2016]

	Less than Basic[34]	Basic[35]	Intermediate[36]	Advanced[37]	Level not stated[38]
total	12.2	48.9	22.3	16.5	0.1
15-24	3.0	59.3	31.2	6.4	0.1
25-54[39]	9.0	48.3	22.6	20.1	0.1
55-64	28.6	43.3	12.9	15.0	0.2
65+	55.3	30.6	6.6	7.2	0.3

Source: Own representation based on ILO (year of publication not stated).

Table 13: Pupils and students differentiated by educational sectors [in thousands]

	1990/91	1995/96	2000/01	2005/06	2010/11	2015/16[40]
Pre-school sector	2,734	3,170	3,424	4,452	4,641	4,812
Primary sector	14,402	14,623	14,793	14,548	14,888	14,250[41]
Lower secondary sector	4,190	4,687	5,350	5,979	6,138	6,835
Upper secondary education	2,101	2,439	2,956	3,659	4,188	5,287
Special schools[42]						579
Universities/institutes of higher education	1,252	1,533	2,048	2,447	2,981	3,916
Post-graduate[43]						328
Advanced and continuing training	414	463	1,052	1,227	1,488	1,861

Sources: Own representation, based on SEP (2016b); SEP (2012, p. 26).

34 ISCED 11: X. No schooling, 0. Early childhood education

35 ISCED 11: 1. Primary education, 2. Lower secondary education.

36 ISCED 11: 3. Upper secondary education, 4. Post-secondary education.

37 ISCED 11: 5. Short-cycle tertiary education, 6. Bachelor's or equivalent level, 7. Master's or equivalent level, 8. Doctoral or equivalent level.

38 ISCED 11: 9. Not elsewhere classified.

39 Rounding differences taken from the original source occur here.

40 The greatest differences in the period from the 2010/2011 school year to the 2015/2016 school year particularly occur because of a growth in participation in distance study and distance learning (see section 3.4.8).

41 An irregularity that cannot be explained occurs here.

42 Data is only available from the 2014/2015 school year onwards.

43 Postgraduates are included in the figures for universities and institutes of higher education until the 2014/2015 school year.

Table 14: Number of pupils or students per teacher by educational sectors, not including distance study and distance learning

	2015/2016
Primary sector	24.8
Lower secondary sector	16.7
Upper secondary education	11.8
Tertiary education	9.4
Continuing and advanced vocational education and training	42.0

Source: Own representation based on SEP (2016b).

Table 15: Dropout rates by educational sectors, not including distance study and distance learning [in %]

	1995/1996	2000/2001	2005/2006	2010/2011	2015/2016
Primary sector	3.1	1.9	1.3	0.7	0.5
Lower secondary sector	8.8	8.3	7.7	5.6	4.2
Upper secondary education	18.5	17.5	16.5	14.9	12.1

Source: Own representation, based on SEP (2016b); SEP (2012, p. 27).

3.1 Historical and current development

Pre-colonial forms of the education system were highly influenced by the state system of the Aztecs. First, there was educational provision for the nobility, who either trained to be warriors or priests. Children from a more modest background were schooled separately. Boys mainly received instruction in craft skills, agriculture, fishing and warfare. Girls were prepared for their later roles of housewife and mother (cf. Cruz Ruiz/Hahm 2013, pp. 260 ff.; Figueras Vallés 2003, p. 28; Pietschmann 2007, pp. 17 ff.).

Spanish colonialisation (1521–1821) brought about fundamental changes in the school system. Communal management of the primary school sector became established during this period. A largely unstructured secondary system under significant influence from the Church also emerged. Higher education was limited to the courses offered by the *Universidad de México*. Community control of the primary school sector remained in place after Mexico obtained its independence at the beginning of the 19th century. A uniform education system was not created until the federal state became consolidated towards the end of the 1800s. In 1867, an initial Education Act introducing compulsory schooling at primary level [Ley General de Educación, LGE] was adopted. This was applicable to Mexico City and to the surrounding areas which came under the aegis of the central state. The law dictated that education should be accessible free of charge and that the influence of the Church should be removed. At the end of the 19th century, communal management was largely replaced by national management. Differentiation

between educational provision at secondary level and the opening of the first teacher training schools (normal schools) [Escuelas Normalistas] also occurred at this time.

A central Ministry of Education [Secretaría de Educación Pública, SEP] was founded one year after the end of the Mexican Revolution (around 1910-1920). Over the course of the next two decades, this ministry developed a comprehensive programme aimed at strengthening the education system across the entire country. Access to education was made easier for the disadvantaged rural regions and for the population of indigenous origin in particular. In view of the inequality that still prevails (see section 1.1), this continues to represent a challenge down to the present day. Expansion of secondary education took place during the same period. Upper secondary education [Educación Media Superior] was, for example, introduced. The National Polytechnic Institute [Instituto Politécnico Nacional, IPN] came into being in 1934 in order to strengthen technical courses.

Although the PRI took action from the mid-20th century in a bid to facilitate access to education for more children of primary age, the numbers completing this school sector remained very low. In 1970, only 65.7 per cent of children aged between six and twelve took part in educational measures (cf. INEGI 2011b). In the same year, 31.6 per cent of the population had not even attended primary level (cf. INEGI 2011a). Because the coverage of secondary education was also very small at this time, the Ministry of Education set up a distance education model in 1968. The aim was to use television broadcasting to help counter the inadequate provision of secondary schools. This opportunity still exists today (see section 3.4.2.3). At the same time, school-based vocational education and training programmes of a duration of between two and four years were developed at upper secondary level (see section 3.4.3). Many private and public institutes of higher education were also established in the 1970s. This development exerted an impact on the number of participants. Between 1970 and 1980, the proportion of the population who had studied at an institute of higher education rose from 6.4 per cent to 14.5 per cent (cf. Tuirán/Muñoz 2010, p. 364).

The Mexican economy crashed dramatically in the 1980s as a result of a collapse in the oil price. This poor economic situation also had an impact on the education system, as state expenditure was reduced sharply. The country still found itself in the same position in the 1990s. The Mexican Government tried to use privatisation, decentralisation of social benefits and economic liberalisation as vehicles to reinforce competitiveness (see section 3.2). A series of reforms were instigated when the PAN took power in 2000. Fundamental changes included the expansion of mandatory schooling (see section 3.3.1). A considerable strengthening of the decision-making authority of the federal states has created an education system which is largely federal in nature. This development has, however, exacerbated the differences between the individual states and the low degree of transparency of the various educational providers. One important further

component of the reforms was the introduction of national standards for the evaluation of schools, teachers and pupils (see also sections 4.4 and 5.8.1) (cf. Roldán Vera 2015).

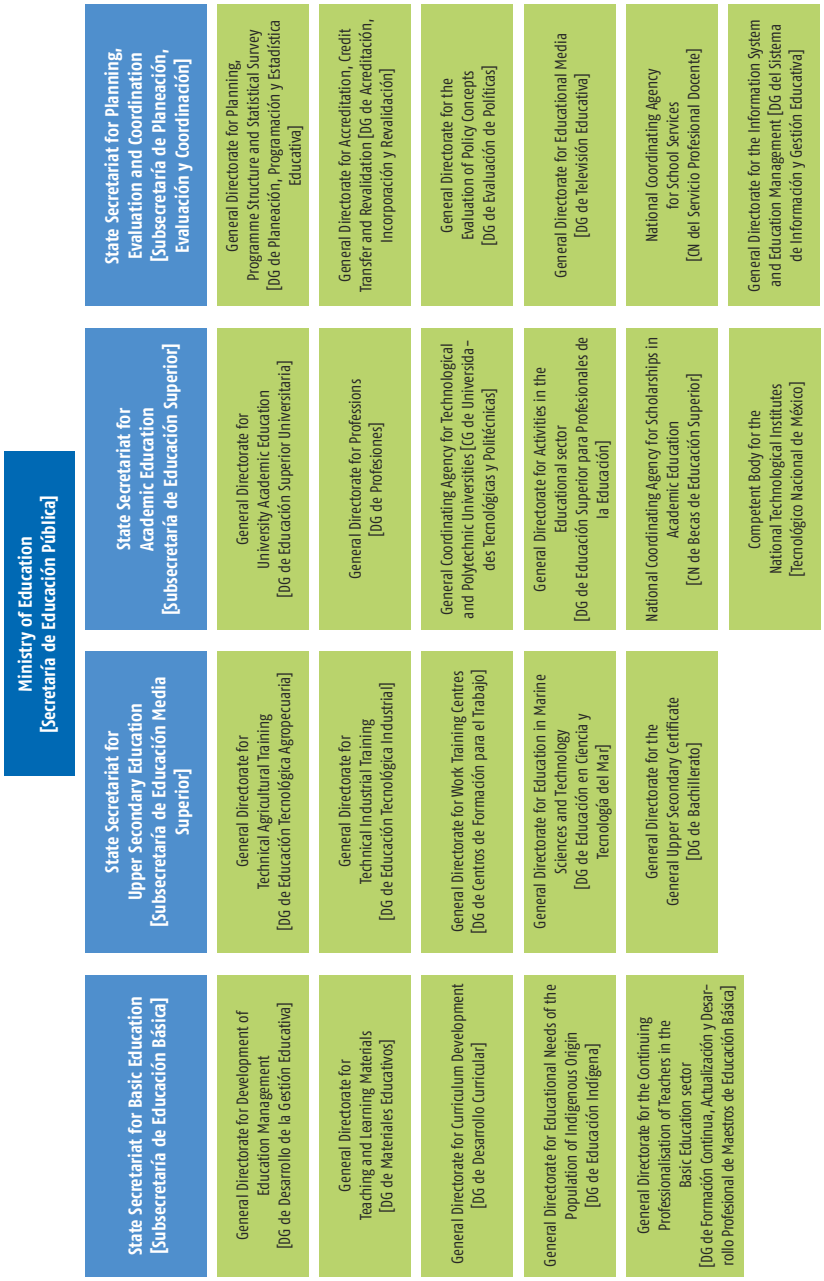
3.2 Governance and financing

National educational objectives are derived from the Education Programme, which is drawn up every five years on the basis of the government's Five-Year Plan. This is divided into a number of overarching goals, which are used to develop specific strategies for implementation (for the period from 2013 to 2018: SEP 2013).

Although Mexico is a federal state, educational policy is strongly centralised. Despite increasing decentralisation in the 1990s when administration and management of primary and secondary schools and of teacher training was transferred to the federal states, key functions are still exercised at federal level (see section 1.2). These include payment of teachers, development of curricula, design of freely available schoolbooks for the primary sector, authorisation of other textbooks and teacher evaluation. Alongside these areas of responsibility, further financing of the education system is incumbent on the federal states (cf. Roldán Vera 2015, p. 218).

The SEP is in charge of the Mexican education system both at national and at federal state level. It is divided into four state secretariats, which in turn govern various general directorates [Direcciones Generales, DG] and coordinating agencies [Coordinaciónes Generales, CG] (Figure 3).

Figure 3: Structure of the Ministry of Education[44]



Source: Own research on the basis of the respective Internet sites of the state secretariats.

44 The Colegios de Bachilleres (COLBACH), CONALEP, the CETI and CONOCER also belong to the State Secretariat for Upper Secondary Education, as do the three sectoral Coordinating Agencies for Planning and Administration [Coordinación Sectorial de Planeación y Administración], for Personnel [Coordinación Sectorial de Personal] and COSDAC.

Strong influence is also exerted by the National Trade Union of Teachers [Sindicato Nacional de Trabajadores de la Educación, SNTE]. The SNTE has around 1.6 million members and is one of the largest and most effective unions. It exercises considerable power with regard to educational policy decisions (cf. Observatorio Público de Transparencia e Información del SNTE year of publication not stated; Cruz Ruiz/Hahm 2013, p. 271). Every head teacher and teacher is required by law to join the SNTE. Frequent discrepancies, opposing endeavours and power struggles between the Ministry of Education and the union make policy decisions and the targeted implementation of reforms more difficult. The influence of the trade union has been especially strengthened by the policy effects of the tendencies towards decentralisation in the education system (see section 1.2). Transfer of areas of responsibility for teachers to the individual states has turned the SNTE into a kind of connecting link between central government and the teachers (cf. Roldán Vera 2015, pp. 217ff.).

The provision and implementation of educational services are subject to very little in the way of regulation. Such services may be offered by any private person or institution. Notwithstanding this, the state always maintains the possibility of deciding on recognition [Re-conocimiento de Validez Oficial, RVOE, for upper secondary education and higher education]. Plans and programmes for private educational provision are required in all cases to meet the requests for public institutions. Although the quality of the various provision varies considerably, private education enjoys a good reputation. This statement both applies to mandatory basic education and is true for all further sectors including the universities, albeit with a few exceptions (cf. Cruz Ruiz/Hahm 2013, p. 268).

With regard to the financing of the formal education system, Article 25 of the Education Act sets out that the government makes a certain amount of funding available each year to be divided between the national level, the individual federal states and in some cases the municipal authorities (Table 16, Table 17, Table 18). This sum should not be less than eight per cent of GDP, whereby at least one per cent must be invested in research and technological development in public institutions in the tertiary education. In 2016, the proportion of GDP was 6.8 per cent (estimated value) (cf. SEP 2016b, p. 32). Respective items of state expenditure are governed by the Law on Fiscal Policy Coordination [Ley de Coordinación Fiscal]. Educational policy spending is provided within a relevant fund [Fondo de Aportaciones de Nómina Educativa y Gasto Operativo, FONE] and published each year in the National Budget [Presupuesto de Egresos de la Federación, PEF]. A more precise explanation of educational spending is provided in section 11 *Education* [Educación], section 25 *Allocations for the basic education system, normal schools, technological universities and adult education* [Previsiones y Aportaciones para los Sistemas de Educación Básica, Normal, Tecnológica y de Adultos] and in section 33 *Allocations to federal states and municipal authorities* [Aportaciones Federales para Entidades Federativas y Municipios]. Coordination of spending takes place via the SEP.

Distribution is based on the requirements of the respective sub-systems, which are identified each year, and in accordance with the annual plans [Programa Operativo Anual, POA], which each educational establishment is obliged to draw up annually. These must contain a detailed list of individual educational provision and programmes and of the corresponding financial needs. They also map the requirements of individual schools in respect of teachers' salaries, equipment and infrastructure. Funding for the latter two is supplemented by financial contributions from the federal states (cf. Centro de Investigación Económica y Presupuestaria 2016).

Table 16: Public educational spending per recipient [2015, estimated values for 2016]

	Spending in absolute terms [in € millions]		Proportion [in % of total spending]	
	2015	2016	2015	2016
Total spending	66,794.1	67,328.5	100.0	100.0
Public institutions	52,142.7	52,106.6	78.1	77.4
▶ National	41,719.7	41,377.3	62.5	61.5
▶ SEP	38,572.3	38,174.9	57.7	56.7
▶ Other secretariats	3,147.3	3,202.5	4.7	4.8
▶ Federal states	10,397.0	10,702.3	15.6	15.9
▶ Municipal authorities	26.0	26.9	0.04	0.04
Private institutions	14,651.4	15,221.9	21.9	22.6

Source: Own representation based on SEP (2016b, p. 30).

Table 17: Public educational spending by educational sector [2015, estimated values for 2016]

	Spending in absolute terms [in € millions]		Proportion [in % of total spending]	
	2015	2016	2015	2016
Total spending	52,142.7	52,106.6	100.0	100.0
Nationally by	41,719.7	41,377.7	80.0	79.4
▶ Basic education	23,048.7	24,136.7	44.2	46.3
▶ Upper secondary	4,926.8	4,836.7	9.5	9.3
▶ Higher education	9,495.6	9,979.9	18.2	19.2
▶ Others	4,248.6	2,424.1	8.2	4.7
Federal states and municipal authorities	10,423.1	10,729.2	20.0	20.6

Source: Own representation based on SEP (2016b, p. 31).

Table 18: Public educational spending per pupil or student by educational sector [€] [2015/2016 school year][45]

Educational sector	Spending
Average public spending per pupil/student enrolled	1,233.2
Pre-school sector	829.8
Primary sector	756.4
Lower secondary sector	1,159.9
Vocational education and training[46]	1,104.9
Upper secondary school leaving certificate	1,586.2
Tertiary education	3,553.0

Source: Own representation based on SEP (2016b, p. 30).

Students and their families are also required to contribute to the costs of education alongside the government. This takes place via payment of school fees, enrolment costs, school materials, school uniforms etc. A multifarious scholarship system exists to support both students and their families and teachers for the purposes of advanced training. This is sub-divided into provision for the various sub-systems in accordance with target group and origin of funding (see Table 19). The sum made available for upper secondary education, to which vocational education and training provision is also aligned, was €220 million[47] for the year 2016. Of this, only €189.1 million[48] was actually accessed (cf. SEP 2017f.). Table 20 provides a sample summary of monthly benefits for upper secondary education.[49] This provision is mainly directed at disadvantaged groups such as young people from structurally weak regions, young people with physical or mental disabilities, young people from indigenous roots and young mothers.

Table 19: Number of scholarships awarded [2015/2016 school year] (preliminary values)

Educational sector	Number of scholarships
Basic education	5,062,711
Upper secondary education	1,905,977
Tertiary education	761,725

Source: Own representation based on SEP (2016b, p. 32).

45 Exchange rate as at 01/01/2017: 1 € = 21.8184 Mex. peso.

46 No differentiation is made in the original figures between the various possibilities of initial vocational education and training. Values stated here are for straight vocational education and training and for the upper secondary school leaving certificate, which probably also encompasses the vocational upper secondary school leaving certificate.

47 Original information: 4,801,109,836 Mex. peso, exchange rate as at 31/12/2016: 1 € = 21.8197 Mex. peso.

48 Original information: 4,126,746,509 Mex. peso, exchange rate as at 31/12/2016: 1 € = 21.8197 Mex. peso.

49 The table shows rounded values. These were converted as of 31/07/2017, exchange rate: 1 € = 21.0755 Mex. peso. No verified information is available as to why payments to women are slightly higher. One possible reason may be that disadvantaged young women are more likely to drop out and the intention is to create an additional incentive.

Table 20: Summary of monthly benefits [in €] by type of scholarship [2017]

Reason for scholarship	Benefit for men	Benefit for women
To prevent premature dropout	30–40	35–45
For above-average performance	50	
To facilitate entry	30	35
To remain in the school system	35	40
Resocialisation	30–40	35–45
To complete practical placements	75	
To take part in MMFD	100	

Source: Own representation based on SEP (2017e).

3.3 Structure

The Mexican education system is divided into the stages of early years education [Educación Inicial], basic education [Educación Básica], which encompasses pre-school [Preescolar], primary school [Primaria] and secondary school [Secundaria], upper secondary education [Educación Media Superior], higher education [Educación Superior] and continuing and advanced vocational education and training [Capacitación para y en el trabajo] (see section 3.4). Upper secondary educational provision is offered in three modalities. These are school-based study [escolarizada], distance study [no escolarizada] (see section 3.4.8) and a mixed form [mixta].

3.3.1 Right to education and mandatory schooling

The right to education is enshrined in Article 3 of the Mexican Constitution [Constitución Política de los Estados Unidos Mexicanos]. The federal states, cities and local government authorities are required to ensure that sufficient provision is in place in the sectors of basic education and upper secondary education. Public schools are made available free of charge. Mandatory schooling in Mexico consists of pre-school, which is normally attended by children aged between three and five, primary school for children aged from six to eleven and secondary school for children aged from twelve to 14. Pre-school was only made compulsory with effect from the 2008/2009 school year. In February 2012, Articles 3 and 31 of the Constitution were amended to make upper secondary education mandatory alongside basic education. The aim is for this expansion to be achieved right across the country by 2022 (cf. Presidencia de la República 2012; Ministry of the Interior [Secretaría de Gobernación, SEGOB] 2012).

3.3.2 School attendance

If we consider the school career of a cohort of 100 pupils who would have been of an age to complete their studies in 2016, the following picture emerges. All 100 pupils entered the primary sector in the 1999/2000 school year. Only 90 completed primary education five years later. Of these, 85 continued their school career in the following year. Only 67 completed lower secondary schooling two years later. Of these 67, seven opted for vocational education and training. Three completed their programme. 58 of the 67 lower secondary leavers chose to try to obtain an upper secondary school leaving certificate. 37 were successful. 31 entered higher education, and 22 of these completed their studies in the 2015/2016 school year.

Although a consideration of this track record does not provide any differentiated statements as to how many pupils exit the school system temporarily or complete a form of schooling outside the usual time frame, it gives a good impression of participation in the various types of educational provision (cf. SEP 2016b, p. 11).

If we consider the proportion of pupils and students who were enrolled in a programme in the National Education System over the course of time (Table 21 and Table 22), we see that

- more pupils have completed mandatory schooling. An increase in percentage values is revealed for the 14 and 15 year-old age groups. In 1990, for example, only 57.1 per cent were enrolled in an educational programme. The corresponding figure for 2010 was 87.3 per cent.
- more pupils have continued to participate in formal educational after competing mandatory schooling.[50]

Table 21: Proportion of pupils and students enrolled in a programme in the National Education System [in % of the age class]

Age	Year				
	1970	1990	2000	2005	2010
5 years	not available	57.1	71.1	85.3	87.3
6-12 years	65.7	89.0	93.8	96.1	96.2
13-15 years	52.6	69.4	76.6	82.5	85.9
16-19 years	23.1	37.3	41.4	47.8	51.2
20-24 years	9.5	15.8	17.7	20.8	22.0
25-29 years	4.3	6.1	6.0	5.9	6.1
30 years and older	1.7	2.1	2.0	2.1	1.7

Source: Own representation based on INEGI (2011b).

50 Because Table 21 and Table 22 do not take account of repeated years, late entrants etc., individual values need to be treated with caution. Tendencies are, however, revealed.

Table 22: School attendance rate by age groups [in % of the respective age group, net enrolment ratio] [2015][51]

Age	School attendance rate in %
3–5 years	63.0
6–11 years	97.7
12–14 years	93.3
15–24 years	44.0

Source: Own representation based on INEGI (2015a).

Despite the positive developments of recent years, there are some areas of weakness in OECD comparative terms (as at: 2014).

- The number of years in which at least 90 per cent of the population subject to mandatory schooling were taking part in education in Mexico was nine, although mandatory schooling now commonly stipulates twelve or 15 years[52]. This represents the lowest value of the OECD countries.[53]
- In Mexico, the amount of educational participants aged between 15 and 19 as a proportion of the total population of the same age is 56 per cent. This also represents the lowest value of any OECD country. The average is 84 per cent.
- The number of educational participants in tertiary education aged between 20 and 29 in Mexico as a proportion of the total population of the same age is eleven per cent.[54] This is the second-lowest value in OECD comparative terms after Luxembourg. The average is 22 per cent (cf. OECD 2016a, p. 370).

One of the reasons for the lack of implementation of mandatory schooling is the need to deploy children to help with agricultural work. It is also a consequence of severe poverty, which prevents the acquisition of necessary school materials or results in children having to beg on the street. A shortage of teachers and language barriers are further causes in rural areas in particular.

3.3.3 The Mexican Qualifications Framework

The General Directorate for Accreditation, Credit Transfer and Revalidation [Dirección General de Acreditación, Incorporación y Revalidación, DGAIR], which forms part

51 The method of presentation used by the INEGI has changed. One of the effects of this is that age groups are divided differently.

52 See section 3.3.1 for more information on the change to mandatory schooling.

53 This value needs to be treated with caution because of the different ways in which compulsory schooling is structured in the OECD countries. It is only stated to present the average duration of school attendance in relative terms. The OECD average is 14 years.

54 This corresponds to the net enrolment ratio (see Table 10 and Table 11). Deviations occur, however, because the UIS only lists the gross enrolment ratio as well as assuming a five-year time span. Nine years are included in this case (age group 20 to 29).

of the State Secretariat for Planning, Evaluation and Coordination [Subsecretaría de Planeación, Evaluación y Coordinación, SPEC] at the Ministry of Education, adopted the Mexican Qualifications Framework [Marco Mexicano de Cualificaciones, MMC] in 2014. The aim is to align qualifications at all formal levels of the education system in a uniform manner and to render them comparable. Alongside these national benefits, alignment to the International Standard Classification of Education (ISCED) also facilitates better international comparability.

The MMC comprises nine reference levels (levels 0 to 8, Table 23). In a similar way to the German Qualifications Framework, learning outcomes are allocated to the respective reference levels and differentiated according to the three pillars of knowledge [conocimientos], skills [destrezas] and competences [competencias]. In this context, the term "competence" describes the assumption of responsibility and autonomy.

Table 23: Mexican Qualifications Framework[55]

Level MMC	Level ISCED	Qualification	Regular learning time
8	8	Doctorate	At least 3 years
7	7	Maestría (7B)	At least 1 year
		Especialidad (7A)	At least 6 months
6	6	Licenciatura	3 to 5 years
5	5	Licencia Profesional/Licencia Técnica (5B)	2.5 to 3 years
		Técnico Superior Universitario/Profesional Asociado (5A)	2.5 to 3 years
4	4	Tecnólogo	1 year (if a Level 3 qualification is already in place, otherwise 4)
3	3	Upper secondary certificate or equivalent (3B)	2 to 3 years
		Profesional Técnico (3B)	2 to 3 years
		Técnico Básico/Técnico Auxiliar (3A)	6 months to 1 year
2	2	Lower secondary education	3 years (200 teaching days per year)
1	1	Primary sector	6 years (200 teaching days per year)
0	0	Pre-school education (0B)	3 years (200 teaching days per year)
		Early years education (0A)	0 to 365 days

Source: Own representation based on SEP (2014, pp. 10ff.).

A credit point system is integrated into this reference framework. One point represents the result of at least ten hours of work. These hours may be performed on the basis of conventional educational provision that requires physical or virtual presence [Docen-

55 Some terms have been left in the original language to avoid any blurring caused by translations.

cia], via the gaining of practical experience through practical placements or auxiliary work [Práctica] or through learning actions persons have conducted themselves [Independiente]. The credit points can be transferred from one form of educational provision to another at the same reference level. Transfer to a higher or lower level is also possible in individual cases upon fulfilment of the necessary requirements. In the case of tertiary education, one year of learning may be replaced by between 1,500 and 1,800 hours. Between 900 and 1,500 hours need to be performed for upper secondary provision. In basic education, the corresponding figure is between 800 and 1,600 hours.

With regard to non-school based vocational provision (companies, training centres etc.), certificates may be awarded which are both aligned to the reference level of the MMC and are dependent on the number of hours performed (Table 24).

Examples are Constancia Level 2 in Hairdressing, Certificado Level 4 in English and Diploma Level 5 in Electronics (cf. SEP 2014b). The awarding of such certificates is also possible within the scope of the recognition of competences acquired by non-formal or informal means (see section 4.4).

Table 24: Certificates of non-school-based vocational education and training provision

Certificate	Hours performed
Constancia	1 to 120
Certificado	121 to 369
Diploma	370 and more

Source: Own representation based on SEP (2014, pp. 7ff.).

3.4 Brief characterisation of the different educational sectors and types of school

3.4.1 Early years education [Educación Inicial]

Basic education is preceded by a pedagogical support system which is available to children from the 43rd day following birth until they reach pre-school age. The main focuses here are on encouraging the motor, social and cognitive skills of the infants and on offering targeted assistance to parents. The institutions responsible are governed either at a federal state or local level. Three separate structural designs can be differentiated. Conventional provision offers whole or half-day care together with comprehensive support. In many more rural regions, such institutions are either very scarce or else too far away. For this reason, day centres offer childcare for a few hours in close consultation with the parents. This provision is mostly delivered by volunteer helpers in possession of the relevant qualification and registration. A third possibility provides targeted support services with the aim of giving parents a greater understanding of their children and how to raise them. This takes place in formats such as courses extending over a period

of several months. Such provision particularly seeks to assist parents who may be struggling with the upbringing of their children, perhaps because they are of a young age or find themselves in a precarious financial situation (cf. SEP 2014a).

3.4.2 Basic education [Educación Básica]

Basic education takes place in accordance with the 2011 Education Plan [Plan de Estudios 2011, Educación Básica], which emerged as the result of a comprehensive reform of basic education [Reforma Integral de la Educación Básica]. It contains curricula for pre-school education, the primary sector and the lower secondary sector (Figure 4). These are divided into the four thematic areas of language and communication, mathematical thinking, discovery and understanding of the societal and natural environment, and personality development and living together. The individual educational areas are in turn divided into various teaching subjects. Fostering of digital competences forms a component of all subjects.

Teaching is traditionally teacher centred. A high degree of importance is attached to rote learning, repetition and copying. In the case of the latter, there is a particular emphasis on thoroughness. Very little time is therefore usually available for the development of problem-solving skills and autonomous work. This was changed within the scope of the reform mentioned above. A competence profile was drawn up for pupils completing each educational sector, and curricula for the individual subjects were designed in a competence-based manner. These also contain a summary of expected learning actions and of pedagogical guidelines.

Figure 4: Skeleton curriculum for basic education

<table>
<tr><th colspan="2">Curriculum standards</th><th colspan="3">1st phase</th><th colspan="6">2nd phase</th><th colspan="3">3rd phase</th><th colspan="3">4th phase</th></tr>
<tr><td rowspan="11">Digital competences</td><td rowspan="2">Educational sector</td><td colspan="3">Pre-school</td><td colspan="6">Primary sector</td><td colspan="3">Lower secondary sector</td></tr>
<tr><td>1°</td><td>2°</td><td>3°</td><td>1°</td><td>2°</td><td>3°</td><td>4°</td><td>5°</td><td>6°</td><td>1°</td><td>2°</td><td>3°</td></tr>
<tr><td rowspan="2">Language and communication</td><td colspan="3">Language and communication</td><td colspan="6">Spanish</td><td colspan="3">Spanish I, II, III</td></tr>
<tr><td colspan="2"></td><td>Foreign language: English</td><td colspan="6">Foreign language: English</td><td colspan="3">Foreign language: English I, II, III</td></tr>
<tr><td>Mathematical thinking</td><td colspan="3">Mathematical thinking</td><td colspan="6">Mathematics</td><td colspan="3">Mathematics I, II, III</td></tr>
<tr><td rowspan="4">Discovery and understanding of the societal and natural environment</td><td colspan="3">Discovery and understanding of the world</td><td rowspan="3" colspan="2">Discovery and understanding of society</td><td colspan="4">Natural sciences</td><td>Natural sciences I (focus on biology)</td><td>Natural sciences II (focus on physics)</td><td>Natural sciences III (focus on chemistry)</td></tr>
<tr><td rowspan="3" colspan="3">Physical development and health</td><td rowspan="2">The place where I live</td><td rowspan="2" colspan="2">Geography</td><td colspan="3">Technology I, II, III</td></tr>
<tr><td>Geography of Mexico and the world</td><td colspan="2">History I, II</td></tr>
<tr><td colspan="2">History</td><td>Federal state-related teaching</td><td colspan="2"></td></tr>
<tr><td rowspan="3">Personality development and coexistence</td><td rowspan="2" colspan="3">Personal and social development</td><td rowspan="2" colspan="6">Civic education and ethics</td><td></td><td colspan="2">Civic education and ethics I, II</td></tr>
<tr><td colspan="3">Tutorial</td></tr>
<tr><td colspan="3"></td><td colspan="6">Physical education</td><td colspan="3">Physical education I, II, III</td></tr>
<tr><td colspan="3">Artistic expression and understanding of art</td><td colspan="6">Art education</td><td colspan="3">Art I, II, III (music, dance, theatre and visual arts)</td></tr>
</table>

Source: Own representation, based on SEP (2011, p. 41)

3.4.2.1 Pre-school education/elementary sector [Preescolar]

The aim of pre-school is to support the growth and development of children aged from three to five years via educational work and play-based activities. The emphasis is on giving children confidence in their powers of expression, on developing an enjoyment of learning, on beginning to establish an understanding of mathematics and on becoming used to the necessary rules of living together with others etc. This kind of support is offered by both private and public institutions. There are different versions of provision, which mainly vary in respect of the extent of support services and duration. General pre-schools [generales] are available alongside *Preescolares indígenas* for children from an indigenous background. The staff employed in the latter are able to speak the languages of the respective ethnic groups. Community courses [Cursos comunitarios] represent a further possibility. These are specially directed at children and families in rural regions where there are more than 35 children of the relevant age but no pre-school exists. They

are combined with provision for children of primary age in some cases. Tutors who have completed a relevant course act as support staff or teachers. This course is open to those who have completed secondary school, meaning that it is a function which is frequently exercised by young people. This service is provided by the National Council for the Promotion of Education [Consejo Nacional de Formento Educativo, CONAFE]. CONAFE is a decentralised unit which is subject to the SEP but acts independently (cf. SEP 2015).

In the 2015/2016 school year, around 4.8 million children were registered at a pre-school. Of these, 88 per cent were registered at the general pre-schools, 8.6 per cent were attending pre-schools for children of indigenous origin and 3.4 per cent were taking part in the *Cursos comunitarios*. Across the country, 230,781 teachers and tutors are employed in 89,405 pre-schools (cf. SEP 2016b, p. 14). Although this provision forms part of mandatory schooling, only 72.1 of children attended for a period of three years (Table 25).

Table 25: Participation rate in pre-school provision [in % of the respective age group] [2015/2016 school year]

Age group	Participation
Participation at the age of three	41.4
Participation at the age of four	90.7
Participation at the age of five	84.8
Participation for three years (between the ages of three and five)	72.5

Source: Own representation based on SEP (2016b, p. 15).

3.4.2.2 Primary sector [Primaria]

This form of schooling extends over a period of six years and is the prerequisite for transition to the lower secondary sector. 14.3 million pupils attended primary school in the 2015/2016 school year. 574,210 teachers were employed in 98,004 schools. 91.0 per cent of these schools were public (cf. SEP 2016b, p. 16).

There are three forms of primary education. General primary school [Primaria general] represents the most important module and was attended by 93.5 per cent of the children in the 2015/2016 school year. There is a considerably lower level of demand for indigenous/bilingual primary school [Primaria indígena/bilingual]. Only 5.7 per cent of children used this provision. Because of their indigenous origin, some of these pupils speak very little Spanish and therefore need to improve their knowledge of this language whilst also maintaining their mother tongue. In rural areas with fewer than 100 inhabitants, there is also provision of communal courses at primary school level (see also section 3.4.2.1). These are conducted by tutors. 0.8 per cent of children attended this type of school (cf. SEP 2016b, p. 16). General primary schools are further sub-divided into full-time schools [Escuelas de tiempo completo, TC] offering 35 hours per week, schools with extended teaching [Escuelas de jornada ampliada, JA] providing 30 hours

per week and half-day schools [Escuelas de medio tiempo, MT] delivering 22.5 hours of teaching per week.[56] During their six school years, pupils spend their time learning subjects such as Spanish, a foreign language (mostly English), mathematics, science, geography, art and civic education/ethics. The latter is primarily devoted to formation of a national identity, to the recognition of the cultural diversity that exists within the country and to political and democratic education (cf. SEP 2011, pp. 71ff.).

3.4.2.3 Lower secondary sector [Secundaria]

Until the amendment to the Constitution in 2012, the lower secondary sector represented the final stage of basic education. It is divided into three different types of school. These are general secondary schools [secundarias generales], vocation-oriented secondary schools [secundarias técnicas] and the *telesecundarias*, which are based on distance learning. Secondary schools for workers [secundarias para trabaja-dores] also exist. Around 6.8 million pupils attended the lower secondary sector in the 2015/2016 school year. 408,577 teachers were employed in 38,885 schools. 91.3 per cent of these schools are public (cf. SEP 2015, p. 18).

56 These three forms lead to equivalent qualifications. Full-time schools and schools with extended teaching represent a kind of all-day supervision. The difference between these two types of school lies in varying subject focuses. The half-day schools usually make up for the lower number of teaching hours by setting more homework.

Table 26: Lesson summary for general secondary schools

Teaching subject	1st year			2nd year			3rd year		
	TC	JA	MT	TC	JA	MT	TC	JA	MT
Spanish	7	7	5	7	7	5	7	7	5
English	5	5	3	5	5	3	5	5	3
Mathematics	7	7	5	7	7	5	7	7	5
Natural sciences (1. Biology, 2. Physics, 3. Chemistry)	7	6	6	7	6	6	7	6	6
Geography of Mexico and the world	5	5	5	–	–	–	–	–	–
History	–	–	–	4	4	4	4	4	4
Civic education and ethics	–	–	–	4	4	4	4	4	4
Physical education	3	2	2	3	2	2	3	2	2
Technology	3	3	3	3	3	3	3	3	3
Art	3	4	2	3	4	2	3	4	2
Federal state-related teaching	3	3	3	–	–	–	–	–	–
Tutorial	2	1	1	2	1	1	2	1	1
Information and communication	–	1	–	–	1	–	–	1	–
Healthy lifestyle	–	1	–	–	1	–	–	1	–
Overall	**45**	**45**	**35**	**45**	**45**	**35**	**45**	**45**	**35**

TC: Full-time schools [Escuelas de tiempo completo]
JA: Schools with extended teaching [Escuelas de jornada ampliada]
MT: Half-day schools [Escuelas de medio tiempo]

Source: Own representation based on SEP (2011, pp. 71ff.).

In 2015/2016, 51.5 per cent of pupils were enrolled at general secondary schools. As in the primary sector, three types of school exist. These are full-time schools offering 45 hours of teaching per week, schools with extended teaching also providing 45 hours per week but with a different distribution of subjects, and half-day schools in which there are 35 hours per week (Table 26). In the case of the latter, a morning and an afternoon version are usually available (cf. SEP 2011, pp. 71ff.).

The aim of the tutorial (Table 26) is to help to deliver comprehensive training to pupils. It is particularly directed towards fostering autonomy and social competences. Great importance is placed on encouraging pupils to reflect on their own personality and on interaction with fellow pupils and with the school and social environment. All specialist teachers teaching a school class in a certain subject are available as tutors. Each tutor is responsible for developing a suitable programme for his or her group which is dedicated to a certain situation, need or challenge within the life world of the pupils. For this purpose, groups are formed with a number of main focuses. These deal with

interaction between pupils and the dynamics within the school, the pupils' own learning process, co-existence in the classroom and a project on life planning. The aim is also to address the topic of vocational orientation in a targeted way.

Table 27: Lesson summary for vocation-oriented secondary schools in the full-time sector

Teaching subject	1st year	2nd year	3rd year
Spanish	7	7	7
English	4	4	4
Mathematics	6	6	6
Natural sciences (1. Biology, 2. Physics, 3. Chemistry)	6	6	6
Geography of Mexico and the world	5	–	–
History	–	4	4
Civic education and ethics	–	4	4
Physical education	2	2	2
Technology	8	8	8
Art	2	2	2
Federal state-related teaching	3	–	–
Tutorial	2	2	2
Overall	**45**	**45**	**45**

Source: Own representation, based on SEP (2011, p. 76)

Vocation-oriented secondary schools place greater emphasis on work-related content (Table 27). In the 2015/2016 school year, 27.3 per cent of pupils in the lower secondary sector were enrolled at such a type of school (cf. SEP 2016b, p. 18). Weekly working time in full-time schools is 45 hours, and time spent on vocation-oriented subjects must amount to at least eight hours (cf. SEP 2011, pp. 71ff.).

Because of the extra capacity needed for the vocation-oriented subjects, vocation-oriented secondary schools frequently operate on a full-time basis. Nevertheless, some schools also offer half-day teaching in which the distribution of subjects is individually adjusted. Content that cannot be covered because of the lower number of teaching hours are then mostly included by setting a greater amount of homework. The vocation-oriented subjects are divided into six occupational fields [campos tecnológicos]. These are agriculture and fishing, food production, manufacturing, construction, information management and communication, and healthcare, services and leisure. These occupational fields are in turn divided into 28 different programmes [programas de estudios]. Manufacturing, for example, includes the teaching topics of machines, tools, control systems and industrial design. Pupils look at the appropriate deployment

of various technologies, learn how to deal with the development and evaluation of modern technologies in a critical and responsible way and carry out their own small-scale project work. The respective provision of the schools is directed towards main regional focuses (cf. SEP 2014c). Implementation of teaching content and in particular of the relevant practical component depends on the equipment of the respective school. Pupils frequently decide to attend such a secondary school for pragmatic reasons such as proximity to home rather than by dint of the fact that they are seeking specific vocational preparation.

The *telesecundarias* have been in place since 1968. They are mainly aimed at children in rural regions in which no regular direct teaching can be offered because of a lack of teaching staff and schools. Video sequences and Internet-based applications are used in a bid to prepare pupils for entry into working life in the best possible way even without personal support. In the 2015/2016 school year, 21.2 per cent of pupils were enrolled in this type of school (cf. SEP 2016b, p. 18).

3.4.3 Upper secondary education [Educación Media Superior]

Upper secondary education has formed part of mandatory schooling since February 2012 (see section 3.3.1). Several possibilities are available to students. They can choose between two versions of the upper secondary certificate (general or vocational) and may also opt for vocational education and training. In addition to this, a dual version of the vocational upper secondary school leaving certificate has been available in some federal states since 2013 (see section 4.3.2). The transition to upper secondary education is mostly preceded by a standardised test, although this is not administered in a uniform way nationally. Whereas in some federal states this tends to serve diagnostic purposes, in others possible participation in upper secondary provision or entry to the relevant schools is determined by the outcome of entrance examinations. As a result, it is frequently the case that only the best students are permitted to complete the general upper secondary certificate. Others are then left with the prospect of the vocational upper secondary certificate or of vocational education and training (cf. Roldán Vera 2015, p. 213).

Around five million students were in upper secondary education in the 2015/2016 school year. 62.1 per cent of these were studying for the general upper secondary school leaving certificate, 36.5 per cent were endeavouring to achieve the vocational upper secondary certificate and 1.4 per cent had opted for straight vocational education and training. 422,001 teachers were employed in 20,383 schools of this type. 81.4 per cent of these schools are public (cf. SEP 2016b, p. 20).

At the time when research was conducted, upper secondary education is the focus of radical reform [Reforma Integral de la Educación Media Superior, RIEMS]. The objective of this reform is to raise and standardise the quality level across the entire country (see also section 5.8.2). In the basic principles set out for the general upper secondary

certificate [Documento Base del Bachillerato General], constructivism is stipulated as a didactic guideline and a high degree of emphasis is placed on competence orientation and on students' action and interaction. Teaching was previously strongly aligned to specialist contents, which were only interlinked to a very small extent. The aim is that competence orientation will lead to better harmonisation. In June 2016, the new competence-oriented upper secondary certificate had already been introduced in 2,114 schools with almost two million students. For the 2015/2016 school year, this corresponds to 40.1 per cent of the total number of students in upper secondary education (cf. Council for the Evaluation of Upper Secondary Education [Consejo para la Evaluación de la Educación del Tipo Medio Superior, COPEEMS] year of publication not stated).

The curricular stipulations are divided into the following three competence areas and other school activities:

- General competences [competencias genéricas]
- competences oriented to academic research disciplines [competencias disciplinares]
- competences oriented to basic vocational learning [competencias profesionales básicas]

The fostering of these competences is distributed across individual modules which are completed over a total period of six semesters. In accordance with the stipulations, weekly working time should be between 29 and 35 school hours. General basic education comprises 31 modules from the areas of mathematics, the natural sciences, the social sciences, the humanities and communication. These account for around 65 per cent of total teaching content. 18 research-oriented specialisms are also available, on the basis of which schools develop their specific provision against the background of local needs. From these, students select eight modules in the fifth and sixth semester. These make up around 13 per cent of the total curriculum. Basic vocational education is divided into 18 areas. These include fields such as administration, controlling, electronics and tourism. The respective subjects may be studied from the third semester onwards and account for 15 per cent of all teaching content. In this case too, schools are permitted to align their provision to local requirements. In addition to this, there are an obligatory two to four hours per week of other school activities in the fields of art and culture, sport and fitness, and careers advice (cf. SEP 2016c).

The mechanisms for monitoring learning outcomes have also been modernised within the scope of the competence-based upper secondary certificate. Whereas the examinations of the past mostly took the form of written tests and constituted a conventional checking of knowledge, the aim now is to adopt a more process-oriented approach. Teachers can use instruments such as situation-based problem assignments and project and portfolio work which result in a final evaluation of the individual competences.

Because the reform involves fundamental changes which introduce completely new concepts such as competence orientation, a critical view needs to be taken of the ex-

tent to which such content will actually be implemented into daily teaching practice in future. At the time when research was being conducted, many schools were still in the initial stages of restructuring their teaching provision. They are accorded considerable scope in this regard by the stipulations of the General Directorate for the General Upper Secondary Certificate [Dirección General del Bachillerato, DGB].

3.4.4 Vocational orientation [Orientación Vocacional]

The vocational orientation programme [Programa de Orientación Vocacional] is directed at pupils from basic education [Educación Básica] and upper secondary education [Educación Media Superior]. In basic education, provision comprises five sessions (extending over a total period of nine hours), which look at pupils' own occupational development. This scheme is continued in upper secondary education. As well as including a consideration of pupils' strengths and interests, the programme then focuses more extensively on educational opportunities after completion of the upper secondary level and entry to the labour market and integrates practical activities such as company visits (total of 26 hours). Some of these activities are conducted online and delivered in school by specially trained teaching staff and company representatives within the scope of the vocational orientation enshrined in the curriculum (tutorial) (cf. SEP 2016a).

The National College of Technical Professional Education [Colegio Nacional de Educación Profesional Técnica, CONALEP] is very active in this area and represents one of the most important providers of vocational programmes (see sections 4.3.1 and 5.2.1). Firstly, cooperation agreements are in place with secondary schools, based on which specialist teaching staff explain the various training provision provided by CONALEP. Secondly, it offers a series of vocational orientation activities to afford assistance with subsequent career choice, to strengthen the social responsibility of pupils and to give them individual support in achieving the school qualification to which they aspire (cf. Cáceres-Reebs 2017).

The Monitoring Centre for Work and Employment [Observatorio Laboral] offers further points of reference within the scope of vocational orientation. This is an instrument introduced by the STPS in order to improve the labour market situation. It gives general information relating to supply and demand and support for choice of career, study programme or training (cf. STPS year of publication not stated).

3.4.5 Special schools/special schools system [Educación Especial]

The inclusion of persons with a disability has been an important issue at the policy level since the 1990s. At the time when research was being conducted, the current relevant project is the Programme for Educational Inclusion and Equality [Programa para la Inclusión y la Equidad Educativa], which was instigated in 2014. As well as seeking the inclusion of children and young people with a disability, this programme also aims to

create better access opportunities for children with an indigenous background and for migrants.

The needs of pupils with special support requirements are represented by the General Directorate for Curriculum Development [Dirección General de Desarrollo Curricular], which is subject to the State Secretariat for Basic Education [Subsecretaría de Educación Básica]. This body also supports the interests of outstandingly talented children and young people.

The special education system encompasses three different types of services – support, school-based provision and guidance. The first of these relates to the inclusion of children and young people with special needs in the regular school system and in preschool education. In the 2015/2016 school year, 4,389 bodies for the support of regular education [Unidades de Servicios de Apoyo a la Educación Regular, USAER] were offering guidance and assistance to pupils and teachers (cf. SEP 2016b, p. 27). These agencies consist of a group of experts such as social education workers, social workers, psychologists, and language and learning therapists. They mostly offer support to four or five schools, depending on geographical coverage. They work in close conjunction with teaching staff to create the necessary general conditions for inclusion and to assist with the way in which lessons are structured. So-called Centres for Psychopedagogical Support in Primary Education [Centro de Atención Psicopedagógica de Educación Preescolar, CAPEP] help children and young people who display conspicuities in their learning processes, language difficulties or problems with regard to the development of psychomotor skills. In addition, during the 2015/2016 school year, 6,060 particular special schools [Centros de Atención Múltiple, CAM] were available. These provide joint school-based provision for pupils with various disabilities and restrictions. Some exhibit a main vocational focus (cf. SEP 2016b, p. 27). The guidance services of which mention was made are directed towards teaching staff, family members of children and young people with a disability and other interested persons. They provide information on aspects such as possible educational and support provision and on everyday living requirements (cf. SEP year of publication not stated b).

3.4.6 Tertiary education [Educación Superior]

Mexican higher education is divided into two sections:

- These are programmes which follow on directly from the acquisition of a higher education entrance qualification [*pregrado*] and
- programmes which require an initial tertiary education qualification [*posgrado*].

The former include courses of study which are approximately comparable to a Bachelor's and which lead to the qualification of *Licenciatura*, usually upon successful completion of eight to ten semesters. Teacher training is also aligned to this section. Programmes

of study of a more vocational type are also available. These lead to the qualification of 'higher technician' [Técnico Superior Universitario] after a regular duration of four to six semesters.

The *posgrado* programmes can be divided into *Maestría* (similar to a Master's course of study, usually four semesters in length), specialisations (regular duration of two semesters) and courses of study leading to the acquisition of a doctorate (normally six semesters).

In the 2015/2016 school year, around one third of those aged between 18 and 23 were enrolled in a programme of study in tertiary education. 90.5 per cent of these were taking part in a course at a university or at a vocation-oriented institute of higher education. Three per cent were studying at a normal school for trainee teachers [Escuelas Normales para Maestros], and 6.5 per cent were enrolled in *posgrado* programmes. Table 28 provides further information on absolute numbers of students, teaching staff and schools. Public provision is divided into a multitude of different services. Table 29 gives an overview.

Table 28: Students, teachers and institutions in tertiary education, not including distance study and distance learning [2016]

	Students			Teaching staff	Institutions
	Total	Female	Male		
Tertiary education	3,648,945	1,800,558	1,848,387	386,219	5,343
Licenciatura	3,302,773	1,597,574	1,705,199	312,758	4,308
Normal school (teacher training)	108,555	78,312	30,243	15,602	460
Post-graduate	237,617	124,672	112,945	57,859	2,289
Public	2,579,289	1,221,247	1,358,042	229,377	2,180
Private	1,069,656	579,311	490,345	156,842	3,163

Source: Own representation based on SEP (2016b, p. 22).

Table 29: Public tertiary education providers [2016]

Institution	Number federal level	Number of participants
National Public Universities [Universidades Públicas Federales]	93	406,663
Federal State Public Universities [Universidades Públicas Estatales]	34	1,087,041
Federal State Public Universities with Solidarity Support [Universidades Públicas Estatales con Apoyo Solidario]	23	62,948
National Technological Institutes [Institutos Tecnológicos Federales]	128	318,547
Technological Universities [Universidades Tecnológicas]	112	228,994
Polytechnic Universities [Universidades Politécnicas]	60	84,226
Intercultural Universities [Universidades Interculturales]	10	10,738
Public Research Centres [Centros Públicos de Investigación]	37	6,843
Public Normal Schools [Escuelas Normales Públicas]	283	91,362
Other	166	57,920

Source: Own representation based on SEP (2016b).

Traditional provision includes the national and federal state universities and the Technological Institutes, which offer classical programmes of study leading to the *Licenciatura*, a specialisation, *Maestría* or the acquisition of a doctorate. Various institutions also exist alongside these which offer shorter training programmes which tend to be more closely aligned to the labour market (mostly *Técnico Superior Universitario* although also including the *Licenciatura* in some cases) such as the Polytechnic Universities or Technological Universities. Intercultural Universities focus on programmes of study dealing with indigenous peoples and communities.

With regard to private provision, there is a great variety with clear differences in quality. Official recognition of qualifications is incumbent on the SEP. Most (public) types of provision in tertiary education require successful completion of an entrance examination.

With a few exceptions (see section 5.4.1), the *Licenciatura* is required for entry to teacher training. In the fields of pre-school education, primary and secondary education, physical education and special education, teacher training takes place in around 280 public and approximately 200 private normal schools or in about 80 branches of

the National Pedagogical University [Universidad Pedagógica Nacional]. Entry to the teaching profession is also possible following completion of the relevant programme of academic study (cf. Cruz Ruiz 2016, Roldán Vera 2015) (see section 5.4 for training of teaching staff in upper secondary education).

3.4.7 Adult education [Educación para Adultos]

The National Council for Life and Work [Consejo Nacional de Educación para la Vida y el Trabajo, CONEVyT] was formed as a national commission in 2000 in order to coordinate existing educational provision for adults. In the field of basic education, its executive organ at federal state level is the National Institute for Adult Education [Instituto Nacional para la Educación de los Adultos, INEA] together with the Federal State Institutes for Adult Education [Institutos Estatales de Educación para Adultos, IEEA], which are subject to the INEA.

Provision is divided into three areas (there are also various opportunities for continuing vocational education and training, see section 4.3.6):

- Literacy
- Primary and lower secondary sector
- Upper secondary education and recognition at upper secondary level of competences acquired by non-formal and informal means

In addition, CONEVyT offers further courses in areas such as housekeeping, first aid, healthcare and many more besides.

Free literacy courses and free courses for the achievement of primary and lower secondary certificates are directed at persons aged at least 15 who had no access to the regular school system or who left school before completing basic level. The INEA established the Education Model for Life and Work [Modelo de Educación para la Vida y el Trabajo, MEVyT] for this purpose. This is structured into a competence-based modular system. Depending on the target qualification, various compulsory modules need to be completed in mathematics, language and communication or the sciences. There are also elective modules (e.g. in health and the environment, family, work, media competence etc.). A final examination also has to be passed.

Many of the modules can already be completed online. So-called community plazas [plazas comunitarias] are available to participants who have no access to a computer with an Internet connection or who are unable to complete the courses online. These meeting places for adults are equipped with work stations for learners, group rooms and Internet-compatible computers. Most were fully financed by the INEA. School equipment or premises and amenities provided by companies are also used.

An online course of study may be completed at upper secondary level. Since the year 2000, it has been possible to acquire recognition for competences obtained via non-for-

mal and informal means within the scope of an official regulation issued by the SEP (Acuerdo 286). This provision is aimed at persons who are at least 25 years old and are able to demonstrate achievement of the lower secondary level. Multiple choice questions, an essay and an oral examination all need to be completed in order to acquire credit points for recognition or the qualification as a whole (cf. CONEVyT year of publication not stated, Díaz de Cossío/Bagur 2003, INEA year of publication not stated, UNESCO and UNESCO Institute of Lifelong Learning 2013).

3.4.8 Distance study and distance learning [Modalidades no escolarizadas y Programas a Distancia]

So-called open learning provision [Modalidades no escolarizadas] is available alongside traditional versions requiring participants to be physically present. This also includes advisory services within the scope of early years education (see section 3.4.1) and the opportunities available in adult education (see section 3.4.7). Various versions of distance study and distance learning also exist. These are directed at all pupils and students whose personal circumstances dictate that they are unable to take part in formal upper secondary or higher education provision that requires their physical presence. In the 2015/2016 school year, 299,267 students took this route to complete the general upper secondary certificate. 2,520 achieved the vocational upper secondary certificate in the same way. 91.8 per cent used public provision for this purpose (cf. SEP 2016b, p. 20). Alongside numerous sector opportunities, the SEP also offers the options explained below.

The general upper secondary certificate may be acquired or obtained via the second chance route in a flexible way [preparatoria abierta]. This possibility has been in place since 1979 and was radically revised in the wake of the RIEMS in 2010. The 22 competence-based modules may be completed individually and without any time restrictions. 21 of these modules deal with general content and are sub-divided into the areas of communication, mathematics, the natural sciences, the social sciences and the humanities. An occupationally related module in the field of information technology also has to be completed. Students are able to work on these modules autonomously with the assistance of online solutions. Lecturers and tutors provide support upon request. The upper secondary certificate is awarded following successful completion of all module examinations (cf. DGB 2014).

Preparation for the general upper secondary certificate may also take place via a course of distance study [preparatoria a distancia]. This option leads to an official qualification in approximately 28 months and is completed exclusively online. It comprises the same 21 modules which comprise the *preparatoria abierta* (see above) plus two occupationally related modules in the field of information technology. One month is available for the completion of an individual module (cf. SEP year of publication not stated a).

The opportunity to acquire the vocational upper secondary certificate or to pursue vocational education and training is also individually available as an online-based option at some Centres for Scientific and Technical Education of the Federal States [Centros de Estudios Científicos y Tecnológicos Estatales, CECyTE] (see also section 4.3.1). Teaching in relation to the individual specialist modules is backed up by considerable use of discussions in chat rooms and forums and by simulations of practical tasks (cf. IPN/Secretaría Académica 2012).

Within the scope of its Programme for Vocational Education and Training via Distance Learning for Workers [Programa de Capacitación a Distancia para Trabajadores, PROCADIST], the STPS also offers the opportunity to complete thematically specific online courses free of charge. These require a working time of up to 48 hours and can be processed within seven days. Confirmation [Constancia] is issued if the final test is passed (cf. **gob.mx** year of publication not stated b).

Various opportunities for distance study also exist in tertiary education. As is also the case with conventional programmes of study, some of these differ significantly in terms of implementation and content. 595.456 students were enrolled in such courses in the 2015/2016 school year. 44.6 per cent of these were at public institutions (cf. SEP 2016b).

4. Initial and continuing vocational education and training

4.1 Development and significance of vocational education and training

The beginnings of formal vocational education and training go back to the enactment of the Education Act in 1867 (see also section 3.1). The establishment of the National School for the Arts and Craft Trades [Escuela Nacional de Artes y Oficios para Varones][57], which was open to male students only, formed the foundation for VET and was a forerunner of the vocational upper secondary certificate offered today. "Miguel Lerdo de Tejada", the first commercial school for women, opened in 1901 (today known as Centre for Technical Industrial Studies and Services No. 7 [Centro de Estudios Tecnológicos Industrial y de Servicios No. 7, CETIS No. 7]). In 1910, a basic industrial school to train women in the field of tailoring, called "Corregidora de Querétaro", also launched (today CETIS No. 9 "Puerto Rico").

The foundation of the SEP in 1921 represented a further stage towards the development of today's education system and its vocational education and training components. The Department of Industrial and Commercial Training [Departamento de Enseñanza Técnica Industrial y Comercial] was set up only one year later. This produced a multitude of schools offering specialist occupational focuses in the fields of industry, housekeeping and commerce. The individual programmes offered in the polytechnic schools began to undergo further differentiation in the 1930s. Technical secondary schools [Preparatoria Técnica] originated in 1931, for which completion of the primary sector represented a sufficient prerequisite for admission. These later led to the emergence of a diverse range of trade and technical schools offering three-year training programmes for technical specialists and subsequently also to the National Polytechnic Institute [Instituto Politécnico Nacional].

During the Second World War, industrialisation was declared to be a predominant strategy in order to achieve economic independence. This policy direction resulted in a greater demand for qualified workers. Resources for vocational education and training were boosted, and provision was extended. The first vocation-oriented secondary schools [Secundarias Técnicas] opened in 1958 and were followed some years later by the National Schools for Vocational Education and Training Staff [Escuela Nacional de Maestros de Capacitación para el Trabajo Industrial]. These were closed in the 1980s due to the establishment of normal schools to provide teacher training.

During the 1970s the individual relevant stakeholders began to shape the education system into the form which still exists today. Only names and designations changed in

57 In 1916, this was converted into the Practical School for Mechanics and Electricians [Escuela Práctica de Ingenieros Mecánicos y Electricistas] and was subsequently renamed the School for Mechanics and Electricians [Escuela de Ingenieros Mecánicos y Electricistas]. It underwent a further change of name: in 1932 to become the Higher School for Mechanics and Electricians [Escuela Superior de Ingeniería Mecánica].

some cases. The General Directorate for Technical Industrial Training [Dirección General de Educación Tecnológica Industrial, DGETI] came into being in 1971, followed seven years later by COSNET, the predecessor of the present sectoral Coordination Body for Academic Development [Coordinación Sectorial de Desarrollo Académico, COSDAC]. The separation between vocational qualifications for direct entry to the labour market and general qualifications facilitating access to general education also partially occurred at the same time. The CETIS were formed to place a particular focus on the manufacturing sector and on direct progression to employment, whilst the CBETIS prepared students for the vocational upper secondary certificate. CONALEP was founded in 1978 (see sections 4.3.1 and 5.2.1). The CECyTEs (cf. DGETI 2016) were set up in 1991 in order to ensure better adaptation to the regional needs of the individual federal states.

The development of Mexican vocational education and training shows that it has always been characterised by school-based provision. The large amount of influence exerted by government authorities was a particular instigator of significant stages in development. This is revealed by aspects such as the regular changes to areas of governance authority and the repeated alteration of designations and names. This chapter can only illustrate examples in this regard. During the history of development, harmonisation with the requirements of the labour market and the involvement of further relevant stakeholders become visible only rarely.

Formal VET currently often represents an alternative for families which are unable to finance academic education. Access to education in Mexico is strongly dependent on individual general conditions such as gender, place of residence and financial background (see section 1.1). Arteaga García et al. (2010) state that one of the reasons for the low level of esteem is the lack of a link between the education system and the needs of the labour market. The low degree of standardisation, which leads to significant differences in quality and to a lack of transparency, is considered to be a weak point. Although curricula are stipulated at a national level, their implementation is subject to the interpretation of teaching staff and to available resources. Vocational education and training is thus very limited in terms of providing a solid starting position for entry to well-paid sectors of the labour market and with regard to covering living costs and offering individual opportunities for further development. For this reason, many parents with the requisite financial means prefer their children to pursue academic options.

Full-time school-based VET forms a kind of niche between direct entry to the labour market as an unskilled worker and a course of higher education study. However, because students in Mexico are not permitted to proceed to the labour market until they are 18 years old and therefore of age, it provides an opportunity to bridge this period of time in a “useful” way. Notwithstanding this, the dropout rate is high (see section 3.3.2).

Because of the points of criticism stated, formal vocational education and training is also held in low regard by companies, particularly in the technical sector (see sector 1.3). Many companies thus decide to offer their own training measures (see section 4.3.5).

These are independent of the existence of a vocational training system. The result of this is that many young Mexicans seek to enter the labour market as quickly as possible and choose to forgo relevant vocational education and training provision. The frequent outcome is commencement of auxiliary employment tasks or of work in the informal sector.

Vocational education and training can also be identified as having a lower status than general education in terms of state spending. In 2013, annual expenditure per student participating in a vocational programme at upper secondary level was €2,379[58], whereas the corresponding figure for general educational provision was €3,416[59] per student. By way of comparison, the OECD average for vocational programmes was around three times higher at €7,237[60]. Germany invests around five times as much (cf. OECD 2016a).

4.2 Structure of vocational education and training and provision

Formal vocational education and training is organised in a school-based way. It is possible to study for a vocational upper secondary certificate [Bachillerato Tecnológico] which teaches more general than vocationally related main subject focuses. Following successful completion, students can proceed to a programme of higher education study or else enter employment in the respective main focus areas. CONALEP offers a special form of this vocational upper secondary school certificate. This leads to the qualification of *Profesional Técnico Bachiller* and teaches a high proportion of vocational content. Corresponding specialisation takes place via the selection of main focuses which are more practically or more academically aligned. Those completing the programme may either enter the labour market directly or commence a course of higher education study. Around 1.5 million students were enrolled in vocation-oriented upper secondary courses in the 2015/2016 school year. A further 305,223 were participating in the CONALEP programme of training leading to the qualification of *Profesional Técnico Bachiller* (cf. SEP 2016b) (see section 4.3.1).

In addition, lower secondary education may be followed by a two- to three-year technical programme of VET [Educación Profesional Técnica]. This is aligned towards subsequent entry to the labour market and for this reason focuses on practical vocational units. No higher education entrance qualification is awarded following completion of this measure. CONALEP was the major provider of this pure form of vocational education and training. However, this form of training has been replaced by the *Profesional Técnico Bachiller* since the 2013/2014 school year. In the 2015/2016 school year, only 1.4 per cent of all students in upper secondary education were taking part in this provision. This rate has constantly declined over recent years. Although it is still possible at some CONALEP schools to shorten *Profesional Técnico Bachiller* training by removing a

58 Original information: 3,273 USD, exchange rate as at 31/12/2013: 1 € = 1.3756 USD.

59 Original information: 4,699 USD, exchange rate as at 31/12/2013: 1 € = 1.3756 USD.

60 Original information: 9,955 USD, exchange rate as at 31/12/2013: 1 € = 1.3756 USD.

number of general modules and thus to obtain the qualification of *Profesional Técnico* without receiving a higher education entrance qualification, this tends to be the exception. This type of training remains possible in individual occupations at some Centres for Technical Education [Centros de Estudios Técnicos, CET] and CECyTEs. Because of its low significance in numerical terms, no further remarks will be made regarding this training option.

Dual vocational education and training was instigated as a further form of provision at upper secondary level within the scope of a pilot project conducted in 2013. Its specific is the acquisition of practical experience (see section 4.3.2).

Instead of proceeding to higher education after completion of the upper secondary certificate, students may also choose the option of training as an higher technician [Técnico Superior Universitario]. The Technological Universities [Universidades Tecnológicas], which are similar to the German Universities of Applied Sciences, are the most important providers of this form of training. Polytechnic Universities [Universidades Politécnicas] also offer this type of study (see section 4.3.3).

Alongside the above-mentioned formal provision, company-based initial and continuing training which is closely aligned to the requirements of the respective workplace also plays a significant role (see section 4.3.5).

Pupils who have completed primary school [Primaria] but not lower secondary education [Secundaria] and those who have already finished formal education or who have entered working life can continue their training via special courses in the advanced and continuing training sector [Capacitación para y en el trabajo] which are specially adapted to the world of work. These are of an average duration of three to six months and teach theoretical and practical knowledge about fundamental tasks within a certain occupational sector as well as general education content (see section 4.3.6).

4.3 Summary of forms of provision and the training programmes aligned to them

4.3.1 Vocational upper secondary school leaving certificate [Bachillerato Tecnológico and Profesional Técnico Bachiller]

The vocational upper secondary school leaving certificate constitutes a component of upper secondary education. Duration of provision is normally six semesters, and courses are directed at secondary school leavers. The *Bachillerato Tecnológico* is offered in occupations in industry and the service sector. It is provided at the CETIS, Centres for the Technical Upper Secondary School Leaving Certificate in Industry and Services [Centros de Bachillerato Tecnológico Industrial y Servicios] and at the CECyTEs. In the agricultural sector, relevant opportunities are provided by the Centres for the Technical Upper Secondary School Leaving Certificate in Agriculture [Centros de Bachillerato Tecnológico Agropecuario, CBTA] and the Centres for the Technical Upper Secondary

School Leaving Certificate in Forestry [Centros de Bachillerato Tecnológico Forestal, CBTF]. In the field of maritime studies, programmes are the responsibility of the Centres for Technical Inland Waterways Studies [Centros de Estudios Tecnológicos de Aguas Continentales, CETAC] and the Centres for Sea Studies [Centros Tecnológicos del Mar, CETMAR].

CONALEP offers a particular version of the vocational upper secondary certificate which leads to the title of *Profesional Técnico Bachiller*. This qualification combines a higher education entrance qualification with the earlier qualification of *Técnico Profesional* (see section 4.2).

The fundamental difference between these two forms is that the CONALEP training programmes are more closely aligned to occupational content (Table 30, Table 31). Both are divided into general training components, occupationally related contents and technical and propaedeutically oriented specialisations. The latter serve the particular purpose of providing preparation for a subsequent programme of higher education study. They are stipulated within the framework of the *Bachillerato Tecnológico*. In the case of the *Profesional Técnico Bachiller*, a technical specialisation may be chosen as an alternative to a propaedeutic alignment.

Table 30: Cumulated number of semester periods per week in a three-year programme leading to the qualification of Bachillerato Tecnológico and Profesional Técnico Bachiller[61]

	Bachillerato Tecnológico	Profesional Técnico Bachiller
General	75	85
Occupationally related	75	95
Specialisation	30	30
Overall	180	210

Source: Own representation based on original curricula.

61 This represents the curricular stipulations. Implementation by the schools may vary.

Table 31: CONALEP curriculum

1st semester	2nd semester	3rd semester	4th semester	5th semester	6th semester
GC 35 hours	GC 20 hours	GC 11 hours	GC 10 hours	GC 6 hours	GC 3 hours
	VC 15 hours	VC 24 hours	VC 25 hours	VC 19 hours	VC 22 hours
				TS 5 hours	TS 5 hours
				PS or TS 5 hours	PS or TS 5 hours

GC = general content
VC = vocational content
PS = propaedeutic specialisation
TS = technical specialisation

Source: Own representation based on CONALEP (2016g).

As is the case with the general upper secondary certificate, no final examinations are taken at the end of the training programmes. Written examinations are conducted for virtually all the individual modules. These may be resat on an unlimited amount of occasions. All passed examinations result in a final certificate. The general upper secondary programmes conclude with the award of the upper secondary certificates [certificado de bachillerato]. The vocational upper secondary programme also culminates in a relevant certificate [certificado de bachillerato tecnológico], and a professional certificate [cédula profesional] is also conferred for the respective occupational specialisation. Access to educational programmes in tertiary education is also available following completion of a relevant admission examination, which is usually conducted by the National Centre for the Evaluation of Higher Education [Centro Nacional de Evaluación para la Educación Superior, CENEVAL]. If only the necessary modules for completion of vocational education and training (currently being phased out) are achieved, a confirmation certificate [constancia de terminación de estudios de profesional técnico] and the professional certificate are awarded.

The content of the *Profesional Técnico Bachiller* is stipulated at a national level by CONALEP, although minor adaptations are possible on the basis of certain special regional circumstances. The general components of training include subjects such as communication, self-directed learning, problem solving, English, contextualisation of social, political and economic events, philosophy and others besides. These are standardised across all training programmes. The content of the *Bachillerato Tecnológico* is stipulated by COSDAC (see section 5.2.1). In this instance, general content is also uniform. In contrast to CONALEP provision, the latter is less practically oriented and tend to be directed towards academic disciplines.

The main learning venue for these programmes is the classroom. Depending on the particular course, additional teaching takes place in school workshops, laboratories or similar venues. The equipment in such facilities varies widely between the different educational institutes. In general terms, the financial situation faced by public vocational schools tends to be tenuous. CONALEP schools in particular are largely reliant on contributions from policymakers and companies. The necessary funding for practice-oriented teaching is frequently absent. This means that classes with up to 70 students do not constitute an exception and there is a shortage of the required teaching materials. This represents a particular challenge for technical programmes, which by dint of their practical content are dependent on having the right equipment available. Such a situation may vary significantly between different programmes within the same school if, for example, there is close cooperation with a company in a certain area.

Content is mostly taught theoretically and in a way that is aligned to occupational tasks. The teacher explains the individual stages of the work process and asks students questions.

Teaching staff require virtually no prior pedagogical training. They have usually completed an academic course of study in their respective field. Any occupational experience they may have represents a considerable advantage. However, in contrast to teaching staff who work in the general sector, neither practical knowledge nor a university qualification are binding prerequisites (see section 5.4.1).

4.3.2 Mexican model of dual vocational education and training [Modelo Mexicano de Formación Dual]

The implementation of dual training structures in Mexico already began to play a role in the 1990s (and earlier in the form of individual projects). Everything began with a cooperation agreement between CONALEP and Mercedes-Benz in the Federal State of Estado de México between the years 1993 and 1998. Training activities were significantly scaled back in the following years because of a temporary recruitment freeze by Mercedes-Benz. CONALEP did not recommence these in a formalised way until 2008. In 2009, a cooperation agreement was signed between the CONALEP General Directorate responsible at a national level and the Federal Institute for Vocational Education and Training (BIBB) in order to strengthen and expand existing structures. The cross-company training centre *Altratec* (see section 5.7.5), which is under German management, was commissioned by CONALEP to provide specialist local guidance at a local level and to extend training provision. With the help of his staff, the implementation of dual training structures was materially supported by the present President Peña Nieto, who was Governor of Estado de México at the time. At the beginning of his period of office as President, he committed to the establishment of dual structures beyond the borders of this single federal state (cf. Cáceres-Reebs/Schneider 2013).

A pilot project for German-Mexican cooperation was launched in 2013 in the form of the introduction of the MMFD. The overarching objective of this initiative, which is funded by the German Government, is to structure Mexican vocational education in a practically oriented way and in line with requirements (see also section 5.7.3 for information on the German-Mexican cooperation with regard to the realisation of dual training structures). COPARMEX and the CAMEXA were also materially involved in the development of the MMFD alongside the SEP and CONALEP. Cooperation between SEP and COPARMEX was consolidated via a cooperation agreement concluded in 2014. Following the conclusion of the pilot project, which applied to six training programmes and eleven federal states, the dual training model was officially approved by the State Secretariat for Upper Secondary Education [Subsecretaría de Educación Media Superior, SEMS] as a component of upper secondary education in 2015 via an announcement in the Mexican Federal Law Gazette [Diario Oficial de la Federación, DOF]. A draft law[62] stipulates that dual provision must be of a duration of three years and must follow a curriculum which is aligned to the target general, specialist and occupational competences. Achievement of the relevant competences must be demonstrated within the scope of the final examination (for the certification of competences see also section 4.4) (cf. SEGOB 2015, SEP year of publication not stated g).

At the time of publication of the present country study, material governance authority for the structuring and further development of the MMFD rests with the Strategic Technical Committee [Comité Técnico Estratégico], which is represented by the SEP, CCE, CONALEP and the CAMEXA (cf. SEP year of publication not stated g). A new committee was created under the umbrella of the SEMS when the official decree entered into force in 2015. The Committee of Dual Training as part of Upper Secondary Education [Comité de la Opción Educativa de la Formación Dual de Tipo Medio Superior, COEFD] encompasses both the respective educational establishments and the private sector (see Table 32) (cf. SEP year of publication not stated h). An agreement to strengthen the MMFD, which was signed between SEP and CCE in February 2017, underlines the considerable interest being shown by the private sector economy. A committee was formed within the CCE [Comisión Especializada para la Formación Dual] to pool the interests of the twelve participating private sector employer associations in dual vocational education and training and to provide representation vis-à-vis the SEP.

62 Further explanations are provided in guidelines relating to the MMFD published in 2017 (SEP year of publication not stated g), edited by the SEMS.

Table 32: Stakeholders participating in the COEFD [2017]

SEMS	
Stakeholders in the educational sector	**Stakeholders in the private sector economy**
DGETI General Directorate for Technical Industrial Training [Dirección General de Educación Tecnológica Industrial]	COPARMEX Mexican Employers' Association [Confederación Patronal de la República Mexicana]
DGETA General Directorate for Technical Agricultural Training [Dirección General de Educación Tecnológica Agropecuaria]	CCE Umbrella Organisation of the Employer Associations [Consejo Coordinador Empresarial]
DGECyTM General Directorate for Education in Marine Sciences and Technology [Dirección General de Educación en Ciencia y Tecnología del Mar]	CONCAMIN Chambers of Industry of the United Mexican States [Cámaras Industriales de los Estados Unidos Mexicanos]
COSDAC Sectoral Coordination Body for Academic Development [Coordinación Sectorial de Desarrollo Académico]	CONCANACO-SERVYTUR National Chambers of Commerce, the Service Sector and Tourism [Cámaras Nacionales de Comercio, Servicios y Turismo]
CONALEP National College for Technical Vocational Education and Training [Colegio Nacional de Educación Profesional Técnica]	CNA National Agriculture Council [Consejo Nacional Agropecuario]
CETI Centre for Technical Industrial Education [Centro de Enseñanza Técnica Industrial]	CANACINTRA National Chamber of Manufacturing Industry [Cámara Nacional de la Industria de Transformación]
CONOCER National Certification Body for Professional and Occupational Competences [Consejo Nacional de Normalización y Certificación de Competencias Laborales]	
CECyTE Centre for Scientific and Technical Education of the Federal States [Centro de Estudios Científicos y Tecnológicos Estatales]	

Source: Own representation based on SEP (year of publication not stated h).

Although CONALEP was the most important school-based partner at the outset, further vocational schools have now expanded their provision to include dual programmes. Very little standardisation was in place regarding the specific structuring of the dual training programmes at the time when research was being conducted. Table 33 provides a summary of the number of persons completing programmes up until 2016. By the end

of 2016, standards had only been developed for the first six training programmes (darker background). The others were already being offered in the absence of relevant standards. As of the end of 2017, five further standards had been drawn up, and the standard for the training programme 'Industrial maintenance' had been completed.

Table 33: Training courses of the MMFD with number of persons completing the programmes [2016]

Training programme	Number completing
Electromechanical engineering [Electromecánica industrial]	393
Engineering and toolmaking [Máquinas y herramientas]	184
Mechatronics [Mecatrónica]	133
Information technology [Informática]	147
Administration [Administración]	181
Tourism [Hospitalidad turística]	35
Food and drink [Alimentos y bebidas]	99
Motor vehicle mechatronics [Autotrónica]	130
Driver [Autotransporte]	No completions as yet
Accounting [Contabilidad]	152
Industrial maintenance [Mantenimiento Industrial]	6
Plastic processing [Plásticos]	21
Telecommunications [Telecomunicaciones]	No completions as yet

Source: Own representation based on CAMEXA (year of publication not stated a).

Students regularly attend full-time school-based teaching in the first year. They are not yet MMFD participants during this time. From the third semester onwards, students who have done well and are at least 16 years old may be proposed by their teachers for participation in the dual model for the respective companies. Final decision-making authority rests with the companies. Students spend the next two to four semesters in the company exclusively. During this time, the aim is that they should follow a rotation plan in order to be deployed in various pre-defined positions in the firm. This rotation plan is based on the training standards and is jointly agreed between the school, the company and a training advisor [Operador del centro empresarial], who is appointed by COPARMEX and trained by the CAMEXA. Each participating company is required to provide at least one qualified trainer (see section 5.4.2). During the company-based training, a type of report book [reportes semanales] needs to be kept in which learners record their respective activities each week (cf. SEP year of publication not stated g).

Participants retain their status as school pupils whilst undergoing training because minors (persons aged under 18) are not permitted to commence work activities in Mexico. This means that companies are not required to pay a wage or training allowance.

Instead, students may apply to the SEMS for a grant of the equivalent of €100 per month approximately. Companies will sometimes pay extra expenses for travel costs or lunch money. They are also permitted to provide the monthly payment if no grant is approved. In addition to this, companies are required to pay a one-off fee of between €125 and €250 per trainee to the CCE via COPARMEX.

Company-based training time should not exceed 40 hours per week. Students also complete tasks via a software-based learning platform, and this replaces school-based teaching during the training time spent in the company. The company is expected to make the necessary time available. Some schools also offer regular face-to-face teaching and support from a tutor.[63] After completing the period of training, students are awarded a school certificate testifying to achievement of the *Bachillerato Tecnológico* or *Profesional Técnico Bachiller* and also receive a professional certificate [cédula profesional] for the respective occupation. Those completing the programme are also certified in accordance with the relevant standard of the National Certification Body for Professional and Occupational Competences [Consejo Nacional de Normalización y Certificación de Competencias Laborales, CONOCER] (see section 4.4) (cf. SEP year of publication not stated g).

Statistics regarding current implementation vary significantly in some cases. According to information supplied by BIBB, 13 federal states and 13 training programmes were involved as of June 2016. 1,443 students were undergoing training at 91 vocational schools and in 297 companies (cf. Cáceres-Reebs 2016). In a speech made at the official signing of the agreement between SEP and CCE in February 2017 (see above), State Secretary Rodolfo Tuirán spoke of the involvement of 24 federal states, 400 companies, 130 schools and 3,000 trainees. The geographical spread of the participating companies reveals a significant focus on the Federal State of Estado de México, in which the foundations of the MMFD lie. In addition to this, the MMFD is now expanding to other regions with an industrial base such as Coahuila de Zaragoza and Nuevo León (cf. Wiemann/Fuchs 2018).

Despite many successes, challenges can also be identified. It should be emphasised at this point that the MMFD is currently undergoing an institutionalisation process. Many of the regulations and structural forms described represent a preferred implementation. Various deviations also exist. Increasing standardisation on the part of both schools and companies are proving to be a significant next step in terms of being able to ensure a sufficient level of quality. It is also important that companies should not view the students as cheap or free labour who are merely deployed for auxiliary tasks. The establishment of contact centres for trainees who are experiencing problems could help to

63 Four modules per semester were proposed at the second meeting of the COEFD in September 2016. These need to be completed within twelve hours per week (excepting the school holidays). The twelve hours are divided into four hours of face-to-face teaching, four hours using the online-based learning platform and a further four hours spent working autonomously (cf. SEP 2016d).

counter this. The actual course of training in respect of its practical implementation has frequently been flexible thus far. This means that students are also able to commence the company-based phase of training at earlier or later points in time if this meets company requirements. Standardisation and in particular scrutiny of compliance with standards could thus help combat the low level of esteem in which vocational education and training is held (see section 4.1).

4.3.3 Technologist [Tecnólogo]

This training possibility reflects a special version of upper secondary education. It is largely provided by the decentralised Centres for Technical Industrial Education [Centros de Enseñanza Técnica Industrial] of the Federal Government. The regional institute has three schools in the Federal State of Jalisco, which offer a total of twelve training programmes. [64] After eight semesters, these lead to the title of *Tecnólogo*, which also provides a higher education entrance qualification. Alongside the content generally stipulated for the upper secondary certificate, the main focuses taught are vocation-oriented. The principal emphasis is on applicability. If a student has already obtained an upper secondary qualification which provides an entitlement to higher education entrance, the training programme can be shortened to one year because only the occupational specialisation then needs to be completed (cf. CETI 2010). In the 2009/2010 school year, 4,056 students were enrolled at one of the three locations (cf. National Institute for the Evaluation of Education [Instituto Nacional para la Evaluación de la Educación, INEE] 2013, p. 25).

4.3.4 Higher technician [Técnico Superior Universitario]

Instead of proceeding to higher education after completion of the upper secondary certificate, students may also choose the option of training as a higher technician [Técnico Superior Universitario]. The Technological Universities [Universidades Tecnológicas], which are similar to the German Universities of Applied Sciences, are the most important providers of this form of training. Polytechnic Universities [Universidades Politécnicas] also frequently offer this type of study.

This form of tertiary education trains specialists below the engineer or *Licenciado* level. Regular duration is two to three years. Individual modules are divided into six or nine blocks of four months each. The final block usually needs to be completed in a company. The SEP stipulates 80 per cent of content nationally. The remaining 20 per cent is the result of adaptation to local needs. This means that a significant regional link with companies is discernible. Company visits also take place throughout the whole of

64 Because this is a regionally limited form of provision, no secured statements could unfortunately be made regarding acceptance on the labour market.

the duration of the programme of study in order to enable students to familiarise themselves with potential work areas in practice and establish links with firms.

Alongside general content, the main focus is on technical aspects within the respective occupational branch. It should also be stressed that the programmes are strongly practically related. The aim is that around 70 per cent of content should be taught in training workshops or laboratories. The extent to which this is possible depends on the equipment in the respective Technological University. Examinations in the individual subjects are completed both practically and in written form. At the end of the programme of study, participants normally spend at least four months in a company, where they carry out a project of their own. This project is derived from the interests of the students in question and from the requirements of the company. It may, for example, comprise a small construction or optimisation task. The course of study concludes with a written piece of work dealing with the project and a presentation of the results.

Possible areas of activity for those completing this programme include specialist positions below management level in production companies in fields such as quality assurance and maintenance. Some are also suitable for roles as supervisors. Nevertheless, the absence of work experience often constitutes a challenge when seeking to enter the labour market. Within one to two years following completion of the programme, it is possible at numerous institutions to proceed to the *Licenciatura* or to a degree in Engineering.

4.3.5 In-company training [Capacitación]

Company-based on-the-job training is highly relevant and may be viewed as the most common form of company-based initial and advanced training (cf. Arteaga García et al. 2010, p. 209). Many companies use this approach to train their skilled workers. Requirements regarding prior occupational knowledge are very low. Completion of lower secondary education or primary education only (especially in the technical sector) is often sufficient. More importance is attached to appropriate personal aptitude revealed in characteristics such as punctuality, reliability and honesty.

Typical company-based training is directly derived from the requirements of the firm rather than being standardised. It is frequently the case that no specific induction programme is in place. New employees are trained on the job. They initially perform simple tasks and may subsequently work their way up the company hierarchy after a longer period of employment and if they perform well. For this reason, there are differences in the way in which such training is structured. The basic pattern of in-company training is, however, highly similar in all cases (cf. Wiemann/Pilz 2017).

By way of example, the remarks below relate to the presentation of induction practice in a plastics processing company.

In our example company, induction commences with an introductory programme, the so-called *Inducción*. This lasts for two days and is conducted away from the shop

floor in a meeting room. Content follows a fixed structure, and a presentation is used to help deliver theoretical information. Induction encompasses a general presentation of the company and also explains corporate values and visions. Further content relates to basic principles regarding health and safety, work clothing, hygiene regulations and the rules and procedures governing everyday working life. This theoretical part concludes with a brief written test to recheck that the content delivered has been understood. A tour of company premises then takes place, during which colleagues are introduced. This session is led by a trainer from the Human Resources Department.

After this introductory programme, a fluid transition to everyday working life takes place. Actual induction happens directly within the real production process. For this purpose, new staff members initially receive instruction from a supervisor either individually or in groups. Each employee begins with a small number of simple and unskilled tasks. A differentiation is made in this regard between school leavers and experienced workers. The new employees are then given the task of imitating tasks under the supervision of the supervisor. This approach does not follow any fixed structure. The tasks involved result directly from production and do not pursue any logical learning sequence. The emphasis is on work processes at all times. Learning processes emerge via learning by doing on the basis of the respective needs and primarily take place via explanation and imitation. More detailed explanations or questions are mostly subject to time restrictions.

Because company-based induction does not constitute a formal training programme, transition to employment proceeds fluidly. No final examination is held, and no certificate is awarded. Nevertheless, practical performance is monitored on a monthly basis by a supervisor. This approach also applies to experienced employees. Brief samples are taken to check ways of working in respect of speed and quality. Personal characteristics are also evaluated as part of this process.

In general terms, new staff have been fully inducted after a period of a few months. In the example company, occupational advancement to the position of supervisor is possible. Task-specific advanced training measures are used to prepare workers in a 'tailored' way to take on roles with more complex activity profiles.

A high degree of importance is usually accorded to internal development opportunities. Vacancies are advertised internally in many areas. Notwithstanding this, companies are likely to revert to applicants with a more academic curriculum vitae when seeking to fill more highly paid positions.

Very low requirements normally apply to trainers for these internal company measures. Because no relevant statutory stipulations are in place, such tasks are undertaken by technical experts without pedagogical training.

4.3.6 Continuing and advanced vocational education and training and preparatory courses [Capacitación para y en el trabajo]

As is the case in initial vocational training, a multitude of different public and private providers also exist in continuing training provision in Mexico. There are institutions at federal level, institutions at federal state level with federal state involvement and decentralised institutions. Around 1.9 learners participated in such provision in the 2015/2016 school year. 59.5 per cent of these were women. Although 78 per cent of the total of 5,801 institutions offering such training operate within the private sector, they cover only 15.8 per cent of enrolments (cf. SEP 2016b). In 2012, more than 40 per cent of these institutions were recognised by the General Directorate of the Work Training Centres [Dirección General de Centros de Formación para el Trabajo, DGCFT] (cf. DGCFT 2012).

The public Industrial Training Centres for Industrial Work [Centros de Capacitación para el Trabajo Industrial, CECATI] and Institutes for Vocational Education and Training for Work [Institutos de Capacitación para el Trabajo, ICAT] resemble the German Adult Education Centres. Their broad-ranging provision consists of competence-based modules and is directed at employees, self-employed persons, job seekers and students. Depending on the individual situation, programmes can be completed face-to-face, online, on an in-service basis or in a mixed form. Across the whole of Mexico, the DGCFT administers 194 CECATIs and 30 ICATs with 454 further external locations [Unidades de Capacitación y Acciones Móviles] (e.g. in companies).

The so-called regular courses [cursos regulares] are aimed at all interested parties. They teach content which features a high level of practical components from occupational task areas in a competence-based way for a duration of between three to six months or over a period of 40 to 600 hours, although they also deal with general educational, social and economic topics. Official course provision is divided into 24 different occupational areas (e.g. mechatronics, communication, construction). These occupational fields produce 62 specialisations and total programme provision of almost 600 modular units.

In addition to this, the CECATIs and ICATs offer companies the opportunity to conduct courses on individually agreed topics. These so-called *cursos de capacitación acelerada específica* differ significantly with regard to scope and costs and are directed towards the needs of the respective firms.

Certain basic knowledge within an occupational field can be used as a springboard for obtaining further competences for a specific professional task within the scope of extension courses [cursos de extensión]. Following successful completion of the last two options stated, a *Constancia* recognised by the SEP is issued (see section 3.3.3).

CONALEP also offers continuing and advanced training courses and conferred relevant certification on 146,615 persons in 2015 (cf. CONALEP 2016c). As is the case with the DGCFT, a choice of courses explicitly aimed at the requirements of local companies

is available alongside provision for parties with a general interest or for persons who are seeking to improve their occupational prospects. The former are conducted on school premises, in the companies themselves or in one of the eight service centres [Centros de Asistencia y Servicios Tecnológicos], which have been in existence since 1991 (cf. CONALEP 2016c, **gob.mx** year of publication not stated d).

The course fees charged by public and private providers differ significantly. Whereas CECATIS, for example, charges costs of between about €20 and €125 for courses of a duration of between approximately 40 to 400 hours depending on complexity and equipment needs (cf. CECATI 92 year of publication not stated), private provision may be considerably more expensive. For instance, an online-based *Diploma* course in technical drawing at the private *Instituto Maurer* costs the equivalent of €278.[65]

4.4 Recognition of competences acquired by non-formal and informal means

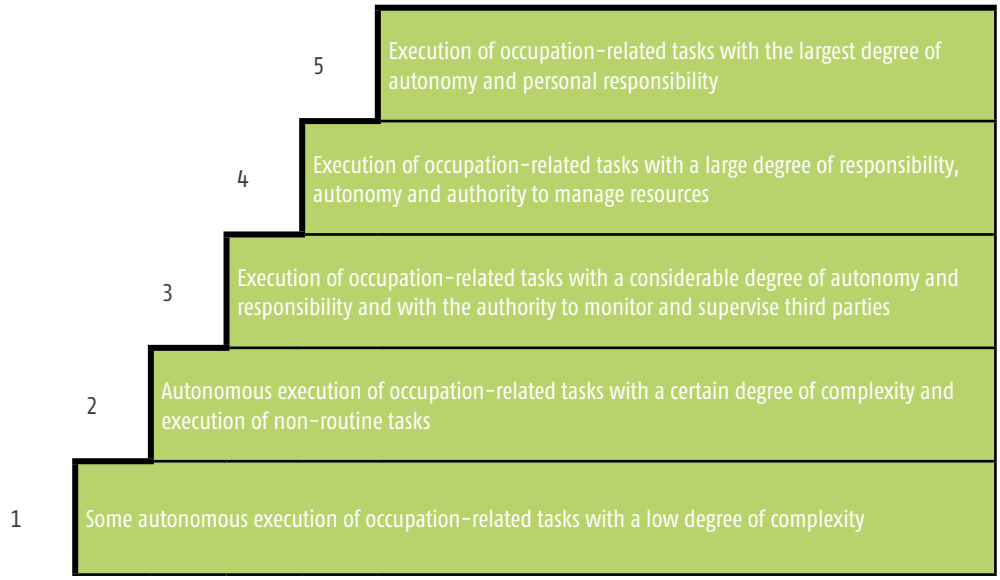
Even if they have finished mandatory education at all, large numbers of persons within the population have not made any targeted preparations for working life (see section 3.3.2). Such people frequently attempt to enter self-employment or make active use of networks to obtain a work position. Nevertheless, it is often difficult to change jobs because no recognition opportunities for these competences acquired by non-formal or informal means were in existence for a considerable period of time.

The introduction of the National Competence System [Sistema Nacional de Competencias, SNC] created a comprehensive possibility to obtain recognition via CONOCER (for more information on the development of the SNC, see section 5.8.1). The SNC covers all aspects associated with the recognition of learning outcomes achieved non-formally and informally. It uses three instruments to secure exchange of information between the labour market and the education system. These are the National Register of Competence Standards, the National Register of Persons with Certified Competences and the National Register of Certifiable Courses (cf. CONOCER 2012, p. 28).

The National Register of Competence Standards takes effect at a national level. It includes all standardised competences which have been issued by CONOCER and developed by the administrative committees responsible [comités de gestión por competencias]. 716 standards were available prior to the commencement of the revision of the National Competence System by CONOCER in March 2017. These are divided across 29 sectors and five reference levels (Figure 5) (cf. CONOCER year of publication not stated).

65 Original information: 5,588 Mex. peso, exchange rate as at 21/04/2017 1 € = 20.1491 Mex. peso.

Figure 5: Reference levels of the SNC



Source: Own representation based on a personal enquiry made to CONOCER.

The National Register of Persons with Certified competences lists information on all persons who are certified in accordance with one or more standards. If requested, it offers further data on a person such as gender, age, approximate salary scale and educational level. The aim is to reduce the amount of money and time companies need to expend on human resources selection. For the persons included, this register represents an additional opportunity to promote themselves to potential employers (cf. CONOCER 2015).

The National Register of Certifiable Courses lists relevant providers and content of competence-oriented courses across the entire country.

The most important organ of the SNC are the administrative committees [comités de gestión por competencias]. These comprise decision makers from various sectors of trade and industry. Their remit encompasses the development of relevant standards with the assistance of experts from the respective branch. They are also responsible for the stipulation of the organisations and institutions which are permitted to evaluate and certify competences (cf. CONOCER 2015). As of March 2017, there were around 240 administrative committees.

Any potential applicant interested in certification can consult the National Competence Register online to find out which occupational competences are certifiable on the basis of the relevant standards. The next stage involves application to an applicable institute and the drawing up of a diagnosis. The first thing that needs to be clarified is whether it seems possible that a candidate will successfully complete the actual performance appraisal in the standard concerned. If this is the case, the performance appraisal itself is

then conducted. Otherwise a preparatory or repeat course will be recommended. Once the performance appraisal has been passed, a superordinate body uses the documentation produced to check that the appraisal has been carried out properly and that the outcome is reasonable. If these criteria are met, the candidate is issued with a certificate and he or she is thus judged to be competent in accordance with relevant occupational standard. The period of time between application and certification is normally about six months, although waiting times which are significantly shorter or longer may occur too. Costs also vary considerably depending on the complexity of the standard to be checked. These are stipulated by the evaluating body. Average costs are approximately between €150 and €200 (cf. CONOCER 2012, p. 21). Around 500,000 certifications were conducted between 2007 and the end of 2014. One fifth of these took place in the latter year. Nearly half of all certificates conferred were awarded in the three sectors of agriculture and fishery, IT and transport.

Recognition may also be acquired via the CETIs within the scope of the official Recognition of competences [Reconocimiento Oficial de la Competencia Ocupacional, ROCO]. A *Diploma* is awarded by the SEP following successful completion of a theoretical and practical examination.

5. Important general conditions and factors determining vocational education and training

5.1 Legal standardisation of VET and school-based and company-based training

The right to education is enshrined in the Mexican Constitution (see also section 3.3.1). Article 3 sets out the state's duty to offer educational provision in the various sub-systems. Article 5 substantiates the right to free choice of occupation and instructs the federal states to stipulate and maintain prerequisites for the exercise of certain professions and occupations. These are further differentiated in the Law on the Exercising of Professions [Ley General para el Ejercicio de las Profesiones]. Pursuant to Article 38 Paragraph 1 of the Mexican Basic Law [Ley Orgánica de la Administración Pública Federal], administrative authority for public education rests with the SEP. This is laid out in detail in the internal regulations of the SEP [Reglamento Interior de la Secretaría de Educación Pública, RISEP].

The Education Act represents the most important statutory foundation for the structuring of the Mexican education system. This is divided into the following eight sections:

1. General provisions
2. Areas of responsibility at federal and federal state level
3. Equal opportunities in the education system
4. Structure of educational provision
5. Educational provision of private persons
6. Official validity of qualifications and certification of competences
7. Societal participation in the education system
8. Breaches, sanctions and administrative complaints

In addition, higher education is governed by the Law on the Coordination of Higher Education [Ley de Coordinación de la Educación Superior, LCED].

In Articles 12 to 14, the Education Act set out the complex distribution of authorities and duties at federal, federal state and municipal level regarding the administration and provision of educational services in all sub-systems. Articles 47 and 48 regulate the responsibility of the government for the development, implementation and evaluation of all formal educational provision (both public and private) in the pre-school, primary and lower secondary sectors, of teacher training via the normal schools and of other teacher training provision in basic education.

The statutory foundations of school and company-based vocational education and training are primarily distributed across two laws. Again, the Education Act provides an important basis in this regard. Article 37 contains stipulations for upper secondary education. This provision is further determined in Articles 23 to 26 of the RISEP. Vocational

preparation courses and advanced and continuing training are governed by Article 45. This also particularly stipulates opportunities for certification. Article 27 of the RISEP sets out more specific regulations for this area.

In the field of school-based vocational education and training, all centrally managed providers are governed by the regulations applicable to official upper secondary education bodies, which are in turn directly subject to the SEP [Normas de Control Escolar aplicables a los Planteles Oficiales de Eduación Media Superior, dependientes directamente de la SEP]. By way of contrast, decentralised providers such as CONALEP act in accordance with their own provisions with regard to the determination and implementation of areas of responsibility. Notwithstanding this, they are also subject to the General National Regulations for the Upper Secondary Certificate [Normas Generales del Sistema Nacional del Bachillerato]. These apply to all providers of educational programmes which lead to a higher education entrance qualification.

The MMFD was included as an official part of upper secondary education via official announcement in the Mexican Federal Law Gazette on 11 June 2015 (see section 4.3.2). The precise structuring of the MMFD and the requirements made of all stakeholders involved is addressed in Agreement No. 06/06/15 [Acuerdo número 06/06/2015 por el que se establece la dual como una opción educativa del tipo medio superior].

Article 153 of the Labour Act [Ley Federal del Trabajo, LFT] describes the regulations for company-based training (see section 4.3.5). It provides that every company should offer advanced and continuing training activities to its staff and that employees should avail themselves of these. Scope is, however, not set out in specific terms. This means that a half-day or full-day course may be sufficient for an entire year. Content may be freely determined. In practice, this frequently relates to aspects of health and safety at work. These activities may be conducted by a firm's own staff or by external trainers, who must be registered with the STPS (see section 5.4.2), and may take place on company premises or in outside training centres. A relevant *Constancia* is issued after successful completion and a report to the STPS. Article 153 further stipulates that companies with at least 50 staff are required to convene mixed committees for advanced and continuing vocational training and productivity [Comisiones Mixtas de Capacitación, Adiestramiento y Productividad], which are responsible for the agreement of relevant activities (e.g. regarding work organisation or necessary equipment).

Recognition of competences for the labour market takes place on the basis of two statutory foundations:

- Agreement 02/08/1995 – Basic rules for the definition of technical norms for the certification of competences for the labour market [Acuerdo por el que se establecen lineamientos generales para la definición de normas técnicas de competencia laboral suscetiples de certificación]. These explain the principles of competence certification against the background of the SNC.

- Agreement 27/11/2009 – General regulations for the integration and application of the National Competence System [Reglas Generales para la integración y operación del Sistema Nacional de Competencias]. These expound upon the implementation of the SNC (see section 4.4). Superordinate aspects include the convening and tasks of the administrative committees, the development of standards by CONOCER, educational provision based on the standards, certification of competences and evaluation centres.

5.2 Governance structures in VET and school-based and company-based training

5.2.1 Governance structures in the national education system

The areas of responsibility of the SEP are governed by Article 12 of the Education Act. The SEMS has a particular responsibility in the area of formal vocational education and training. It determines the school calendar, the pedagogical requirements and the curricula for all upper secondary education provision. Nevertheless, the assessments of local education authorities, of representatives of the individual sub-systems at state level and of the various social sectors are also all taken into account. The SEMS is further charged with the planning, coordination and evaluation of educational provision. It stipulates general basic principles for the examinations and is responsible for the national certification system.

The federal states are responsible for the provision of services to the SEP and use their state committees [Comités Estatales para la Planeación y Programación de la Educación Media Superior, CEP-PEMS] as a vehicle for proposing regionally oriented content to be integrated into the skeleton curricula. They also authorise private educational providers and recognise and update competences acquired via informal means on the basis of the SEP guidelines. Each federal state is required to ensure that cities and municipal authorities make the necessary basic equipment available in their public schools. The governments of the respective federal states are also free to enter into agreements with the individual municipal authorities for the purposes of coordinating and standardising educational activities pooling resources. Each federal state has its own Ministry of Education to implement and coordinate these tasks. In addition, representatives of the National Ministry of Education and of the administrative units of the respective sub-systems maintain a presence in each state.

The National Council of the Education Authorities for Upper Secondary Education [Consejo Nacional de Autoridades Educativas, Capítulo Educación Media Superior, CONAEDU-EMS], which was set up in 2004, coordinates the decision-making process between national and federal state stakeholders. However, it mainly acts as an advisory body. Meetings are held three or four times annually, at which the representatives of the

various General Directorates of the SEMS and the federal state ministers of education discuss the planning and structuring of programmes and reforms (cf. OECD 2013).[66]

In accordance with Articles 47 and 48 of the Education Act, responsibility for national curricular tasks rests with the SEP. It is required to ensure the development of skeleton curricula [plan de estudios] which regulate the aim of the respective competence acquisition, grouping into teaching subjects, the structure of the educational programme and information regarding evaluation and certification. During the development process, consideration needs to be accorded to the assessments of the local education authorities and of the various social stakeholders involved (e.g. teachers, parents or company representatives). The latter are represented in turn by the National Council for Social Participation in Education [Consejo Nacional de Participación Social en la Educación, CONAPASE]. Account must also be taken of the assessments of the INEE. If cultural, historical, artistic or literary content is relevant, integration of the expertise of the Ministry of Culture [Secretaría de Cultura] is also required. Particular regional characteristics relating to aspects such as geography, history and customs should be added in consultation with the local education authorities. Since 2013, greater integration of the federal states in the development of curricula has been sought via a framework agreement to strengthen the State Commission for Planning and Programme Design in Upper Secondary Education [Convenio Marco de Coordinación para el Fortalecimiento de las CEPPEMS] with the goal of being able to harmonise the various types of educational provision more effectively to the needs of the labour market in the individual regions.

COSDAC is the competent body for the development and evaluation of curricula for upper secondary education (general and vocational, apart from CONALEP). It also coordinates some of the teacher training provision (see section 5.4.1) and promotes the implementation of innovations and research contributions in upper secondary education. Because CONALEP is a decentralised institution, it works autonomously to develop its curricular stipulations and the competence profiles of those completing programmes. Notwithstanding this, it also cooperates closely with COSDAC.

Actual provision of the respective initial and continuing vocational education and training activities is extremely complex. More than a dozen public providers are available. These comprise central sub-units of the SEP, decentralised units of the individual federal states with federal state involvement and entirely decentralised institutions. Table 34 provides a summary of the number of the respective school providers and of the relevant administrative units.

66 The results of the respective meetings may be publicly viewed at: **http://www.sems.gob.mx/es_mx/sems/conae-du_ems**, last accessed on 28/02/2018.

Table 34: Sub-systems and schools in the public vocational education and training system[67]

	Centralised units under the SEMS		Decentralised units of the federal states with federal involvement		Decentralised units	
	Administrative unit	School	Administrative unit	School	Administrative unit	School
Vocational upper secondary certificate	DGETI	CETIS CEBETIS	DGETI	CECyTE	CETI	CETI
	DGETA[68]	CBTA CBTF			CONALEP	CONALEP
	DGECyTM[69]	CETMAR CETAC				
Advanced and continuing training	DGCFT	CECATI	DGCFT	ICAT	CONALEP	CONALEP

Source: Own representation based on INEE (2013, pp. 22ff.).

The most important institution at national level is the DGETI, which has been subject to the SEMS since being established in 1971. It has 456 schools nationwide, and there are a further 652 institutes in the federal states which are also administered via the DGETI (cf. DGETI year of publication not stated). The largest decentralised institution is CONALEP, which has over 300 schools and more than 300,000 students (cf. **gob.mx** year of publication not stated c).

Although the CECyTEs and ICAT are governed decentrally by the respective federal states, they receive both financial and administrative support from the Federal Government.

There are also decentralised units which are primarily governed and financed by the federal states. These include the CETIs and the CONALEP institutes. CONALEP is an institute of the Mexican Government under public law and is subject to the SEP. Although it is a decentralised unit, some aspects are governed by its Head Office in Metepec in the Federal State of Estado de México, which determines the curricula and the normative

67 Colleges for Technological Studies [Colegio de Estudios Technólogicos, CET] as well as Centres for Scientific and Technical Education [Centros de Estudios Científicos y Technológicos, CECyT] also exist. These are centralised units yet are not subject to the SEMS and are instead based in the IPN. For reasons of clarity they are not shown in the table. In addition to this there is further regional or content-specified provision with an often very low number of participants.

68 General Directorate for Technical Agricultural Training [Dirección General de Educación Tecnológica Agropecuaria].

69 General Directorate for Education in Marine Sciences and Technology [Dirección General de Educación en Ciencia y Tecnología del Mar].

alignment of the institute in overall terms and assumes responsibility for national coordination of training provision in the respective schools. Human resources planning and recruitment, investment in infrastructure and operational implementation are, however, all governed in a decentralised way via the respective federal states. Mexico City and the Federal State of Oaxaca constitute an exception in this regard by dint of being linked to Head Office.

Particular regulations and responsibilities apply to the introduction and implementation of the MMFD (see section 4.3.2).

The DGCFT, which is subject to the SEMS and acts at a national level, is the largest provider of advanced and continuing vocational education and training measures. Its provision is divided into courses at the CECATIs and at the ICATs at federal state level.

Areas of responsibility in tertiary education are divided between the Coordination Office for Technological and Polytechnic Universities [Coordinación General de Universidades Tecnológicas y Politécnicas, CGUTyP] and the Competent Body for the National Technological Institutes [Tecnológico Nacional de México, TecNM], which looks after the national and decentralised Technological Institutes.

5.2.2 Governance structures of company-based VET activities

Responsibility for company-based vocational education and training activities primarily rests with the STPS or with its General Directorate for Vocational Education and Training and Labour Productivity [Dirección General de Capacitación, Adiestramiento y Productividad Laboral, DGCAPL]. General statutory conditions regarding company-based VET activities have enjoyed very little elaboration or recognition. They are primarily governed by Article 153 of the Labour Act and in overall terms include only a few requirements that have been specifically formulated (see section 5.1). From the point of view of the companies, these tend to be viewed as being of secondary importance. Arteaga García et al. (2010, pp. 207 ff.) indicate that the binding commitment provided by this statutory framework is low for companies and trade unions alike. The latter exert only a very slight influence on initial and advanced training activities, if indeed they have any impact in this regard. Many of the companies do not implement the stipulations described at all. Although the STPS regularly conducts checks to ascertain whether the relevant activities are being carried out, no consequences in the case of non-compliance occur in most cases.

According to an investigation of manufacturing industry conducted by the INEGI (2010), only 7.7 per cent of the companies surveyed offer any kind of formal training to their employees. Nevertheless, attention should be drawn to the significant differences that exist both within the various branches of industry and in respect of company size. Micro companies with a maximum of 15 employees exhibit considerable weaknesses in particular (Table 35).

Table 35: Proportion of companies in the manufacturing sector offering formal training to their employees, by company size [in %]

Size	Proportion
Large (251 and more employees)	73.2
Medium (101–250)	62.5
Small (16–100)	36.9
Micro (0–15)	5.4

Source: Own representation based on INEGI (2010).

Strengthening the vocational training activities of companies is one of the goals of the National Committee for Productivity [Comité Nacional de Productividad, CNP]. The CNP acts as an advisory organ to the government and recommends measures and specific projects aimed at strengthening and democratising productivity. The SEP, the SE, the STPS and the Ministry of Finances and Public Spending [Secretaría de Hacienda y Crédito Público, SHCP] are all represented alongside chambers, trade unions, employer associations and educational providers (e.g. CONALEP).

5.2.3 Further stakeholders

The main influence exerted on initial and continuing training activities by self-governing organs (such as the chambers) is revealed in the conducting of courses. These are dedicated to a wide range of main focuses including administration and management, technical guidance and the acquisition of standards certificates (e.g. ISO). These activities are managed at a national level and executed by the regional representative offices of the respective chambers.

The introduction of the MMFD has also accorded the chambers a strategic role in the structuring of initial and advanced training activities. Whereas the SEP, COPARMEX and the CAMEXA initially took on a leading part in this regard, increasing numbers of chambers are now considering active participation. The employer associations are also taking on a significant role, and the CCE is now highly involved too (see section 4.3.2). The SNTE has not yet addressed specific issues relating to vocational education and training.

The Federation of Mexican Workers [Confederación de Trabajadores Mexicanos, CTM] has been supporting the establishment and management of various institutions for the promotion of the professionalisation of employees since as long ago as the early 1960s. The strengthening of initial and continuing training structures represents one of the main focuses of this work. The CTM is in particular calling for closer integration and commitment of employers and for workers to have the right of lifelong access to educational provision. Its most prominent projects have included integration into the Council for the Promotion of Human Resources for Industry [Consejo Nacional de Formento de Recursos Humanos para la Industria], a body that has since been dissolved, and support

for the CECATIs and the National Service for the Efficient Training of Workers in Industry [Servicio Nacional de Adiestramiento Rápido de la Mano de Obra en la Industria, ARMO]. These institutions cooperate with the National Centre for Productivity [Centro Nacional de Productividad, CENAPRO], in which the CTM is represented at a management level. The CTM and trade unions with which it cooperates also maintain their own training centres. Examples which should be mentioned in this regard are the Training Centre of the Sugar Industry [Instituto de Capacitación de la Industria Azucarera, ICIA] and the Fidel Velázquez Centre for Trade Union Education and Training [Centro de Educación Sindical y Formación Profesional Fidel Velázquez]. The CTM now also conducts educational activities in tertiary education via its Trade Union Centre for Higher Education [Centro Sindical de Estudios Superiores, CSES] in the Federal State of Yucatán. The CTM and further trade union bodies are represented via the CNP.

5.3 Financing of VET and training

The financing of individual formal educational provision is aligned to the financing possibilities available to upper secondary education (see section 3.2). Table 36 provides a summary of payment of costs for individual types of vocational education and training provision in the public education system.

CONALEP is funded in two ways. The budget for Head Office and the schools in the Federal State of Oaxaca and in Mexico City is provided directly by the Federal Government. The other schools are financed by the respective federal states. Nevertheless, the Federal Government also offers support in the form of allocations, which are stipulated in sections 11 and 33 of the National Budget (see section 3.2).

Table 36: Main finance providers in upper secondary education

Financing via the Federal Government		Proportionate financing by the Federal Government and federal states		Financing via the federal states	
Administrative unit	School	Administrative unit	School	Administrative unit	School
DGETI	CETIS	DGETI	CECyTE	CONALEP (except Mexico City and Oaxaca)	CONALEP
	CBTIS	DGCFT	ICAT		
DGETA	CBTA				
	CBTF				
DGECyTM	CETMAR				
	CETAC				
DGCFT	CECATI				
CONALEP (only Mexico City and Oaxaca)	CONALEP				
CETI	CETI				

Source: Own representation based on INEE (2013, pp. 22ff.).

Apart from this, additional revenues can be achieved in the vocational education and training sector via the staging of courses, via the provision of equipment for internal company training and by carrying out certifications for students and employees. Such forms of income are, however, usually low. This means that VET institutes are largely dependent on state allocations. Depending on their location, they may have recourse to monetary contributions or donations in kind from companies. In addition, teachers and parents try to make up for the frequent lack of resources by providing equipment themselves. A parent or a teacher may, for example, make their own car available for inspection purposes in the motor vehicle sector.

Vocational education and training also benefits from international support by means of certain projects or schemes provided by bodies such as the World Bank or the Inter-American Development Bank (IDB). One extensive example currently is the IDB-funded Programme for the Formation of Competence-Oriented Human Resources [Programa de la Formación de Recursos Humanos basada en Competencias, PROFORH-COM] (see section 5.8).

In-company training and the advanced or continuing training that are obligatory on an annual basis are financed by the firms themselves. A fee is payable to COPARMEX or CCE for participation in the MMFD. Some companies pay additional "pocket money"

to the trainees (see section 4.3.2). Trainees may apply to receive a state grant in the amount of approximately €100 per month.

5.4 Training of VET staff

5.4.1 Teachers at vocational schools

Within the area of responsibility of the SEMS

Although teacher training institutions such as the normal schools and the Pedagogical Universities are in place for the primary and lower secondary sectors (see section 3.4.6), very few such bodies exist for the upper secondary level. It is possible to obtain a *Licenciatura* or an upper secondary teaching qualification at Maestría level at some universities. Nevertheless, teacher training in this area was scarcely subjected to any regulation at all over a long period of time, in particular with regard to the vocational schools. The formal prerequisite was that a university degree needed to have been acquired. This did not necessarily have to relate to the teaching subject. This stipulation could, however, be waived in the event of recruitment problems. Pedagogical training was not mandatory. Teacher selection criteria gave the impression of being arbitrary. The SNTE was frequently involved in passing on or selling vacancies. Promotions followed the principle of seniority.

There was a lack of quality across the whole of the school system, for which the low requirements for teacher training were perceived to be a major reason. In 2013, this led to a fundamental reform conducted by President Peña Nieto (see section 5.8). The introduction of two new statutory provisions exerted an impact on training and continuing training for teachers. When enacted in 2013, the Law of the National Institute for the Evaluation of Education [Ley del Instituto Nacional para la Evaluación de la Educación, LINEE] and the Law for School Services [Ley General del Servicio Profesional Docente, LGSPD] formed a new framework for the selection, induction, regular evaluation and permanent employment of teachers in both basic education and in upper secondary education.

With regard to teacher recruitment, a competence profile was developed with the aim of facilitating transparent employment decisions. These now take place on the basis of selection procedures which are regularly conducted once or twice per year for each federal state. Selection of teaching staff at vocational schools is governed by an aptitude test held nationally. This comprises standardised multiple choice questions which check knowledge of competences which are important for the teaching profession and of the development of lesson plans. An overall points score is calculated on the basis of these two procedures which forms the outcome of the process. If an applicant's score exceeds a certain value, he or she is allocated to the various vacancies using a points ranking system (cf. SEP 2017a).

Article 4 of the Teacher Training Act defines the function of a teacher as a person who has completed formal or non-formal specific technical training and is in possession of a profile which enables him or her to teach, advise, carry out research and assist pupils directly in practical units.

Table 37: Course provision within the two-year induction period for teachers

Category	Number of hours	Description
Competence development for teachers	120	This online-based programme is specially aligned to knowledge of diagnostic investigation and to the competence profile stipulated in this regard. It is divided into four workshops: 1. Introduction to general and teacher-specific competences for teaching at upper secondary level 2. The pupils as the focal point 3. A classroom climate that is conducive to learning 4. Epistemic logic of disciplines
Observing in order to learn – interaction with pupils	40	This video-based course programme looks at the planning and execution of teaching and at reflection. It uses videos featuring successful lesson examples supplemented by expert commentaries. There are also at least four face-to-face group leaner sessions together with an experienced teacher.
Communication course to enhance quality	80	This online-based course is dedicated to communication in lessons. It comprises the following modules: 1. Communication in the educational sector 2. Pedagogical dialogue as a tool for the construction of knowledge 3. Quality of feedback from teacher to pupils 4. Clear communication strategies to foster pupils' understanding processes 5. Non-verbal communication

Source: Own representation based on SEP (year of publication not stated b, c, d).

Contracts of employment commence with an initial six-month probationary period. During the first two years, new teachers receive support from an experienced tutor and a course programme to impart a more detailed level of didactic and pedagogical competence (Table 37). After completion of the first year of school service, a diagnostic appraisal takes place with the aim of determining which further targeted support will be required. Firstly, this comprises a report on the teacher's current performance level. A

standardised questionnaire is used, which is completed independently by the respective teacher and school head. In the second part of the evaluation, teachers address their own preferences and needs with regard to further support (cf. SEP 2017b).

The first regular appraisal is carried out after two years. This investigates whether new teachers are in a position to deliver lessons in accordance with requirements. These assessments tie in closely with subsequent evaluation processes, which are explained in the following section.[70] Teachers who achieve a satisfactory outcome enter school service.

Validation is required to take place at least every four years after the introduction of the new Teacher Training Act. This comprises three stages. The first of these consists of two standardised online-based questionnaires, in which the teacher and the school head address the respective strengths and weaknesses of the former. One of these is completed by the teacher and the other by his or her direct line manager (mostly the head). The second stage of the process involves preparation of a lesson plan and a written reflection. These documents also need to be submitted online. The third stage comprises a standardised online-based test. The teacher is required to answer subject-specific questions and questions relating to didactic knowledge within a time limit of three hours (cf. SEP 2017c, 2017g).

The evaluations lead to three possible results – *unsatisfactory, satisfactory* or *outstanding*. If an outcome of satisfactory is achieved, the teacher is confirmed in his or her function within the school service for a further four years. In agreement with the school head, he or she may participate on a voluntary basis in courses to strengthen teaching competence. If performance is unsatisfactory, participation in further courses is mandatory and the evaluation will be repeated one year later. Teachers who fail to achieve a satisfactory result at the third attempt are excluded from performing teaching tasks and may either accept a position in school administration or else voluntarily opt for early retirement. An outcome of outstanding leads to a salary increase and opens up the possibility of promotion to more demanding positions. More advanced courses may be completed upon request, and credit transfer for these is available within an academic specialisation (cf. Cordero Arroyo/González Barbera 2016). Over 29,000 teachers were evaluated when the scheme was conducted for the first time in the 2015/2016 school year. Around 78 per cent achieved a result of at least satisfactory (cf. SEP year of publication not stated c).

The introduction of this reform, which places the emphasis on different recruitment criteria for teachers and on regular evaluation, led to major protests in some regions of Mexico. These reached a climax in 2016, when teachers and trade union officials demonstrated for weeks and blocked main roads. The SNTE was also clearly involved in these actions. Violence was also perpetrated against police officers and strike breakers.

70 Because regulations regarding implementation are amended slightly each year, the following presentation is based on the example of the 2017/2018 school year.

The criticism was that the reform did not address the core of the quality problems in the education system. The opponents of reform believe that these lie in the lack of resources available in schools, particularly in disadvantaged regions. They also argue that children are not able to attend school because of poor infrastructure and poverty in society. They see the implementation of national standards as a step in the wrong direction and as something that will exacerbate existing inequalities still more. A further point of criticism was that the criteria for the evaluation of teaching staff are not sufficiently transparent and lead to targeted dismissals and cost-cutting measures. In addition, there is a feeling that the rigid stipulations, which have their basis in declared profiles of good teachers, are too strongly focused on academically oriented teaching and thus place too much of a restriction on the work carried out by teaching staff.

Within the area of responsibility of CONALEP

Although the provisions and requirements set out in the Teacher Training Act are directed at all upper secondary teaching staff and therefore also specifically take account of decentralised institutes, a certain grey area exists within this sector. Only a small number of the teaching staff working for CONALEP are employed by the SEP. The remaining teachers have a direct contract of employment with CONALEP and are thus exempt from the regulations of the SEP with regard to evaluation and continuing training. They are instead bound by collective wage agreements with other trade unions. Although CONALEP takes the competence orientation required by the educational reform on board and aligns itself to the teacher profiles of the SEMS, it has also developed separate recruitment requirements. These are derived from its own academic model, which has its basis in the findings of constructivist learning theories and is directed towards general, academic and vocation-oriented competences. The aim is to establish a clear reference between the educational sector and the requirements of everyday life and of the world of work. Dealing with heterogeneous groups, their cultural and social differences and differing educational backgrounds constitutes an important factor in this regard.

With this in mind, CONALEP has its own programme in place to strengthen the competences of teaching staff [Programa de fortalecimiento de las competencias de los docentes] (Table 38). This comprises eight basic and ten specialisation modules with different main focuses. Modules are either completed personally or online and in some cases are based on cooperation agreements with national and international institutions and companies.

Table 38: CONALEP course provision for teachers

Basic modules		Specialisation modules	
Learning	Introduction to the academic model	Strengthening of personal and professional interaction	Ethics in educational areas
	Introduction to competence orientation		Intervention strategies in the classroom
	Didactic training in the academic model		Planning of vocational orientation activities
	Application of strategies for the fostering of general competences	Application of communication and information technologies	Acquisition of competences in communication and information technology
	Holistic evaluation of learning success		Introduction to educational activities via virtual channels
	Creation of a good learning environment	Psycho-pedagogical reinforcement	Strategies for the teaching of adults
	Lesson planning		Training of training staff
	Final module		Improvement of teaching activities
			Learning strategies
			Application of findings of learning theories

Source: Own representation based on CONALEP (2016f).

The basic modules reflect the minimum requirements made of a teacher and should be completed in a timely manner following appointment. In addition, CONALEP conducts its own self-developed evaluation procedure each semester. The individual instruments are as follows.

- Evaluation by pupils (30 %)
- Evaluation by the school head (25 %)
- Self-evaluation (5 %)
- Evaluation by a colleague via observation of a lesson (40 %) (cf. CONALEP 2017a).

Other provision

The Teacher Training Programme [Programa de Formación Docente, PROFORDEMS] of the SEMS, in which the National Association of Universities and Institutions of Academic Education [Asociación Nacional de Universidades e Instituciones de Educación Superior, ANUIES] is also involved, offers course programmes for teaching staff. The aim is to provide teachers with support in meeting requirements within the scope of the RIEMS. The PROFORDEMS offers two continuing training options. These are an academic specialisation in teaching competences [Especialidad en Competencias Docentes], which is awarded by the National Pedagogical University (see section 3.4.6), and a *Diplomado* for teaching competences in upper secondary education [Diplomado en Competencias Docentes en el Nivel Medio Superior], which is issued by various institutions affiliated to the ANUIS. The latter comprises the following three modules (online based and face-to-face teaching):

- RIEMS (40 hours)
- Development of teaching competences in upper secondary education (100 hours)
- Didactic planning for competence-oriented teaching (60 hours)

Certification of teaching competences for upper secondary education [Certificación de Competencias Docentes para la EMS, CERTIDEMS] takes place upon completion of the courses (cf. ANUIES 2013, ANUIES/SEP 2012, SEP/ANUIES 2015).

Alongside the training and evaluation opportunities provided by the SEMS and CONALEP as described, CENEVAL also offers such an evaluation of the competences of teaching staff in upper secondary education [Evaluación de Competencias Docentes para la Educación Media Superior, ECODEMS]. This provision for teachers encompasses a four-hour standardised knowledge test and lesson evaluation using a draft teaching plan, a video recording and self-reflection on the part of the teacher. Costs of evaluation and certification are the equivalent of approximately €240 (cf. CENEVAL year of publication not stated).[71]

5.4.2 In-company trainers

Virtually no binding regulations exist in Mexico in respect of requirements for in-company trainers. Experienced colleagues are often put in charge of induction, or theory-based

71 Original information: 4,900 Mex. peso; exchange rate as at 24/07/2017: 1 € = 20.5999 Mex. peso.

courses on certain topics are offered by the respective experts. Full-time trainers in possession of a relevant qualification tend to represent the exception (see section 4.3.5).

Statutorily prescribed continuing and advanced training courses (see section 5.1) need to be conducted by registered training agents. Registration is inexpensive and takes place via the STPS. No formal prerequisites need to be fulfilled for this purpose. Although evidence of competency to conduct continuing training courses should be demonstrated by some kind of certificate, it may also be based on personal experience if relevant explanations are provided (cf. STPS 2016a).

The STPS offers voluntary courses for the training of in-company trainers via the DGCAPL. One possibility is the Programme for the Training of Multipliers [Programa de Formación de Agentes Multiplicadores, FAM]. This provision is free of charge and aligned to needs. It is directed at staff within a company who pass on their knowledge in a targeted way. Three main focuses are available – training of training staff, identification of training needs and development of training handbooks. One-week courses of a duration of 30 hours are offered for 15 to 20 participants, who should be in possession of an upper secondary qualification at least. Otherwise, participation must be approved by the General Directorate responsible. Following successful completion of the course, participants receive a *Constancia* (cf. STPS 2016b).

Against its background of certifying both the German and Mexican version of dual training (see section 4.3.2), the CAMEXA offers the following courses for training staff. Two internationally aligned variations are closely oriented to the training standards of the German Ordinance on Trainer Aptitude (AEVO). On the basis of a licence from the training arm of the Association of German Chambers of Commerce and Industry (DIHK), the CAMEXA conducts 80-hour and 40-hour training courses. Costs are around €1,200[72] or around €600 for the shortened version. A further option is directed at participants in the Mexican model. For this purpose, the CAMEXA cooperates with the employer association COPARMEX to provide 40-hour online-based courses to train staff which are adapted to the Mexican work environment (cf. CAMEXA year of publication not stated a). Costs in this case are around €260.[73]

5.5 VET research

No research institute dealing with vocational education and training specifically exists in Mexico. Technological research is conducted by the National Conference for Knowledge, Technology and Innovation [Conferencia Nacional de Ciencia, Tecnología e Innovación, CNCTI], which is composed of representatives of the National Council for Science and Technology [Consejo Nacional de Ciencia y Tecnología, CONACYT] and of the individual federal states. CONACYT comprises six regional representations and is

72 Original information: 24,940 Mex. peso; exchange rate as at 24/07/2017: 1 € = 20.5999 Mex. peso.

73 Original information: 5,400 Mex. peso; exchange rate as at 24/07/2017: 1 € = 20.5999 Mex. peso.

primarily dedicated to research funding in various areas via vehicles such as doctorate scholarships which are awarded both in Mexico and abroad. In addition, each federal state has its own research council. These councils are coordinated by the National Network of Federal State Councils and Organisations for Science and Technology [Red Nacional de Consejos y Organismos Estatales de Ciencia y Tecnología, REDNACECYIT]. CONACYT also maintains a summary list of all official institutions, companies and individual persons actively engaged in research – the National Register of Research Institutions [Registro Nacional de Instituciones y Empresas Científicas y Tecnológicas, RENIECYT].

In overall terms, national VET research tends to represent a marginal area and does not embody a separate research discipline. Relevant research work is instead frequently localised in adjacent disciplines such as social sciences, business administration etc. Nevertheless, there has certainly been interest in this topic area traditionally. As early as the 1950s, the then Industrial Productivity Centre [Centro Industrial de Productividad] – which since 1983 has been subsumed under the General Directorate for Vocational Education and Training and Labour Productivity [Dirección General de Capacitación y Productividad] (see also section 5.2.2) – began to look at correlations between productivity and vocational education and training in Mexico (cf. Villar et al. 2013).

The UNAM Institute for Research and Education (cf. e.g. B. Valle 2009) and the Centre for Further Studies at the IPN also investigate topics relating to vocational education and training on an individual basis. They are, however, primarily concerned with academic education. One prominent theme addressed by national studies is the contribution made to combating poverty amongst disadvantaged young people and adults. Authors conduct investigations into government anti-poverty programmes in particular. Within this context, reference is made to the fact that it is difficult for vocational education and training alone to contribute towards bringing about a material reduction in unemployment and an improvement in the precarious work conditions faced by the population addressed (cf. Alvarez-Mendiola 2006, Calderón-Madrid/Trejo 2001, Pieck 2001, 2004, Delajara et al. 2006). There are also studies of a more educational economics nature which discuss aspects such as the impact of investments in VET activities on productivity and wages (cf. Ríos Almodóvar 2005, Quinn/Rubb 2006) or which look at the influence of increasing technologisation on training needs (cf. Castro Lugo et al. 2013). The US study conducted by Atkin (2016) investigates the correlation between exports in manufacturing industry and the amount of time young people spend in the education system. The author shows that growth in the export-oriented production sector leads to an increased supply of low-skilled tasks. This entices young people into leaving school early in order to enter the labour market directly.

Studies by Arteaga García et al. (2010), Minowa (2000), Sánchez-Castañeda (2007) and Villar et al. (2013) provide a good overview of Mexico's vocational education and training landscape. Particular content addressed includes matching of educational pro-

vision shaped by the SEP and the STPS, labour market demand and reform approaches adopted by the government to overcome the resultant challenges. The Economic Research Centre at the Technical University of Zurich (ETH) also offers comprehensive information (cf. ETH Zurich 2017). Publications of a more didactic nature primarily investigate competence orientation approaches (cf. e.g. Valdez-Coiro 2006, Climent Bonilla 2010). Wiemann and Pilz (2017) compare the company-based initial and continuing training activities of German and Mexican companies against the background of the transferability of the German dual training model and its influence on the education system in Mexico (see also Pilz et al. 2016, Wiemann 2017).

In international terms, vocational education and training research is promoted and practised by the following organisations:

- The Inter-American Centre for Knowledge Development in Vocational Training [Centro Interamericano para el Desarrollo del Conocimiento en la Formación Profesional, CINTERFOR] of the ILO
- The Organisation of Ibero-American States [Organización de los Estados Iberoamericanos, OEI]
- The Economic Commission for Latin America and the Caribbean [Comisión Económica para América Latina y el Caribe, CEPAL] (e.g. "Formación profesional y capacitación en México", Ahumada Lobo 2014)
- The Latin-American Faculty for Social Sciences [Facultad Latinoameri-cano de Ciencias Sociales, FLACSO] (e.g. "El CONALEP y las características de la Inserción laboral de los profesionales técnicos en Electromecánica y Productividad Industrial", Lara Carmona 2006)
- The OECD (e.g. "Learning for Jobs Reviews of Vocational Education and Training Mexico", Kis et al. 2009),
- The World Bank (e.g. "A Reassessment of Technical Education in Mexico", López-Acevedo 2002),
- UNESCO (United Nations Educational, Scientific and Cultural Organisation)/UNEVOC (UNESCO's International Centre for Technical and Vocational Education and Training) (e.g. "World TVET Database Mexico", UNESCO-UNEVOC International Centre for Technical and Vocational Education and Training 2015)

5.6 Procedures for quality assurance in VET

5.6.1 Educational reporting and educational indicators

The INEE or the respective sub-systems produce reports and national statistics on upper secondary education. There is, however, no national report which directs its perspective explicitly at vocational education and training. The INEE is the most important quality assurance stakeholder in Mexico. It was founded in 2002 and is a public and autono-

mous institution which devotes itself to the evaluation of teaching quality and of learning outcomes in basic and upper secondary education within the National Education System. As well as conducting various projects, it has been managing teacher evaluation since the 2015/2016 school year (see section 5.4.1). Since the 2014/2015 school year, it has also been in charge of evaluating pupils in the final classes in primary, lower secondary and upper secondary education. In the report "Educación Media Superior" (cf. INEE 2013), which was last published in 2013 and covered the 2010/2011 school year, the INEE provides a summary of important aspects of upper secondary education in the schools and institutes which belong to the SEP. It presents educational institutes together with numbers of learners, the material and infrastructure conditions of the schools, the experience background of teaching staff and typical profiles of those completing educational sectors. The report is primarily a statistical evaluation. Although vocational education and training provision is included as a component of upper secondary education, it is not accorded explicit consideration.

The report "Panorama Educativo de México" (cf. INEE 2015b), which appears annually, presents the most significant educational indicators for basic and upper secondary education. The latter is aligned to the following indicators:

- Social context (e.g. target groups, participation rates, average school education)
- Stakeholders and funding (e.g. typical profiles of pupils, teachers and heads, training of teaching staff, access to communication and information systems, spending by origin of funding)
- Access and school career (e.g. enrolment rates in certain age groups as a ratio of the overall population, completion and dropout rates)
- Learning outcomes (e.g. results of nationwide evaluations of learners, employment rate after completion of schooling)

5.6.2 Securing quality of provision in educational institutions

Because the securing of quality standards within the company context was non-existent over a long period of time and is currently slowly being established against the background of the MMFD, quality assurance has thus far been focused on the full-time school-based sector. Guidelines and quality standards for upper secondary institutions have been put in place within the scope of the RIEMS and SEP Agreement No. 480. Only schools which fulfil these standards are accepted into the National Upper Secondary Certificate System [Sistema Nacional de Bachillerato, SNB]. This constitutes a holistic evaluation system for the standardisation of key aspects of upper secondary education. The respective prerequisites are exclusively defined and monitored by COPEEMS. A series of checks and evaluations needs to be carried out in order to achieve this certification. These range from a general investigation of the underlying educational model to an assessment of teaching and of other support provision for pupils. One material factor is

implementation within teaching plans of the competence profiles contained in the Joint Curricular Framework [Marco Curricular Común, MCC] (see section 5.6.3). Alongside such standards, other relevant evaluation criteria include the training of teaching staff and heads, equipment and amenities of school buildings, provision to supplement teaching and improvement and development plans for the future (cf. CONALEP 2018).

A further quality assurance mechanism is in place in the form of the National Plan for the Evaluation of Learning [Plan Nacional para la Evaluación de los Aprendizajes, PLANEA], which has been implemented for upper secondary education on the basis of the RIEMS since 2015. Various educational institutions recognised by the SEP use a sample to monitor the performance of students in the two areas of language and communication and mathematics (cf.**gob.mx** year of publication not stated a).

As well as the holistic evaluation carried out within the scope of the RIEMS, the SEP occasionally commissions specific assessments from the National Council for the Evaluation of Social Development Policy [Consejo Nacional de Evaluación de la Política de Desarrollo Social, CONEVAL] and federal state appraisals (cf. CONEVAL year of publication not stated). In addition, each educational institution has the option of seeking certification from other bodies such as CONOCER or in accordance with the ISO quality standards. CONALEP has developed its own quality assurance mechanisms, which comprise four parts:

- Participation in the SNB – CONALEP signed up to take part in the SNB in 2009. Since then, 231 of a total of 308 schools have been certified (as at: March 2016) (cf. CONALEP 2016e).
- Quality management certification pursuant to ISO 9000:2008 (cf. CONALEP 2017b).
- Accreditation of subjects offered by the Council for the Accreditation of Higher Education [Consejo para la Acreditación de la Educación Superior, COPAES], which since 2000 has also offered accreditation of individual subject content each semester. CONALEP has been taking part in the accrediting processes since 2002. In 2015, 132 of a total of 395 *programas académicos*[74] had been accredited. This tendency has, however, been in decline since 2009 because the SNB has been a greater object of focus (cf. CONALEP 2016a).
- Quality diagnostics – this mechanism is directed both at the teaching and administrative staff of CONALEP and at students. The Ministry of Public Service [Secretaría de la Función Pública, SFP] has been conducting a survey of work climate and culture in respect of the former since 2002. Students are questioned on their satisfaction with the school environment and with learning provision via a survey that is closely aligned to the criteria of the SNB (cf. CONALEP 2016b).

74 A *programa académico* represents the teaching content of a subject for a semester.

The INEE, a public and autonomous institution which has existed in its current form since 2013, is the most important quality assurance stakeholder in the educational sector. Its remit is to foster improvement processes by evaluating the quality, performance and outcomes of basic and upper secondary education. Relevant measurement mechanisms are developed for this purpose and passed on to the responsible authorities at federal, federal state and local level for implementation (cf. INEE 2015a).

5.6.3 Educational standards and certification

National competence standards are awarded by CONOCER. The development process for a new standard is initiated when a public institution, chamber or private company reports a specific need. CONOCER then initially checks whether such a new development is necessary. If this is the case, the new standard is drawn up by a committee comprising experts from the respective standardisation area and representatives of CONOCER. Standards are officially enacted via publication in the Mexican Federal Law Gazette and inclusion in the Competence Register.

The skeleton curricula form the educational standards for the school area. Considerable significance has been accorded to competence standards since the RIEMS. National competence standards defined by COSDAC in conjunction with the respective sub-systems are stipulated for SEMS upper secondary programmes (see also section 4.3.1). These are divided into general, academically oriented and vocational competences, some of which are aligned to the standards of CONOCER. The general competences are transferable to all academic disciplines and occupational branches. They encompass aspects such as the ability to act in a self-directed and autonomous way, the ability to express oneself appropriately, a capacity for critical thought, the ability to shape further development actively and the ability to work in a targeted way as part of a team. The academically oriented competences represent the minimum requirements for a fundamental understanding of mathematical, scientific, socio-scientific and communicative correlations. The vocation-oriented competences are aligned to requirements relating to entry to the labour market and are set out in more specific terms via the respective sub-systems.

Particular standards which encompass all occupational profiles apply to the education programmes of the MMFD. These are developed in cooperation with the SEP, the CAMEXA, CONOCER and experts from within the respective fields. As of the end of 2017, seven standards had been drawn up and work had begun on a further eleven (see section 4.3.2).

In general terms, two types of certificates can be differentiated. These are certificates which are issued following completion of a formal educational programme and certificates which contain recognition of competences for the labour market. The first type can be categorised according to the three fundamental sorts of provision in upper secondary education:

- The general upper secondary certificate
- The vocational upper secondary certificate
- Vocational education and training (see section 4.3)

The professional certificate represents official approval to work in a certain occupation following completion of a course of higher education study or of a programme of vocational education and training. This is particularly important for professions such as doctor, lawyer, architect or engineer. The issuing authority is the General Directorate for Professions [Dirección General de Profesiones], which is subject to the SEP and maintains a register of all professions and higher education qualifications that are recognised in Mexico (cf. Steinmeyer et al. 2012, p. 25).

Recognition of vocational competences is attested by one of two possible certificates (see section 4.4):

- Via CONOCER – this certificate is valid nationally and attests competent execution of a task that is defined in the National Competence Register.
- ROCO via the CETIs – a Diploma is awarded by the SEP following successful completion.

There are in addition a multitude of other different certifications which confer a greater or lesser dissemination of recognition depending on the awarding body. Numerous further evaluation mechanisms exist, although these are only marginally relevant to the area of vocational education and training. Examples include the following:

- CENEVAL, including provision of the usual entrance tests for universities
- Examinations for the Assessment of Educational Quality and Success [Exámenes de la Calidad y el Logro Educativo, EXCALE], for the identification of educational success and offered at a systemic level via the INEE
- National Assessment of Academic Achievement in Schools [Evaluación Nacional del Logro Académico en Centros Escolares, ENLACE], which conducts regular national evaluations in mathematics and communications for basic and upper secondary education.

5.7 International mobility/internationalisation/international VET cooperation

5.7.1 Mutual recognition of qualifications and international mobility

Bilateral agreements between the Mexican Government and governments of other countries allow the SEP and all its sub-systems to enter into accords on the recognition of qualifications. Although the SEP currently maintains over 50 cooperation agreements, the vast majority of which are with countries on the American continent, there are only

ten bilateral agreements in place for the recognition of qualifications (cf. SEP und Dirección General de Relaciones Internacionales 2016). Some of these expressly relate to qualifications in tertiary education.

The 1974 Regional Convention on the Recognition of Studies, Diplomas and Degrees in Higher Education in Latin America and the Caribbean [Convenio Regional de Convalidación de Estudios, Títulos y Diplomas de Educación Superior en América Latina y el Caribe 1974] represents an international affiliation which aimed to help achieve increased mobility for both students and workers across the South American and Caribbean area (cf. UNESCO 1974).

5.7.2 Multilateral institutions

Mexico works in conjunction with multilateral institutions such as the ILO, the World Bank, the OECD, the IDB and UNESCO to draw up strategies for a range of main topic focuses that are relevant to development. Examples of some of the programmes which relate to vocational education and training are explained below.

CINTERFOR promotes cooperation in respect of the development and modernisation of vocational education and training systems, contributes to the implementation and management of programmes and measures in the field of VET and funds vocational education and training research with a regional focus (cf. CINTERFOR year of publication not stated a). An online platform permits targeted networking of information and resources to take place between members. Mexican members include the STPS, CONOCER, DGCFT and CONALEP, but not the SEP (cf. CINTERFOR year of publication not stated b).

The System for Integrated Measurement and Improvement of Productivity [Sistema Integral de Medición y Avance de la Productividad, SIMAPRO] is an ILO initiative that seeks to improve work conditions and increase productivity in Latin American countries. Vocational education and training represents a key aspect. SIMAPRO helps to bring together the relevant representative bodies of companies, workers, trade unions and associations in pursuit of this purpose. One current project is Qualified Training in the Tourism sector in Guerrero, Oaxaca and Chiapas [Formación de Aprendices Calificados Sector Turismo en Guerrero, Oaxaca y Chiapas]. Within the scope of this project, dual training structures have been implemented in four CECATI schools with the involvement of representative bodies of the employers, the DGCFT, SEMS and CONOCER (cf. SIMAPRO 2015).

The World Bank, for example, was materially involved in the introduction of the SNC within the framework of the "Technical Education and Training Modernisation Project" between 1994 and 2003. It also funded bodies such as CONALEP as part of the "Technical Training Project", which ran from 1985 to 1991. No World Bank project is presently addressing vocational education and training in a targeted manner (cf. The World Bank year of publication not stated c).

Within the scope of the "OECD Skill Strategy", the OECD is currently helping Mexico to develop a national framework for the creation of coherent measures for the fostering, activation and effective use of skills. For this purpose, various experts and stakeholders have been involved in the identification of eight specific challenges and of relevant possible solutions (cf. OECD 2017).

5.7.3 German-Mexican VET cooperation

Germany and Mexico maintain a close degree of cooperation in the field of vocational education and training. BIBB and CONALEP have been collaborating on the promotion and further development of Mexico's VET structures since 2009. The aim is to achieve a broad-based transfer of knowledge in order to support the dissemination and implementation of the MMFD, which was initially launched as a pilot project in 2013 (see section 4.3.2). The main focuses are on the development of a National Vocational Training Act and on support from the German side with the introduction of core elements of dual training structures (cf. BIBB year of publication not stated).

The Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) and the CAMEXA have also been working inter alia on topics relating to initial and continuing VET in conjunction with South American stakeholders within the framework of the North Latin American Cooperation Platform (KOPLAN), which was funded by the German Federal Ministry for Economic Cooperation and Development (BMZ) from November 2012 until April 2018 (initially). One particular focus, for example, is the development of demand-oriented modular provision in the area of environmental and climate technology (cf. GIZ year of publication not stated a).

In 2014, the BMZ commissioned the GIZ with investigating the possible support that could be provided for the introduction and further development of the MMFD. BIBB was also involved at an early stage by taking part in the investigative missions. As a result in 2015, the BMZ gave the GIZ the task of implementing the project "Further Development of the Mexican Model of Dual Vocational Education and Training (MMFD)".

In June 2015, cooperation was consolidated by a joint Declaration of Intent between the German Federal Ministry of Education and Research (BMBF), the Mexican Foreign Ministry [Secretaría de Relaciones Exteriores, SRE] and the SEP. Cooperation is planned to extend initially until 2019 with the objective of the further development of the MMFD. Against this background, the governments of both countries have committed to bipartite funding of the development of the MMFD at an overall volume of €10 million. Also involved on the German side are the CAMEXA, the GIZ, the German Office for International Cooperation in Vocational Education and Training (GOVET) and BIBB. The further Mexican stakeholders are CONALEP, COPARMEX and the CCE. In its capacity as the binational steering committee for the cooperation agreement, the German-Mexican Working Group for Vocational Education and Training defines the roles

and tasks of the participating stakeholders. The following activity areas describe key aspects of the cooperation:

- Creation of the strategic and regulatory foundations of the MMFD
- Improvement of the quality of dual training in selected specialisms
- Improvement of the organisation and management of dual vocational education and training
- Strengthening of capacities and personnel effectiveness of the stakeholders within the MMFD (cf. BIBB 2015)

The GIZ is acting on behalf of the BMZ to support the objective of the project, which will run from June 2015 to June 2019 and will receive total funding of €5 million. The project partners on the Mexican side are the Mexican Agency for International Development Cooperation [Agencia Mexicana de Cooperación Internacional para el Desarrollo, AMEXCID] and the SEP. The project encompasses the following areas of activity:

- Support for the SEP and COPARMEX in the further development of the MMFD
- A strengthening of policy dialogue between the stakeholders involved and the development of consultation structures and governance mechanisms
- Guidance on the legal framework and on the development of standards
- Support for the institutional effectiveness of the most important stakeholders and in the stipulation of organisational and technical areas of responsibility
- Promotion of the establishment of research resources
- Support for the initial and continuing training of VET staff (cf. GIZ year of publication not stated b)

For its part, the BMBF has commissioned GOVET to support and advise the Mexican partners on the further development of the MMFD. GOVET and the GIZ are collaborating closely on this task. One current main work focus is the creation of a Mexican TVET Agency to govern the MMFD. The aim is that this will be set up in 2018. Initial workshops have already been conducted on the development of standards (training regulations/skeleton curriculum), and the intention is that these will continue in more detailed form.

The CAMEXA has also adopted a highly significant role within the scope of German-Mexican VET cooperation and is involved both within the context of the MMFD and of the German version of dual training in Mexico. It fulfils the following functions within the framework of the MMFD:

- Coordination and certification of training staff in the companies
- Provision of guidance to the participating or prospective Mexican educational institutions

- Provision of advice to interested companies
- Certification and authorisation of the Mexican centres for the final examinations

Within the scope of German dual training, the CAMEXA offers services to companies in Mexico via the German Chambers of Commerce Abroad or the Association of German Chambers of Commerce and Industry (DIHK) such as certification as a company providing training, training of training staff, organisation of examinations and certification of trainees (cf. CAMEXA year of publication not stated a).

In December 2016, Mexico was included in the VETnet project for the purpose of further strengthening dual training structures. This BMBF-financed initiative supports the implementation of dual elements in the VET systems of selected countries (cf. DIHK year of publication not stated). The Centre for International Migration and Development (CIM), which is funded by the BMZ, supports by delegating integrated specialists (cf. CAMEXA year of publication not stated a).

5.7.4 Training activities undertaken by German companies[75]

The internal initial and continuing training activities conducted by German multinational companies operating in Mexico are of particular significance. Firstly, such companies are revealed to be clearly embedded within the local context. Many act in the same way as Mexican companies by using activity-specific on-the-job training for a majority of their workers, particularly for simple tasks in the area of production. On the other hand, numerous major German companies have developed complex programmes in order to train skilled workers to take on specialist roles. These are offered in cooperation with the MMFD in conjunction with other school or university partners, in the form of a company consortium or autonomously (cf. Wiemann/Pilz 2017, Wiemann 2017). Prominent examples involving complex internal company training activities which are now being supplemented by cooperation agreements concluded within the scope of the MMFD include those being undertaken by Bosch in Toluca, Siemens in the Federal State of Jalisco and the Schaeffler Group in Guanajuato and Puebla (cf. Steinmeyer et al. 2012).[76] Some companies go beyond merely using training activities to cover their own skilled worker requirements and become actively involved as providers of initial and continuing vocational training. Some of the best known examples are initiatives instigated by Volkswagen, Schuler und Audi. These will be presented briefly below.

75 The representations in this paragraph and the following are partially based on findings that have emerged from the project "Global strategies and local forms of vocational education and training in German multinational companies – a regional comparison in emerging economies", in which Professor Martina Fuchs, Professor Matthias Pilz, Judith Wiemann and Kristina Wiemann are all involved. This project is funded by the German Research Foundation (PI 418/5-1 and FU 424/16-1).

76 For more information on the role of expats and impats in initial and continuing training activities in German subsidiaries in Mexico, see Adick et al. (2014).

Volkswagen in Puebla founded its *Instituto para Formación y Desarrollo Volkswagen*, today known as the *Volkswagen Group Academy*, in 1996. Its main provision comprises three-year training for mechatronics technicians, electronics technicians and toolmakers. Although these programmes are aligned to the German dual training model, they have been significantly adapted to meet local requirements. Trainees spend the whole of the first year at the Academy and learn about the basic principles of the respective occupational fields via structured teaching and in apprentice workshops. The final two years are spent exclusively in the company. Some of the trainers are in possession of a relevant certificate from the CAMEXA, whilst the others are technical experts. Training concludes with both a theoretical and practical examination, and certification is then awarded by the Academy. Volkswagen has also been using CAMEXA certification since 2016. An average of about 100 new trainees commence training each year. Depending on the order situation, training takes place to cover the company's own needs in some cases, especially in the field of maintenance. Training is also provided in exchange for a fee for other mostly German companies or for further subsidiaries within the group, such as Audi. In addition, the Academy offers various specialisation courses of a duration of several weeks for certain main focuses as well as providing language courses (cf. Wiemann 2017).

The training centre *Centro de Especialización Dual (CEDUAL)*, which is also located in Puebla and is operated by the company Schuler, is another major provider of complex technical training. The trigger for the establishment of this training centre was a considerable requirement on the part of companies for trained skilled workers. CEDUAL offers a three-year training programme for tool makers and industrial mechanics which is closely aligned to German training. The centre has its own vocational school, where basic theoretical principles are taught during scheduled teaching blocks. Practical components are taught in the apprentice workshop and in the respective companies. Trainers are certified by the CAMEXA. The examination is divided into an intermediate and final part and is certified by the CAMEXA in accordance with the German standard. Around 25 trainees enter training at CEDUAL each year. The centre provides training to cover the company's own needs as well as offering services to other firms (cf. Wiemann 2017).

Audi in San José Chiapa, a more rural region in the Federal State of Puebla, is a further provider of vocational education and training. In 2016, the company opened a greenfield investment site for the production of one of its premium models. Before the works even opened, the *Centro de Especialización de Universidad de Tecnológica de Puebla*, a facility which extends over an area of more than 20,000 square metres, was being used for employee training. The construction of the training centre and the salaries of teachers and training staff were primarily financed by the Federal State of Puebla. *Audi* provides the equipment for the apprentice workshops and uses courses held in Ingolstadt to train the trainers. Trainees complete a three-year programme leading to qualification as a mechatronics maintenance technician, motor vehicle mechatronics tech-

nician or motor vehicle body and vehicle construction mechanic. Close collaboration with the Universidad de Tecnológica de Puebla also means that trainees are awarded a qualification as higher technician following completion of the programme. There is also an opportunity to obtain a credit transfer towards subsequent higher education study for this training activity. After a further two years, trainees are able to obtain a *Licenciatura* in the engineering sciences. The training centre was initially set up to cover the company's own employee requirements. Because of the large capacities that are available, the intention is to open up the facility for the training of staff from other companies in future (cf. Comunicación Audi México 2014).

5.7.5 German education and training providers

Several German education and training providers have now recognised the considerable need that both Mexican and multinational companies have for qualified skilled workers. Projects by Altratec, Festo Didactic and Don Bosco will be presented as examples below.

Altratec is a cross-company training centre located in Estado de México. It was founded in 1998 as part of the VET project "Dual vocational education and training in Mexico". At the outset, the initiative was instigated by the present Managing Director in his capacity as a CIM expert and later received support from the automobile manufacturer Mercedes-Benz and from CONALEP. Today, Altratec is a private institute which offers various dual training programmes. These are either tied to the German or Mexican version of the MMFD or offer customer-oriented training provision in the occupations of industrial mechanic, toolmaker, mechatronics technician, tourism expert, specialist in the hotel and restaurant sector or information technology specialist. Training is conducted partially in the dedicated training centre and partially in the participating companies. During this time, theoretical content is made available to trainees via a learning platform. Costs and certification depend on the respective version involved (cf. Altratec year of publication not stated).

Festo Didactic operates from Tlanepantla in the Federal State of Estado de México. It offers a broad range of learning solutions to companies and educational institutions. These range from the full equipping of apprentice workshops to online-based learning support and extend to encompass thematically specific course provision. The last named are aligned directly to customer needs and primarily comprise intensive courses that are of a duration of several days and *Diplomado* programmes, each of which consist of around 100 hours of training. Contents focus chiefly on the areas of automation technology, hydraulics, pneumatics, lean manufacturing and similar fields. Courses are recognised by the STPS and lead to the award of a *Festo Didactic* certification. Programmes are delivered in Festo Didactic's own training centre in Tlanepantla, in mobile training units that are capable of deployment anywhere in the country or in companies or educational institutions directly. Costs vary according to the number of participants, place of

implementation and duration of programme (cf. Festo Didactic year of publication not stated).

The NGO *Don Bosco Mondo e. V.* and its local partner the *Salesians of Don Bosco* work across the world to support particularly disadvantaged children and young people. The main aim is to use education to combat poverty and promote development. Don Bosco has been active in Mexico since as long ago as 1902. Today, 381 Salesians work in 55 institutions at 38 different locations. Three of their projects are specifically directed at fostering vocational education and training at a local level. The vocational training centre *Instituto Tecnológico Don Bosco (InTec)* is located in Saltillo in the Federal State of Coahuila. It offers various training opportunities leading to the vocational upper secondary certificate or higher technician status as well as a range of intensive courses. Equipment is jointly financed by funding from the NGO and from German development agencies. The main focus of all the provision offered is highly practical. Six trainers are certified by the CAMEXA, meaning that InTec acts as an examination centre for MMFD training programmes in the region. Each year, the Instituto Carlos Gómez in San Luis Potosi offers more than 500 young people a vocational qualification in five areas of training. Don Bosco also runs a technical secondary school in San Cristobal de las Casas in the Federal State of Chiapas in order to offer basic school and vocational education to young people and adults with an indigenous background, particularly in the area of tourism (cf. Don Bosco Mondo year of publication not stated).

5.7.6 Further international cooperation agreements

The cooperation agreements stated thus far are heavily influenced by the binational arrangements entered into with Germany, particularly against the background of the far-reaching changes brought about by the introduction of the MMFD. Mention should also be made within this context of the Swiss Alliance for Vocational Education and Training [Alianza Suiza por la Educación Dual], which coordinates the commitment of Swiss companies in Mexico on the basis of a Declaration of Intent submitted in November 2016 and participates in the strengthening of dual structures (cf. SEP 2016e). Cooperation agreements are also in place with other international stakeholders. One example is a programme for the formation of human resources instigated within the scope of a global strategic partnership between Mexico and Japan [Programa de Cooperación para la Formación de Recursos Humanos en la Asociación estratégica global entre México–Japón], which promotes technical university training (cf. Japan International Cooperation Agency, JICA, 2017).

The scholarship programmes MEX-FITEC and MEXPROTEC, which are aimed at Mexican engineers and higher technicians, have emerged from a further cooperation agreement with the French Government for the fostering of international academic networking (cf. Embajada de Francia en México year of publication not stated).

Australia's Department of Education and Training and the SEP concluded a Memorandum of Understanding on cooperation in education and VET in 2003. This was extended in 2008 and 2015. Even though these cooperation arrangements have been in place for many years, Australian influence in the area of vocational education and training remains relatively low (cf. Senate Foreign Affairs/Defence and Trade References Committee 2015).

5.8 Major approaches to reform in VET

Vocational education and training activities in Mexico have undergone considerable changes over recent decades. Mention has already been made of a number of individual reforms and initiatives in reference to the main content focuses. Table 39 provides a summary of the educational labour market reforms of relevance to vocational education and training which have taken place since the 1980s. A brief explanation of some of these will be given below.[77]

Table 39: Summary of relevant educational and labour market reforms since 1980

1984	Scholarship Programme for the Retraining of Workers [Programa de Becas de Capacitación para Trabajadores, PROBECAT].
1984-1988	National Programme for Vocational Education and Training and Labour Productivity [Programa Nacional de Capacitación y Productividad], which underlined the major significance of initial and continuing training and of productivity for the securing, improvement and expansion of job supply.
1987-1992	VET project [Programa de Capacitación de Mano de Obra, PCMO] by the STPS, partially funded by the World Bank. This was divided into the two elements of support for vocational education and training activities for the unemployed within the scope of PROBECAT and for persons in employment via the Programme for Integral Quality and Modernisation [Programa de Calidad Integral y Modernización, CIMO].
1990-1994	National Programme for Vocational Education and Training and Labour Productivity [Programa Nacional de Capacitación y Productividad], which stated productivity to be the main engine of development and also took account of the role and contribution of individual employees.
1992	National Agreement for the Increase of Productivity and Quality [Acuerdo Nacional para la Elevación de la Productividad y la Calidad], which looked at the relevant general conditions in companies. Communication between representatives of the government, the trade unions and companies was a further component of this agreement, which also contained a proposal to link salary rises to increases in productivity and quality.
1992-1997	Project for the Modernisation of the Labour Market [Proyecto de Modernización de los Mercados de Trabajo, PMMT], which pursued similar goals to the PCMO but had access to greater resources because a proportion of funds were provided by the World Bank.

77 Information for respective years varies across different sources. The data presented here is primarily aligned to that of Arteaga García et al. (2010).

1994–2003	Project for the Modernisation of Vocational Education and Training [Proyecto para la Modernización de la Educación Técnica y la Capacitación, PMETyC], which was partly funded by the World Bank and focused on the establishment of the National Competence System and of an attendant certification system.
1995–2000	Programme for Employment, Vocational Education and Training and Defence of the Rights of Workers [Programa de Empleo, Capacitación y Defensa de los Derechos Laborales], which aimed to disseminate mechanisms to facilitate entry to the labour market and to encourage increases in quality and competition.
1997–2001	Programme for the Modernisation of the Labour Market [Proyecto de Modernización del Mercado Laboral, PMML], which pursued similar objectives to the PPMT and implemented further mechanisms to modernise the labour market.
2002–2005	Multiphase Project for the Support of Vocational Education and Training and Employment [Programa Multifase de Apoyo a la Capacitación y el Empleo, PMACE], which was partially funded by the IDB and supported entry to employment, company-based continuing and advanced training and the development of institutional programmes and evaluations.
2005	Agreement 286, published by the SEP and facilitating the recognition of competences acquired by non-formal and informal means.
2005–2007	PROFORHCOM (Phase I), partly financed by the IDB with the aim of continuing and expanding the competence culture introduced within the scope of the PMETyC.
2008	RIEMS, which stipulates the competence basis for upper secondary education and assimilates the various sub-systems within the Framework of the MMC and SNB.
2008	Revision of the CONOCER recognition concept as part of the El Nuevo CONOCER project.
2010–2013	PROFORHCOM (Phase II), which exhibits a close connection with the RIEMS in addition to the aspects contained in the first phase.
2012	Declaration of extension of mandatory schooling to include the upper secondary level.
2013	Educational reform as a result of the 2013–2018 National Education Report. The aim is a standardised quality level for all sub-systems of mandatory education via means such as the introduction of measures to train and evaluate teaching staff.
2014–2021	PROFORHCOM, which is primarily aimed at aligning the educational provisions of schools to the requirements of young people and of the labour market.
2015	Agreement 06/06/2015, declaring the MMFD to be an official version of upper secondary education.
2016	Introduction of the New Education Model [El Nuevo Model Educativo] with the aim of achieving quality improvements across the whole of compulsory schooling. Main focuses include better selection of content via revision of the skeleton curricula, greater governance authority and autonomy on the part of individual schools and improvement of the pedagogical and didactic competences of teaching staff.

Source: Own representation based on Arteaga García et al. (2010).

5.8.1 Development of a national competence system via PMETyC, PROFORHCOM and El Nuevo CONOCER (1994–approx. 2013)

The SNC, which aimed to facilitate the recognition of competences acquired by non-formal and informal means and to make qualifications comparable, was introduced in the 1990s within the scope of a broad-based VET reform, the Project for the Modernisation of Vocational Education and Training [Proyecto para la Modernización de la Educación Técnica y la Capacitación, PMETyC]. The National Certification Body CONOCER, which was set up for this purpose, continues to play an important part in the recognition of non-formal and informal competences down to the present day (see sections 4.3.2 and 4.4). The outcome of the project was a skills matrix containing a cross table with five competence reference levels and twelve occupational areas. The aim was that this should cover the entire spectrum of the Mexican labour market. The idea was that each qualification produced at the point where lines and columns cross should be defined by a competence standard. Particular attention was paid to the development of new standards. Between 1996 and 2003, a total of 601 different official standards were drawn up. 256,282 certificates were issued during the same period. Most of the 601 standards remained unused (cf. Anda 2010, p. 21).

Against the background of an investigation into the introduction of the Mexican Qualifications Framework, Anda (2010, p. 17) criticises the obscure and complex structure of the system: "[...] in fact, the information contained in the element components was insufficient and not clear enough, above all for users, who found that they had to ask someone to translate the contents of the standards for them."

After the end of the PMETyC project in 2003, further development work came to a temporary halt and the SNC was virtually dissolved. There was a lack of financing opportunities, whilst uncertainties also prevailed with regard to the management authority of CONOCER (cf. Anda 2010, pp. 23ff.).

Thanks to considerable support from the IDB, the Programme for the Formation of Competence-Oriented Human Resources [Programa de Formación de Recursos Humanos basadas en Competencias, PROFORHCOM] was established in 2005. This was initially divided into two phases (see Table 39). The particular objective of this project was to retain the competence culture in Mexico developed via the PMETyC. The main focus was on alignment to the needs of educational institutions and companies. Improved integration of the various stakeholders was a further important component. The project was, however, under the sole leadership of the SEP. CONOCER was restructured and accorded the status of a foundation under public law. The STPS, on the other hand, was not granted any leading position in the project.

The most recent stage of development instigated by the SNC took place via the project *El Nuevo CONOCER* [the new CONOCER, NC]. This was set up in 2008 to promote confidence in the SNC, drive forward its dissemination and reorganise existing processes (cf. Anda 2010). The SNC now contains all aspects that are associated

with the recognition of learning outcomes obtained via formal, non-formal and informal means (see section 4.4).

5.8.2 RIEMS (since 2008)

The RIEMS is an ongoing process which was initiated in 2008 via a series of agreements. The overarching goal is the creation of a uniform system for upper secondary education, the SNB. The reform comprises four main pillars:

- Establishment of the MCC to harmonise the different sub-systems in a systematic way. This encompasses the definition of competence standards in the form of profiles of those completing the programmes, the idea being that these should be addressed in all sub-systems and mapped in their curricula.
- Definition and regulation of the various implementation modalities to create clearer stipulations and alignment to minimum standards for educational provision which is not or not fully delivered on a face-to-face basis *(no escolarizada and mixta)*. This facilitates the recognition of such qualifications.
- Professionalisation of educational services. The aim is to establish the general conditions for high-quality teaching aligned to the MCC by undertaking a comprehensive improvement of the conditions of the sub-systems. Preference is given to the areas of initial and continuing training of teachers, creation of support provision for students outside actual teaching, compliance with minimum standards with regard to equipment of school buildings and classrooms, improvement of the management level in schools, facilitation of permeability within the various sub-systems and implementation of evaluation mechanisms for upper secondary education.
- National certification. The respective educational institutions are certified for participation in the SNB if they successfully implement the processes of the RIEMS (the MCC is firmly established in education plans, all required minimum standards are fulfilled and the educational institutions are sufficiently committed to the functioning of the system as a whole) (cf. SEGOB 2008).

Significant changes at the time of publication of the present study were the introduction of competence-based teaching (see section 3.4.3) and implementation of holistic evaluation systems (see section 5.6.2).

5.8.3 PROFORHCOM (2014–2021)

PROFORHCOM was re-established in 2014 with the help of funding from the IDB in order to strengthen the employability of persons completing the vocational upper secondary certificate, vocational education and training and continuing and advanced training. The aim was to harmonise the desired competences more effectively to labour market demand and to adapt and consolidate the SNC appropriately. Firstly, the project

is directed at DGECyTM, DGETA, DGETI, CONALEP and DGCFT students. Against this background, particular attention is being paid to the adjustment of skeleton curricula by COSDAC, greater involvement of employers, the creation of more opportunities for company-based learning and improvement of teacher training. Secondly, the project also addresses those who are already in employment via improved certification provision by CONOCER (cf. SEP 2017d).

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7. Further information

7.1 Legal foundations, training regulations, curricular materials

- Mexican Constitution [Constitución Política de los Estados Unidos Mexicanos]
- Mexican Basic Law [Ley Orgánica de la Administración Pública Federal]
- Law on the Exercising of Professions [Ley General para el Ejercicio de las Profesiones].
- Education Act [Ley General de Educación, LGE]
- Labour Act [Ley Federal del Trabajo, LFT]
- General National Regulations for the Upper Secondary Certificate [Normas Generales del Sistema Nacional del Bachillerato]
- Agreement No. 06/06/15 including dual vocational education and training as an official part of upper secondary education [Acuerdo número 06/06/2015 por el que se establece la formación dual como una opción educativa del tipo medio superior]
- Internal Regulations of the SEP [Reglamento Interior de la Secretaría de Educación Pública, RISEP].
- School governance regulations applicable to official upper secondary education bodies which are directly subject to the SEP [Normas de Control Escolar aplicables a los Planteles Oficiales de Eduación Media Superior, dependientes directamente de la SEP]
- Law on the Coordination of Higher Education [Ley de Coordinación de la Educación Superior, LCED]
- Law of the National Institute for the Evaluation of Education [Ley del Instituto Nacional para la Evaluación de la Educación, LINEE]
- Law for School Services [Ley General del Servicio Profesional Docente, LGSPD]
- Agreement 02/08/1995 Basic rules for the definition of technical norms for the certification of competences for the labour market [Acuerdo por el que se establecen lineamientos generales para la definición de normas técnicas de competencia laboral suscetiples de certificación]
- Agreement 27/11/2009 General regulations for the integration and application of the National Competence System [Reglas Generales para la integración y operación del Sistema Nacional de Competencias]

7.2 Addresses

Ministry of Labour [Secretaría de Trabajo y Previsión Social, STPS]
Av. Anillo Periférico No. 4271,
Col. Fuentes del Pedregal, Del. Tlalpan, Ciudad de México, C.P. 14140
https://www.gob.mx/stps/

Ministry of Education [Secretaría de Educación Pública, SEP]
República de Argentina No. 28,
Centro Histórico, Ciudad de México, C.P. 06020
https://www.gob.mx/sep

Umbrella Organisation of the Employer Associations
[Consejo Coordinador Empresarial, CCE]
Sócrates No. 124,
Col. Polanco, Ciudad de México, C.P. 11540
http://www.cce.org.mx/

Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ)
Torre Hemicor, PH,
Av. Insurgentes Sur No. 826,
Col. Del Valle, Del. Benito Juárez, Ciudad de México, C.P. 03100
https://www.giz.de/en/worldwide/306.html

German-Mexican Chamber of Commerce and Industry
[Cámara Mexicano-Alemana de Comercio e Industria, CAMEXA]
Av. Santa Fe No. 170, oficina 1-4-12
Col. Santa Fe, Delegación Álvaro Obregón, Distrito Federal, C.P. 01210
www.camexa.com.mx

Mexican Employers' Association
[Confederación Patronal de la República Mexicana, COPARMEX]
Insurgentes Sur No. 950, Pisos 1 y 2,
Col. Del Valle, Del. Benito Juárez, Ciudad de México, C.P. 03100
http://coparmex.org.mx/

National Institute for the Evaluation of Education
[Instituto Nacional para la Evaluación de la Educación, INEE]
Av. Barranca del Muerto No. 341,
Col. San José Insurgentes, Del. Benito Juárez; Ciudad de México, C.P. 03900 México
http://www.inee.edu.mx/

National College for Technical Vocational Education and Training
[Colegio Nacional de Educación Profesional Técnica, CONALEP]
Calle 16 de Septiembre No. 147 Norte,
Col. Lázaro Cardenas, Metepec, Estado de México, C.P. 52148
https://www.gob.mx/conalep

National Council for Science and Technology
[Consejo Nacional de Ciencia y Tecnología, CONACYT]
Av. Insurgentes Sur No. 1582,
Col. Crédito Constructor, Del. Benito Juárez, Ciudad de México, C.P. 03940
https://www.conacyt.gob.mx/

National Certification Body for Professional and Occupational Competences
[Consejo Nacional de Normalización y Certificación de Competencias Laborales, CONOCER]
Barranca del Muerto No. 275, 1er. piso,
Col. San José Insurgentes, Del. Benito Juárez, Ciudad de México, C.P. 03900
http://conocer.gob.mx/

Sectoral Coordination Body for Academic Development
[Coordinación Sectorial de Desarrollo Académico, COSDAC]
Mariano Escobedo No. 438,
Col. Casa Blanca, Del. Miguel Hidalgo, Ciudad de México, C.P. 11590
http://cosdac.sems.gob.mx/

7.3 Internet addresses

General information:

GIZ: **https://www.giz.de/de/weltweit/306.html**

GOVET: **https://www.bibb.de/govet/de/10392.php**

INEGI: **http://www.inegi.org.mx/**

SEMS: **http://www.sems.gob.mx/**

Public educational institutions:

CBETIS: **http://www.sems.gob.mx/es_mx/sems/cbtis**

CBTA: **http://www.sems.gob.mx/es_mx/sems/cbta**

CECyTE: **http://www.cecyte.edu.mx/**

CETI: **http://www.ceti.mx/cetinew/index.php**

CETIS: **http://www.sems.gob.mx/es_mx/sems/cetis**

CETMAR: **http://www.sems.gob.mx/es_mx/sems/cetmar**

CONALEP: **https://www.gob.mx/conalep**

DGCFT (CECATI und ICAT): **http://www.dgcft.sems.gob.mx/**

The MMFD:

CONALEP: **http://www.conalep.edu.mx/academicos/Paginas/mmfd.aspx**

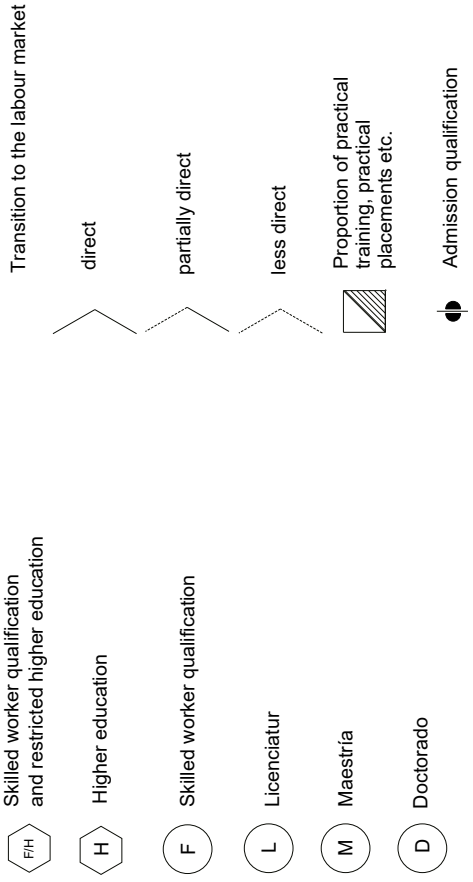
SEMS: **http://www.sems.gob.mx/es_mx/sems/modelo_mexicano_de_formacion_dual_mmfd**

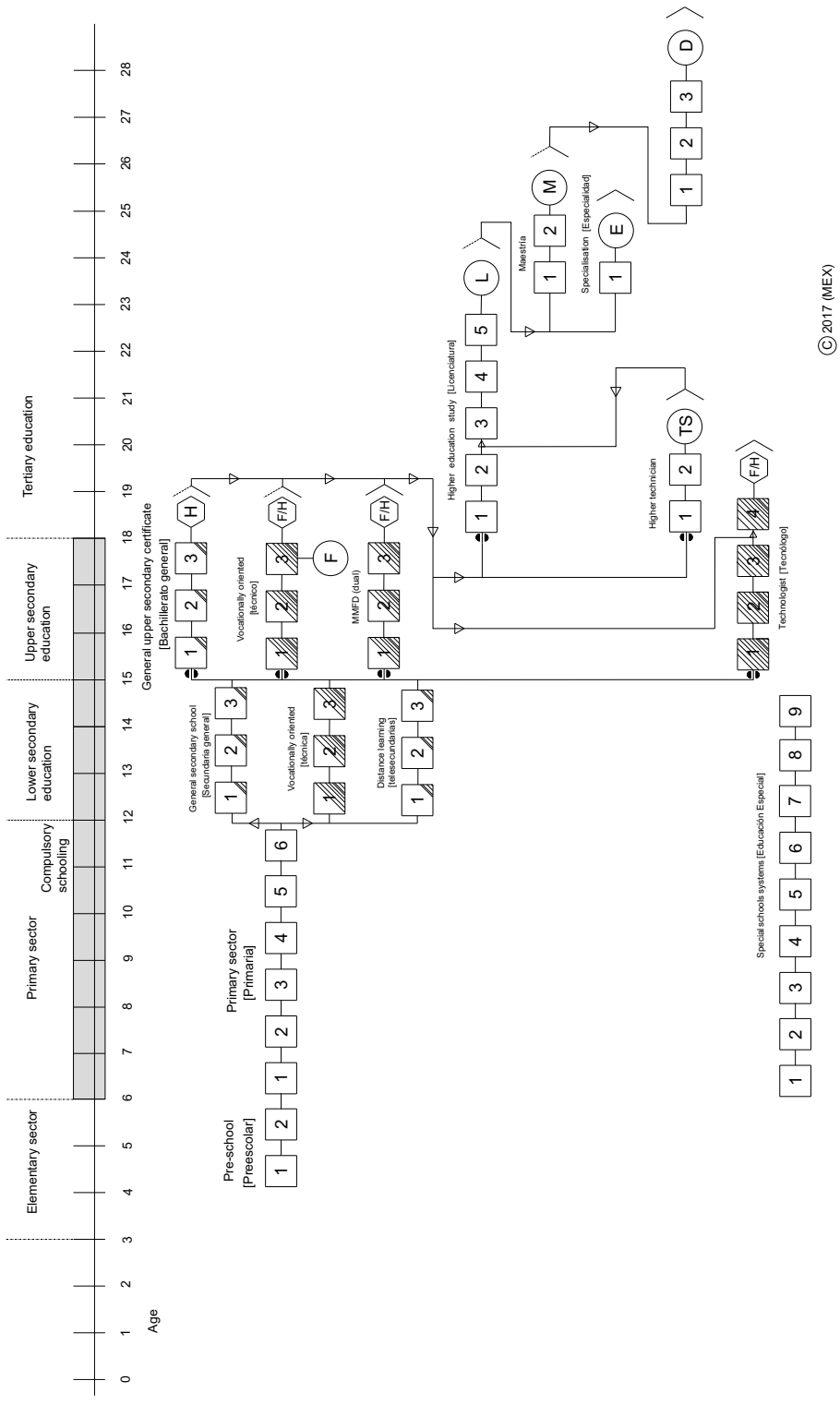
SEP: **https://www.gob.mx/sep/acciones-y-programas/modelo-mexicano-de-formacion-dual?state=published**

Scholarships:

SEP: **http://www.becas.sep.gob.mx/**

Organigram of the educational system (general education and vocational training including higher education)




Elementary sector
Primary sector
Compulsory schooling
Lower secondary education
Upper secondary education
Tertiary education
Age
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28
Pre-school [Preescolar]
Primary sector [Primaria]
General secondary school [Secundaria general]
Vocationally oriented [técnica]
Distance learning [telesecundaria]
General upper secondary certificate [Bachillerato general]
Vocationally oriented [técnico]
MMFD (dual)
Higher education study [Licenciatura]
Maestría
Specialisation [Especialidad]
Higher technician
Technologist [Tecnólogo]
Special schools systems [Educación Especial]
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Index of keywords

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The "International Handbook of Vocational Education and Training (IHBB)" has developed into a practically related standard work for comparative VET research in the German-speaking countries. The studies concentrate on national vocational education and training and educational systems and provide an introductory insight into the general socio-economic conditions and educational policy competences in the respective countries. The Handbook presents the educational systems from a VET perspective and traces their structural and historical lines of development. The International Handbook of Vocational Education and Training was founded by Dr Uwe Lauterbach and Professor Wolfgang Mitter at the German Institute for International Pedagogical Research in 1994. It originally comprised a loose-leaf compilation and has been supplemented and updated on an ongoing basis ever since.

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Mexico is an emerging nation with excellent basic demographic conditions. However, particular possibilities for economic and social development are only feasible if this potential can be exploited in an appropriate manner. Vocational education and training (VET) represents an important factor, but society's low opinions of VET provision, as well as a weak connection between full-time school-based provision and demand in the labour market, pose challenges. The transition from school to employment is thus frequently made more difficult for graduates, while companies struggle to meet their own needs for skilled workers. Extensive reforms in the area of (vocational) education and training are intended to meet these challenges. One example is the introduction of a dual training model towards which German companies and stakeholders in VET cooperation arrangements can contribute.

The title is part of the International Handbook of Vocational Education and Training, the standard reference for comparative research in vocational education in German. It is intended for an academic audience as well as vocational education and training practitioners. Selected titles are translated to make them available to the much broader English readership.

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