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Report commissioned by the Federal Ministry of Education and Research

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1 Introduction

The present report examines a number of longitudinal studies on education pathways in various European countries and North America, some of which have been in progress for decades. The studies provide important information on key stages in the education careers of children, adolescents, and young adults. Some of them follow education careers from birth all the way up to entry into the labor market.

For this report, the following countries were selected for closer examination: Canada, France, the Netherlands, Sweden, the United Kingdom, and the United States. The studies conducted in these countries cover a broad spectrum of longitudinal investigation styles and can accordingly be drawn upon to illustrate a variety of approaches to the study of educational careers.

This expertise pursues three main aims. First, it provides *a systematic stocktaking of the most important longitudinal studies on educational pathways in the selected countries* (Section 2). Of especial interest here are studies that combine different sources of information, such as standardized achievement assessment, interviews with or questionnaires addressed to pupils/students, parents, teachers and heads of school, and registry data. The overview describes the essential features of these studies. The second key aspect is the issue of *how these longitudinal studies are utilized for national education reports* (Section 3). Here, we indicate how, and to what extent, the different countries draw upon existing data for official education reports. On the basis of the wide range of indicators drawn from the description and comparison of the various national longitudinal studies and the use made of them for education reports, the third major aim of the expertise is to lay out *an initial proposal for the establishment of a longitudinal study of educational pathways in Germany* (Section 4).

The groundwork for the report consisted first of all in thorough research designed to identify the relevant large-scale longitudinal studies documenting individual education paths in the different countries selected. Once the identification process (including material search and evaluation) was over, we then contacted the people in charge of these studies. On-the-spot interviews with these experts enabled us to gather detailed information on the various studies. The experts were also asked to provide advice and recommendations on the establishment of a longitudinal study on educational pathways. Further experts were consulted on the issue of how such studies are (or can be) utilized in national education reports. The content of the expertise is thus based both on generally available material and documents as well as on the statements made by the experts consulted¹. A list of these experts can be found in Appendix A.

¹ The responsibility for errors and misrepresented information lies entirely with the authors.

2 Longitudinal Studies on Educational Pathways

2.1 The Key Studies in the Different Countries

This chapter provides an overview of the key longitudinal studies on educational pathways in the selected countries. It refers only to major studies in which individual development at school is the central concern of the respective longitudinal program, or in which the survey of educational careers is at least one of the central factors. Panel studies not primarily targeted at the educational pathways of children and young people, such as those focusing on labor markets (e.g. the Labour Force Surveys) are not considered here. Table 1 shows the studies represented here, country by country and in the order of the longitudinal program's establishment.

Table 1: The Longitudinal Studies in the Selected Countries

Country	First program	Name of Study	Abbreviation
United Kingdom	1958 [1948]	National Child Development Study	NCDS
		1970 Birth Cohort Study	BCS70
		Millennium Cohort Study	MCS
		Youth Cohort Study	YCS
		Longitudinal Study of Young People in England	LSYPE
Sweden	1961	Evaluation Through Follow-up	ETF
USA	1972	Early Childhood Longitudinal Study	ECLS
		National Longitudinal Study of the High School Class of 1972	NLS-72
		High School and Beyond Longitudinal Study	HS&B
		National Education Longitudinal Study of 1988	NELS:88
		Education Longitudinal Study of 2002	ELS:2002
		Beginning Postsecondary Students Longitudinal Study	BPS
Baccalaureate & Beyond Longitudinal Study	B&B		
France	1973 [1962]	Panels d'Élèves	
Netherlands	1988	PRIMA-cohorten Basis- en Speciaal Basisonderwijs	PRIMA
		Voortgezet Ondwerwijs Cohort Leerlingen	VOCL
Canada	1994	National Longitudinal Survey of Children and Youth	NLSCY
		Youth in Transition Survey	YITS

The following discussion of the longitudinal studies focuses on various aspects, including the aims of the respective program, the identification of the institutions participating in them, a description of the design, an overview of the data collection intervals, the major content areas of the study in question, and some selected issues indicating the analytic potential of the relevant study. Finally, we summarize and evaluate the most important aspects for each country, taking into account assessments by national experts.

2.2 United Kingdom (England)

In the United Kingdom, the first longitudinal studies on the education sector were established in the 1950s, earlier than all the other countries discussed here. In the following, we focus on two central aspects and largely on studies conducted in England.² First, we concentrate on the birth cohort studies that began the longitudinal program in the UK (see Section 2.2.1), turning then to the studies initiated and supervised by the Department for Education and Skills on transitions from the secondary education sector to further education and the labor market (see Section 2.2.2). Excluded from consideration are the largely labor market-oriented programs such as the Labour Force Survey (LFS) and other studies not primarily targeted at the educational pathways of children and young people (e.g. the British Household Panel Survey, BHPS).

2.2.1 The Birth Cohort Studies

Over the postwar period, the United Kingdom developed four large-scale birth cohort studies: the National Survey of Health and Development of 1946, the National Child Development Study (NCDS) of 1958, the British Cohort Study (BCS70) of 1970, and the Millennium Cohort Study (MCS) of 2000-2002. The first cohort study of 1946 focused almost exclusively on information about health issues, so we will exclude it from our further remarks. The other three studies are suitable for longitudinal analyses of educational pathways and corresponding cohort comparisons. The data from the NCDS and BCS70 are suitable both for evaluations of health development and for analyses of educational trajectories. The intervals between the individual data collections are however quite large, so they reflect transition processes in the educational careers of children, adolescents, and young adults to a limited degree. With the initiation of the latest cohort study, the MCS, the focus changed, with interest centering more on social aspects than previously. In the long term this will make the MCS an especially important data basis for the study of individual educational pathways. Since 1998 the conduct of these studies has been entrusted to the Centre for Longitudinal Studies (CLS), a research center dedicated to the collection, management, and analysis of longitudinal data.³

2.2.1.1 National Child Development Study (NCDS)⁴

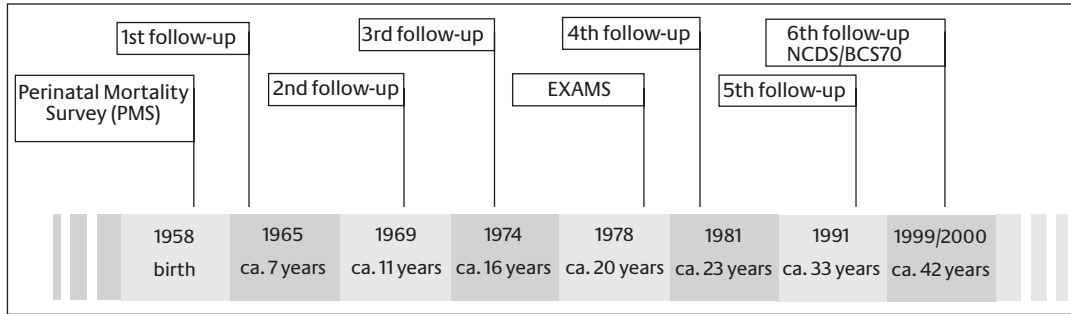
The National Child Development Study (NCDS) assembles data on the life courses of all persons born in Britain between May 3-9, 1958. The study was established with the aim of tracing the trajectories of individuals in various spheres of life, including health, educational pathways, and social and economic development.

² The Scottish programs are not accounted for here (e.g. the Scottish School Leavers Survey, SSLS, or the planned Early Years Longitudinal Survey; cf. http://www.natcen.ac.uk/scotland/pages/sc_currentprojects.htm; accessed August 2004).

³ For more detailed information on the CLS go to <http://cls.ioe.ac.uk> (accessed August 2004).

⁴ For more detailed information go to <http://cls.ioe.ac.uk/Cohort/mainncds.htm> (accessed of August 2004).

Figure 1: NCDS



In the meantime, the NCDS extends to a total of seven data collections covering a period of 42 years. The initial collection was the Perinatal Mortality Survey (PMS) of 1958, which encompassed 17,414 newborn babies and their families. Follow-up studies took place in 1965, 1969, 1974, 1978, 1981, 1991, and 1999/2000. At these time points the individuals involved were 7, 11, 16, 20, 23, 33, and 42 years of age. Figure 1 shows the timing of the individual waves. The sixth follow-up study of 1999/2000 was collated with the fifth survey of the subsequent birth cohort study, the BCS70 (see Section 2.2.1.2). In 1978 EXAMS was a survey that collected information on examination results.

Table 2: Respondents, Documents, and Content of the Surveys (NCDS)

	Respondents/Docs	Content
IS	medical records, mother	social background, family background, preceding births, prenatal examinations, problems during pregnancy, length of labor, problems at birth, analgesia and anesthesia, sex/weight/development status of child, management of infant, smoking during pregnancy
	children	achievement measurement (NCDS1-3), educational aspirations and interests (NCDS2), school, education, continuation of education career, future employment, relations to family, marriage/family plans (NCDS3)
	parents	size of family, situation of parents, father's education and occupation, nature of housing, mother's work, tenure, number of rooms, household amenities, attendance of care facilities, hospital admissions, clinic attendance, medical history, behavior, physical coordination, school, separation from mother, pre-school experiences, financial situation, housing satisfaction, satisfaction with neighborhood, child's future (education and employment)
FS1-3	school	size, organization, assessment of child's abilities, behavior, and future development
	medical service, medical records	medical examination, height, weight, head circumference, tests, puberty
EXAMS, FS4	school/college	kind of exam, subject, grades, time of exam
	individuals	employment, unemployment, education, apprenticeship and training, continuing education, literacy, numeracy, attitudes to school and work, children (number, age, sex), children's health, marriage/cohabitation, characteristics of partner, marriage plans, family plans, contraception, living conditions, income, savings, health, accidents, hospital admissions, height, weight, leisure activities, voluntary participation, economic status of parents, experiences with care facilities as a child, emotional well-being
	census 1971, 1981	area of residence data
	individuals	present and former employment, partner's job, partner's income, unemployment, education and training, certificates, problems in reading, writing, arithmetic, marriage/cohabitation, pregnancy, children, housing, income, savings, investments, inheritances, debts, state of health, history of health, health behavior, values, attitudes, emotional well-being, height, weight
FS5	partners	marriage/cohabitation, children, employment, unemployment, housing
	mother	family life, pregnancy, birth, history of health, separation of child from mother, experiences with care facilities, pre-school experiences, child's motor and social development, behavioral problems, temperament, home environment
	child	height, weight, achievement measurement, temperament, home environment
FS6	individuals	household, living conditions, relationships, children, family, social support, income, employment, school and vocational education, continuing education, health, attitudes, values

Note: IS = Initial Survey, FS = Follow-Up Study

Alongside these major surveys, a number of additional studies on subsamples were also conducted, such as children in care, adopted children, gifted children, children in one-parent families, disabled school leavers, and people with specific diseases.

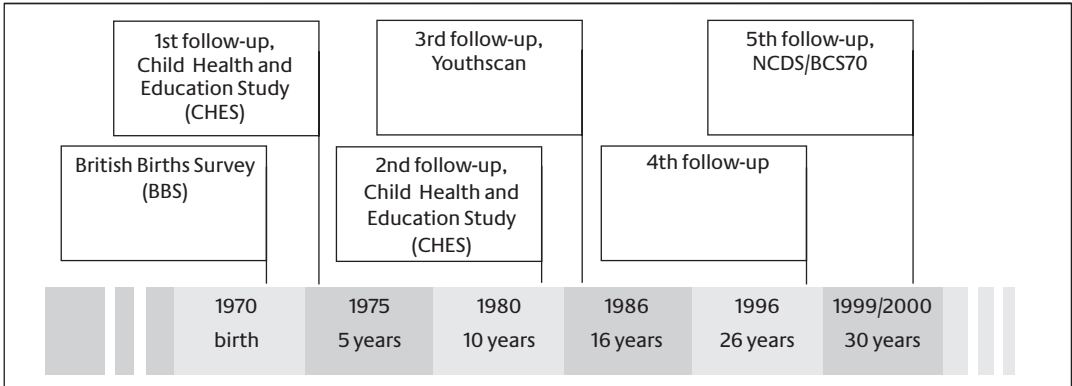
The NCDS has assembled information from various sources. In the initial survey immediately after birth, the midwife interviewed the mother and also evaluated the clinical records. In the follow-up studies the children themselves, their parents, teachers, and school principals (head teachers) were

also interviewed. This data was supplemented by health examinations and information from medical records. In 1978 the examination results were collected via the schools and colleges, and in the fourth follow-up study census data characterizing the area of residence were drawn upon. Table 2 provides an overview of the various inquiries and data sources, as well as the most important subjects addressed.

2.2.1.2 1970 Birth Cohort Study (BCS70)⁵

The British 1970 Birth Cohort Study follows the life courses of all persons born in Britain between April 5-11, 1970.

Figure 2: BCS70



Like the preceding NCDS, this cohort study is a multi-disciplinary undertaking providing information on the development and life conditions of the age cohort in question. Initially the study was strongly geared to medical and health issues. Over the course of time it has been extended to encompass other areas. In these extensions, the additional focus was on aspects of mental and social development as well as the education careers of children and adolescents. This focus was complemented by social, occupational, and economic aspects of life after schooling.

⁵ For more details go to <http://cls.ioe.ac.uk/Cohort/Bcs/mainbcs.htm> (accessed August 2004).

Table 3: Respondents, Documents, and Content of the Surveys (BCS70)

	Respondents/Docs	Content
IS	medic. records/ mother	health of child and mother at birth, diary on the baby's first seven days, problems during pregnancy, length of labor, problems during birth, analgesia, anesthesia, sex, weight, child's development status, management of infant, previous births, occupations of both parents, family status, child rearing, smoking during pregnancy, contraception, pre-natal examinations
	children	achievement measurement
FS1	mother	social background, family background, environment, child's behavior
	medic. records	height, head circumference, risk factors, use of health services, state of health
FS2	pupils	achievement measurement (reading, mathematics, language, logical thinking), smoking, attitude to school, dietary habits, self-confidence, personality traits, social skills
	parents	medical history, accidents, use of health services, occupations of both parents, nature of housing, education certificates of both parents, household amenities, neighborhood, hospital admissions, outpatient attendances, school, child's abilities, child's behavior, parents' behavior, mother's health
	school	composition of student body, curriculum, discipline, ethics, assessment of child's abilities and behavior, hyperactivity
	health service	medical examination, disabilities, chronic illnesses, height, weight, head circumference, blood pressure, pulse, eyesight, hearing test, laterality, coordination
	pupils	sport, hygiene, diet diary, activities diary, leisure activities, family life, religion, leaving home, money, smoking, alcohol, laterality, media behavior, friends, social behavior, law and order, sexual behavior, self-confidence, state of health, medical history, attitude to health, feelings, drugs, school, occupational interests, achievement measurement
FS3	parents	state of health, chronic illnesses, disabilities, medicines taken, accidents/injuries, use of health services, social experiences, occupations of both parents, situation of parents, family finances, household amenities, number of rooms, neighborhood, alcohol, smoking, school performance, life and leisure, behavior
	school	curriculum, teaching methods, special support, child's behavior, performance, academic potential, absence
	health service	medical examination, special preconditions, chronic illnesses, disability, mental disorders, blood pressure, eyesight, coordination, hearing test, height, weight, head circumference
FS4/5	individuals	household, housing, relationships, children, family, social benefits, income, school and occupational education, continuing education, health, attitudes, values

Note: IS = Initial Survey, FS = Follow-Up Study

The BCS70 now comprises a total of six surveys extending over a period of 30 years. The initial British Births Survey (BBS) of 1970 encompassed 17,198 newborn babies and their families. Further cycles followed at ages 5, 10, 16, 26, and 30. Figure 2 indicates the individual cycles and illustrates their scheduling over time. The fifth follow-up study of 1999/2000 was collated with the sixth NCDS survey (see Section 2.2.1.1).

The BCS70 combines different sources of information. In the first wave, midwives were interviewed and information on the mother was collected. Additionally, clinic and hospital records were evaluated. The later surveys included interviews conducted with children, parents, and teachers. This information was supplemented by regular medical examinations and various achievement assessments. Since the fifth cycle in 1996, inclusion has been restricted to the selected individuals.

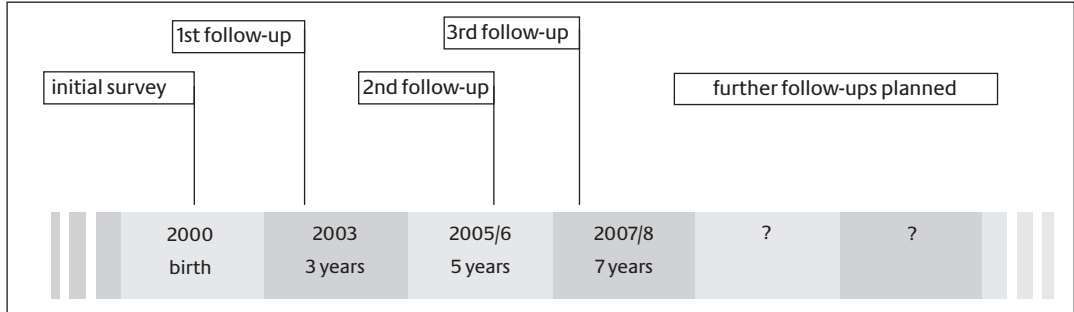
Since funding of the study was not established from the outset, different institutions undertook the individual surveys, with the result that each survey had different interest foci. The heterogeneity of the subjects addressed was already a feature of the preceding NCDS and is reflected in the list of contents in Table 3.

2.2.1.3 Millennium Cohort Study (MCS)⁶

The most recent British birth cohort study, the Millennium Cohort Study (MCS), assembles a wide variety of information on the development of children at the beginning of the 21st century. It extends the preceding studies in two ways. First, the social aspects of adolescence are given greater attention than before. This is an extension of considerable importance especially for education research and education policy. Second, care is taken to ensure that certain geographical areas and specific groups of the population are adequately represented in the study.

The Economic and Social Research Council (ESRC) and a consortium of different ministries financed the first two waves of the MCS, with the Centre for Longitudinal Studies (CLS) conducting the study and coordinating an interdisciplinary research group in charge of the design and the instruments. Additionally, many academics and representatives of the ministries were consulted in the run-up stage to the surveys conducted thus far. Unlike the preceding cohort studies, the MCS was not a full-scale survey of a certain group of newborn babies born within the space of a few days. Instead, the sample was drawn from all live births over a time-span of twelve months. This approach caters to additional analyses on the influences of the time of birth in the calendar year. It also favors a more efficient work flow for the interviewers.

Figure 3: MCS



The sample was taken from a random selection of electoral wards, disproportionately stratified.⁷ This guarantees that all four countries in the United Kingdom (England, Wales, Scotland, Northern Ireland) are adequately represented in the sample. Also, care was taken to ensure that ethnic minorities and children from areas with a record of considerable child poverty are properly represented in the sample. The initial survey began in June 2001. Within the twelve-month data-collection period envisaged, information was assembled on the parents of 18,553 newborn babies. These infants were 9 months old at the point of the first data-collection wave. The first follow-up study took place in 2003,

6 For more details go to <http://cls.ioe.ac.uk/Cohort/MCS/mcsmain.htm> (accessed August 2004); Dex, Shirley and Heather Joshi (2004): Millennium Cohort Study First Survey: A User's Guide to Initial Findings, London: Centre for Longitudinal Studies, <http://cls.ioe.ac.uk/MCS/Publications/mainpubs.htm> (accessed August 2004).

7 For a description of the sample design see Plewis, I. (2003): The Millennium Cohort Study: Technical Report on Sampling, London: Centre for Longitudinal Studies.

when they were two to three years old. Further cycles are planned for 2005/2006 and 2007/2008. Figure 3 gives an overview of the different cycles.

In the initial survey, both parents were interviewed on different aspects of life. Table 4 lists the most important subjects addressed. In the first follow-up study, interviews were again conducted with both parents. In addition, the older siblings of the selected three-year-old children were interviewed. The cognitive abilities of the children were assessed via tests designed for that purpose.

Table 4: Respondents and Content of the Initial Survey (MCS)

Respondent	Content
mother	ethnicity, language spoken, father of baby, single parent, pregnancy, birth, child care, social support, parents' state of health, education, employment, income, housing, community, time spent with baby, interests, baby's temperament and behavior, relationship with partner, earlier relationships, home tasks, earlier pregnancies, mental state, attitudes
father	ethnicity, language spoken, involvement in child rearing, social support, parents' state of health, education, employment, income, time spent with baby, interests, baby's temperament and behavior, relationship with partner, earlier relationships, children living elsewhere, mental state, attitudes

The MCS will make it possible to follow the developments of a birth cohort that is still very young. The intention is to combine the surveys over time with other information sources like the census. Cohort comparison is also envisaged with the preceding studies, and international comparisons are also planned. The study is multi-disciplinary in design and thus suitable for work on issues in different areas. The extension of the MCS relevant to education research and education policy is the more in-depth coverage of social aspects in educational pathways.

2.2.2 Longitudinal Studies of the Department for Education and Skills

Alongside the birth cohort studies, Britain has other longitudinal studies mandated and supervised by the Department for Education and Skills (DfES): Among them are the Youth Cohort Study (YCS) and the Longitudinal Study of Young People in England (LSYPE). Both studies are concerned with educational transitions from the secondary level to further branches of education and training and to the labor market.

2.2.2.1 Youth Cohort Study (YCS)⁸

The Youth Cohort Study (YCS) was initiated in England and Wales in 1985 to follow the transitions from secondary education to further education institutions and to the labor market. The data make it possible to study the conditions under which young people embark on different educational and vocation pathways when they finish schooling. Interest focuses here on variations in educational success, further education/training opportunities and trajectories, and experience gathered over the course of school careers. The study was instituted to create a source of data that can be used for educational policy purposes.

⁸ For more detailed descriptions go to <http://www.data-archive.ac.uk/findingData/yycsAbstract.asp> (accessed August 2004); user guides on the individual waves can be found at <http://www.data-archive.ac.uk/findingData/yycsTi-tles.asp> (accessed August 2004).

Mandated by the Department for Education and Skills (DfES), the Youth Cohort Study was carried out by Social and Community Planning Research (SCPR, now the National Centre for Social Research, NCSR) until 1999. Since then the conduct of the study has been in the hands of Research Surveys of Great Britain (RSGB). At present the YCS is made up of a series of twelve longitudinal studies. In each case, a sample of individuals is selected after completion of compulsory schooling at the age of 16 and followed through various stages of their further life course. Data collection on the oldest cohort began in 1985; the most recent cycle took place in 2003. Table 5 indicates the different collection time-points. The cells show the ages of the respondents at the time of their interview.

Over the years, sample selection has been modified on several occasions. In most cases, random samples were drawn from schools in England and Wales. To this end, all public and private schools identified the students in the relevant school years. From these lists those persons were selected whose birthday fell on a particular day in the month. For cohorts 1 to 5 multi-stratified random procedures were used. As of cohort 6 this has been reduced to a one-level selection. Sample size varies between the different cohorts. In the first year of the study (1985), information was collected on some 8,400 individuals, while in the base year of the eleventh cohort (2002) some 16,800 young people were interviewed.

Table 5: Study Design of the YCS⁹

	Cohort												
	1	2	3	4	5	6	7	8	9	10	11	12	
1985	16												
1986	17	16											
1987	18	17	16										
1988		18	17										
1989			18	16									
1990				17									
1991				18	16								
1992					17	16							
1993					18	17							
1994			23			18	16						
1995													
1996							18	16					
1997													
1998								18	16				
1999									17				
2000								20	18*	16*			
2001													
2002										18	16		
2003										19	17	16	

Note: * In 2000 there were two surveys.

The different surveys cover many similar aspects. However, over time new questions were added, while existing questions were deleted or modified. The design of the individual studies has also responded to changing political interests in the education sector. In all surveys, questions were asked exclusively to the persons selected for the samples. No other sources of information were drawn upon. The focus of interest is on educational and occupational situation, the qualifications attained, and questions about family background and other demographic features. Table 6 lists the subjects addressed by the YCS in the first two sweeps of the tenth cohort.

⁹ The figure is taken from Fitzgerald, R. et al. (2003): Youth Cohort Study: Joint Survey of 19 and 17 Year Olds (Cohort 9 Sweep 4 and Cohort 10 Sweep 2), Technical Report, Sheffield: Department for Education and Employment, S. 3. It has been modified to include the latest surveys.

Table 6: Respondents and Content (YCS10)

Respondents	Content	Cycle
individuals	ethnicity, education of both parents, employment of both parents, housing, family situation, disabilities, health problems, truancy, expulsion from school, information and counseling on school career, work experience, kind of school attended, present school/occupational situation (school, training, occupation, unemployment, continuing education, income, etc.), highest education/vocational certificate attained so far, highest education/vocational certificate aspired to, grades in mathematics and English, preparation for university study/admission exam	IS ¹⁰
	attitude to education and work, present activities (school, training, profession, etc.), new qualifications (since Sweep 1), preparation for future school and vocational qualifications, continuing vocational education, job search, household characteristics	FS ¹¹

Note: IS = Initial Survey, FS = Follow-Up Study

The data can be used for cross-sectional and longitudinal studies and for cohort comparisons. The information is evaluated for the most part by the ministries, but academics also draw upon the rich data material. In the education policy sector, the following issues are among the most important:

- Which paths are taken in the transition from school to continuing education institutions and to the labor market?
- What is the significance of formal educational qualifications for later positioning on the labor market?
- What training opportunities are provided and how useful are the different certificates on the labor market?

2.2.2.2 Longitudinal Study of Young People in England (LSYPE)¹²

The Longitudinal Study of Young People in England (LSYPE) is the most recent longitudinal program in Britain. The survey's first cycle was conducted in April 2004. As in the case of the YCS, the LSYPE focuses on the main stages in the life course of adolescents and young adults. It is designed to supply answers to questions on the developmental and educational pathways of young people.

The new program is more broad-based than the YCS. It also has a more obviously sociological perspective. One of the key aims of the study is to estimate the consequences of the introduction of new education policy measures for individuals' education careers of individuals. In addition, the LSYPE is designed to monitor the decisions taken by young people at the different junctures of the education system and the different development pathways resulting from these decisions. It pays particular attention to the question of why different groups typically chose certain pathways. Decisionmaking is related to the individuals' specific experiences and the distinctive parameters bounding their life situations.

10 cf. Department for Education and Employment (2001): Youth Cohort Study, Cohort 10 Sweep 1 (C10S1), Sheffield: Department for Education and Employment, Appendix 13, p. 1-16.

11 cf. Fitzgerald, R. et al. (2003, footnote 9), p. 6.

12 For more detailed information go to <http://cls.ioe.ac.uk/Lsyp/mainlsyp.htm> (accessed August 2004); Department for Education and Skills (2000): Scoping Study and Development Work for a New Cohort Study of Young People (14 to 25); Sheffield: Department for Education and Skills tender no. 4/RP/215/2000/1; Department for Education and Skills (2003): Longitudinal Studies for Young People in England (LSYPE). Invitation to Tender for Waves 1 to 3. Specification of Work to be Carried out, Sheffield: Department for Education and Skills.

During the multi-year preparation stage for the LSYPE, the attempt was made to elaborate as optimal a design as possible that meets both the demands of the government and existing academic standards. The Department for Education and Skills (DfES) entrusted the elaboration of the study to the Joint Centre for Longitudinal Research (JCLR), made up of the Centre for Longitudinal Studies (CLS) and the National Centre for Social Research (Natcen). The Institute for Social and Economic Research (ISER) of the University of Essex took over additional tasks in connection with the elaboration of the sample design and in this context also conducted a number of methodological projects. The most important preparations for the first survey were:

- identification of the ministry’s requirements for study and elaboration of an overview of comparable studies and survey instruments
- set-up of an Academic Advisory Group concerned with the design, content, and conduct of the overall program
- elaboration of the sample design
- establishment of the content of the first wave (sweep) of the survey and proposals for the subsequent follow-ups
- elaboration of questionnaires and conduct of pilot studies on individual parts of the survey
- testing of the entire survey
- conduct of methodological projects to clarify certain design issues
- conduct of a qualitative study addressing special aspects of the survey in connection with ethnic minorities.

Table 7: Respondents and Content of the Initial Survey (LSYPE)

Respondents	Content
individuals	demographic features, transitions, attitudes to school presently attended, school subjects chosen (10th year in school), rules and discipline, homework, PC skills, support in learning, future plans, advice for the future, attitude to school, relationship to the parents, risk factors (truancy, mobbing, smoking, drugs), responsibilities at home, leisure activities
parents	number of members in household, language spoken, attitudes to school, involvement in school, out-of-school activities, school subjects chosen (10th year of school), special support, expectations, aspirations, family activities, relationship with child, strengths and weaknesses, reasons why child is not living with his/her natural parents, risk factors (truancy, brushes with police, mobbing), responsibilities at home, household resources, qualifications and education, present employment, history of employment, health, birth and health of child, attendance of pre-school institutions, school biography, choice of present school, experiences with older siblings, history of relationships

The LSYPE will follow a cohort of some 11,250 individuals – interviewed for the first time at age 13/14 and then annually until they are about 25 years old. In addition, approximately 3,750 young people of various ethnic origins will be included in the sample. Altogether eleven collection waves (sweeps) are planned. Samples are drawn via the schools, which are selected in accordance with a multiple stratification procedure. In this process, a “deprivation indicator” is formed, designed to ensure that schools with disadvantaged student bodies are oversampled, thus ensuring adequate representativeness even of smaller ethnic groups. Random samples of pupils are then drawn from the lists provided by the selected schools. These pupils were 14 years old at the time of the initial survey in 2004.

The base-year survey collects information on education, training, occupation, school experiences, school performance, attitudes, aspirations, family, relationships, leisure activities, interests, health, life-style, and so forth (see Table 7). Both the students and the parents are included in the interview process. Later, this information is to be supplemented with the results of national achievement assessments and registry evaluations.¹³

2.2.3 Summary and Evaluation

Past British longitudinal studies can be divided up into two kinds: the large-scale birth cohort studies conducted by the Centre for Longitudinal Studies (CLS) and the studies initiated by the Department for Education and Skills (DfES) on transitions from the education system to the labor market. The cohort studies cover the entire life courses of four birth cohorts from the years 1946 (National Survey of Health and Development), 1958 (NCDS), 1970 (BSC70), and 2000-2002 (MCS). The studies are very broadly conceived and supply information on a wide range of different sectors. Whereas the first three cohort studies display a relatively clear medical or health-related bias, the latest birth cohort study is the first to focus primarily on educational careers and relevant social aspects. In the long term, this can be expected to make the MCS a particularly significant longitudinal study for education research and education policy.

British longitudinal studies enable researchers and policymakers to draw on over 40 years of data collection. The more recent surveys are notable for their attempts to remedy problems encountered in earlier cycles and to make the studies generally more efficient. A central factor in this endeavor is the establishment of the CLS, which represents a successful vehicle for the planning and conduct of the more recent cohort studies. In this respect, the organizational structure in Britain displays similarities to the set-up in the United States, where the National Center for Education Statistics (NCES) acts as a central coordinator (see Section 2.4)¹⁴ Concentrating these functions within a central institution appears to be a major factor in the success of such programs, notably with respect to on-going development and improvement (see Section 4.3.1.4).

As other countries, Britain is looking for more efficient and affordable ways of collecting data in the future. An initial step in this direction is the collation of different surveys, as practiced for the first time in the follow-up studies of the NCDS and the BCS70 in the year 1999/2000. Such an approach not only cuts down on costs but also can enhance comparability between the various studies.

While the British birth cohort programs boast many advantages, experts also point to some deficits:¹⁵

- the financing of the older studies was never guaranteed beforehand and thus had to be provided by different sponsors from one survey to the next. As a consequence, it was impossible to pursue a homogeneous program and the respective focus changed from study to study (especially in the BCS70, but also in the NCDS).
- Notably for the early years of the life courses under study, the data collection time-points were too far apart, reducing the potential for the study of transition processes at central junctures in educational careers. The MCS is the first study to capture information at shorter intervals.

¹³ Iain Noble (DfES) informed us of the additional surveys planned. As yet there is no reference to them in the publications.

¹⁴ However, as an institute affiliated to a university, the CLS is not directly comparable with the NCES. First, the staff of the CLS have a number of obligations to fulfill at the university; secondly, its financial scope appears to be more restricted than that of the NCES.

¹⁵ These were communicated by Heather Joshi, the director of CLS.

- Persons not born in Britain and immigrating later are relatively difficult to identify and add to the sample.
- All in all, the inadequate financial and staffing resources prevent the realization of many projects within the task purview of the CLS.

The Youth Cohort Study (YCS) and the Longitudinal Survey of Young People in England (LSYPE) pursue different objectives from the birth cohort studies. Geared to the systematic study of certain stages in the life courses of adolescents and young adults, their focus is on (a) the transition from the secondary school stage to the subsequent educational and training pathways and (b) on the transition to the labor market. Because these studies were initiated by the Department for Education and Skills, a chief concern is to use the data to respond to issues with education policy relevance.

The LSYPE was instituted in response to problems encountered in connection with the YCS. Here are some of the assets and improvements over and the YCS that preceded it:¹⁶

- In the LSYPE, individuals are followed over a longer period of time.
- The surveys not only involve the interviewing of selected individuals, but are to be supplemented by registry data and the results of national achievement assessments in the long term.
- The LSYPE considers social aspects more than the YCS, making it suitable for the study of the impact of a wide variety of contextual conditions and individual characteristics on the choices made in educational careers. In contrast to the YCS, the LSYPE has a more clearly explanatory focus.
- Experienced academics from a variety of sectors joined forces to elaborate the LSYPE. Commissioning the Joint Centre for Longitudinal Research (JCLR) ensured that a great deal of experience amassed in connection with the planning and conduct of earlier longitudinal surveys benefits the new study.
- Currently, Britain is setting up a pupil database that will assemble register data on all school students. Still in development, the database should be fully usable by 2008/09. In the long term, this information is to be integrated into the LSYPE.

¹⁶ These were communicated by Iain Noble, project leader of the YCS and the LSYPE.

2.3 Sweden

2.3.1 Evaluation Through Follow-up (ETF)¹⁷

Begun in 1961, the longitudinal program Evaluation Through Follow-up (ETF; Utvärdering Genom Uppföljning, UGU) now encompasses eight cohort studies monitoring the educational pathways of children from their first school years all the way up to adulthood. This rich source of material is used for evaluation of the Swedish school system and education reforms. In addition, the data are drawn upon by scholars for the analysis of status acquisition processes. In Sweden, studies on the development of school performance and intelligence play a major role alongside the focus on educational and occupational trajectories.

The distinctive factor in the Swedish data collection system is the allocation of an identification number to each individual that is used in all registers. These personal codes make it possible to collate different sources of data. Furthermore, this method enhances the affordability of the surveys, as the data stored in documents and registers do not have to be assembled by means of expensive interviews or questionnaires. This identification system also facilitates the detection of individuals in later waves of the survey. Sweden has developed and enhanced this successful system over the past few decades and has made extensive use of it, not only in the ETF study.

A further specialty of the Swedish data collection system is the efficient division of labor between academics and the central statistics office (Statistics Sweden or Statistiska Centralbyran). Researchers at the University of Göteborg are in charge of the planning of the subject matter to be addressed in the surveys, their design, and all other academic aspects of the ETF project, while the surveys themselves are conducted by Statistics Sweden. In all stages of the process, researchers and statisticians collaborate quite closely. Therefore, an unusually productive system of data collection has developed in Sweden since the early 1960s, both in terms of ongoing methodological sophistication and in the implementation of such methodical advances in the surveys themselves.¹⁸

The ETF program was initiated in the early 1960s within the framework of an overhaul of the education statistics system. The plan was to begin with data on students in the sixth grade (thirteen-year-olds), when the first transition in the Swedish school system is imminent. The information was to be collected in five-year sweeps on some ten percent of the student body of an age cohort. Initially, the survey focused exclusively on information culled from school records (e.g. individual background features, pathways chosen, grades). But researchers were quick to propose that these administrative data be supplemented with information on the schoolchildren themselves, originally by interviewing the students and measuring their achievements. At a later date, questions asked of parents and teachers were introduced.

The ETF data collection is made up of two parts, the sample-based ETF-S study and the register-based ETF-R study. The ETF-S surveys began in 1961 with a ten-percent sample of schoolchildren 13 years old at the time (born 1948). Statistics Sweden collected school data on grades and educational pathway decisions. In addition, a questionnaire was designed to capture information on the children's interests and plans, and they were also tested on their abilities. In 1966 a new ten-percent sample was drawn, this time from the children born in 1953, with data collected as before. Since 1980, however, the selection criterion has no longer been the year of birth, but rather the grade (class) the students are in, although the cohorts are still named after the year of birth. New cohorts were initiated every five years: 1972, 1977, 1982, 1987, 1992. Altogether, the collected data at the disposal of the ETF-S study covers eight cohorts of schoolchildren born between 1948 and 1992.

Table 8: Study Design of the ETF-S ¹⁹

Cohort	Sample	N	IS	Grade	Age	FS	Grade	Age
1948	10% birth year	12.000	1961	6	13			
1953	10% birth year	9.000	1966	6	13			
1967*	10% grade 6	9.000	1980	6	13	1984	10	17
1972*	10% grade 3	9.000	1982, 1985	3, 6	10, 13	1989	10	17
1977*	5% grade 3	4.500	1987, 1990	3, 6	10, 13	1996	12	19
1982*	10% grade 3	9.000	1992, 1995	3, 6	10, 13	2001	12	19
1987*	10% grade 3	10.000	1997, 2000	3, 6	10, 13	2006	12	19
1992*	10% grade 3	10.000	2002, 2005	3, 6	10, 13	2011	12	19

Note: * Most of the selected children were born in the year indicated. IS = Initial Survey, FS = Follow-Up Study

Table 8 gives an overview of the different studies, indicating the major time-points at which information was and is to be collected on schoolchildren, parents, and teachers and achievement measurements conducted. This is supplemented by the annual collection of administrative data from the schools, information on the children's background characteristics, and information related to school and school careers. The school registers are drawn upon until such time as the persons selected leave the Swedish school system. Further information is captured from other registers after individuals complete schooling. Table 9 shows the key subject matter addressed by the ETF-S surveys.

¹⁷ For a more detailed description see Härnqvist, K. (1998): A Longitudinal Program for Studying Education and Career Development, Report No. 1998-01, Department of Education and Educational Research, University of Göteborg.

¹⁸ This aspect in particular was stressed by leading figures in the project such as Allan Svensson, the co-founder of the ETF program, and Jan-Eric Gustafsson, the man in charge of the study's scientific side.

¹⁹ The table draws both upon information in Härnqvist (1998) (footnote 17) and upon supplementary information from Christina Cliffordson (University of Göteborg).

Table 9: Content of the ETF-S Surveys

Respondents/Documents	Content	Collection
school records	birth year, class, grades, test results, parents' educational and occupational background	Annual
performance measurement (identical for all cohorts)	verbal, inductive, spatial	IS, FS
schoolchildren and parents (differing according to cohort since 1967)	adjustment to school/school demands, interests, education-related and job plans	IS, FS
teachers (differing according to cohort since 1982)	instruction, class/school characteristics	IS, FS
records on education financing (only partly available for the older cohorts)	financing studies	FS (outside the school system)
registers of institutions of higher education (only for the older cohorts)	attendance of higher education institutions	FS (outside the school system)
census and income registers (1948 and 1953 cohorts only)	income, household characteristics	FS (outside the school system)

Note: IS = Initial Survey, FS = Follow-Up Study

Alongside the ETF-S data collections, Statistics Sweden also compiled a register-based set of data between 1996 and 1999, the so-called ETF-R. This collection of data contains information on all persons born between 1972 and 1979 and living in Sweden at age 16. (N=842,800). The information was compiled from a wide range of registers via the identification numbers. However, the identification code had to be destroyed after the compilation process was complete, so the database could not be updated or continued. But in 2000 Swedish legislation on this point was changed; since then the identification codes no longer have to be destroyed. Thereafter, the first version of ETF-R was replaced by a new, updated database that contains information on all individuals born in Sweden between 1972 and 1984 (N=1,138,347). Table 10 shows the main subject matter covered by the ETF-R database. The first version of the ETF-R study was linked up with the ETF-S of 1972 and 1977. There are also plans to combine it with the updateable second version of ETF-S, thus providing an opportunity to include a wide range of additional information in the ETF-S surveys.

Table 10: Content of the ETF-R Registry Database

Register	Content
background information	sex, nationality, country of birth of individual and parents, migration, emigration, parents' educational and occupational background
school records	grades in the school-leaving report after completion of obligatory schooling application and access to secondary stage II, grades, profile, certificate
adult education institution	courses taken, courses completed
Swedish Scholastic Aptitude Test	complete information on all tests since 1989
Military Enlistment Data	results of entrance test, assessment of aptitude for career as officer
application for higher education	applications for each semester in national and local programs, outcome of application
higher education performance	participation in programs/courses, number of points scored, exam results
education loans	financial aid granted for study in Sweden and elsewhere
occupation	kind of occupation, income (annual)

The data of the ETF program make it possible to study individual educational careers from the first major transition at the end of the sixth grade up to entry into the labor market. The longitudinal cohort design lends itself to the analysis of changes and developments in achievement and education trajectories and enables cohort comparisons.

In line with the key aim of the ETF program – to provide data for the evaluation of the Swedish education system – a very large number of application-oriented analyses have been carried out. These have produced a wide range of reports targeted largely to the Swedish public. The data material is also regularly used to respond to government inquiries on the education sector. Furthermore, the National Agency of Education has mandated a series of evaluation studies as well as conducted such studies itself. Alongside these policy-related evaluations, a large number of research issues have also been addressed, including:

- What effect does schooling have on intelligence?
- How do cohort comparisons reflect the development of intelligence?
- What long-term life course consequences result from the amassed educational experiences?
- What explanations are there for differences in success at school?
- What explanations are there for differences in the choice of subject and places to study (in terms of sex and socio-economic background)?
- How does financial aid impact the decision for or against the attendance of institutions of higher education?

2.3.2 Summary and Evaluation

The Swedish ETF program provides a wide range of information on the educational pathways of different birth cohorts and now covers a time-span of over four decades. Sweden differs significantly from other countries initiating longitudinal studies on the education sector at an early stage. It benefits from a unique identification system facilitating the collation of information from very different

sources. The success of the ETF program is closely bound up with this system. The following points call for emphasis:

- Consistent use is made of existing registry data, which makes the surveys more readily affordable (since much background information does not have to be elicited again) and shortens the duration of interviewing.
- Restricting the survey questions to those that must be elicited by interviewing leads to a stronger focus on the aspects that are of genuine interest in the elaboration of the instruments.
- Registry data in part supplies more reliable information than retrospective interviewing. School records are also more reliable on sensitive topics such as school grades achieved.
- In later waves, it is easier to identify the participants because the identification number makes it possible to locate the sector of the Swedish system the person in question happens to be in at any given point (“tracing”). With this knowledge contact can be established more systematically.
- The cumulative potential of the identification system is unique and the existing information unusually rich. Further, it can always be extended and supplemented over time. The blending of the ETF-S and ETF-R data, which is to be undertaken even more consistently in the coming years, shows this very clearly.
- Sampling is facilitated by the database system.
- The registry data can be drawn upon for large-scale non-response analyses.

Alongside these major assets of the Swedish system, there are also a number of problems and potential improvements that have been identified by the experts involved:²⁰

- The potential of the ETF cannot be exploited to the full because there is a chronic shortage of funds for research purposes.
- On the evaluation side, another difficulty besides funding shortages is the lack of academic experts trained in the handling of longitudinal data. Also, quantitative evaluation methods are not popular with all academics.
- In future, greater attention will need to be paid to the construction of variables from the registry data. This is necessary to improve the use made of the study.
- So far interviewing has been done entirely in written form. There are plans to supplement this with other data collection methods (e.g. personal interviews) so as to improve response rates and to capture additional aspects.
- The subject matter addressed in the questionnaires neglects certain important aspects (e.g. individual motivation, information on teaching styles, teacher behavior).
- The time-points in ETF studies for data collection from the individual cohorts are relatively few and far between. Despite the wide range of information available from the registries, some aspects have been neglected that can only be gleaned by questionnaires. Accordingly, there are plans to use sub-samples to gather supplementary data on selected major topics.
- Migrants who are older than their fellow pupils in the third grade (when the ETF-S sample is drawn) are automatically excluded from participation because they no longer belong to the cohort in question. Attempts are being made to alleviate this problem somewhat by drawing upon information from the ETF-R.

²⁰ These have been communicated by the following experts from the University of Göteborg: Christina Cliffordson, Joanna Giota, Jan-Eric Gustafsson, Allan Svensson.

- Because both the documentation of the ETF program and the reports are designed above all for the Swedish public, there is too little information available on the program in English for a wider international audience.

2.4 USA

2.4.1 The Key Longitudinal Studies on Educational Pathways

Scholars and policymakers in the United States recognized at a very early stage that the collection of representative longitudinal data in connection with primary and secondary schooling is not only of major significance for research purposes, but above all represents a significant information base for education policy. Accordingly, the National Longitudinal Studies Program was created in the early 1970s. The general aim of this program is to study the academic, vocational, and personal development of individuals at different stages of their life courses, taking into account the impact of personal, family, social, institutional, and cultural factors in the process.²¹

The most important longitudinal surveys on educational pathways conducted in the framework of this program are cohort studies covering different stages in the educational careers of children, adolescents, and young adults. Taken together, they encompass a life span ranging from birth to about the age of 30, but they can be roughly divided into three sectors:

a) birth, kindergarten, primary school:

Early Childhood Longitudinal Study (ECLS)

b) high school (secondary level) and the transition to post-secondary institutions²² and the labor market:

National Longitudinal Study of the High School Class of 1972 (NLS-72)

National Education Longitudinal Study of 1988 (NELS:88)

High School and Beyond (HS&B) Longitudinal Study

c) attendance of a post-secondary educational institution and transition to the labor market:

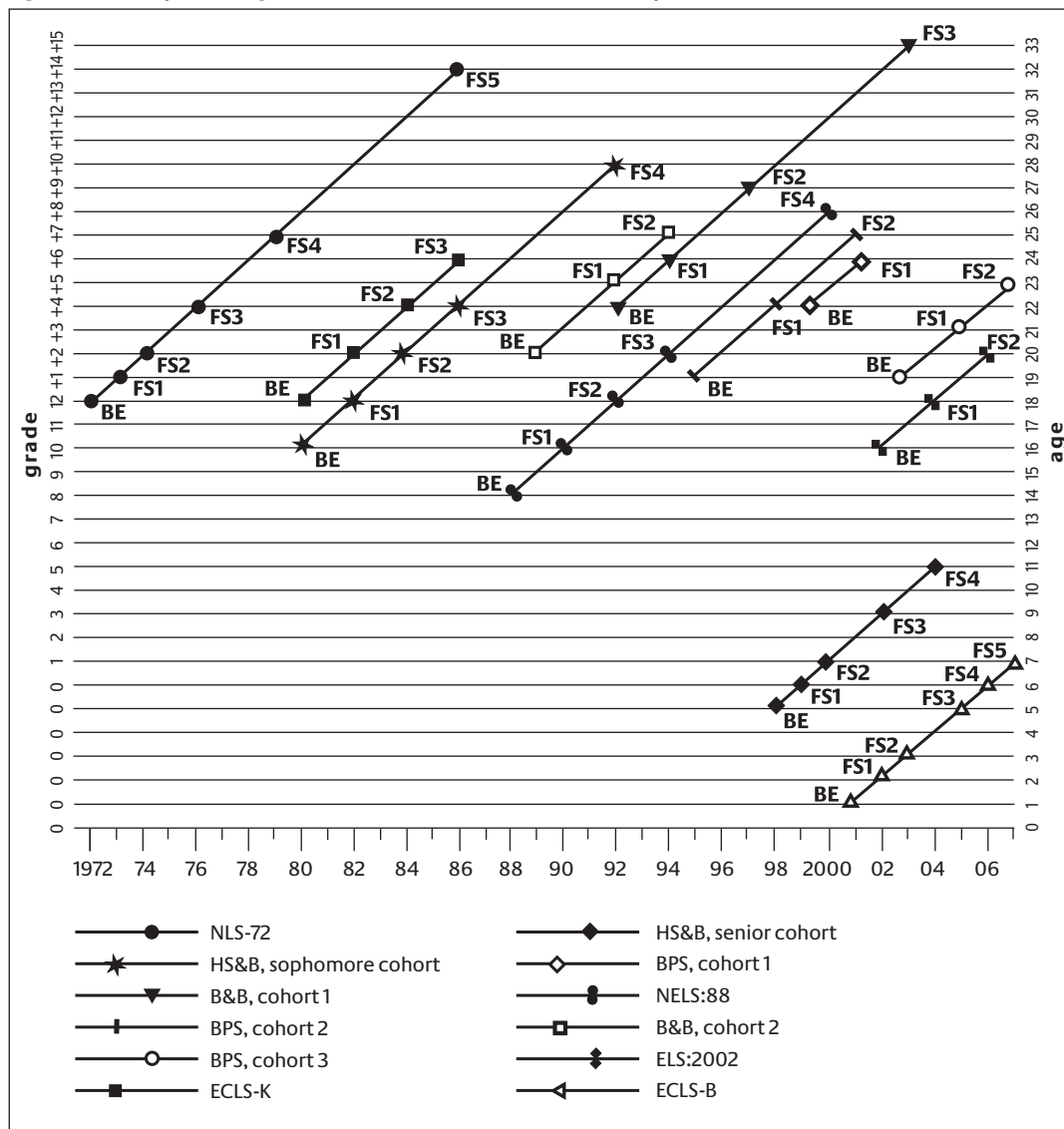
Beginning Postsecondary Students (BPS) Longitudinal Study

Baccalaureate & Beyond (B&B) Longitudinal Study

²¹ Cf. NCES (2003): NCES Handbook of Survey Methods. Technical Report, NCES 2003-603, NCES: Washington, DC, p. 67. The NCES publications cited in this chapter can be found at <http://nces.ed.gov/pubsearch> (accessed August 2004).

²² These comprise private and state schools (less than 2 years), community colleges (2-3 years), colleges (4 years), and universities.

Figure 4: The Key U.S. Longitudinal Studies on Educational Pathways²³



Alongside these key cohort studies, there is a large variety of cross-section surveys covering further educational aspects,²⁴ some of which are directly coupled to the longitudinal studies. Figure 4 shows both the spread of the various studies over time and the age groups and grades taken into consideration.

²³ The figure is taken from NCES (2004): Education Longitudinal Study of 2002: Base Year Data File User's Manual, NCES 2004-405, NCES: Washington, DC, p. 3. It has been slightly modified for this report.

²⁴ Cf. NCES (2003) (footnote 21), pp. 1-3.

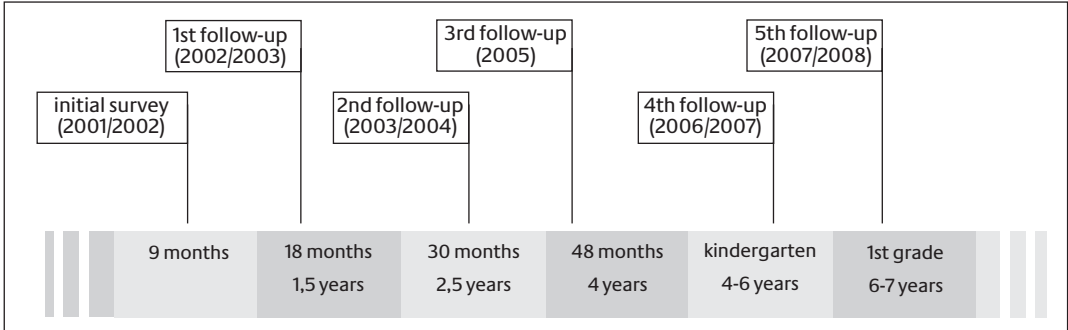
In the United States, the most important large-scale longitudinal studies on educational pathways are conducted by the National Center for Education Statistics (NCES) on behalf of the U.S. government. The NCES is a division of U.S. Department of Education’s Institute of Education Sciences (IES)²⁵. The role of the NCES is to collect data on education matters and prepare such information for a variety of actors, including Congress, state authorities, national education associations, education researchers, companies, and the public at large.²⁶

Alongside the studies indicated in Figure 4, there are also a number of other important longitudinal studies on educational pathways and initial labor market experiences, such as the Wisconsin Longitudinal Study or the National Longitudinal Survey of Youth of 1979. Given the abundance of data available for the United States, the authors found it necessary to make a selection. Alongside the central criterion restricting inclusion to large-scale key longitudinal studies, other aspects also played a part in this decision. First, to qualify for inclusion in this report, the longitudinal studies should concentrate on the field of education and the various stages of education individuals experience. Thus, studies on initial labor market experiences were relegated to the background. Second, the aim of this report suggested to primarily include studies regularly drawn upon in response to inquiries relating to education policy. Though for this purpose the studies deriving from the NCES were not the only ones taken into consideration, the studies undertaken there are of particular significance here.

2.4.1.1 Early Childhood Longitudinal Study (ECLS)²⁷

The Early Childhood Longitudinal Study (ECLS), initiated relatively recently, is the first large-scale longitudinal survey by the NCES on early childhood and the first years in school. This survey explores the influence of different family, school, community, and individual variables on the development of children, early learning, and the learning performance achieved. The ECLS provides information on status at birth and at several subsequent time-points, on transitions children in care institutions pass through, on participation in early educational (pre-school) programs, and on the experiences of the children as they progress up to the 5th grade.

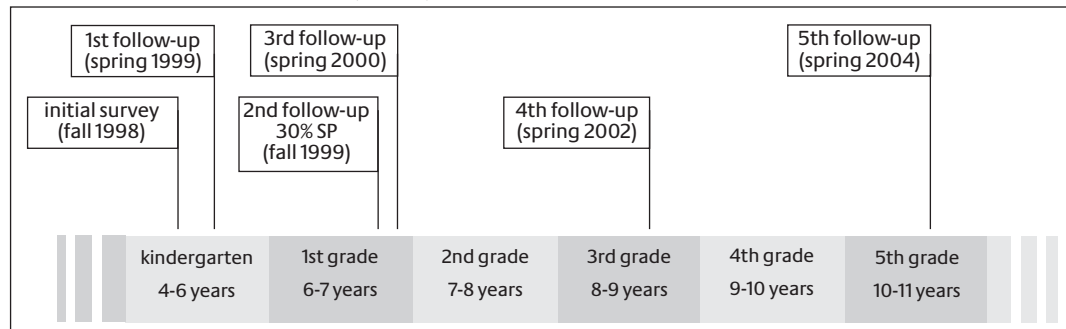
Figure 5: The Birth Cohort (ECLS-B)



The ECLS consists of a representative birth cohort (ECLS-B) and a representative kindergarten cohort (ECLS-K). The birth cohort encompasses some 16,000 babies born in the year 2001. They are followed through entry into the first grade. The sample assembles children of different ethnic and socio-economic origins. Also, care has been taken to oversample certain groups: children of Chinese origin, children with an Asian/Pacific Islander background, children of low weight at birth, twins, and Native American children. To collect data on important events at the time in question and thus avoid the

necessity of retrospective inquiries, a group of six survey time-points at relatively short intervals was chosen (the collection cycles for the birth cohort study are shown in Figure 5).

Figure 6: The Kindergarten Cohort (ECLS-K)



The kindergarten cohort encompasses a representative sample of 22,782 children attending one of 1,277 kindergartens or care facilities in the school year 1998/99. This group is also followed in six cycles up to the 5th grade (see Figure 6). The sample was designed to enable separate analyses for the following categories: private and public kindergartens; black, Latin American, white, and Asian/Pacific Islander children; and different socio-economic status groups.

Both cohort studies combine information from a variety of sources. The birth cohort study (ECLS-B) draws on birth certificates, standardized procedures for measuring development, and information from parents, care providers, pre-school teachers, schoolteachers, and principals. The data for the kindergarten cohort (ECLS-K) are also collected from the children, their parents or guardians, their teachers, and their schools. Additional information is drawn from the school records. Table 11 provides an overview of the various data sources and the most important subjects addressed in the different surveys.

25 Detailed information on the NCES can be found at <http://nces.ed.gov> (accessed August 2004).

26 For more detailed information on the tasks and services of the NCES, see NCES (2003): Programs and Plans of the National Center for Education Statistics, NCES 2004-027, NCES: Washington, DC, pp. 1-19.

27 For a more detailed description see NCES (2003) (footnote 21), pp. 5-18; Moore, K. et al. (1999): A Birth Cohort Study: Conceptual and Design Considerations and Rationale, NCES Working Paper 1999-01, Washington, DC.

Table 11: Respondents, Documents, and Content of the Surveys (ECLS-B, ECLS-K)

	Respondents/Documents	Content	Cycle
ECLS-B	birth certificate	birth date, sex, parents' education, ethnicity, mother's marital status, history of pregnancy, prenatal examinations, risk factors, complications at birth, child's health	IS
	parents	child's health and development, child's experiences with family members/other persons, parenting role, home environment, neighborhood	IS, FS1-FS5
	children	measurement of development: cognitive, social, emotional, and physical development	IS, FS1
	pre-school teachers	own educational background, teaching experience, assessment of the children, learning environment	FS1,FS3
	school	technical/organizational school characteristics, learning environment, education philosophy, education program, classroom, assessment of cognitive and social development	FS5
	father	child's well-being, shared activities, parenting role	IS, FS1, FS3, FS5
ECLS-K	children	measurement of achievement/development: cognitive and psychomotor abilities, language proficiency in English	IS, FS1-FS5
	parents	family demography, family structure, involvement of parents in upbringing, educational activities at home, experience in child care, child's health, parents' educational and vocational status, child's social skills and behavior	IS, FS1-FS5
	care providers/teachers	educational background, teaching experience, assessment of children's abilities: social skills, learning skills, academic aptitude, placement at school	IS, FS1-FS5
	teachers at schools for disabled pupils	disability category, aims of support, nature and amount of support, communication with parents/regular teaching staff	FS1-FS5
	school	type of school, number of students, composition of student body, equipment, resources, community characteristics, safety, school policy, school practices, links between school and parents, special programs, characteristics of staff/teachers, leadership, school atmosphere, characteristics of principal	IS, FS1-FS5
	school records	presence, existence of individual education plan, language test used on entry, participation in Head Start prior to kindergarten, school report	IS, FS1-FS5
	checklist on school facilities	availability and condition of classrooms, toilets, and gymnasiums, safety measures, learning environment, learning atmosphere	IS, FS1-FS5

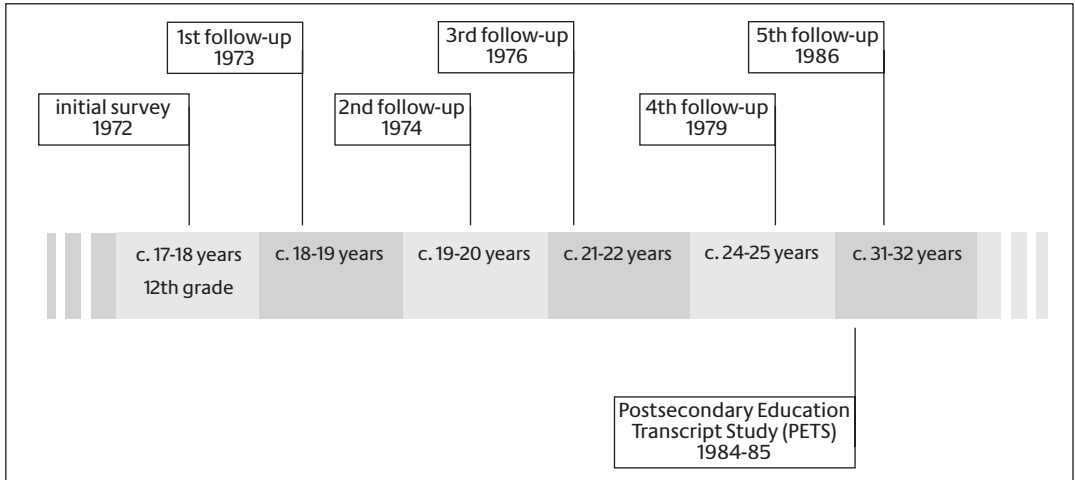
Note: IS = Initial Survey, FS = Follow-Up Study

The birth cohort study supplies information on the health of the children at birth and their experiences at home, in care centers, and in schools, making it possible to conduct sophisticated analyses on the influences of family, preventive health care, care facilities, schools, and communities on the physical, social, and emotional development of the children over their first few years of life. By contrast, the kindergarten cohort study provides information on the next stage of education, primary school. The information collected at kindergarten age serves as comparison on the further development at school in different skills and abilities. The longitudinal design makes it possible to study learning progress and significant changes in the development of achievement.

2.4.1.2 National Longitudinal Study of the High School Class of 1972 (NLS-72)²⁸

The first study conducted in the framework of the National Longitudinal Studies Program was the National Longitudinal Study of the High School Class of 1972 (NLS-72). Together with three follow-ups outlined below, the High School and Beyond (HS&B) Study, the National Education Longitudinal Study of 1988 (NELS:88), and the Education Longitudinal Study of 2002 (ELS:2002), this initial survey covers educational careers spanning the years from 1972 to the present.

Figure 7: NLS-72



The NLS-72 supplies information on the various transitions from high school to subsequent educational pathways and to the labor market. To this end, a representative sample of the high school class of 1972 was selected and interviewed prior to graduation. The interviewed cohort was followed up through 1986, for a period of 14 years. In the course of a total of six collection waves, information was captured on about 23,000 individuals. In the Postsecondary Education Transcript Study (PETS), additional data were collected on the attendance of post-secondary educational institutions. Figure 7 illustrates the schedule for the different surveys.

The sample is based on a two-level selection procedure drawing upon school records from the U.S. Department of Education and the National Catholic Educational Association. First, private and public schools in all states were selected. Subsequently, a random sample of 18 students per school was taken from this selection. The study focused on measurements of achievement and complemented those data with school records and questionnaires addressed to the schools and teachers. Table 12 gives an overview of the major subjects covered.

²⁸ For a more detailed description see NCES (2003) (footnote 21), pp. 67-79.

Table 12: Respondents, Documents, and Content of the Surveys (NLS-72)

Respondents/Documents	Content	Cycle
students	personal background, family background, school characteristics, achievement at school, vocational status, vocational achievement, job satisfaction, future plans, goals, attitudes, opinions, achievement assessment (verbal and nonverbal)	IS
	family status, children, community characteristics, educational success (institutions attended, grades, credits, financial aid), work career, self-esteem, goals, work satisfaction, satisfaction with education experiences, involvement in the community, political activities	FS1-FS5
	achievement measurement (subsampling)	FS4
	marriage, divorce, alimony, economic relations within the family (subsampling)	FS5
school records	courses, average grades (GPA), aptitude assessment, support instruction, participation in state programs, achievement measurement	IS
school	grades offered, number of students, curricula, attendance, composition of student body, drop-outs, number of disabled/disadvantaged children, number of college transitions	IS
careers teachers	gender, ethnicity, age, education, experiential background, careers advice experience, recommended support for college education, methods of job procurement, number of students looked after, time expended on counseling/other activities	IS
documents	documentation of education trajectories after leaving high school: length of study, attendance, subjects studied, courses, grades, credits	PETS

Note: IS = Initial Survey, FS = Follow-Up Study; PETS = Postsecondary Education Transcript Study

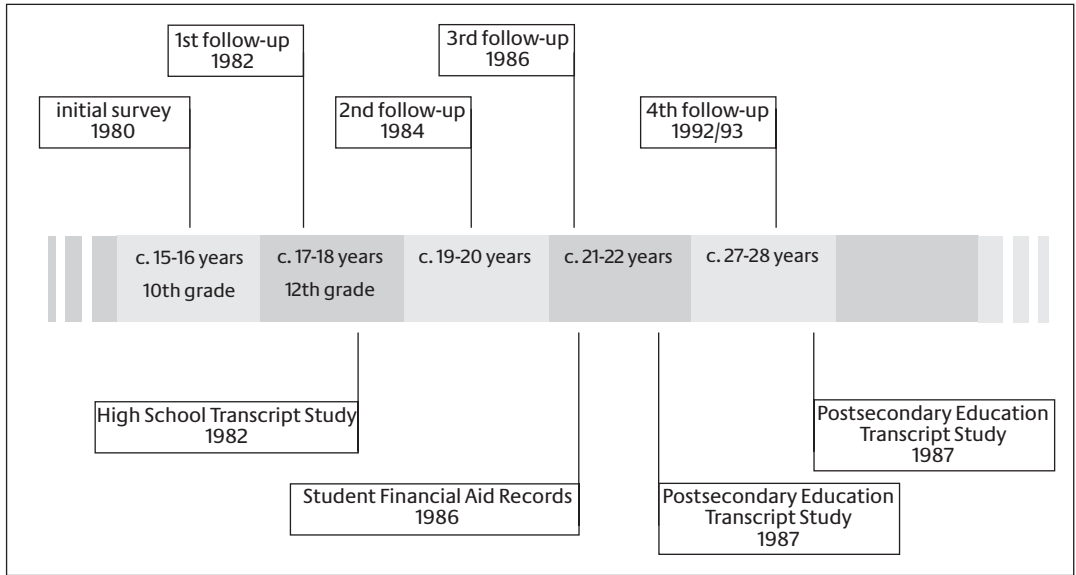
The collected data lend themselves to diverse analyses of cognitive development over time, individual (personal) development, and the educational qualifications ultimately attained. Individual educational careers can be traced via the individual ramification points. In addition, the NLS-72 is also used as a base study for cohort comparisons with the major follow-up studies. With these four key studies taken together (NLS-72, HS&B, NELS:88, and ELS:2002), American educational careers can be analyzed over a period of about 30 years. One aspect that can be studied on the basis of this rich data is whether academic education, achievements, values, and goals have changed over the period in question, and, if so, what did change.

2.4.1.3 High School and Beyond (HS&B) Longitudinal Study²⁹

The High School and Beyond Longitudinal Study is the second large-scale cohort study conducted within the framework of the National Longitudinal Studies Program. It follows the education trajectories and the vocational and personal development of young people from high school attendance to adulthood. In particular, it provides ample material to explore the impact of personal, family-related, social, institutional, and cultural factors on educational careers.

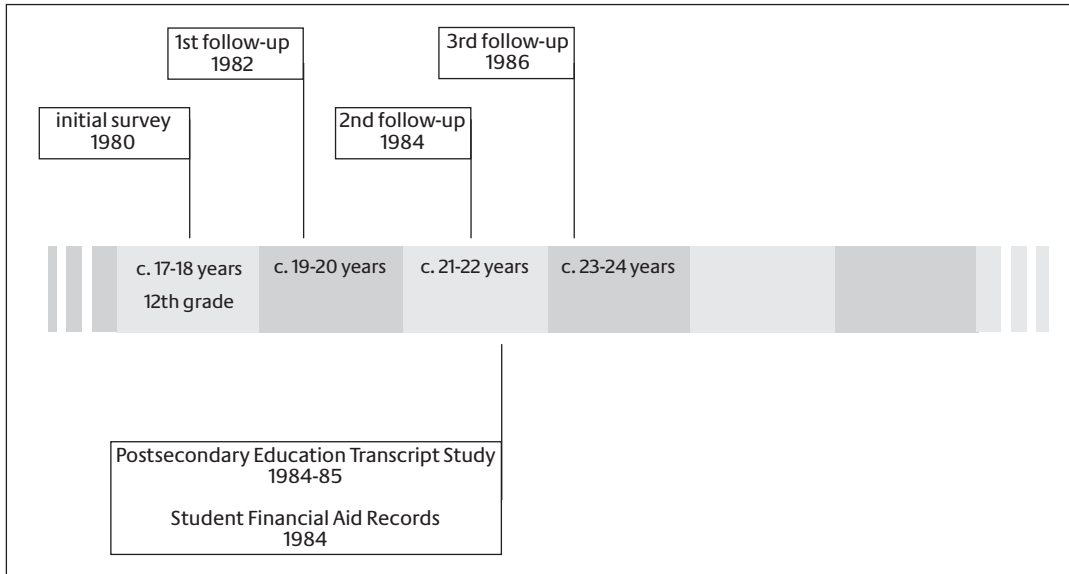
²⁹ For a more detailed description, see NCES (2003) (footnote 21), pp. 81-92..

Figure 8: HS&B (10th grade, sophomore cohort)



The HS&B consists of two cohorts representative for both public and private schools. These cohorts comprise students attending either the 10th grade (sophomore cohort) or the 12th grade (senior cohort) in the spring of 1980. The sample encompasses some 28,000 individuals at the sophomore level and approximately 30,000 students at the senior level, attending 1,122 schools. Students were selected in a two-stage randomized procedure. First the schools were selected and then 36 sophomores and 36 seniors from each school were drawn at random. Certain kinds of school were intentionally oversampled: public schools with a high proportion of Latin American students, Catholic schools with a high proportion of minorities, alternative public schools, and private schools with high-achieving students.

Figure 9: HS&B (12th grade, senior cohort)



The base-year survey of 1980 was followed by four follow-up studies, through 1992. Students, parents, teachers, and principals were interviewed. These data were supplemented by the evaluation of documents and school records. Figure 8 shows the schedule for the various collection waves and additional studies for the 10th-grade cohort. In the section above the time grid are the five key collection time-points, while the lower area of the figure shows the different supplementary studies. Figure 9 provides the same types of information for the 12th grade cohort. This cohort was only followed over four of the collection time-points. The various data sources and the content of the surveys are summarized in Table 13.

The base-year survey of the HS&B study of 1980 can be compared with the data from NLS-72 and also with the subsequent longitudinal studies. This makes it possible to study changes over time and correlate them to influences exerted by a huge variety of parameters. The following questions may serve to convey an initial impression of the program's highly variegated analytic potential:

- When does a school-leaver begin his/her college education?
- How is a decision made in favor of attending college? What circumstances play a role in this decisionmaking?
- What long-term effects result from leaving high school prematurely? What differences are there in employment conditions and income trajectories between high school graduates and non-high school graduates?
- Do college graduates earn more than people who have not attended college? What influence do financial support programs have?
- How large is the proportion of students that after college moves into full-time employment in the field they qualified for in their studies?
- To what extent do public and private schools differ?

Table 13: Respondents, Documents, and Content of the Surveys (HS&B)

Respondents/Documents	Content	Cycle
students	languages spoken (apart from English), personal background, family background, high school experiences, work experiences, educational plans, vocational plans, post-secondary education plans, achievement measurement: cognitive, verbal, quantitative	IS
	school, family, work experience, educational and vocational aspirations, values, achievement measurement: additional components for school drop-outs, school-switchers, and students graduating ahead of time	FS1 (soph.)
	high school experiences, experiences with post-secondary education institutions, work experience, family status, attitudes, plans	FS1 (sen.)
	work experience, post-secondary education, income, unemployment	FS2
	updating of background information, work experience, unemployment, education, further training, family information, income, experiences, opinions	FS3
	access to and choice between post-secondary education institutions, persistence in the attainment of education goals, progress in curriculum, education certificates, education benefits	FS4 (soph.)
school	number of students, staff, education programs, equipment and resources, services, drop-out rates, programs for disabled/disadvantaged students	IS
teachers	assessment of personality and behavior of students	IS
parents	family attitudes, family income, employment, occupation, salary, financial planning, influence of these factors on post-secondary education/goals pursued (subsample)	IS
documents	<i>High School Transcript Study</i> : courses, credits, grades, time of course attendance, average grade (GPA), days absent, results of standardized procedures for achievement measurement	FS1 (soph.)
	<i>Postsecondary Education Transcript Study (PETS)</i> : documentation of educational pathways after leaving high school: attendance, subjects studied, certificates, titles, grades, credits	FS2 (sen.) FS3 (soph.) FS4 (soph.)
	<i>Student Financial Aid Records</i> : recourse to financial aid programs (for participation in post-secondary education)	FS2 (sen.) FS3 (soph.)

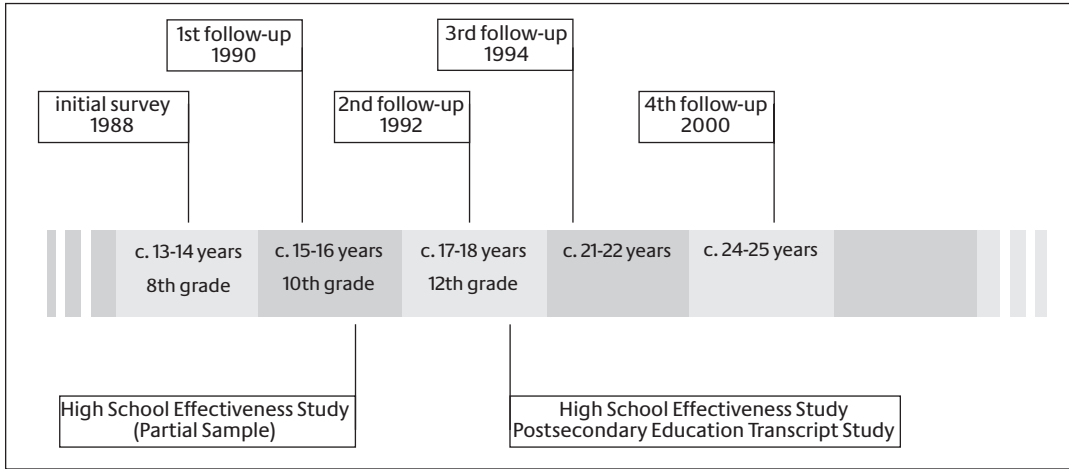
Note: IS = Initial Survey, FS = Follow-Up Study, soph. = sophomore cohort (10th grade), sen. = senior cohort (12th grade)

2.4.1.4 National Education Longitudinal Study of 1988 (NELS:88)³⁰

The National Education Longitudinal Study of 1988 (NELS: 88) is the third large-scale cohort study following the educational pathways of students through different stages of education and employment up to early adulthood. NELS:88 complements the preceding studies with information on a further critical transition – at the end of the 8th grade. The establishment of the NELS:88 program pursued two aims. The first of these was to capture data on the key transitions and on individual progress and development in the different stages of education. Important here are the transitions to high school, to post-secondary education institutions, and to the labor market. The second aim was to amass data for the comparison of trends derived from the two preceding cohort studies.

³⁰ For a more detailed description, see NCES (2003) (footnote 21), pp. 53-66.

Figure 10: NELS:88



The NELS:88 base-year survey centered on a national random sample of 1,052 public and private schools, from which some 25,000 8th-grade students took part. Care was taken to ensure both a representative sample of 8th-grade students and a representative sample of schools providing 8th-grade education. In the first and second follow-up studies, equal care was taken to obtain representative samples of 10th- and 12th-grade students. The samples were designed in such a way that they could be drawn upon both for cross-sectional studies and for longitudinal analyses and cohort comparisons with the two preceding studies. Through 1994, a total of three follow-up surveys were conducted at intervals of two years. The fourth follow-up study followed in the year 2000. Figure 10 shows the survey's time schedule for the different waves.

As in the two preceding studies, the database for NELS:88 was compiled from different sources. Here too, parents, teachers, and schools were interviewed, alongside the key student surveys and achievement measurements. This information was supplemented by the evaluation of school records. Additionally, the High School Effectiveness Study (HSES) was conducted in the framework of NELS:88 and combined with a wide range of information on the schools. The aim of the HSES was to study the influence of school practices and characteristics on the progress in students' academic performance. Table 14 provides an overview of the key issues addressed in the individual surveys.

The NELS:88 base-year survey centered on a national random sample of 1,052 public and private schools, from which some 25,000 eighth-grade students took part. Care was taken to ensure representative samples of both 8th-grade students and of schools providing 8th-grade education. In the first and second follow-up studies, equal care was taken to obtain representative samples of 10th and 12th grade students. The samples were designed in such a way that they could be drawn upon both for cross-sectional studies and for longitudinal analyses and cohort comparisons with the two preceding studies. Through 1994, a total of three follow-up surveys were conducted at two-year intervals. The fourth follow-up study followed in the year 2000. Figure 10 shows the schedule for the different waves of the survey.

As in the two preceding studies, the database for NELS:88 was compiled from different sources. Again, parents, teachers, and schools were interviewed to complement the key student surveys and achievement measurements, and this information was supplemented by the evaluation of school records (Table 14 provides an overview of the NELS:88 survey). Additionally, the High School

Effectiveness Study (HSES) was conducted within the framework of NELS:88 and combined with a wide range of school information. The HSES studied the influence of school practices and characteristics on the progress in students' academic performance.

Table 14: Respondents, Documents, and Contents of the Survey (NELS:88)

Respondents/Documents	Content	Cycle
students	home background, language use, family, self-assessment, future plans, jobs, housework, school life, school work, activities, achievement measurement	IS
	background information, school environment, home environment, participation in school/out-of-school activities, jobs, goals, aspirations, self-assessment, additional questions for drop-outs, achievement measurement	FS1
	achievement in school, assessment of curriculum/school, family structure, environment, social relations, aspirations/attitudes/values in connection with high school/job/post-secondary education, achievement measurement, additional component for students graduating from high school ahead of time	FS2
	achievement, perception/feelings vis-à-vis school/job, work experience, vocational training, application/enrollment for post-secondary education, sexual behavior, marriage, family, values, leisure activities, voluntary work, choice behavior	FS3, FS4
parents	background and socio-economic characteristics of both parents, aspirations for the children, readiness to provide resources for children's education, home support for development at school, education-relevant family characteristics	IS, FS2
teachers	assessment of student performance, assessment of students' personality characteristics, curriculum, teacher's background and activities	IS, FS2
school	school/student/teacher characteristics, school regulations/practices, grading, performance tests, school program, equipment and resources, parent commitment, school atmosphere	IS, FS2
teachers/school	school administration, school program, services, curriculum, instruction, assessment of students	FS1, FS2
students/school	<i>High School Effectiveness Study (HSES):</i> interviewing of students, achievement measurement, school characteristics (subsample)	FS1, FS2
documents	<i>Transcript Study:</i> academic experience at high school (for regular students, drop-outs, students graduating ahead of time, students with mental/physical disabilities/language barriers)	FS2

Note: IS = Initial Survey, FS = Follow-Up Study

The data from the NELS:88 make it possible to study several important stages and transitions in the educational careers of adolescents and young adults. The longitudinal design permits the study of changes and progress in academic performance and educational careers. The data lend themselves to analysis of a multiplicity of issues pertaining to education processes and results that are of immediate relevance to education policy. The following list conveys the wide-ranging potential usage of these data:

- Which individual and which school-related factors favor progress in individual academic performance?
- What measures are suitable in supporting disadvantaged students in the development of academic performance?
- What are the reasons prompting individuals to choose different pathways at various transition points?
- What features are characteristic of effective schools providing optimum learning conditions?
- Under what conditions do young people drop out of school?
- What are the causes of ethnic differences in educational pathways?

– What measures are instrumental in arousing the interest of students in mathematics and the sciences?

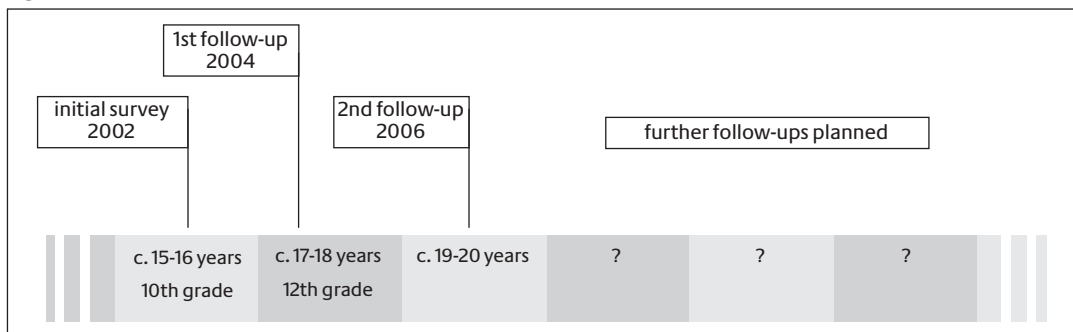
2.4.1.5 Education Longitudinal Study of 2002 (ELS:2002)³¹

The fourth large-scale cohort study, the Education Longitudinal Study of 2002 (ELS:2002), also monitors the education trajectories of students through several stages between high school and early adulthood. Of especial interest in this study are the transitions to post-secondary education institutions, progress through these institutions, and entry into the labor market. The longitudinal design allows for the documentation of changes and interruptions in the education trajectories of adolescents and young adults and for the correlation with individual developments and prerequisites, as well as with specific school-related parameters.

ELS:2002 builds directly on the three preceding longitudinal studies (NLS-72, HS&B, and NELS:88). Like its immediate predecessor NELS:88, ELS:2002 draws upon a representative sample of schools and students. In the first stage, the participating schools were selected from the totality of public and private schools providing 10th-grade education in 2002. The private high schools were oversampled to facilitate comparisons between the two types of school. From these selected schools a random sample of approximately 26 students per school was taken of students attending the 10th grade (sophomores) in 2002. Asians and Latin Americans were oversampled. In the base year of ELS:2002, information was collected on some 15,000 students from 752 schools.

The first follow-up study was still being conducted at the time this report was written. Most of the individuals are now attending the 12th grade (seniors), while some have dropped out of school or are attending school in another grade. While the second follow-up study is planned for 2006, neither the precise schedule nor the subject matter have been finalized for the subsequent waves. Figure 11 shows the different stages of the survey cycles.

Figure 11: ELS:2002



In ELS:2002, as in the preceding studies, different sources of information are evaluated and combined. Questionnaires are repeatedly filled out by the original high school cohort and these measurements of their achievement levels are supplemented by interviews with parents, teachers, principals, library personnel and, in later waves, by evaluations of school records and other documents. The main factors in the surveys rest on information about social background, parental support, school and grade characteristics, and the results last achieved – expressed in terms of performance, grades,

³¹ For a more detailed description see NCES (2004) (footnote 23).

rankings, transitions, and other aspects. Table 15 provides an overview of the most important subjects of the base-year survey.

Table 15: Respondents and Content of the Initial Survey (ELS:2002)

Respondents	Content
students	achievement measurement: reading and mathematics school experiences, school activities, future plans, language spoken, money, work, family, attitudes to self, self-assessment
parents	family background, child's life in school, child's family life, opinions on the school attended, aspirations and future plans for the child
teachers (English + mathematics)	assessment of individual students (behavior, performance education/work plans), teacher's background (education and training, subjects, teaching experience, continuing education)
principals	school characteristics, student characteristics, teacher profiles, school program, use of modern technologies, school leadership, school atmosphere
library	size, organization, staff, technologies used, book holdings, media holdings, money spent on books/media, opportunities for use by students and teachers, collaboration between library and teaching staff
checklist on school facilities	state of corridors, toilets, classrooms, parking lots, neighborhood, safety/security (metal detectors, fire alarms, lighting, fences, cameras), maintenance/order (waste, graffiti, cleanliness, noise, loitering)

Note: IS = Initial Survey, FS = Follow-Up Study

A large variety of cross-sectional and longitudinal analyses can be conducted on the basis of these data. In addition, the study is designed to accommodate cohort comparisons with the three preceding studies (NLS-72, HS&B, and NELS:88). The following questions illustrate the analytic potential provided by ELS:2002:

- What are the differences between the various groups with regard to their chances of access to the different branches of education?
- What aspects are instrumental in choices made between different branches of education?
- How do cognitive performance weaknesses come about over time? What school-related factors play a role in this?
- How do opportunities for the selection of courses differ within and between schools? What are the operative criteria for allocating students to different courses and programs?
- What aspects of school structure and the environment lead to progress in performance?
- Which variables are most suitable for distinguishing between effective and less effective schools?
- What significance does parental involvement have for educational success?
- How does the preceding educational career affect the transition to the labor market, persistence in higher education, and social tasks and roles assumed in later adult life?

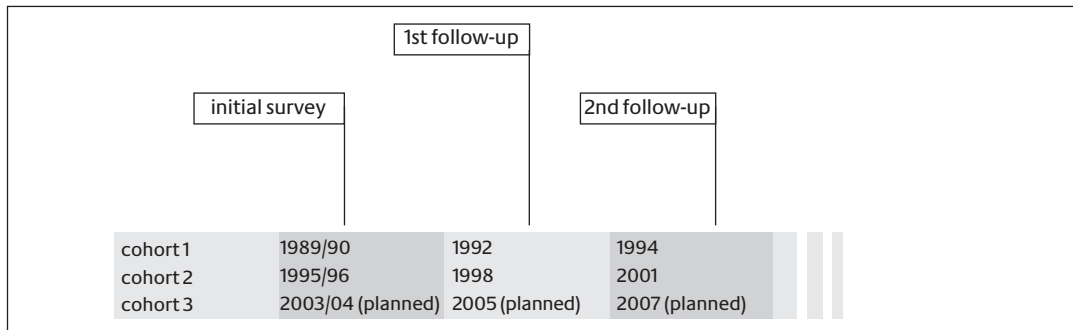
2.4.1.6 Beginning Postsecondary Students (BPS) Longitudinal Study³²

The Beginning Postsecondary Students (BPS) Longitudinal Study began in 1990 and was designed to supplement the preceding cohort studies with additional information on attendance of post-secondary education institutions. The study focuses primarily on aspects such as persistence, progress, and the qualifications ultimately achieved at this stage of education, relations between education and work, entry into the labor market, and effects of post-secondary education on the lives of the individuals in question. The study was also intended to monitor the educational pathways of older students, who make up an increasing proportion of the student body.

The BPS follows these young people from admission to college to entry into the labor market. The BPS cohorts are selected from the National Postsecondary Student Aid Study (NPSAS). The NPSAS compiles cross-sectional information at regular intervals on financial aid for the attendance of post-secondary education institutions for a representative sample of students. It serves not only as a selection base, but also as an initial survey for the BPS study.

The first BPS cohort encompasses some 8,000 students who commenced their studies in the academic year 1989/90. They were followed through 1994 in two follow-up studies. The second BPS cohort includes some 10,200 individuals who began their studies in 1995/96. These persons were also interviewed at two further points, most recently in 2001. Data collection on the third BPS cohort began in the academic year 2003/04. Figure 12 illustrates the timing for the survey's three waves.

Figure 12: BPS



Central pillars of the surveys are questions asked of the students, evaluations of records from the post-secondary education institutions attended, and information on loans taken out for educational purposes or participation in financial aid programs. The key subjects addressed in the various surveys are summarized in Table 16.

³² For a more detailed description see NCES (2003) (footnote 21), pp. 161-167.

Table 16: Respondents, Documents, and Content of the Surveys (BPS)

Respondents/Documents	Content	Cycle
students	subject studied, financial aid at an institution other than the one attended, other financial resources, reasons for the choice of institution, family status, age, ethnicity, highest expected degree, employment, income, choice behavior, honorary activities	IS
	study year, persistence, academic progress, degree, change of subject of study, transfer to other educational institution, education experience, family status, education expenses, employment, income, vocational training, honorary activities, political participation, expectations for the future	FS1, FS2
parents	family status, age, highest education certificate, income, amount of financial support for children, financing of education costs, employment, area of work	IS
documents commencement of	<i>Student Record Abstracts</i> : study year, subject studied, attendance, finance plan, contribution of family to financing, average grade (GPA), age, studies	IS
	<i>Department of Education Administrative Records</i> : application for participation in aid programs/education loans, type of financial aid, amount of financial aid	IS, FS1, FS2

Note: IS = Initial Survey (from NSPAS), FS = Follow-Up Study

The data provide ample material for a wide range of analyses on educational pathways in the post-secondary sector – notably in connection with persistence, progress, the kind of degree ultimately obtained, and the transition to the labor market. In addition, they can be used to investigate whether older first-year students differ on these points from younger students whose high school graduation is of comparatively recent date. For education policy, the BPS is relevant above all for the assessment of possible consequences resulting from educational reforms. The following list indicates some important aspects that can be studied with the help of the BPS:

- How high is the proportion of first-year students who successfully complete the program they have begun?
- What financial, family-related, and institutional factors play a role in the decision to drop out of a course of study? How can this be offset?
- Do those students receiving financial aid do better than those who do not?
- Would the success rates improve as a result of extending financial aid?
- Are students who change subjects as likely to complete their studies successfully as students who continue studying the subjects they originally chose?

2.4.1.7 Baccalaureate & Beyond (B&B) Longitudinal Study³³

The Baccalaureate & Beyond (B&B) Longitudinal Study collects data on a further important stage in the lives of young adults. The study concentrates exclusively on individuals who have successfully completed a course of study at a post-secondary education institution. The B&B Study follows directly from the surveys undertaken within the framework of the BPS Study.

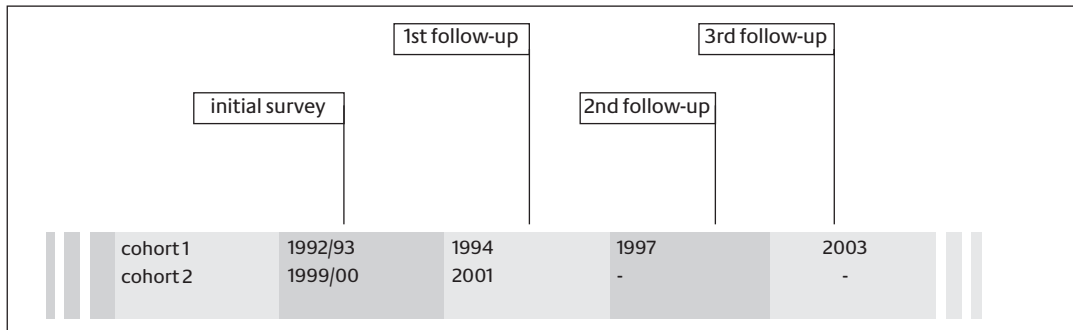
Initially, cross-sectional profiles are compiled on college graduates one year after graduation. The subsequent surveys follow these individuals through further stages of education. Two aspects are of

³³ For a more detailed description see NCES (2003) (footnote 21), pp. 169-177.

central importance in the B&B Study: (1) information on the transition of college graduates to subsequent branches of education (e.g. Master's and PhD programs) and (2) the career pathways of new teachers.

As with BPS, the B&B cohorts are selected from the National Postsecondary Student Aid Study (NPSAS). The NPSAS is representative both for the postsecondary education institutions and for the students. The information assembled in this study serves as the base-year data collection for the B&B Study. The first B&B cohort encompasses some 9,000 individuals who received a Bachelor's degree in the academic year 1992/93. So far this cohort has been followed up in three waves through 2003. The second B&B cohort is made up of persons who obtained their Bachelor's degree in the year 1999/2000. The first follow-up study took place in 2001; however, no further waves are planned. Figure 13 shows the timing schedule for the different surveys.

Figure 13: Baccalaureate & Beyond (B&B)



Data collection centers on questions asked of students, the evaluation of records from the educational institutions attended, and documents on participation in financial aid programs and/or loans for educational purposes. Table 17 lists the key subjects addressed and the main sources of information. Evaluations of the B&B Study are of special significance for education policy. Among the things that can be studied with the help of these data are the positions typically occupied by students who have completed post-graduate programs such as the M.A. or Ph.D., how good their prospects for promotions are, how their income develops, and what significance the debts accruing from educational loans have on the further course of their careers. In addition, it is possible to observe decisions for or against university education and prospects of access to the relevant programs. A further central focus is on evaluations in connection with teacher training for primary and secondary education. The following catalog lists further typical issues that can be analyzed with the help of the B&B Study:

- How much time elapses between graduation and entry into the labor market?
- What professional positions do students who have completed post-graduate programs occupy in comparison with college graduates?
- What is the time to completion of post-graduate programs?
- What length of time is required to find employment that corresponds to the subjects studied?
- To what extent does employment match the kind of degree obtained?
- To what extent do debts accruing from educational loans for college have an influence on the decision for or against participation in a post-graduate program?
- What trends are observable in enrollment figures for post-graduate programs, length of study, and the number of students completing such programs?

- Does a delayed decision to participate in a post-graduate program have an impact on the prospects of access to and success in such a program?
- What factors influence the decision to participate in post-graduate education?
- How many graduates go on to qualify for a teaching position?
- To what extent does the degree obtained influence job promotion prospects?
- How frequent are job switches and changes in the kind of employment engaged in?

Table 17: Respondents, Documents, and Content of the Surveys (B&B)

Respondents/Documents	Content	Cycle
students	education level, subjects studied, financial aid at an institution other than the one attended, other financial sources, monthly expenses, reasons for choice of education institution, family status, age, ethnicity, highest degree aimed for, employment, income, honorary activities, vocational expectations after degree, plans to attend a university, plans for entering the teaching profession	IS
	employment (since leaving college), job search, expectations connected with teaching profession, commencement of teaching job, certification status as teacher, professional training, professional responsibilities, expectations connected with post-graduate education, entry into post-graduate education, financial aid, status of repayment of education loans, income, family formation/family responsibilities, honorary activities	FS1, (92/93 cohort, 99/01 cohort)
	history of employment/education (since leaving college), job-search strategies after graduation, course of career, present status of post-graduate education, non-federal financial aid, additional professional training, entry/continuation/termination of teaching activity, certification status as teacher, teaching career, income, family formation/family responsibilities, honorary activities	FS2 (92/93 cohort)
parents	family status, age, highest education certificate, income, amount of financial aid for children, financing of education costs, kind of work	IS
documents	<i>Student Record Abstracts</i> : subjects studied, educational institution, attendance, tuition fees, result of achievement assessment on access, financial aid, costs, financial planning, family participation in financing, average grade (GPA), age, commencement of studies	IS
	<i>Undergraduate Transcript Study</i> : courses, education institutions attended, grades, credits, distinctions	FS1 (92/93 cohort)
	<i>Department Aid Application/Loan Records</i> : kind and amount of federal financial aid, overall debts accruing (with federal agencies), status of repayment of education loans	FS2 (92/93 cohort)

Note: IS = Initial Survey (from NPSAS), FS = Follow-Up Study

2.4.2 Summary and Evaluation

The longitudinal study program in the United States dates back to the early 1970s. In the meantime, it covers almost all stages in the educational careers of children, adolescents, and young adults. The sole exception is the period known as the “middle years”, i.e., the time-span from the 5th to the 7th grade (see Figure 4). However, plans have been developed to close this gap in the near future. All in all, the United States has an especially rich and comprehensive data foundation for the study of educational careers at its disposal, with new cohorts continuously joining the existing ones.

The major success of this program can be summarized with the following points:

- The restructuring of the NCES in the 1980s resulted in an especially efficient form for managing the organization and for the conduct of a large-scale longitudinal program.
- Detailed and standardized documentation is guaranteed on all stages from the planning of studies and the data collection procedures to the provision of the data themselves.³⁴
- The progressive sampling procedures used ensure that representative samples are taken both from the schools themselves and from the general body of students. Thus, general statements can be made on both analytic levels.
- Due to the uniform standards established, the preparation and provision of the data is especially user-friendly.³⁵
- There are clearly defined rules for the provision of data, ensuring that information from different sectors is made available to users (see Section 4.3.1.3).
- The success of the program is also illustrated by the high demand for the data and the results derived from them – both in terms of education policy and academic study.

Alongside these central assets, there are also some deficits indicated by experts working in this field:³⁶

- Cooperation on the part of the schools has been declining in recent years. The reason adduced for this is the constantly increasing number of achievement assessments in which the schools are obliged to participate.
- Given the difficulties in connection with participation by the schools, there is discussion of whether the requisite information might not be increasingly derived from school records and registry data. This would not only alleviate the participation problem, but might also lower the cost of data collection.
- Generally, preparation and provision of data takes too long. At present the interval between the end of field time to the publication of the data is between one and two years. However, accelerating this process would involve an increase in the resources required.
- The demands on the NCES have increased continuously, yet there has been no corresponding rise in the number of staff positions available, which has resulted in repeated bottlenecks and delays.
- Another deficiency noted is the fact that there are insufficient resources for internal NCES data analyses.
- Generally speaking, the data should be used more widely and more intensively. At present the potential is not being exploited to the full.
- The number of academics prepared to conduct longitudinal analyses is still insufficient. Thus, additional training opportunities would be beneficial. The NCES itself emphasizes training courses in the hope that the academics taking part will act as multipliers for the spread and the more efficient usage of the data.
- Children with migration experiences or immigrant background need to be more fully integrated into the studies on early childhood (ECLS, see Section 2.4.1.1). As the data collection instruments have not been translated into languages other than English, certain population groups have been excluded from the studies.
- In some longitudinal studies, the data collection time-points are too far apart to adequately trace the processes in question. This criticism applies notably to the ECLS studies on early childhood. Here it is felt that the data should be collected twice a year and it has also been recommended that the

waves should be closer together in the studies on high schools and that data collection should begin earlier.

- It is necessary to establish a study on the “middle years” (5th to 7th grade).
- In the long term, an attempt should be made to combine not only the NCES studies amongst themselves, but also to connect them with surveys conducted by other institutions, especially with studies by the Labor Department and the Department of Health and Human Services.
- Data protection laws have been tightened, making efficient and affordable data collection more difficult. There are fears that this problem may be exacerbated over the coming years.
- As yet, there are no comparative longitudinal studies at an international level.

34 Cf. NCES (2003); NCES Statistical Standards, NCES 2003-601, NCES: Washington, DC.

35 Cf. *ibid.*

36 These have been communicated by the following experts: James Griffith (NCES); Steven Ingles (RTI International); David Miller (Education Statistics Service Institute, ESSI); Eugene Owen (NCES); Jeff Owings (NCES); Valena Plisko (NCES); Laura Salgnanik (ESSI); Leslie Scott (ESSI); Jerry West (NCES).

2.5 France

2.5.1 Panels d'Élèves³⁷

In France, cohort studies on the educational pathways of school students have been conducted since 1962. The first longitudinal study was initiated by the Institut National d'Études Démographiques (INED). Since the beginning of the survey on the second cohort in 1973, the data have been collected by the Sous-Direction des Enquêtes Statistiques et des Études (SDESE), part of the Ministry of Education. These data are used largely by the Ministry, but are also available to academic researchers.

The need for more precise information on school students' educational pathways became apparent in the 1960s in the course of attempts to make the French school system more open and efficient. The longitudinal data were designed to help identify different educational careers and to study the social selection mechanisms operative in the choice of different educational paths. In addition, they were intended for use in evaluating new education policy measures. These general aims were specified and extended for the two more recent cohort studies of 1989 and 1995. Among other goals, the data were collected to identify the returns produced by investments in education, to assess the degree of equal opportunity provided by the system, to evaluate long-term consequences of education policy measures, to identify changes in typical educational trajectories, and to explore differences in school careers.

At present, information from seven cohort studies is available. The base-year surveys start in the first or sixth grade. Subsequently, the children are followed throughout their school careers on the basis of annual follow-up studies. To some degree, these studies also extend until labor force entry. Table 12 provides an overview of the surveys for cohorts 2 to 7. The first cohort of 1962 encompassing 17,460 youngsters is not included because no information was available on the individual time-points for data collection. The beginning of the survey for the second cohort was spread out over three years, with a third of the sample included in each year (see Table 18, cohorts 2a-2c).

³⁷ For more detailed descriptions see Caille, J. (1996): Student Panels in French Education Ministry Studies, *Courier des statistiques*, English series no. 2, pp. 17-22; Colmant, M., J.-P. Jeantheau und F. Murat (2002): Les compétences des élèves à l'entrée en cours préparatoire. Études réalisées à partir du panel d'écoliers recrutés en 1997, les dossiers no. 132, Vanves: Ministère de la Jeunesse, de l'Éducation nationale et de la Recherche, pp. 15-21.

Table 18: Study Design of the Panels d'Élèves

	2a N=12.500 6th grade	2b N=12.500 6th grade	2c N=12.500 6th grade	3 N=22.000 1st grade	4 N=21.000 6th grade	5 N=25.000 6th grade	6 N=17.800 6th grade	7 N=9.260 1st grade
1972	IS							
1973	FS1	IS						
1974	FS2	FS1	IS					
1975	FS3	FS2	FS1					
1976	FS4	FS3	FS2					
1977	FS5	FS4	FS3					
1978	FS6	FS5	FS4	IS				
1979	FS7	FS6	FS5	FS1				
1980	FS8	FS7	FS6	FS2	IS			
1981	FS9	FS8	FS7	FS3	FS1			
1982	FS10	FS9	FS8	FS4	FS2			
1983	FS11	FS10	FS9	FS5	FS3			
1984		FS11	FS10	FS6	FS4			
1985			FS11	FS7	FS5			
1986					FS6			
1987					FS7			
1988					FS8			
1989					FS9	IS		
1990					FS10	FS1		
1991						FS2		
1992						FS3		
1993						FS4		
1994						FS5		
1995						FS6	IS	
1996						FS7	FS1	
1997						FS8	FS2	IS
1998						FS9	FS3	FS1
1999						FS10	FS4	FS2
2000						FS11	FS5	FS3
2001							FS6	FS4
2002							FS7	FS5
2003							FS8	FS6

Note: IS = Initial Survey, FS = Follow-Up Study

The sampling procedures vary for the different cohorts. The samples are taken in a multi-stage process from all the students of the year in question that were born on a particular day in the month. A special feature of the French system not found in the other countries under review here is that the samples from the initial survey are not “freshened up” in the follow-up studies.

Another difference to the other countries included here is that in France greater prominence is given to information gleaned from the school principals than to questions asked of students or their families.³⁸ In the first four cohorts the initial survey concentrated exclusively on questions asked of the relevant school principal on the educational careers of the selected youngsters. The schools also pro-

³⁸ On this point, France is closest to the Swedish approach, which also attaches major importance to annual evaluation of school records (cf. Section 2.3).

vided the information on socio-demographic characteristics. In the subsequent annual follow-up studies, the principals were then asked about the pupils' present school situation. However, further surveys did not ensue. This only changed with the fifth cohort of 1989. Here the questions on school situation were supplemented by a one-time interview of the parents, achievement measurements, and a number of minor additional studies on subsamples of the cohort. However, questions asked of the school principals remain the core factor in the Panels d'Élèves. Table 19 indicates the subject matter addressed in the first five data collection waves for the 1989 cohort.³⁹

Table 19: Respondents and Content for the 1989 Cohort of the Panels

Respondents	Content	Cycle
school principals	previous school career, sex, nationality, sibling position, vocational status of both parents, size of family	IS
	grade attended, chosen curriculum, class size, school characteristics	annual
parents	size of family, family structure, vocational status of both parents, accommodation, length of stay, language spoken, school attended by child, reasons for choice of present school, parental involvement in child's education, education expectations	FS2
individuals	Achievement measurement (national tests)	FS2, FS4

Note: IS = Initial Survey, FS = Follow-Up Study

A large number of issues have been examined with the help of the data assembled by the Panels d'Élèves. Here are some of the subjects addressed in the cohort studies for the school years 1989 and 1995:⁴⁰

- What reasons make students terminate their school careers prematurely?
- What specific features do the school careers of immigrant children display?
- What features are characteristic of children who have special difficulties in school? What role do the families play in this?
- What influence does the family have on the children's development at school and in their educational careers?
- What role do the parents' aspirations play in the educational success of their children?
- What are the criteria determining the families' choice of school?

2.5.2 Summary and Evaluation⁴¹

France is another country where the first longitudinal studies were initiated in the early 1960s. The Panels d'Élèves assemble information on the educational careers of different cohorts of school-children. The French longitudinal program has a number of features not encountered elsewhere:

- The cohort studies are used above all by the Ministry of Education, which conducts the surveys itself (through a department of the Ministry, the SDESE).
- In the surveys, the questions put to the school principals are of primary interest. Interviews with students and parents only take place at certain specific points, which results in less information available than in comparable studies undertaken in other countries. For example, interviews with school principals provide limited information on the pupils' backgrounds, even though this information is of crucial importance for inquiries into the causes of different educational pathways. As such, the

Panels d'Élèves are more suited for descriptions of typical educational careers, transitions, and participation rates than for explanatory analyses.

- The results of national achievement assessments are linked with the Panels d'Élèves: an important supplement to the questions addressed to the school principals.
- At present, France is building a national database on schoolchildren, with the aim of assembling information on the children from the schools and other data. This is an attempt to find an efficient and affordable method of capturing as much information as possible on as many individuals as possible.⁴²
- There appears to be hardly any documentation on the surveys, not even in French. Thus, it is difficult for outsiders to gain access to individual features of the French longitudinal program for their analyses.

39 It is difficult to give a more comprehensive overview of the content of the different waves as the corresponding documentation has not been published. Nor was it possible to find technical reports on the studies containing information on such things as the samples and the content of the surveys. Accordingly, our description is based on information in Caille, J. (1996) (footnote 37), pp. 17-22.

40 Cf. Cytermann, J.-R. (2004): L'évaluation du système éducatif en France, p. 10.

41 In view of the restricted amount of information available (see footnote 40), it is difficult to come to a definite conclusion on the study. Also, discussions with experts on the spot were impossible to arrange, despite intensive efforts on our part. The main problem here was that the potential partners in such an exchange felt unable to conduct a conversation in English.

42 Cf. Cytermann (2004) (footnote 40).

2.6 The Netherlands

2.6.1 The Key Longitudinal Studies on Educational Pathways

In comparison with the countries examined thus far, the Netherlands was relatively late in establishing large-scale longitudinal studies on education. Since the end of the 1980s, two main programs have been put in place: the PRIMA-cohorten Basis- en Speciaal Basisonderwijs (PRIMA) in the primary school sector and the Voortgezet Onderwijs Cohort Leerlingen (VOCL) at the secondary school level.

2.6.1.1 PRIMA-cohorten Basis- en Speciaal Basisonderwijs (PRIMA)⁴³

The PRIMA cohort study assembles data on Dutch primary schools. It is designed to evaluate primarily the quality of the educational system and to assess the consequences of education policy measures. Though the use of the data for policy purposes is an important aspect, the material can equally be drawn upon for the study of a wide variety of academic issues. In terms of the subject matter it addresses, the PRIMA study focuses on a number of different factors: the development of cognitive and social skills displayed by primary school pupils, the development of their social behavior, and the study of the impact of individual background features and school characteristics on the course of school careers.

The PRIMA study is coordinated and supervised by the central Dutch research promotion institution, the Nederlandse Organisatie voor Wetenschappelijk Onderzoek (NWO). Two university institutes, the Institute for Applied Social Science (ITS, University of Nijmegen) and the SCO-Kohnstamm Institute for Educational Research (University of Amsterdam) are in charge of conducting the study.

The PRIMA project is notable for its special design. At intervals of two years, simultaneous surveys take place on school grades two, four, six, and eight.⁴⁴ The children selected are followed in the subsequent surveys. In this process, a new second-grade cohort is integrated in each survey, while the eighth-grade children are left out. After six years (four waves of the study) the primary school experiences of an age cohort can be traced in full. Table 20 shows the study design. It also takes account of the preceding and similarly designed Landelijke Evaluatie van het Onderwijsvoorrangs-beleid (LEO), conducted between 1988 and 1992.⁴⁵ The grades included at each stage of data collection are listed below the years in which the surveys were conducted (in bold), thus making the longitudinal design apparent if read line by line.

43 For more detailed descriptions see Roeleveld, J. and van der Meijden, A. (2004): *Speciaal basisonderwijs: veldwerkverslag, leerlinggegevens en oudervragenlijst, Basisrapportage PRIMA-cohortenonderzoek, Vijfde meting 2002-2003*, Amsterdam: SCO-Kohnstamm Instituut.

44 In the Netherlands, primary schooling extends over a period of eight years. Children enter school at the age of four. This means that in the 2nd grade they are 5-6 years old, 7-8 in the 4th grade, 9-10 in the 6th grade, and 11-12 in the 8th grade. School attendance is compulsory for a total of 12 years.

45 LEO was instituted to evaluate a particular education policy measure. PRIMA, by contrast, is much more broadly conceived and can be drawn upon to study a wide range of issues and different education policy measures.

Table 20: Study Design of the PRIMA Study d'Élèves

LEO-1	LEO-2	LEO-3	PRIMA-1	PRIMA-2	PRIMA-3	PRIMA-4	PRIMA-5
							2002
						2000	2
					1998	2	4
				1996	2	4	6
			1994	2	4	6	8
		1992	2	4	6	8	
	1990	–	4	6	8		
1988	–	4	6	8			
–	4	6	8				
4	6	8					
6	8						
8							

Each wave of the PRIMA study collects information on a sample of some 57,000 regular primary school pupils and some 5,400 primary school pupils in special support institutions. The study encompasses some 600 schools, with the pupils selected via the schools. The overall selection is based on three sample components. The central primary school sample – representative of the Dutch primary school landscape – is supplemented by a random sample of children from schools with a high incidence of weak pupils. Most of these schools have a large number of migrant pupils or pupils from the lower social strata. The third sample component is made up of random samples of pupils selected from special schools. As the data collection is undertaken via the schools, children leaving their grade or school cannot be followed any further. But new pupils joining the classes are included. Children from schools opting out of further participation in the PRIMA study are no longer accounted for in further stages.

After primary school (i.e. after leaving the purview of the PRIMA study proper), a subsample of some 6,000 pupils is followed for a further six years through secondary school (PRIMA-VO). The data on their secondary school careers is largely drawn from registries (e.g. information on the kind of school attended, on the respective school grade, or on school reports).

Table 21: Content of the PRIMA Surveys

Respondents	Content	Grade
pupils	achievement measurement (mathematical and verbal)	2, 4, 6, 8
	intelligence assessment (non-linguistic)	4, 6, 8
	learning, position in class, relations with fellow pupils, attitude to school	6, 8
teachers	child's abilities and behavior, atmosphere at home, well-being in school, relationship to teachers, family background, family support in the learning process, pedagogic behavior toward the child, proficiency in Dutch, performance assessment in comparison to other pupils, prognosis on future school career, reading performance, participation in instruction in the mother tongue	2, 4, 6, 8
school records	sex, age, length of residence, family form, parents' native country, parents' education	2, 4, 6, 8
parents	mother present, father present, number of children, number of older children, family status, grandparents' native country, parents' length of residence, parents' nationality, highest education certificates attained, employment, religion, self-allocation to an ethnic group, language spoken at home, proficiency in Dutch, problems at home, child rearing, child's behavior, parents' reading habits, cultural activities, child's leisure activities, family activities	2, 4, 6, 8

The PRIMA study combines measurements of performance and intelligence with questions addressed to parents and teachers. In addition, each wave of the survey focuses on a specific topic, such as the children's social integration, the transition from kindergarten to primary school, or preparation for the next stage of education. Table 21 provides an overview of the main subject matter addressed in the different stages of the survey.

These data can be used to conduct cross-sectional and longitudinal studies and cohort comparisons. PRIMA is used primarily for the evaluation of education policies and specific measures in the primary school sector. In addition, the participating schools receive feedback on their results in comparison with other schools. This aspect is instrumental in ensuring the schools' willingness to participate in the study. They obtain information on performance levels and other aspects that they can draw upon for internal quality assurance.

2.6.1.2 Voortgezet Onderwijs Cohort Leerlingen (VOCL)⁴⁶

The Voortgezet Onderwijs Cohort Leerlingen (VOCL, Longitudinal Cohort Studies in Secondary Education) is a cohort study on educational pathways in the secondary school sector. From a life course perspective, it takes up where the surveys of the PRIMA project leave off. As in the case of PRIMA, one of the central aims of the VOCL study is the evaluation of education policy measures. In addition, the data are designed to be helpful in improving teaching and are hence of interest for the schools themselves. A further major goal is to follow the education careers of pupils through the various transitions and to trace transfers between educational institutions in the secondary school sector. The transition to the labor market also plays a significant role in the study. Alongside the description of distributions and changes over time, the study focuses above all on explaining the differences in educational success and in the educational decisions typically made.

The VOCL longitudinal study is conducted under mandate of the central Dutch statistics office, the Centraal Bureau voor de Statistiek (CBS), and the Dutch research promotion organization NWO. The fieldwork is done by the CBS in collaboration with various other institutes. Since 1999, the Gronings Instituut voor Onderzoek van Onderwijs, Opvoeding en Ontwikkeling (GION) has been involved in the conduct of the study. Alongside representatives of the CBS and the GION, the NWO has also participa-

ted in establishing the design and the objectives of the new cohort study. In the VOCL program, NWO performs an important overall steering and coordination function.

Table 22: Study Design of the VOCL⁴⁷

	1 VOCL'89	2 VOCL'93	3 VOCL'99
1989/1990	IS		
1990/1991			
1991/1992	FS1		
1992/1993			
1993/1994	FS2	IS	
1994/1995			
1995/1996	FS3	FS1	
1996/1997			
1997/1998	FS4	FS2	
1998/1999			
1999/2000		FS3	IS
2000/2001			
2001/2002		FS4	FS1
2002/2003			
2003/2004			FS2

Note: IS = Initial Survey, FS = Follow-Up Study

The VOCL program now encompasses three cohorts, VOCL'89, VOCL'93, and VOCL'99. Each cohort covers about 10 percent of the population in the respective school year. The pupils are selected via the schools. Initially, a stratified school sample was drawn from the totality of secondary education institutions, differentiated (amongst other things) in terms of the courses offered. In the next stage, a random sample of classes in the first stage of secondary schooling was drawn from the school sample.⁴⁸ All pupils in the selected classes were included in the study. In this way, VOCL'89 assembled data on 19,524 pupils, VOCL'93 on 20,331 pupils, and VOCL'99 on 19,391 pupils. Table 23 shows the data collection schedules for the three VOCL cohorts.

The study combines questions addressed to pupils, head teachers, teachers, and parents with the results of achievement measurements. The surveys take place at two-year intervals, but information on school careers is collected annually from the schools. Table 23 provides an overview of the main subject matter addressed by the VOCL.⁴⁹

46 For more detailed descriptions see CBS/GION (1999): Masterplan Scholloopbaanonderzoek VOCL'99, Heerlen, Groningen: CBS/GION; van der Werf, G.P.C. et al. (1999): Quality and Opportunities in Secondary Education: Implementation and Effects of the Common Core Curriculum, in: R. Bosker et al., Enhancing Education Excellence, Equity and Efficiency, Dordrecht: Kluwer, pp. 113-135; van der Werf, G.P.C. et al. (1999): Onderwijsresultaten van VOCL'89 en VOCL'93 Leerlingen, Groningen: GION.

47 In VOCL'89 and VOCL'93 for the years 1998/1999 to 2003/2004, it has unfortunately proved impossible to establish whether the survey time-points actually concur with the information provided here. For VOCL'89 it is unclear whether further surveys took place after 1997/1998 and for VOCL'93 the surveys of 1999/2000 and 2001/2002 have remained unconfirmed. A specific inquiry on this point has yet to be answered by the Dutch officials responsible for the survey.

48 In VOCL'99 all the first grades of the schools selected were included.

49 Cf. CBS/GION (1999) (footnote 46), pp. 19-25.

Table 23: Respondents and Content of the Surveys (VOCL)

Respondents	Content	Cycle
pupils	performance measurement, intelligence measurement	IS, FS1
	sex, age, sequence of births in family, country of birth, language spoken at home, self-allocation to an ethnic group, nationality, length of residence, primary school career, recommendation of primary school for further education, results of final primary school test, grades and exam results in all subjects	IS
	learning skills (performance motivation, homework behavior, meta-cognitive abilities, self-regulation, perception of learning environment), social and emotional characteristics (satisfaction with school life/branch of education selected/present activity, future plans, dealings with partner, leisure activities, personality traits)	IS, FS1, FS2
parents	education and occupational status of both parents, nationality and country of birth of both parents, family characteristics, sharing of housework, knowledge of educational system, aspirations, cultural capital, school selection, social capital	IS
school	school career: course attended, class, exam	annual
	school/class characteristics, teacher characteristics, instruction characteristics	IS, FS1

Note: IS = Initial Survey, FS = Follow-Up Study

2.6.2 Summary and Evaluation

Longitudinal studies on the educational sector were initiated in the Netherlands at a comparatively late stage. The two central studies, PRIMA and VOCL, cover two important stages in the education of children and adolescents. While PRIMA concentrates on the primary school sector, VOCL focuses on the secondary school sector, vocational training, and entry into the labor market. Experts involved emphasize the following aspects in their assessments of the Dutch survey program:⁵⁰

- Both PRIMA and the preceding LEO assembled information covering the entire primary school career from the first data collection wave onwards. Accordingly, cross-sectional evaluations were already feasible for different time-points in the primary school sector once this first sweep was completed. In subsequent years, this collection design was then extended into a longitudinal program.
- One problem besetting the PRIMA study is that children leaving their class prematurely (e.g. because they repeat a class or change schools) cannot be followed any further.
- The division of the two longitudinal studies into the primary school sector and the secondary school sector means that the key transition from primary school to subsequent educational pathways is not accounted for: PRIMA ends before this transition and VOCL begins after it.
- In the case of PRIMA, the data are available one year after collection. In comparison with other studies this is a very short time span. By contrast, a criticism leveled at VOCL is that the provision of data takes too long. The reason given for this is the bureaucratic character of the CBS.
- Attempts should be made to draw more strongly on registry data. This applies particularly to VOCL.
- Certain topics and aspects are not yet adequately covered by the studies. A case in point is the paucity of information on pupil performance in PRIMA. More detailed information on teaching aspects should be collected in both programs.
- Data from the two studies are used by many academics, although the basic orientation of the study is not primarily scientific.

⁵⁰ These communications came from the following experts: Els van Gessele (NWO), Christine Jol (CBS), Jaap Roeleveld (SCO-Kohnstamm Instituut), Tanja Traag (CBS), Annet van der Veen (NWO), Greetje van der Werf (GION).

- The NWO, the CBS, and the GION all participate in VOCL, but because the experts work at different locations, communication can be somewhat laborious. Some regard the CBS as a bureaucratic obstacle, although this does not apply to the PRIMA study, which aside from the NWO involves different actors (ITS, SCO-Kohnstamm Instituut).
- As in other countries, it is sometimes difficult to ensure the participation of the schools, and this applies particularly to VOCL. The PRIMA method of providing feedback on the outcomes in the form of standardized reports to the primary schools has proved an effective way of enhancing the motivation of schools to participate.
- There are plans to establish a database on all pupils and students, collating the information via an identification code, as is done in Sweden.

2.7 Canada

2.7.1 The Key Longitudinal Studies on Educational Pathways

In Canada, the existing longitudinal studies were only instituted in the early 1990s, when it became increasingly clear that more detailed information on the development of children and young people was of crucial import for informed educational policy-making. Initially, interest was focused on selected risk groups, such as school dropouts. The intention was to identify how typical problems develop, what life conditions play a part in their emergence, and what circumstances may have preventive effects. To this end, the National Longitudinal Survey (NLSCY) was instituted in 1994 to monitor the development of children and adolescents. This was followed in 2000 by the Youth in Transition Survey (YITS), dedicated to the key educational transitions in the lives of children and young people. Both studies are jointly conducted by Human Resources and Skills Development Canada (HRSDC)⁵¹ and Statistics Canada.

2.7.1.1 National Longitudinal Survey of Children and Youth (NLSCY)⁵²

The National Longitudinal Survey of Children and Youth (NLSCY) follows the development of children born in Canada from birth to early adulthood. The NLSCY is designed to monitor the physical, social, and emotional development and behavior of children and youth over time and to facilitate the study of the impact of biological, social, and economic characteristics and risk factors on the development of young people. The research results can be drawn upon for the development of effective strategies and measures assisting as many individuals as possible in embarking on successful educational pathways and life courses.

The NLSCY was instituted in 1994 by HRSDC and Statistics Canada. From the outset, a Steering Committee made up of members from both institutions has been in charge of the survey. Statistics Canada has been responsible, amongst other things, for sampling, the development of measuring instruments, and data collection, while HRSDC has been in charge of the elaboration and further development of the study, together with data evaluation.⁵³ They are assisted at governmental level by experts from the Canadian provinces and territories and in research by a large number of academics who have contributed a great deal both to the development of the program and to the data analysis. Also in research, an important role has been entrusted to an international group of experts from a variety of disciplines – the HRSDC Expert Advisory Group on Children and Families.

The NLSCY comprises several different cohorts. The first cohort encompasses children aged 0-11 in 1994, the initial year of the survey, who will be followed until they are 25 years of age (the different age groups in the first cohort are designated by the letters A-L in Table 24). For the second cohort (1996), babies up to 1 year old were selected, and they are to remain in the study until they have reached the age of 5 (this cohort has been given the letters M-N in Table 24). The third cohort began in 1998 and also encompasses babies up to the age of 1 (O-P). The same design also applies to the fourth cohort from the year 2000 (Q-R).

Data collection occurs at two-year intervals. However, not all children from the original survey are followed. Accordingly, longitudinal analyses are only possible for part of the sample. In addition, the samples are repeatedly extended so that the information pertaining to individuals included later does not cover the entire time-span of the surveys. The fourth cycle from the year 2000 assembles longitudinal information on about 27,000 children and cross-section data on about 9,500 children.⁵⁴ The sampling was done from the population of the Labor Force Survey (LFS), which rests on a house-

hold-based sample representative of the Canadian population. However, it was necessary to supplement the sample from the birth registry. For this additional sampling process, each Canadian province was initially divided into urban and rural areas: a simple random sample was taken from the rural areas, while a two-tier selection process was used for the urban areas.

Table 24: Study Design of the NLSCY⁵⁵

age	1994	1996	1998	2000	2002	2004	2006	2008
0	A1	M1	001	Q1				
1	B1	N1	P1	R1				
2	C1	A2	M2	O2	Q2			
3	D1	B2	N2	P2	R2			
4	E1	C2	A3	M3	O3	Q3		
5	F1	D2	B3	N3	P3	R3		
6	G1	E2	C3	A4				
7	H1	F2	D3	B4				
8	I1	G2	E3	C4	A5			
9	J1	H2	F3	D4	B5			
10	K1	I2	G3	E4	C5	A6		
11	L1	J2	H3	F4	D5	B6		
12		K2	I3	G4	E5	C6	A7	
13		L2	J3	H4	F5	D6	B7	
14			K3	I4	G5	E6	C7	A8
15			L3	J4	H5	F6	D7	B8
16				K4	I5	G6	E7	C8
17				L4	J5	H6	F7	D8
18					K5	I6	G7	E8
19					L5	J6	H7	F8
20						K6	I7	G8
21						L6	J7	H8
22							K7	I8
23							L7	J8
24								K8
25								L8

Note: cohort 1: A-L, cohort 2: M-N, cohort 3: O-P, cohort 4: Q-R

The NLSCY is broad in scope, encompassing the development of children in different sectors such as health, language ability, cognitive skills, emotional development, and behavioral development. Information is collected from the children themselves, their parents, teachers, and schools. Table 25 summarizes the most important subjects of the various inquiries and measurements. Given the wide range of data collection instruments resulting from the simultaneous coverage of different age

51 This Ministry deals with matters related to education and the labor market (cf. <http://www.hrsdc.gc.ca>; accessed August 2004).

52 For a more detailed description see Brink, S. and S. McKellar (2000): NLSCY: A Unique Canadian Survey, *isuma*, Canadian Journal of Policy Research 1(2): 111-113; Statistics Canada und Human Resources Development Canada (1995): National Longitudinal Survey of Children, Survey Instruments for 1994-95 Data Collection – Cycle 1, Catalogue 95-01, Hull/Ottawa: Statistics Canada/Human Resources Development Canada; Human Resources Development Canada (1998): Investing in Children: Ideas for Action, Report from the National Research Conference, October 27-29, 1998, Ottawa: Human Resources Development Canada.

53 However, those in charge emphasize that the division of labor on this point is not very strict. This flexible approach is felt to be productive because it underlines the community aspect of the enterprise (cf. footnote 57).

54 Cf. Statistics Canada (2002): Microdata User Guide, National Longitudinal Survey of Children and Youth, Cycle 4, Ottawa: Statistics Canada, p. 85.

55 The Figure is taken from Brink, S. and S. McKellar (2000) (footnote 52), p. 113. It has been modified for the present purposes.

groups, the overview restricts itself to two survey time-points – the initial survey of 1994 and the fourth cycle dating from 2000.

Table 25: Respondents and Content of the Surveys (NLSCY)

Respondents	Content	Cyle
parents	<i>Information on the household:</i> demographic characteristics, relations between persons in household, housing, family situation, socio-economic background for both parents (education, work status, income), health, social support, neighborhood	IS, C4
	<i>Information on the child:</i> health, behavior, education, literacy, parenting, custody	IS
	education, health, medical and biological information, mother's work after birth of child, child development, literacy, communication, activities, positive behavior, sleeping habits, motor and social development, relationships, parenting, custody, expectations and aspirations	C4
	communication ability, motor abilities, problem-solving competency, personal and social development	C4 (0-6-year-olds)
individuals	achievement assessment (for verdict on school aptitude)	IS (4-5-year-olds)
	achievement assessments in different sectors (adapted to age level)	IS (7-11-year-olds), C4
	friends, family, school, feelings, behavior, smoking/alcohol, activities	IS (10-11-year-olds)
	self-assessments	C4 (4-5-year-olds)
	friends, family, school, self-assessment, feelings, behavior, parents, puberty, smoking/alcohol/drugs, activities, first relationships, health, occupation, money, decision-making processes	C4 (10-17-year-olds)
	education, gainful employment, income, health, activities	C4 (16-17-year-olds)
interviewers	assessment of residential area/neighborhood	IS
teachers	achievement and behavior of children, instruction methods, characteristics of and atmosphere in class	IS, C4 (6-11-year-olds)
principal	instruction methods, resources, atmosphere in school	IS, C4 (6-11-year-olds)

Note: IS = Initial Survey, C = Cycle

These data enable the longitudinal study of the development of children and young people. The theme areas are broad in scope and are suitable for the study of different developmental dimensions of babies, children, and young people. The following questions illustrate the surveys analytic potential:

– What risk factors exert a detrimental influence on the development of children and young people, and how widespread are these factors in the population of Canada?

How do different life circumstances and events impact individual pathways of development? What conclusions can be drawn from these for education policy measures?

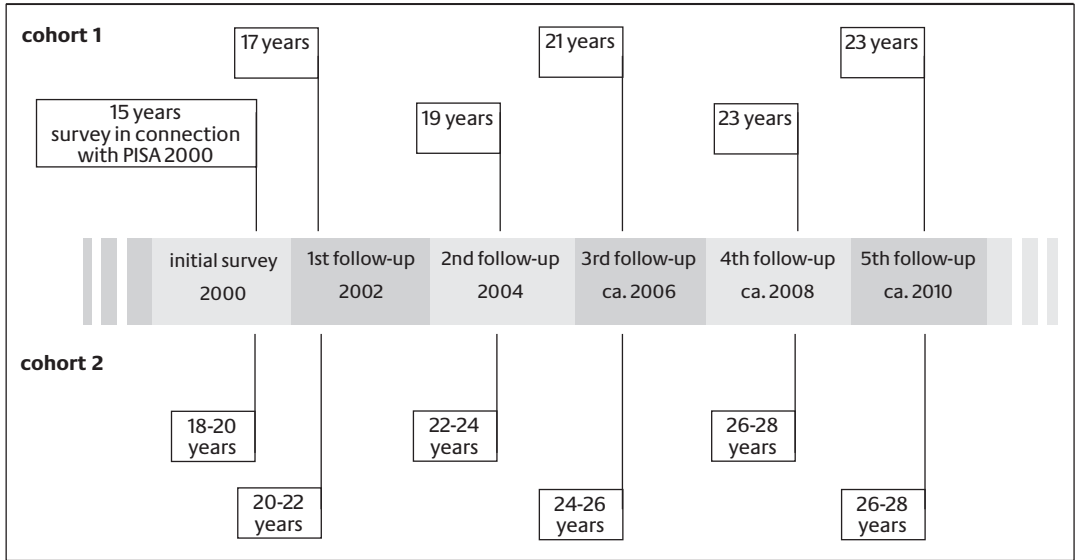
– What are the pathways taken by the biological, social, and economic development of children and young people?

– What environments (family, friends, community) do the children grow up in and what influence do different contextual conditions have on their development?

2.7.1.2 Youth in Transition Survey (YITS)⁵⁶

The Youth in Transition Survey (YITS), established in 2000, covers different significant stages in the life courses of young people, such as key educational transitions in secondary school, choice of training pathways, and entry into the labor market. The study is designed to supply relevant education policy information on the Canadian situation at important transitional points in educational careers. The YITS was conceptualized jointly by HRSDC and Statistics Canada in collaboration with representatives of the Canadian provinces and the Ministry of Education and Labour.

Figure 14: YITS



The study is made up of two age cohorts: 15 year-olds and the 18 to 20 year-olds. The student sample was taken from the schools in a two-stage procedure. The older cohort encompasses persons born in the period between 1979 and 1981. The younger cohort consists of young people born in 1984 who were undergoing some form of schooling in one of the ten Canadian provinces at the time of the survey. Similar to the NLSCY, the sample is derived from the population of the household-based LFS. The cohort of 15 year-olds numbers 29,660 students, that of the 18-20 year-olds 22,352 persons. YITS data are collected at two-year intervals, with the survey continuing until the selected individuals are between 28 and 30 years old. Figure 14 shows the different data-collection time-points for the cohort of 15 year-olds in the area above the time grid, and indicates the cycles for the 18-20 year-olds in the area below it. A special feature of the study design is the combination of the initial survey for the younger cohort with the OECD Program on International Student Assessment (PISA), which evaluates the reading, mathematical, and science achievement of 15 year-olds.

⁵⁶ For a more detailed description, see Human Resources Development Canada (2000): Youth in Transition Survey Project Overview, T-00-5E, Ottawa: Human Resources Development Canada.

Table 26: Respondents and Content of the Surveys (YITS)

Respondents	Content	Cycles
	demographic information, school effects, achievements, engagement at school, socio-economic status, social and cultural capital, family and custody history, parental involvement, parenting style, balancing of work, education and family, educational and labor market aspirations, career planning, peer-group influences, disobedient behavior, health and psychological functioning, post-secondary financing, skills, participation in preparation-for-work programs, voluntary activities, early employment experiences, combining school and work, unemployment, job quality, job tenure, job mobility, income, job satisfaction	all cycles
students	<i>PISA</i> : achievement assessment (reading, mathematics, sciences) and questions on personal background	IS (15-year-olds)
	<i>YITS</i> : achievement, school experiences, early employment experiences, voluntary activities, peer-group influences, educational and vocational aspirations	IS (15-year-olds)
parents	family history, socio-economic background, aspirations and expectations for the child, assessment of child's school experiences	IS (15-year-olds)
principals	<i>PISA</i> questionnaire + <i>YITS</i> additional questions: school characteristics	IS (15-year-olds),
individuals	educational and occupational expectations, aspirations and plans, influences on educational and vocational choices, participation in programs preparing for work, attendance of post-secondary education institutions, chosen program and specialization, early study experiences, barriers to participation in post-secondary education, financing, participation in/experience with labor market, career-/job-related training, income	IS (18-20-year-olds), FS1 (15-year-olds)
	perceived benefits of post-secondary education, career-/job-related training, job-quality indicators, lifelong learning, marriage and family plans, plans on starting a family, balancing work and family	FS1 (18-20-year-olds), FS2 (15-year-olds)

Note: IS = Initial Survey, FS = Follow-Up Study

In connection with the 15 year-olds, the initial survey collected information from the students, parents, and school principals. In the older cohort, no other sources of information were drawn upon besides the questions addressed to the sampled individuals, since at this stage many of the young adults have already left the parental home and/or school. The survey's content is related to main transitions in secondary education, experiences with education and the labor market, achievement, and aspirations/expectations. Table 26 summarizes the content in overview form, with the upper part of the table indicating some general subjects of inquiry and the lower part listing some complementary aspects addressed to select age groups.

The data assembled in the YITS thus far relate to the initial survey and the first follow-up study. In the long term, Human Resources Development Canada (HRSDC) intends to use this information for the evaluation and development of education policy measures and programs. However, the data are also accessible to teachers, interest groups, and academics. The following catalogue describes some of the aspects that can be studied utilizing the YITS:

- education transitions in secondary school up to entry into the labor market,
- typical educational pathways and vocational stages and the question of which factors influence the choice of different pathways,
- the identification of specific educational pathways and vocational steps that facilitate successful transitions into the labor market,
- the point in time at which school careers come to an end and the question of the factors involved,

- the impact of school characteristics on educational and vocational success,
- the impact of work-preparation programs, part-time jobs, and voluntary activities on the development of certain abilities and on transitions into the labor market,
- attitudes, behaviors, and abilities of individuals on entry into the labor market,
- determinants for the attendance of post-secondary education institutions and the decision to continue in such institutions through graduation,
- the role of educational and vocational aspirations and expectations for ongoing investment in education and the choice of a career,
- typical pathways of educational and vocational development in selected groups (e.g. at-risk adolescents and young adults).

2.7.2 Summary and Evaluation

In Canada, the two existing large-scale longitudinal programs were first established in the 1990s. While the NLSCY is more broadly conceived in terms of content and now covers a relatively extensive span in the lives of adolescents and young adults, the very recent YITS focuses more systematically on transitions in the education and training system and on entry into the labor market. Because the YITS began in 2000, no analyses extending across several stages in the life course of young people are yet possible.

The following points summarize some of the assets and deficiencies of the Canadian survey program:⁵⁷

- The NLSCY encompasses individuals from several age groups at the same time (see Table 24). The advantage of this is that information on different age levels can be gathered within a relatively short space of time. However, this method also involves a number of problems. First, the case numbers for the individual groups are smaller than they would otherwise have been. Second, designing a questionnaire for several age groups at the same time has proved to be difficult and time-consuming. Third, the collection of data was accordingly more difficult.
- Only two age groups have been taken into account in connection with YITS.
- In some instances, data from the NLSCY can be combined with information from the YITS. For example, the data on the 15-year-old students in the NLSCY can be compared with those on the 15-year-olds in the initial YITS survey.
- The link-up between YITS and PISA represents an efficient and relatively low-cost method of collecting data. A drawback of this link-up was that the sample selection was determined by the PISA program. Some groups remain inadequately represented.
- A further weakness of the YITS is that it does not provide for any achievement assessments that go beyond the achievement data collected in the framework of the PISA study. For the older cohort this means that there are no achievement data at all; for the younger cohort, achievement information is only available for one cycle. Accordingly, achievement developments over time cannot be studied

⁵⁷ The assessments were provided by the following experts: Steve Arrowsmith (Statistics Canada), Lynn Barr-Telford (Statistics Canada), Satya Brink (HRSDC), Patrick Bussière (HRSDC), Pierre Caron (Statistics Canada), Robert Crocker (Memorial University), André Cyr (Statistics Canada), Douglas Hodgkinson (Council of Ministers of Education, CMEC), Tamara Knighton (Statistics Canada), Stephanie Lalonde (Statistics Canada), Susan McKellar (Statistics Canada), Cathy Oikawa (Statistics Canada), Ellie Shaughnessy (Statistics Canada).

on the basis of YITS. In response to this problem the program is now attempting to introduce relatively small-scale achievement measurements.

- The YITS has no data on respondents before they have reached age 15 or 18-20. At these points in the life course, major decisions have already been made on the further course of educational careers. Thus, the data provide quite limited information on the causes determining the choice of different educational pathways.
- In Canada, there are an insufficient number of scholars able to carry out longitudinal analyses, resulting in the analytic potential of the studies not being fully utilized.
- It has proven difficult to ensure the cooperation of the participating schools over an extended period of time.

2.8 Summary

The above consideration of the various large-scale longitudinal studies on educational pathways provided an overview of the different approaches taken in the selected countries to the investigation of educational careers. It focused on both countries where certain longitudinal programs have been conducted for several decades and on countries where they were established a relatively short time ago. While the study designs are diverse, they can be roughly divided into two groups: (1) studies following the entire educational careers of individuals (as in the major birth cohort studies), and (2) studies singling out individual stages of educational careers for special consideration.

To a large degree, the different longitudinal studies pursue similar aims. Key concerns in most cases are the evaluation of educational systems and the effects of education policy measures. It is thus essential to focus on individual educational trajectories across the various stages of education careers. Longitudinal programs are designed to help identify the relevant individual and contextual factors leading to different educational outcomes in different segments of the population.

To identify the relevant processes requires the analysis of different data sources. Almost all the studies reviewed here combine questionnaires, measurements of achievement, and evaluations of registry data. There is a unanimous conviction that such processes can only be studied on the basis of extensive data collections of the kind examined here. Indeed, almost all countries considered here display an increasingly keen interest in establishing a database system – following the Swedish model – into which new information can be progressively incorporated via a person identification system.

3 Using Longitudinal Studies for Education Reports

This chapter examines the use made of the various longitudinal programs in national education reports. It will show whether and, if so, how individual countries make use of existing longitudinal data in official accounts of the condition of education.

Generally speaking, national education reports are designed “to inform as broad a section of the public as possible at regular intervals on whether the complex fabric of institutions making up the education system are succeeding in fulfilling the requirements made on them by society. In addition, such a report should at least provide initial information on need for change and opportunities for improvement that can be addressed by education policy.⁵⁸ Education reports usually display the following features:⁵⁹

- The general aim of an education report is to provide an evaluative overview of the development of the education system in question.
- Education reports are series of publications appearing at regular intervals with the same title or a volume number.
- They are addressed to the public at large and to relevant actors such as political or educational decision-makers.
- They are mandated by a state authority.
- They present a theoretically substantiated selection of information deriving from education statistics and other empirically validated sources.

Roughly speaking, there are two types of education report: those based on statistics or on school inspections.⁶⁰ The former aims primarily at a description of the education system based on significant statistical data about distributions, developments, and connections. Statistically oriented reports are usually based on a set of indicators derived from a variety of statistical data that describe developments of the educational system. Evaluations of longitudinal studies on education trajectories are one of the main sources they draw upon. Statistically oriented reports are found in the United States (see Section 3.3), in France (see Section 3.4), and in Canada (see Section 3.6).

By contrast, inspection-based reports are geared more to the quality of schools and instruction, teaching and learning processes, and school parameters. Inspectors evaluate individual schools and/or local administrative units. They adhere to a standardized evaluation procedure that is itself based on specific indicators. The official reports normally make little specific reference to data stemming from existing statistical surveys or from longitudinal studies. However, it is customary for evaluations of longitudinal programs to find their way into education policy by other routes, such as additional reports on findings or responses to inquiries addressed to the government or official requests from policy-makers. Inspection-based report systems are found in Britain (see Section 3.1), in Sweden (see Section 3.2), and in the Netherlands (see Section 3.5).

Longitudinal programs on educational pathways are an important source of information for education reports when they go beyond mere description and thus make it possible to engage in a more profound investigation of important issues (see Section 4.1). Accordingly, if education reports acknowledge their function not only to inform the public and specific audiences on existing conditions and distributions and the changes over time, but also to make well-founded statements on the underlying causes and factors involved, then systematic use of longitudinal data is indispensable. For example, if the intention is to examine the interplay between individual background features (i.e.,

educational factors operative outside school) and specific contextual conditions existing in school, then a purely school-related reporting system is obviously inadequate to the task. Here it would be imperative to cross-link statistical information systematically with data relating both to schools themselves and to factors students encounter outside of schools.

This expert report concentrates on the utilization of the longitudinal programs for the purposes of education reports in the selected countries. Accordingly, the following sections will indicate the extent to which evaluations of longitudinal data actually find their way into education reports these countries. This aspect will take precedence over other questions, such as detailed examinations of reporting systems in the various countries.

3.1 United Kingdom⁶¹

British education reports are based on a system of direct school inspections. The prime feature is the evaluation of schools providing general education by registered school inspectors. These inspections, based on standardized guidelines for evaluation and analysis,⁶² cover a wide variety of indicators allowing both for an evaluation of each individual school⁶³ and for statements on the quality of schools in general. The key “Annual Report of Her Majesty’s Chief Inspector of Schools” is based largely on this data source (its key features are described in Table 27).

Table 27: Features of the Education Report in the United Kingdom

name of report	Annual Report of Her Majesty’s Chief Inspector of Schools
mandated by	Department for Education and Skills (DfES)
institution responsible	Office for Standards in Education (OFSTED) ⁶⁴
aim	ongoing evaluation of quality in the British education system
kind of report	inspection-based
structure and content	key topics: (1) child care and early learning, (2) primary school education, (3) secondary school education, (4) post-compulsory education (e.g. college), ⁶⁵ (5) education in special schools, (6) school improvement strategies, (7) teacher training and supply, (8) education in independent schools, (9) local education authorities, (10) quality of inspection and services. For each of the sectors the following aspects are addressed: (a) school leadership and school management, (b) quality of teaching and learning, (c) quality of the curriculum, (d) behavior of pupils/students, (e) development of the schools since the last inspection, (f) achievement levels of pupils/students.
regional differentiation	none
publication intervals	annual
sources of data/information	assessment of quality indicators by the inspectors surveys on learning status

This education report includes not only the results of school inspections, but also national assessments of learning status related to the different types of school. By contrast, the outcomes of the large-

58 Avenarius, Hermann et al. (2003): Bildungsberichterstattung für Deutschland: Konzeption, Frankfurt, <http://www.kmk.org/doc/publ/bildungsbericht/Konzeption.pdf> (accessed August 2004), p. 9.

59 Ibid. pp. 9-10, 32.

60 Cf. *ibid.*, pp. 25-26, 31-32.

61 The central education report and further information on the British report system can be found at Office for Standards in Education (2004): Standards and Quality 2002/2003. The Annual Report of Her Majesty’s Chief Inspector of Schools, London, http://www.official-documents.co.uk/document/deps/ofsted/170/ofsted_annual_rep_20jan04.pdf (accessed August 2004). Avenarius et al. (2003) (footnote 58), pp. 28-34.

62 Office for Standards in Education (2003): Inspecting Schools. Framework for Inspecting Schools, London, <http://www.ofsted.gov.uk/publications/docs/3266.pdf> (accessed August 2004).

63 Detailed individual reports are made on each school inspected.

64 <http://www.ofsted.gov.uk> (accessed August 2004).

65 No inspections are conducted in the higher education and adult education sectors.

scale longitudinal programs do not find their way into the report. Thus it is fair to say that the inspection-based reporting system is geared more to specific learning conditions, the quality of teaching, and other parameters in the individual schools than to the findings of statistically oriented education surveys.

In addition to the inspection-based report on education there are other publications and dissemination strategies addressed to education policy-makers and the general public that draw upon a wide variety of data sources, including the large-scale longitudinal programs, and chief among them the YCS (see Section 2.2.2.1) and the LSYPE (see Section 2.2.2.2).⁶⁶ Also, longitudinal data are regularly drawn upon for responses to inquiries addressed to the government.⁶⁷ Thus, although the longitudinal programs are not directly incorporated into the education report as such, they find their way into educational policy by other routes.

3.2 Sweden⁶⁸

In Sweden, the general school system is evaluated by Skolverket, the National Agency for Education (NAE),⁶⁹ which was reorganized in 2003 and has been asked to present an updated overview of the Swedish education system to the government and parliament every three years.⁷⁰ Since then, an inspection-based evaluation of schools has been the central element in the activities of the NAE. As in Britain, the focus is on the individual schools and the local education authorities. Quality assurance in the schools is a primary concern. Between 2004 and 2009, all schools and education institutions in the Swedish education system are to be evaluated by the inspectors.⁷¹ After the evaluations have been completed the schools and the local authorities will receive a report. The inspections are designed to provide information on the following core sectors:

- results (learning): (1) norms and values; (2) knowledge, skills, and non-cognitive developments,
- processes: (3) ethic, school atmosphere, cooperation; (4) teaching and learning; (5) management, school leadership, quality assurance,
- conditions (of teaching and learning): (6) infrastructure, access to education, learning opportunities; (7) resources.

A further important component in the evaluation is supplied by the national achievement assessments of different school grades, also conducted by the NAE. In addition, an internet-based information system called SIRIS⁷² was established in 2001 providing information on important aspects of the Swedish educational system. At school level, SIRIS supplies information on the following sectors:⁷³

- education statistics (e.g. grades, test results, number of pupils and teachers, teacher qualifications, costs),
- inspections,
- quality assurance reports by schools and communities,
- information on state expenditures and support in the educational sector,
- a statistical analysis tool defining for individual schools what influence individual background features of pupils (such as their social or ethnic origins) have on their showing in the 9th grade.

SIRIS is only available in Swedish so it was neither possible for the authors to establish which databases are drawn upon for the system nor to verify whether the ETF longitudinal data (see Section 2.3) are used for SIRIS.⁷⁴

In the United States, the various longitudinal studies are extensively drawn upon for education reports. The essential features of the annual education report *The Condition of Education* are described in Table 28.

Table 28: Features of the Education Report in the United States

name of the report	The Condition of Education
mandated by	U.S. Department of Education
institution responsible	NCES
aim	description of significant developments and trends in the American educational system
kind of report	system of indicators based on education statistics
structure	six key topics (44 indicators) with various thematic emphases
content	description of education at all ages (pre-school, vocational, higher and adult education) main emphases: education in public schools providing general education key topics: (1) participation in education, (2) learner outcomes, (3) student effort and educational progress, (4) contexts of elementary and secondary education, (5) contexts of postsecondary education, (6) societal support for learning
regional differentiation	Differences between the states are largely phased out (except in the outcome reports deriving from surveys of learning status); observation concentrates on local aspects and individual schools.
publication	annual
sources of data/information	Most indicators are taken from the NCES survey data. Evaluations of the longitudinal programs discussed in this report are taken into account, along with those of many other NCES reports.

Along with a large number of other NCES surveys, the latest report (2004) takes account of the following longitudinal studies:⁷⁶

- Early Childhood Longitudinal Study (ECLS, see Section 2.4.1.1)
- High School and Beyond (HS&B) Longitudinal Study (see Section 2.4.1.3)
- National Longitudinal Study of the High School Class of 1972 (NLS-72, see Section 2.4.1.2)
- National Education Longitudinal Study of 1988 (NELS:88, see Section 2.4.1.4)
- Education Longitudinal Study of 2002 (ELS:2002, see Section 2.4.1.5)

66 As an example, Iain Noble (DfES) pointed to the different dissemination strategies for the YCS. Alongside a set of routine analyses published by the DfES at regular intervals, external academics are commissioned for specific tasks in this connection.

Response to inquiries addressed to the government also plays a central role in the evaluation and dissemination of the results.

67 Iain Noble (DfES) told us that such inquiries make up some 30-40% of the activities of the corresponding section of the DfES.

68 Söderberg, Sten and Eva Wirén (2003): *The Swedish School System and Recent Trends in Swedish Educational Policy*, Paper presented for the DfES Conference "Learning by Comparison: International Experiences in Education and Training," London, December 5th 2003.

69 <http://www.skolverket.se> (accessed August 2004)

70 Cf. Söderberg und Wirén (2003; footnote 68), p. 3.

71 Cf. *ibid.*, p. 8.

72 <http://sirir.skolverket.se> (accessed August 2004)

73 Cf. Söderberg and Wirén (2003) (footnote 68), p. 11; http://sirir.skolverket.se/pls/porta130/PORTAL30.sirir_frame.sirir (accessed August 2004).

74 The authors have yet to receive a response to an inquiry on this point addressed to the Swedish experts.

75 Cf. U.S. Department of Education, National Center for Education Statistics (2004): *The Condition of Education 2004*, NCES 2004-077, Washington, DC: U.S. Government Printing Office. Avenarius et al. (2003) (footnote 58), pp. 17-19, 30-34.

76 Cf. U.S. Department of Education, National Center for Education Statistics (2004) (footnote 75), pp. 292-295.

- Beginning Postsecondary Students (BPS) Longitudinal Study (see Section 2.4.1.6)
- Baccalaureate and Beyond (B&B) Longitudinal Study (see Section 2.4.1.7)

With regard to the education report, the strength of the American reporting system relate to the special nature of the National Center for Educational Statistics as an institution. It not only conducts the longitudinal and cross-sectional studies relevant for education reports, but is also in charge of the report series that is based on extensive evaluations of those studies. This link-up facilitates the efficient exploitation of the unusually rich available data sources. Thus, unlike other countries, the American report does not restrict itself to the description of conditions and changes of the educational system, but also extends its purview to more profound analyses of important related matters.⁷⁷

3.4 France⁷⁸

In France, the two education reports *L'État de l'École* and *Géographie de l'École* are compiled by the Direction de l'Évaluation et de la Prospective (DEP), a department of the Ministry of Education. In its reports, the DEP provides information on all the different levels of the French educational system (for its key features, see Table 29). The French approach to reporting on education is largely descriptive, concentrating on statistics relating to distributions and changes in different areas of the educational system over time. The reports make only isolated reference to the findings of multivariate evaluations. Compared to other countries, these descriptions are brief and convey a relatively basic overview of the French educational system rather than a detailed analysis.

⁷⁷ However, in its report, the NCES is legally restricted to descriptive analyses and to ensure that no subjective evaluations find their way into the report.

⁷⁸ Direction de l'Évaluation et de la Prospective (2003): *L'État de l'École/The State of Education*, Paris, <http://www.education.gouv.fr/stateval/etat/etat.htm> (up to August 2004); Direction de l'Évaluation et de la Prospective (2003): *Géographie de l'École*, Paris, <http://www.education.gouv.fr/stateval/geo/geo.htm> (up to August 2004); cf. Avenarius et al. (2003) (footnote 58), pp. 22-25, 30-34; Cytermann (2004) (footnote 40).

Table 29: Features of the Education Reports in France

names of the reports	L'État de l'École / The State of Education Géographie de l'École
mandated by	The government
institution responsible	Direction de l'Évaluation et de la Prospective (DEP)
aim	description of the development of the French education system (L'État de l'École) description of regional differences (Géographie de l'École)
kind of report	system of indicators based on education statistics
structure	L'État de l'École: three key topics (31 indicators) Géographie de l'École: five key topics (30 indicators)
content L'État de l'École	focus: schools providing general education key topics: (1) costs: funding for the education system, (2) activities: teaching staff, participation in education, duration of school attendance, school entry age, size of classes, (3) outcomes: school-leaving qualifications, impact of qualifications on income and unemployment risk
content Géographie de l'École	focus: regional differentiation of schools providing general education key topics: (1) L'environnement économique et social: socio-economic data framework, (2) L'offre de formation: development in the number of pupils and schools, specific aspects of different school levels, (3) Les moyens et les ressources humaines: education funding, grants, and other study support provisions, pupil-teacher ratios, school staff, (4) Les parcours: participation of 16- and 4-year-olds in education, class repeaters, pupils requiring support, access to vocational training and universities, (5) Les résultats: national studies on learning status in grade 6, school-leaving and vocational qualifications
regional differentiation	Géographie de l'École: differences between départements and school catchment areas
publication	every 1-2 years
sources of data/information	no precise indication of the data drawn upon

The data drawn upon for the two education reports are only specified in one or two places. Unlike in other countries, such as the United States or Canada, there is no overall indication of the various data sources. Accordingly, it is difficult to assess the extent to which the Panels d'Élèves (see Section 2.5.1) are made use of for the reports. However, the relatively brief and descriptive nature of the reports make it appear likely that registry data are the main source of information. Little reference is made to more in-depth issues that would require longitudinal data.

Along with the two central reports, the DEP does however compile a wide range of further studies on different aspects of the French educational system in which account is taken of the Panels d'Élèves.⁷⁹ In addition, these are drawn upon for responses to inquiries addressed to the government. Thus, we can say that the Panels d'Élèves are used for education policy largely independent of the education reports themselves.

79 Cf. Avenarius et al. (2003) (footnote 58), p. 24. Cytermann (2004) (footnote 40).

3.5 The Netherlands⁸⁰

As in Britain and Sweden, the educational report in the Netherlands is based less on statistical material in the form of an indicator system than on school inspections⁸¹ (the central features of the annual education report *Verslag van de Staat van het Onderwijs in Nederland* are described in Table 30).

Table 30: Features of the Education Report in the Netherlands

name of report	Verslag van de Staat van het Onderwijs in Nederland (Onderwijsverslag)
mandated by	The government
institution responsible	Inspectie van het Onderwijs (Schulinspektion, eingeständige staatliche Agentur)
aim	assessment of the quality of the Dutch education system
kind of report	inspection-based
structure	elementary education (13 standards)
	secondary and higher education (14 standards)
	vocational and adult education (10 standards)
content	key topics (1) pupils, (2) teaching staff, (3) quality assurance and school management, (4) elementary schools, (5) secondary schools, (6) vocational schools and adult education, (7) higher education
regional differentiation	none
publication	annual
sources of data/information	assessment of quality indicators by the inspectors
	school performance studies (for years 2, 4, 6 and 8)
	school exam results

In the Netherlands, the essential source of information for the education report is the on-the-spot inspection of schools, with specific inspection guidelines for each sector of education. The quality of learning and teaching processes at school and of the parameters operative there is assessed on the basis of standards previously established. Various indicators identified and evaluated by the inspectors determine the standards. Accordingly, the Dutch education report is also based on selected indicators, though unlike the systems based on education statistics these are more closely related to individual schools and individual instruction styles. The report takes account not only of the findings of the inspectors, but also of the results of school tests and exams. It does not, however, refer to the Dutch longitudinal programs PRIMA (see Section 2.6.1.1) and VOCL (see Section 2.6.1.2).

The studies of the Sociaal en Cultureel Planbureau (SCP) also play a major role in education policy decision-making processes.⁸² The SCP is a government agency conducting scientific studies on different areas of society. In the education sector, the “Sociaal en Cultureel Rapporten”⁸³ are published every two years. However, its data sources are not specified in detail, making it difficult to assess the extent to which evaluations of longitudinal programs find their way into the descriptions.⁸⁴

Alongside these publications addressed specifically to the public and to education policy-makers, there are also general reports on the findings of the PRIMA study. These focus on different topics and are compiled regularly by the institutes in charge of the study – the SCO-Kohnstamm Instituut and the ITS. Also, the direct feedback to the participating schools ensures that the PRIMA findings can be used by the schools for internal quality assurance. By contrast, the VOCL data do not appear to benefit from systematic dissemination within the framework of such reports.⁸⁵

3.6 Canada⁸⁶

In Canada, responsibility for the educational system lies with the provinces and territories. This also applies to the education report, which represents a self-imposed obligation by the Ministers of Education. So far, two such reports have been published (in 1999 and 2003), entitled Education Indicators in Canada. Their essential features are described in Table 31.

The Canadian education reports are largely based on registry and interview data collected and supplied by Statistics Canada. A second major source is provided by the various surveys on educational achievement. Findings from the YITS longitudinal program (see Section 2.7.1.2) were presented for the first time in the second report.

Generally speaking, the use of longitudinal studies for education reports in Canada has been restricted by the fact that the two existing programs, NLSCY and YITS (see Section 2.7), are limited to secondary education and the subsequent transitions in educational pathways. Also, the more successful YITS program only started in 2000, so that the information available from it only pertains to a very short period. In the long term, however, the inclusion of other educational stages in the longitudinal program and the increasing duration of the studies will make it possible to draw more extensively upon their findings for education reports.

80 Inspectie van het Onderwijs (2002): *Onderwijsverslag over het jaar 2002*, Utrecht,

<http://www.owinsp.nl/documents/pdf/ov2002> (up to August 2004). Avenarius et al. (2003) (footnote 58), pp. 26-28, 30-34.

81 Cf. Avenarius et al. (2003) (footnote 58), p. 25.

82 This was pointed out to us by Jaap Dronkers (European University Institute). Information on the SCP can be found at <http://www.scp.nl> (accessed August 2004).

83 Sociaal en Cultureel Planbureau (2002): *Sociaal en Cultureel Rapport 2002. De kwaliteit van de quartaire sector*, Den Haag: www.scp.nl/boeken/scrs/scr2002/acrobat/default.htm (accessed August 2004).

84 According to Els van Gessele (NWO) the longitudinal data are at least purchased by the SCP. This might be interpreted as an indication that they find their way into the evaluations of the SCP.

85 This was pointed out to us by Greetje van der Werf (GION).

86 Cf. Council of Ministers of Education, Canada and Statistics Canada (2000): *Education Indicators in Canada 1999. Report of the Pan-Canadian Education Indicators Program*, Ottawa: Statistics Canada. Council of Ministers of Education, Canada and Statistics Canada (2003): *Education Indicators in Canada 2003. Report of the Pan-Canadian Education Indicators Program*, Ottawa: Statistics Canada (both reports can be found at <http://www.statcan.ca/english/freepub/81-582-XIE/free.htm>; accessed August 2004). Avenarius et al. (2003) (footnote 58), pp. 20-22, 30-34.

Table 31: Features of the Education Report in Canada

name of report	Education Indicators in Canada, Report of the Pan-Canadian Education Indicators Program
institution responsible	Pan-Canadian Education Indicators Program (PCEIP): Statistics Canada (Centre for Education Statistics), Council of Ministers of Education (CMEC)
aim	description of the Canadian education system for education policy-makers and the public assessment of the Canadian education system over time
kind of report	system of indicators based on education statistics
structure	1999: four key topics, 2003: five key topics (The key indicators of 1999 are taken up again in the 2003 edition and supplemented by a number of additional indicators.)
content	focus: school education key topics 1999: (1) The Context of Education, (2) Characteristics and Features of Education Systems, (3) Education Outcomes, (4) Labor Market Outcomes key topics 2003: (1) A Portrait of the School-Age Population, (2) Financing Education Systems, (3) Elementary-Secondary Education, (4) Postsecondary Education, (5) Transitions and Outcomes
regional differentiation	comparison of provinces and territories
publication	1999, 2003
sources of data/information ⁸⁷	The report draws mainly upon cross-sectional studies and registry data from Statistics Canada. Also drawn upon are various school achievement studies by the Organisation for Economic Co-operation and Development (OECD), the International Association for the Evaluation of Educational Achievement (IEA), and the CMEC. The 2003 report also draws upon the YITS longitudinal program for the first time.

⁸⁷ Council of Ministers of Education, Canada and Statistics Canada (2000) (footnote 86), pp. 147-157; Council of Ministers of Education, Canada and Statistics Canada (2003) (footnote 86), pp. 213-246.

4 Thoughts on a German Longitudinal Study of Educational Pathways

Comparison of the wide range of longitudinal studies on educational pathways existing in other countries with the situation in the Federal Republic produces a sobering picture. In Germany, there are no large-scale prospective longitudinal studies providing a basis for the investigation of the educational careers of children, adolescents, and young adults through the various stages of those careers. In this respect, the Federal Republic clearly lags behind all the countries discussed in this report.

At the same time, there can be no doubt that the causes behind individual and societal processes, developments, and changes in the educational sector cannot be adequately studied without a valid and reliable database. In turn, this means that convincing recommendations for political action are difficult to devise, as such recommendations would need to draw upon comprehensive knowledge of the underlying processes involved.⁸⁸ The design of effective measures must be grounded on firmly established facts, and the establishment of those facts requires thorough empirical analyses. Accordingly, if education policy is to be purposeful and effective, then those responsible for such a policy should have a keen interest in instituting a longitudinal study providing such necessary data.

In the following section, we present a number of ideas pertinent to the development of a German longitudinal study on educational pathways. First, we discuss in greater detail why such longitudinal data are urgently required (Section 4.1). Reference is made to the key stages of educational careers and the surveys that would be needed to account for these (Section 4.2). Subsequently, we point out the most important stages in the establishment of a longitudinal study on educational pathways (Section 4.3). At various points, the recommendations of experts from the various Federal German states are incorporated into the argumentation. Finally, a list of selected publications helpful in devising a new longitudinal program on educational trajectories can be found in Appendix B.

4.1 Why do We Need Longitudinal Data on Educational Pathways?

TIMSS, PISA, and PIRLS have provided cross-sectional descriptions of the performance displayed by German pupils/students of different ages in different areas of knowledge. However, these studies concentrate on different levels of achievement established by way of comparisons at an international level, between different Federal states, and between different sectors of the population, such as groups with a particular social origin or immigration background. Thus, they cannot provide the data needed to analyze the conditions and causes responsible for the observed cross-national differences. Longitudinal studies on educational pathways are imperative for precisely this purpose.

To explain the current achievement status of a given cohort of pupils/students requires us to investigate their educational careers up to the point they were tested. In other words, a precise reconstruction of all the educational investments made prior to that point is necessary. These include the support and encouragement received in infancy at home, in kindergarten or other care-providing institutions, development throughout the first years of elementary school, the subsequent initial transition to secondary school, and the further development of achievement during secondary education. Even such a broad listing of the different stages of education makes it amply clear that a one-

⁸⁸ Cf. Kommission zur Verbesserung der informationellen Infrastruktur zwischen Wissenschaft und Statistik (2001): Wege zu einer besseren informationellen Infrastruktur, Baden-Baden: Nomos, p. 15. An abridged version of this expert report can be found at http://www.bmbf.de/_media/press/A--FIN4_.pdf (accessed August 2004).

time assessment of performance at a relatively late stage of school careers is inadequate to the task of indicating the causes underlying different educational trajectories and different degrees of achievement. At each stage of school careers, different pathways present themselves to the students, while institutional regulations, education policy measures, and school influences provide opportunities and constraints throughout those careers. Thus, we must study not only individual factors, but also the impact of the parameters that affect achievement or success at school. It is necessary to trace individual development through the different stages of school careers over time and indicate the ways specific conditions and factors affect that development at important junctures in the educational process.

But developments in individual educational pathways can only be studied by collecting information at the micro-level from the different agents involved (students, families, schools) at different times. Only by examining such data can we hope to identify interconnected factors and behavioral regularities.⁸⁹ By providing longitudinal data related to different years and individuals, cohort studies are an especially pertinent way of identifying and analyzing the processes involved in human development and the course taken by students' lives in the context of broader social and economic changes.⁹⁰

The general advantages of longitudinal studies can be roughly summarized in three areas. First, they facilitate the description of states and conditions, their respective duration as well as the distribution of, and changes to, those factors over time. Second, longitudinal designs are especially effective for the multivariate study of individual and societal development and change processes. Third, longitudinal designs facilitate the causal reconstruction of events and processes. Comparison of the data derived from different waves of a survey can be used to establish whether and how certain features have changed and what statistical relations exist between variables measured at an earlier point and the dependent variables measured at later junctures.⁹¹

For the study of educational pathways, the following aspects are especially crucial. Longitudinal studies are necessary

- to document educational pathways and achievement development and to explain differences⁹² in educational pathways and achievement development,
- to document important physical, social, emotional developmental aspects and to explain differences in them,
- to evaluate education policy measures and their short-term and their long-term effects,
- to evaluate school parameters and programs and ultimately to evaluate the school system as a whole.

This rough outline can be further specified with regard to the aims pursued by such a longitudinal study and the priorities that reflect those aims (see Section 4.3.1.1). The national overviews presented here have indicated the vast range of issues that can be addressed with the help of such a study (see Section 2).

89 Cf. *ibid.*, p. 15.

90 Cf. *ibid.*, p. 28.

91 Cf. Solga, Heike (2001): Longitudinal Surveys and the Study of Occupational Mobility: Panel and Retrospective Design in Comparison. *Quality & Quantity* 35 (3): 291-309.

92 These differences may be related to various social and spatial features such as differences between sectors of the population or differences between countries, Federal states, regions, schools, etc.

The clarification of such issues plays a significant role in the development of suitable recommendations for political action. In principle, systematic measures can only be elaborated on the basis of information on the underlying processes and mechanisms. Otherwise, it will remain impossible to gauge the effectiveness of interventions and their (possibly unintended) consequences accurately. The markedly successive structure of schooling, in which learning potential in later stages is dependent on learning experiences and learning outcomes in earlier stages, makes problem-oriented longitudinal studies indispensable.

4.2 The Key Education Stages and Surveys

A longitudinal study setting out to trace individual educational pathways would need to take into account all the important stages in educational careers. These include

- infant experiences both at home and in child-care institutions, such as day-care centers or kindergarten,
- entry into elementary school and progress through it,
- the first transition from elementary school to the various secondary schools,
- progress through secondary education up to dropout or graduation,
- transitions to the subsequent stages of education and training or to the labor market,
- progress through those stages, further changes, and ongoing education investments, until entry into the labor market.

Especially the early stages of educational careers require closer attention because they provide the decisive foundations for further learning. Important decisions are normally taken at transition points, thus these also require close consideration.

The examples from the various countries discussed in Chapter 2 indicate the large number of different approaches conceivable. Whereas the birth cohort studies in the United Kingdom and Sweden concentrate on individuals' entire educational pathways, studies in the Netherlands, Canada, and the United States tend to single out individual stages in educational careers. The cumulative program in the United States takes a remarkably progressive approach. Here, educational stages initially left out of account are covered by additional studies, while existing surveys on certain stages are extended by including new cohorts (see Section 2.4, especially Fig. 4). Independently of the course embarked upon, the important thing is to gain as comprehensive a picture as possible of the individual educational trajectories (see Section 4.3.1.2).

For an adequate coverage of the ongoing processes and the parameters involved, it is necessary to combine information from a variety of data sources on and from the different actors involved. Usually this information has to be collected from different actors, but it has to be combinable at an individual level. Almost all the studies discussed here (see Section 2) have opted for such a procedure. A longitudinal study on educational pathways should include at least the following survey types:⁹³

- repeated assessments of intelligence and school performance,⁹⁴
- questions asked of students/pupils,

⁹³ The precise content of the different surveys would need to be in harmony with the aims pursued (cf. Section 4.3.1.1).

⁹⁴ The tests need to be devised so as to make progress measurement possible.

- questions asked of parents,
- questions asked of caregivers/teachers,
- surveys on the school context (e.g. composition of student bodies, instruction, school features, measures),
- evaluations of documents and official data (e.g. data on grades, advances, and transitions, information on choice of schools, data on residential areas).

The examples from the different countries have shown the wide array of combinations and link-ups that are possible. Along with the interplay of information from different questionnaires, this applies particularly to the systematic collation of questionnaires and registry data (e.g. Sweden, Section 2.3), as well as the combination of different surveys that may not have been initially cross-linked, such as the combination of PISA and YITS in Canada (see Section 2.7.1.2) or of different surveys in the United States (see Section 2.4).

4.3 Phases in the Establishment of a Longitudinal Study

The establishment of a longitudinal study on educational pathways can be roughly divided into three phases. First comes the detailed planning and preparation of all important aspects of the study (Section 4.3.1). Then follows the survey phase for the first wave of the study (Section 4.3.2). The third stage centers on the editing of the data material, initial analyses, and the protected provision of data for the users (Section 4.3.3).

All of the subsequent waves of the survey have to go through more or less the same procedures. However, they have to be geared to the basic decisions and commitments made at the outset. Accordingly, the initial planning stage plays a key role in the study as a whole. At the same time, the success of each stage of the study is crucial for the quality of the ultimate data product. Throughout, all efforts must be geared to the central aim of providing suitable high-quality data for the analysis of individual educational pathways as efficiently and affordably as possible.

4.3.1 Planning

In the planning phase, all procedures and strategies for the entire study must be mapped out in advance. As the decisions made at the outset largely determine the course a longitudinal program is to take, the preparation stage should be as painstaking and precise as possible. The experts from the different countries interviewed have repeatedly emphasized how important it is to plan the first wave of a survey scrupulously as all the options selected at the beginning have a major impact on the conduct of all the subsequent cycles.⁹⁵ Particular care should be taken to ensure that the essential decisions are made under time pressure. Undue haste at the outset often results in the need to invest more time at later stages to deal with the resulting difficulties.⁹⁶ It needs to be borne in mind that the planning of a longitudinal design requires much more time and care than the elaboration of a cross-sectional survey. The longitudinal perspective has to be maintained throughout all stages of the planning.⁹⁷

⁹⁵ Among the examples of particularly well planned and prepared studies are the LSYPE in Britain (see Section 2.2.2.2), the ECLS in the USA (see Section 2.4.1.1) or the YITS in Canada (see Section 2.7.1.2).

⁹⁶ This point was referred to specifically by Canadian experts working on the very recent YITS study. Their conclusions derive from their experience with the preceding NLSCY. In that study, overly hasty initial planning generated a series of problems. "Better safe than sorry" thus became a central motto in the establishment of the YITS (see Section 2.7).

⁹⁷ Iain Noble (DfES, UK).

At the planning stage, the following essential points call for careful consideration:

- establishing central aims and content priorities (see Section 4.3.1.1)
- elaboration of the study design and sample (see Section 4.3.1.2)
- deciding on data collection techniques, the timing of data collection, and the methods for ensuring appropriate exploitation quotas
- preliminary methodical concerns
- elaborating the measuring instruments
- testing the measuring instruments
- planning the survey (interviewers, participation, monitoring etc.; see Section 4.3.2)
- planning data editing, such as data-cleansing, non-response, imputations, evaluation (see Section 4.3.3.1)
- analysis plan for the first stage of data evaluation (see Section 4.3.3.1)
- data protection and regulation of access to data (see Section 4.3.3.2)
- planning quality assurance for each phase of the study (i.e., monitoring and assessing the individual stages and the whole study)
- publication and dissemination plan: agreeing on the main publications and defining the respective target group(s) (see Section 4.3.3.1)
- elaborating strategies for ensuring short-term and long-term participation of students, schools, teachers, and families⁹⁸
- dividing responsibility and decision-making powers among organizations and the infrastructure (see Section 4.3.1.4)
- establishing standards for all phases of the study (see Section 4.3.1.3)
- documentation (see Sections 4.3.1.3 and 4.3.3.1)
- time schedule for the entire course of the study from initial planning to data release
- personnel planning
- calculation of costs taking account of all stages and aspects referred to in this report.

In the following, we will discuss in greater detail some of the key points listed above. Aspects related to the survey, the data editing, and the use of data are dealt with in the next two Sections, 4.3.2 and 4.3.3. These remarks are designed to convey an initial impression of selected matters requiring attention in the establishment of a longitudinal study on educational pathways.

⁹⁸ This aspect was repeatedly stressed by the experts, including Els van Gessele (NWO, Netherlands), Steven Ingles (RTI International, USA), Jeff Owings (NCES, USA), Leslie Scott (ESSI, USA), Greetje van der Werf (GION, Netherlands), Jerry West (NCES, USA).

4.3.1.1 Aims

Laying down the essential aims of the study must be the starting point for all planning activities. Here, it makes sense to identify the requirements and interests of the relevant actors involved. Consultation with potential users of the study⁹⁹ and consideration of the aims pursued in other countries is helpful (see Section 2). Just as important as the clear definition of aims is the establishment of priorities for the content of the study.¹⁰⁰ This involves the planning of the theoretically relevant variables and the definition of information requirements for the various waves of the survey. The establishment of such guidelines is necessary for the planning of the study's individual stages. Clear definition of the content at the outset will obviously have an impact on all the subsequent stages.

In addition to the concretization of the content, the implementation of a longitudinal program will always be geared to the general aim of finding efficient and affordable ways to provide high-quality data that are reliable, useful, and informative for education policy-makers, the public, and other relevant actors.¹⁰¹

4.3.1.2 Study Design and Sampling

The precise elaboration of the study design, including sampling, depend on the central aims and the content priorities established beforehand. If the processes involved in developing different academic and life skills are of essential significance, it is important to trace these processes continuously over time, from early infancy onwards (see Section 4.2). Accordingly, a longitudinal program on educational pathways should be designed to supply as comprehensive a picture as possible of individual developments over the long term.

In their attempts to achieve this end, the countries discussed in this expert report have explored different avenues. In some cases, they have opted for birth cohort studies tracing the complete educational careers of selected individuals over time (e.g. the United Kingdom and Sweden), whereas others have given preference to a systematic focus on individual stages of education (e.g. France, the Netherlands, Canada, or the USA). The focus on entire educational careers has the major advantage of allowing examination of the influence of preceding educational stages on subsequent developmental trajectories. In surveys on individual stages of education, this can only be done by retrospective interviewing on previous stages. However, longitudinal programs covering the entire educational career are challenged by one major problem. At least two decades elapse before the data on complete education careers are ultimately available. In countries where longitudinal programs on educational pathways are a relatively recent development (e.g. in the Netherlands or Canada), this resulted in a decision to explore additional studies to ensure quicker availability of important information on different stages in educational careers.

This approach involves singling out several different stages in educational careers and studying them simultaneously. An especially important stage is development in infancy and early childhood, including the first years in elementary school and extending to the transition to secondary education (e.g. PRIMA in the Netherlands¹⁰² or the ECLS in the USA, see Sections 2.6.1.1 und 2.4.1.1). Such studies of early childhood development are crucial because precise examination of family-related, pre-school,

⁹⁹ NCES (2003) (footnote 34), p. 15.

¹⁰⁰ Experts from the USA were particularly adamant on this point, e.g. Leslie Scott (ESSI), Steven Ingles (RTI International), and Jerry West (NCES).

¹⁰¹ Cf. NCES (2003) (footnote 34), p. 1.

¹⁰² PRIMA is an unusual study in that it covers all the grades of elementary school simultaneously (see Section 2.6.1.1, Table 20).

and school-related processes at this stage are essential for the assessment of the long-term consequences of early development for the educational career as a whole.

A second important stage is the attendance of secondary school, including the transition to subsequent branches of education and training all the way up to entry into the labor market (e.g. VOCL in the Netherlands (see Section 2.6.1.2), LSYPE in Britain (see Section 2.2.2.2), the High School Surveys in the USA (see Section 2.4.1) or the YITS in Canada (see Section 2.7.1.2)). If a study is designed in such a way that important educational transitions have already occurred, detailed retrospective information must be collected on the preceding stages of education.¹⁰³

These considerations are of apparent relevance to the situation in the Federal Republic of Germany. If the intention is to concentrate on two stages of the educational career, the solution that suggests itself is to begin with the phase extending from early infancy, through kindergarten and elementary school, and up to the transition to secondary education. The second important stage would then extend from secondary education itself to the subsequent transitions. This second study should at all costs take account of the first transition, because it is at this point in the German educational system that the individual's entire subsequent educational career is determined. The absence of information on this most important transition would have far-reaching consequences for the analytic potential any such study. Without information on the living and learning conditions and achievement levels of individuals at the end of elementary school, it would be impossible to provide an adequate investigation of later differences in academic performance in the various branches of education at secondary level.

One might also consider the extent to which existing longitudinal components (such as the Panel of the HIS Higher Education Information System) might be usefully integrated into the new longitudinal study. This would ensure consistency with findings that have been produced to date. Such a procedure does, however, involve a number of potential hazards – as regards sampling, for example – which is why a reorientation of the existing studies would need to be undertaken. Accordingly, link-ups of this kind must be made with care and pursued only if the benefits they may yield outweigh the challenges they imply. In no event should important aspects of the new longitudinal program be substituted due to integration of selected components of preceding studies.

After the various essential decisions have been made on the educational stages and the surveys that are to be taken into account (see Section 4.2), the next step is to elaborate the sampling plan. This involves the establishment of the sample design, the sample size, and the data collection methods to be used, as well as clarification of all the design and sampling issues bound up with these decisions. One such issue is the optimal combination of information collected from different actors. Essentially, the sample design must be geared to the collection of data that will cast light on the issues that are central to the content of the study. As in all other phases of the study, care must be taken to draw upon the rich fund of experience amassed in the course of similar studies both in Germany (e.g. the Socio-Economic Panel) and elsewhere (see Section 2).

Two aspects call for special attention in the elaboration of a suitable sample. First, the sample must be designed to facilitate analyses in connection with specific sectors of the population, such as immigrants or risk groups such as school dropouts). One of the major concerns of education policy is to cater and account for specific groups that are frequently relatively small in size. If reliable statements are to be made on these subgroups, this concern will need to be properly reflected at the selection

103 This was stressed particularly by Greetje van der Werf (GION) in the context of VOCL (cf. Section 2.6.2).

stage. Second, the different stratifications of the survey (Federal states, regions, urban districts, school types, schools, families, and individuals) have to be represented adequately. Again, this requirement can only be satisfied by way of suitable sampling methods. In the United States, for example, selection procedures are used that ensure representative samples of both schools and students (see Section 2.4).

4.3.1.3 Establishing Standards

For all phases of the study, detailed quality standards must be elaborated and laid down beforehand. The aim of establishing and committing to guidelines of this kind is to ensure the provision of high-quality, reliable, and useful information for education policy-makers, the public, and other relevant actors.¹⁰⁴ Professional quality standards geared to scientific principles and appropriate, up-to-date statistical methods are vital to realize this aim.

Standards established in the framework of other studies can act as a model, such as the NCES Statistical Standards devised in the United States and widely drawn upon in this report.¹⁰⁵ These Standards contain a detailed rationale of all stages of the respective NCES study, specifying guidelines, providing concrete procedural instructions, and making compliance with the individual points binding for the persons conducting the study. Also, the manual is regularly updated, thus adapting it to the latest developments and insights. Over time, this monitoring has contributed greatly not only to the accumulation of experience and knowledge, but also to ongoing optimization in the conduct of the wide range of NCES longitudinal programs.

Quality standards should also contain binding guidelines for the appropriate documentation of the entire study. The main reason that documentation standards are so vital is that longitudinal studies extend over a long period of time so that new project workers and other data users must be assured of access to all relevant information many years after it has been compiled. Accordingly, documentation of this kind must also indicate how the data deriving from each cycle of the survey is to be analyzed appropriately. Also, the studies should be reproducible or replicable on the basis of the documentation. And finally, the information contained in the standards are of major importance for the development of future survey programs as they make it possible to assess the resources required for such surveys and a wide range of other relevant factors.¹⁰⁶

4.3.1.4 Organizational Structure and Infrastructure

If the conduct of a large-scale longitudinal program on educational pathways is to be successful, it is necessary to regulate the division of labor involved from early stages onwards. A well-defined organizational structure with an equally well-defined leadership at its head has been shown to be essential to this aim.

First of all, a steering or planning committee should be appointed for the planning phase of the longitudinal program. As most aspects of planning call for specialized academic expertise, this committee should be made up largely of scientists and academics with the necessary methodological know-how. Experts from other countries should also be directly involved or consulted. A record of experience in the elaboration and conduct of longitudinal studies should be the key criterion in the selection of these experts. Experts from the social sciences (such as sociology), empirical education research, and

104 Cf. NCES (2003; footnote 34), p. 1.

105 Cf. *ibid.* Standards of this kind have also been established in Canada: cf. Statistics Canada (2003): Statistics Canada Quality Guidelines, Catalogue no. 12-539-XIE, <http://www.statcan.ca/english/freepub/12-539-XIE/index.htm>.

106 Cf. NCES (2003) (footnote 34), p. 66.

education economics should team with survey and statistics specialists well-versed in the practical implementation and conduct of such studies.

Further, a leadership team should be established at an early stage and entrusted with the responsibility for the long-term conduct of the study. At the same time, an academic advisory council should be appointed to monitor the study's development over time. Along with the establishment of a leadership team, the success of a longitudinal program also hinges crucially on the creation of efficient, functional, and stable infrastructure. Such infrastructure is of vital importance in dealing with wide range of often parallel tasks involved in such a large-scale study.

The planning and set-up of organizational structures of this kind should also take into account successful examples at home and abroad. Looking at the countries dealt with in the present report, it appears that the establishment of a central agency with overall responsibility for the study is one of the most efficient organizational forms. Programs conducted by the NCES in the United States (see Section 2.4) and by the CLS in the United Kingdom (see Section 2.2.1) in particular were successful in this regard. By contrast, the principle of division of labor underlying the VOCL program in the Netherlands evidently leads to problems between the central statistics office (CBS) and the academic side of the program (GION, see Sections 2.6.1.2 and 2.6.2).¹⁰⁷ Another factor that appears to be disadvantageous for the smooth functioning of such a program seems to be the geographic distance between the two organizations. Further, care needs to be taken to ensure that the infrastructure is staffed with suitably well-trained personnel. Stability is a fundamental factor in this respect, as repeated changes in personnel make for inefficiency in longitudinal programs, such as loss of specific knowledge, delays, and additional costs. The interviewed experts from the countries discussed in this report consider staff stability an essential factor for the success of longitudinal studies.¹⁰⁸

4.3.2 Data Collection

The field stage should be elaborated and established as precisely as possible by the preceding planning and preparation stages. Here are some of the key points to be kept in mind in the field stage:

- Thorough interviewer training is essential: detailed instructions, communication of background knowledge on the study, transfer of techniques for ensuring the cooperation of the interviewees, practice interviews, etc.). This must be supplemented by intensive interviewer care in the field phase itself, such as briefings, feedback control, and so on.¹⁰⁹
- Above all, the survey staff should aim at best-possible participation rates, across all stratification criteria. This is necessary to achieve an ideally representative picture of the population in question. Measures that can be taken to ensure this include the verification from the outset of the survey whether participation is liable to be too low in certain subgroups. If so, systematic follow-ups could be used to improve participation rates. Also, there should be consideration at the preliminary stage of ways to improve participation by creating participation incentives.
- Care should be taken to collect sufficient information on non-response. This is necessary for corresponding analyses to be undertaken during the data editing and evaluation stage that facilitate the imputation of missing data or corresponding weighting procedures (see Section 4.3.3.1).

¹⁰⁷ This was pointed out to us by the experts both of the CBS and the GION.

¹⁰⁸ This aspect was emphasized notably by the experts from Canada and the United States.

¹⁰⁹ In the United States interviewer training can take anything up to eight days (Jerry West, NCES).

- Information needs to be collected that will facilitate the tracing of target persons, such as recording the addresses of permanent residences or of family members who may be able to provide information on the whereabouts of the selected person at a later date.
- The entire survey phase has to be supervised and monitored for quality assurance. This requires compliance with the standards laid down in the preliminary stage for the conduct of the field stage and the observance of the relevant guidelines on time-planning, costs, and data quality (see Section 4.3.1.3).
- All stages of data collection must be documented, with standards laid down beforehand adhered to (see Section 4.3.1.3).
- The rights of interviewees must be protected at all stages of the data collection process (see Section 4.3.3.2).

4.3.3 Data Management

The data collection stage is followed by the editing of the large-scale data material, including data cleansing and the initial data analyses (Section 4.3.3.1). A further crucial aspect is the protected provision of data for as large a circle of users as possible (Section 4.3.3.2). Finally, reference needs to be made to the necessity of statistical link-ups between data culled from interviews/questionnaires and data from official statistical sources such as registry data (Section 4.3.3.3).

4.3.3.1 Data Editing and Initial Data Analysis

The key task in data editing is to capture and code the data, a process that requires an expenditure of time and effort that should not be underestimated. Notably, the various procedures for identification and removal of data errors – data cleansing, consistency tests – require meticulous planning. This process should also incorporate detailed non-response analyses. Normally, this is also the stage at which missing values on core variables are imputed.¹¹⁰

Furthermore, it is advisable to couple these editing stages with an assessment enabling data users to gauge the quality and the limitations of the data. This evaluation is also of major significance for the planning of further surveys. The assessment must systematically investigate all possible sources of error and predict their consequences.¹¹¹ Typical errors are those connected with sampling, measuring, data editing, weighting or imputation, and non-response.¹¹²

All stages of data editing must be done systematically and documented accordingly. For this purpose, precise standard guidelines need to be laid down at the planning stage regulating procedures for all phases of editing (see Section 4.3.1.3). At this point, there should also be recourse to existing experience and to the relevant manuals established in the framework of successful longitudinal programs.¹¹³

Instructions on the various stages of data editing and on the user-friendly documentation of the individual data files are required.¹¹⁴ They must contain all the information needed for data analysis.¹¹⁵ Care must be taken to ensure that data editing takes place immediately after the conclusion of the data collection stage, as the cross-national discussion reported here has shown that in practice there are repeated instances of delays endanger timely analysis and publication of the data.¹¹⁶

The planning stage of the study must clearly establish what the product of the initial data analysis should be. To this end, plan of analyses geared to the aims of the study and the issues it addresses is required, specifying inter alia appropriate analysis procedures. Reliable empirical analyses require a combination of specialist academic knowledge, precise understanding of the collection and editing of data, and problem-oriented logical and statistical analysis.¹¹⁷ As the design of a longitudinal study on educational pathways extends over a number of different levels (e.g. schools, grades, families, individuals), procedures like multi-level analyses are required to reflect the structural nature of the data (dependent observations within the respective contexts). Also, depending on the kind of sample (e.g. stratified samples), suitable weightings have to be taken into account. Finally, the statistical study of panel data will require special methods such as event data analysis. All the statistical evaluation procedures used should be substantiated and documented.

If findings are to be presented in a specific format, such as an initial overview report, the relevant standardized procedures suitable for the respective format should be employed.¹¹⁸ This standardization is designed to ensure that all descriptions convey the central findings clearly and accurately. Standardized procedures are particularly important if the aim is to produce reports reflecting the recurrent updating of findings. Accordingly, this point is of relevance in making the data usable for education reports. Also, before dissemination, all reports, the data sets, and the documentation should be subjected to a review procedure ensuring that all the information is accurate and presented clearly.¹¹⁹

Appropriate data analysis requires trained personnel. The overviews of the different countries have shown that even in cases where longitudinal studies have been conducted for several decades there is regularly a shortage of suitable staff familiar with advanced analysis procedures. In the planning stage, ways of dealing with this problem must be attended to.¹²⁰

4.3.3.2 Data Access and Data Protection

The microdata resulting from such a large-scale, publicly funded study have to be made available to as many users as possible. This requires user-friendly editing of the raw data sets (see Section 4.3.3.1). Two important factors favor the open regulation of data access. The first of these is the principle of verifiability in connection with the presented findings. This principle can only be upheld consistently if the original microdata that the findings are derived from are available for re-analysis.¹²¹ Another essential principle now upheld internationally is that data from publicly funded research are a public good that must be made available on as broad a scale as possible: “Publicly funded research data should be openly available to the maximum extent possible. Availability should be subject only to national security restrictions; protection of confidentiality and privacy; intellectual property rights;

110 Cf. NCES (2003) (footnote 34), pp. 71-73, 88-90.

111 *Ibid.*, pp. 80-81.

112 See *ibid.*, pp. 82-86 for an overview of possible error sources and their identification.

113 For example *ibid.*, pp. 69-90.

114 *Ibid.*, pp. 119-121.

115 These include data sets, measuring instruments, definition of variables, description of new variables, identification variables, sample weightings and their use, the sample itself, appropriate variance calculation, imputation procedures, and indications on the removal of imputed values from the data, and the description of data anomalies and corrections undertaken; cf. *ibid.*, p. 66.

116 For example in the VOCL in the Netherlands (see Sections 2.6.1.2 and 2.6.2) or the different studies in the United States (cf. 2.4.2).

117 KVI (2003) (footnote 88), p. 18.

118 NCES (2003) (footnote 34), pp. 99-104.

119 Cf. *ibid.*, pp. 8, 11-116.

120 In this connection the KVI report suggests a corresponding extension of training at universities (KVI 2003 [footnote 88], pp. 18, 29-30).

121 *Ibid.*, p. 31.

and time-limited exclusive use by principal investigators. Publicly funded research data are a public good, produced in the public interest. As such they should remain in the public realm. This does not preclude the subsequent commercialization of research results in patents and copyrights, or of the data themselves in databases, but it does mean that a copy of the data must be maintained and made openly accessible.¹²²

As data provision is conditional upon anonymity and confidentiality, data access must be regulated by effective measures ensuring the protection of the persons interviewed. In this connection, the German Commission for the Improvement of the Information Infrastructure between Science and Statistics (KVI) recommends establishing different access pathways to microdata on the basis of different degrees of availability.¹²³ These proposals aim to make the data available to as large a circle of users as possible, while at the same time minimizing the risks of such an open policy.

4.3.3.3 The Necessity of Data Combination

The statistical combination of data from interviews/questionnaires and data from official statistical records is of major significance in the field of education. The advantages of data culled from interviews/questionnaires – grounding in theory, measurement sensitivity, topicality of issues and data access, and multivariate microdata analysis – can be linked with the advantages of data from official records – large-scale surveys on big samples, cohort series, regional differentiation, small groups, reliable historical comparisons, reference to households, residential areas, and communities, and usability for projections.¹²⁴

The national comparisons have shown how the necessary information can be collected in an efficient and affordable way. In Sweden, this system has attained an particularly advanced stage: the identification codes used in all surveys makes it possible to systematically combine registry data on entire student cohorts (ETF-R) with interview or questionnaire data from selected samples (ETF-S, see Section 2.3). In the United States, ways of collating NCES data on the education sector with data on the health system and the labor market are being given considerable attention.¹²⁵

All the countries discussed in this report display a uniform attitude to data combination. Where this is not already the case, database systems are being put in place that allow for the collation of registry information with data from respondents. This makes it possible to trace educational careers through different educational institutions for complete student cohorts and to enrich this information with data collected via interviews/questionnaires from respondents in subsamples. A database system like this has considerable cumulative potential, as over time existing information can be constantly enriched and supplemented by the incorporation of longitudinal data from other sources.

The systematic combination of different data sources also has a number of advantages for the efficient and affordable organization of a longitudinal study on educational pathways:

- In terms of affordability, collating registry data with information from surveys is advantageous as existing information does not have to be re-collected in comparatively expensive questionnaire processes.
- A further consequence of this is that interviews/questionnaires can concentrate on aspects that cannot be covered in any other way. This shortens the duration of interviewing and leads to a stronger focus on the genuinely interesting topics at the instrument elaboration stage.
- Also, registry data and document evaluations can sometimes provide more reliable information than interviews. This applies not only to retrospective issues, such as educational careers up to the present, but also to sensitive topics like grades. Here school records are likely to be more reliable.

The systematic combination of interviews/questionnaires with information from official statistical records or school documents is preferable not only in terms of affordability. In content terms, this existing data collection method helps to reduce the efforts required of schools, teachers, families, and students/pupils to participate, even as it provides key background information for the process-oriented data on individual educational pathways that only a longitudinal survey can deliver.

122 OECD Follow-up Group on Issues of Access to Publicly Funded Research Data (2003): Promoting Access to Public Research Data for Scientific, Economic, and Social Development, http://dataaccess.ucsd.edu/Final_Report_2003.pdf (accessed August 2004).

123 Cf. KVI (2003) (footnote 88), pp. 31-33.

124 *Ibid.*, p. 25.

125 Valena Plisko (NCES).

Appendix

A Experts Consulted

Table 32: The Experts in the United Kingdom, Sweden, and the United States

Country	Name	Study/Sector	Organization	Contact Information
United Kingdom	Heather Joshi	Birth Cohort Studies (NCDS, BCS70, MCS)	Centre for Longitudinal Studies (CLS)	Tel.: +44 20 7612 6874 hj@cls.ioe.ac.uk www.cls.ioe.ac.uk
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	Jan-Eric Gustafsson	ETF	Universitat Goteborg	Tel.: +46 31-773 2420 jan-eric.gustafsson@ped.gu.se www.ped.gu.se/ipd/
	Allan Svensson	ETF	Universitat Goteborg	Tel.: +46 31-773 2434 allan.svensson@ped.gu.se www.ped.gu.se/ipd/
USA	David Miller		Education Statistics Service Institute (ESSI), American Institute for Research	Tel.: +1-(202) 654 6533 dmiller@air.org www.air.org
	Laura Salganik		Education Statistics Service Institute (ESSI), American Institute for Research	Tel.: +1-(202) 654 6530 lsalganik@air.org www.air.org
	Jerry West	ECLS	National Center for Education Statistics (NCES)	Tel.: +1-(202) 502 7335 jerry.west@ed.gov www.nces.ed.gov
	Valena Plisko	ECLS	National Center for Education Statistics (NCES)	Tel.: +1-(202) 502 7434 valena.plisko@ed.gov www.nces.ed.gov
	Steven Ingles	High School Surveys (NLS-72, HS&B, NELS:88, ELS:2002)	RTI International	Tel.: +1-(202) 728 1962 sji@rti.org www.rti.org
	Jeff Owings	High School Surveys (NLS-72, HS&B, NELS:88, ELS:2002)	National Center for Education Statistics (NCES)	Tel.: +1-(202) 502 7423 jeffrey.owings@ed.gov www.nces.ed.gov
	Leslie Scott	High School Surveys (NLS-72, HS&B, NELS:88, ELS:2002)	Education Statistics Service Institute (ESSI), American Institute for Research	Tel.: +1-(202) 654 6542 lscott@air.org www.air.org
	James Griffith	HS&B, BPS, B&B	National Center for Education Statistics (NCES)	Tel.: +1-(202) 502 7387 james.griffith@ed.gov www.nces.ed.gov
	Eugene Owen	International Studies Program	National Center for Education Statistics (NCES)	Tel.: +1-(202) 502 7422 eugene.owen@ed.gov www.nces.ed.gov

Table 33: The Experts in France, the Netherlands, and Canada

Country Name	Study/Sector	Organization	Contact Information
France	Jean-Paul Caille	Panels d'Élèves	Ministère de la jeunesse, de l'éducation nationale et de la recherche; Direction de l'évaluation et de la prospective
	Jean-Richard Cytermann	Expertise	Ministère de la jeunesse, de l'éducation nationale et de la recherche
The Netherlands	Els van Gessele	PRIMA	Nederlandse Organisatie voor Wetenschappelijk Onderzoek (NWO)
	Jaap Roeleveld	PRIMA	SCO-Kohnstamm Instituut, Universit�t Amsterdam
	Christine Jol	VOCL	Centraal Bureau voor de Statistiek (CBS)
	Tanja Traag	VOCL	Centraal Bureau voor de Statistiek (CBS)
	Annet van der Veen	VOCL	Nederlandse Organisatie voor Wetenschappelijk Onderzoek (NWO)
	Greetje van der Werf	VOCL	Gronings Instituut voor Onderzoek van Onderwijs, Opvoeding en Ontwikkeling (GION)
	Jaap Dronkers		European University Institute (EUI), Italien
Canada	Andr� Cyr	NLSCY	Statistics Canada
	Stephanie Lalonde	NLSCY	Statistics Canada
	Susan McKella	NLSCY	Statistics Canada
	Ellie Shaughnessy	NLSCY	Statistics Canada
	Satya Bring	NLSCY, YITS	Human Resources and Skills Development Canada (HRSDC)
	Steve Arrowsmith	YITS	Statistics Canada
	Patrick Bussiere	YITS	Human Resources and Skills Development Canada (HRSDC)
	Pierre Caron	YITS	Statistics Canada
	Tamara Knighton	YITS	Statistics Canada
	Cathy Oikawa	YITS	Statistics Canada
Lynn Barr-Telford	YITS	Statistics Canada	

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E Abbreviations

B&B	Baccalaureate & Beyond Longitudinal Study (USA)
BBS	British Births Survey 1970 (UK)
BCS70	1970 Birth Cohort Study (UK)
BPS	Beginning Postsecondary Students Longitudinal Study (USA)
CBS	Centraal Bureau voor der Statistiek (Netherlands)
CESC	Canadian Education Statistics Council (Canada)
CLS	Centre for Longitudinal Studies (UK)
CMEC	Council of Ministers of Education (Canada)
DEP	Direction de l'Évaluation et de la Prospective (France)
DfES	Department for Education and Skills (UK)
ECLS	Early Childhood Longitudinal Study (USA)
ELS:2002	Education Longitudinal Study of 2002 (USA)
ESRC	Economic and Social Research Council (UK)
ESSI	Education Statistics Service Institute, American Institute for Research (USA)
ETF	Evaluation Through Follow-up (Sweden)
FS	Follow-Up Study
GION	Gronings Instituut voor Onderzoek van Onderwijs, Opvoeding en Ontwikkeling (Netherlands)
HIS	Higher Education Information System (Germany)
HRSDC	Human Resources and Skills Development Canada (Canada)
HS&B	High School and Beyond Longitudinal Study (USA)
HSES	High School Effectiveness Study (USA)
IEA	International Association for the Evaluation of Educational Achievement
IES	Institute of Education Sciences (USA)
INED	Institut National d'Études Démographiques (France)
IS	Initial Survey
ISER	Institute for Social and Economic Research, University of Essex (UK)
ITS	Institute for Applied Social Science, University of Nijmegen (Netherlands)
JCLR	Joint Centre for Longitudinal Research (UK)
LEO	Landelijke Evaluatie van het Onderwijsvoorrangsbeleid (Netherlands)
LFS	Labour Force Survey
LSYPE	Longitudinal Study of Young People in England (UK)
MCS	Millennium Cohort Study 2000-2002 (UK)
NAE	National Agency for Education (Sweden)
NCES	National Center for Education Statistics (USA)
NELS:88	National Education Longitudinal Study of 1988 (USA)
NCDS	National Child Development Study (UK)
NatCen	National Centre for Social Research (UK)
NLSCY	National Longitudinal Survey of Children and Youth (Canada)
NLS-72	National Longitudinal Study of the High School Class of 1972 (USA)
NPSAS	National Postsecondary Student Aid Study (USA)
NWO	Nederlandse Organisatie voor Wetenschappelijk Onderzoek (Netherlands)
OECD	Organisation for Economic Co-operation and Development
OFSTED	Office for Standards in Education (UK)
PCEIP	Pan-Canadian Education Indicators Program (Canada)
PETS	Postsecondary Education Transcript Study (USA)
PIRLS	Progress in International Reading Literacy Study, IEA
PISA	Programme for International Student Assessment (OECD)
PRIMA	PRIMA-cohorten Basis- en Speciaal Basisonderwijs (Netherlands)

PMS	Perinatal Mortality Survey 1958 (UK)
RSGB	Research Survey of Great Britain (UK)
SAIP	School Achievement Indicators Program (Canada)
SCP	Sociaal en Cultureel Planbureau (Netherlands)
SCPR	Social and Community Planning Research, now NatCen (UK)
SDESE	Sous-Direction des Enquêtes Statistiques des Études (France)
TIMSS	Third International Mathematics and Science Study (OECD)
UGU	Utvärdering Genom Uppföljning (Sweden)
VOCL	Voortgezet Ondwerwijs Cohort Leerlingen (Netherlands)
YCS	Youth Cohort Study (UK)
YITS	Youth in Transition Survey (Canada)

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This report presents a selection of longitudinal studies on educational pathways conducted in various European countries and North America, some of which have been conducted for decades. The studies provide crucial information on important stages in the educational careers of children, adolescents, and young adults. Especially notable here are longitudinal programs combining different sources and types of data, such as achievement assessments, questionnaires/interviews involving students, parents, and teachers, and registry records. This expert's report begins with a systematic stocktaking of key longitudinal studies in Canada, France, the Netherlands, Sweden, the United Kingdom, and the United States. The report also indicates how these programs have been utilized for national education reports. The final section presents observations on, and initial proposals for, the establishment of a longitudinal study on educational pathways in Germany.

