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The German National Educational Panel Study: Surveying a Cohort of 9th Graders in Germany

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The German National Educational Panel Study:
Surveying a Cohort of 9th Graders in Germany¹

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Abstract

The German National Educational Panel Study (NEPS) has been set up to investigate how education is acquired, to see how it impacts on individual biographies, and to describe and analyze the major educational processes and trajectories across the life span. NEPS is collecting longitudinal data on the development of competencies, learning environments, effects of social inequality and migration, as well as returns to education throughout the whole life. The presentation gives a general overview of the project, focusing on the theoretical dimensions as well as on the educational stages being investigated. Furthermore the established multicohort sequence design will be introduced with a special focus on the sampling and recruitment procedure as well as on the instruments of the first panel wave of the 9th graders’ starting cohort. Finally, some information on data documentation and data dissemination is given.

Keywords

educational research, panel data, NEPS, school, data collection
1. Introduction

Education and competence development are key topics in modern societies. How do educational careers and competencies develop throughout the life span? How are competencies influenced by learning opportunities in the family, educational institutions, workplaces, and private life? To what extent do the acquisition of competencies and educational achievement correlate throughout the life span? Longitudinal data are needed to answer those questions. Since longitudinal data on educational processes and competence development are still sparse in Germany the National Educational Panel Study (NEPS) for the Federal Republic of Germany was initiated in order to collect detailed data on the acquisition of education and individual competence development across the life span – from early childhood to retirement age – using sufficient large samples. The project is being financed by the Federal Ministry of Education and Research (Bundesministerium für Bildung und Forschung, BMBF) within the Framework Programme for the Promotion of Empirical Educational Research. The head of the interdisciplinary consortium of research institutes, research groups, and leading researchers is Professor Dr. Dr. h.c. Hans-Peter Blossfeld, University of Bamberg. The NEPS is embedded in the Institute for Longitudinal Educational Research Bamberg (INBIL).

2. Structure and Multicohort Sequence Design

The NEPS focuses on theoretically selected dimensions over the life course. The internal structure is given by the so called “pillars” – describing the major theoretical concepts – and stages – structuring the educational biographies into different phases (see also figure 1).

![Figure 1: Structure of the National Educational Panel Study](image)
The theoretical dimensions coordinated by the pillars make it possible to describe and analyze long-term development within educational pathways consistently over the life course: Pillar 1: Competence Development in the Life Course; Pillar 2: Education Processes in Learning Environments; Pillar 3: Social Inequality and Education Decisions in the Life Course; Pillar 4: Education Acquisition with Migration Background in the Life Course; Pillar 5: Returns to Education in the Life Course.

To highlight the specific situation in different transitions and phases of the life course NEPS focuses on eight stages: Stage 1: From Birth to Early Childcare; Stage 2: From Kindergarten to Elementary School; Stage 3: From Elementary School to Lower Secondary School; Stage 4: From Lower to Upper Secondary School; Stage 5: From Upper Secondary School to Higher Education, Vocational Training, or the Labor Market; Stage 6: From Vocational Training to the Labor Market; Stage 7: From Higher Education to the Labor Market; Stage 8: Adult Education and Lifelong Learning.

For the empirical implementation of the research questions and to make relevant information on educational transitions and pathways available as quickly as possible (see figure 2; see also Blossfeld, von Maurice & Schneider 2011) a multicohort sequence design has been developed.

Figure 2: Multicohort Sequence Design of the National Educational Panel Study
Six starting cohorts are recruited between 2009 and 2012. These will contain a total number of more than 60,000 target persons who will be surveyed regularly over an extended period of time. The surveys include competence tests and interviews with the target persons and – at least for the younger cohorts – also interviews with the parents and the pedagogically qualified personnel. Altogether, NEPS plans to integrate about 100,000 participants in its data collection design. In the ZfE special issue “Education as a Lifelong Process. The German National Educational Panel Study (NEPS)” Blossfeld, Roßbach and von Maurice (2011) give a detailed description of the project. This book gives detailed information on the conception of the National Educational Panel Study, its embeddedness in German research, its main emphasis in terms of content, central education processes and trajectories across the entire life span as well as relevant methodological aspects and significant facts regarding data protection.

3. Building up the 9th Grade Sample

After primary education, secondary education in Germany is generally divided into two different pathways: One pathway leads directly to academic education and university whereas the other pathway leads to vocational education. As the administrative responsibility concerning the German educational system does not lie with the federal government but the federal states, there is a lot of variability regarding the educational systems within the 16 German federal states. But in general lower secondary education ends with Grade 9 or 10. Depending on their achievement, students may enter upper secondary school (gymnasiale Oberstufe), an academic track which is situated in two school types, namely Gymnasium and Gesamtschule. Alternatively, they may enter the vocational track or the labor market. As we know educational pathways through school are not that linear as schemes of educational systems may suggest. It is possible that students change from upper secondary school to vocational training after Grade 11 or that they break up vocational training and continue to attend upper secondary school. Consequently, following these pathways indicates that you need to be very flexible in terms of surveying.

To build up a sample of 9th Grade students in Germany several steps had to be taken:


2. In Germany data collection in schools is in the responsibility of the 16 federal states. Therefore, in the planning phase, the research questions and the design of the NEPS were explained to the KMK and a general permission for data collection in schools was given. This general permission was linked to two conditions: First, the participation of schools, teachers and students has to be voluntary, and second, analyses of federal state information (e.g., comparison of the competence level of students between federal states) are not allowed.

3. Pilot studies

Within NEPS all data collection procedures are piloted in small samples; in most cohorts this is done one year before beginning of the main studies. The main aim of the pilot studies is not only to check the instruments but also all materials (letters, consent forms) as well as field and data processing procedures. We learned a lot
from the experiences in the field and the reactions and detailed recommendations of
the participants. Since schools in four German federal states participated in the pilot
studies, we also had the chance to discuss all instruments, materials, and procedures
with the ministries of those federal states (in preparation of the next step). After the
pilot studies we were able to improve the data collection in the 9th Grade cohort in a
substantial way: Data collection in classes showed to be more successful than data
collection in a sample of children drawn from all classes in the 9th Grade; incentives
are needed to guarantee a sufficient participation rate; student participation should
not presuppose the willingness of parents to give a parent interview.

(4) Proposal in each of the 16 German federal states
Data collection in German schools requires an active negotiation process with each
federal state. Not only the questionnaires used (students, parents, teachers,
principals) but also all additional material (covering letters, consent forms) and the
data collection procedures are verified by the ministries of the federal states. This
process showed to be time-consuming (up to 23 weeks in the first wave). In this
process, the storage of the names and addresses of the participants and some of the
data collection processes had to be redefined; thereby, a strong focus was drawn to
data protection issues (for data protection aspects within the NEPS see also Meixner,
Schiller, von Maurice & Engelhardt-Wöfler 2011). Some “bureocratic formulations”,
more details about the content of the instruments and more information on data
collection processes and data dissemination had to be included in the letters for the
participants. Some items had to be discussed with the ministries; as a result of the
intense negotiation processes only a few items had to be deleted or reformulated.

(5) Sampling and recruitment of schools
Within the NEPS, a representative sample of 9th graders was drawn by a two-stage
design (for sampling aspects within the NEPS see also Aßmann et al. 2011). First, a
random sample of schools was drawn on the basis of a frame of all German schools.
Second, two classes within each school were sampled (if available). Thereafter, the
schools were contacted and informed about NEPS. We delivered not only written
material (letters, brochures, flyers, information on the homepage), but we also
offered a hotline. Moreover, we had a series of presentations given in all 16 federal
states, where teachers and principals were able to talk to researchers from the NEPS
and the data collection institute.

(6) Recruitment of students and their parents
Due to data protection regulations schools are not allowed to give the names of their
students to researchers or data collection institutes. This is why we handed out
written information material (which could be taken home and shown to the parents)
and installed a hotline as well as an additional (service) part on our homepage. A
written consent had to be given by the parents and by the students. With this
process, we realized a sample of more than 14,500 students in more than 500
schools within the 9th Grade cohort at wave 1 (plus an additional sample of special
schools for students with learning disabilities). As data cleaning is not finished,
sample sizes are preliminary. First results show, that the participation rate varies
between the school types (as expected with a higher participation in the highest
track) but the gap in the participation rate between the school tracks is enjoyable
small.
4. Instruments in Wave 1 of the 9th Grade Cohort

The survey program for 9th graders covers the research perspectives of the pillars (cp. above) adjusted to this special educational stage (for a detailed description of school cohorts see Frahm et al. 2011 and Wagner et al. 2011; for vocational education and training and transition into the labor market see Ludwig-Mayerhofer et al. 2011). An important question for instance is the choice of the upper secondary school track (academic or vocational) and its relation to the students’ competence development during upper secondary education (for pillar 1; see also Weinert et al. 2011). Furthermore, it is important to find out how the differential milieus regarding learning and development associated with the different learning environments of the students interact with competence development and educational processes over time (for pillar 2; see also Bäumer, Preis, Roßbach, Stecher & Klieme 2011). To study, for example, why and how students change school tracks and/or vocational training will also be of great interest (for pillar 3; see also Stocké, Blossfeld, Hoenig & Sixt 2011). These interrelations can then be analyzed to see whether there are also specific dynamics concerning students with migration background and to seek explanations for the substantial differences in competence development between students with and without migration background (for pillar 4; see also Kristen et al. 2011). With regard to (nonmonetary) educational returns for students, health, family aspirations, satisfaction as well as political, and prosocial behavior will be taken into account in this educational stage (for pillar 5 see also Gross, Jobst, Jungbauer-Gans & Schwarze 2011).

As long as the target person stays in the institutional context of school, NEPS prepares several survey instruments for the target person and the so called context persons. Of central importance are the competence tests and the paper-and-pencil questionnaires for the 9th graders themselves in each wave. Even if not conducted every wave, but nevertheless the questionnaires for the context persons are also important. Context persons are parents (40-minute telephone interview with one parent), teachers (paper-and-pencil questionnaire regarding the class, German and mathematics teacher) and school principals (paper-and-pencil questionnaire). The interviews with the parents are used to collect valid information on the migration background of the students up to the third generation and their social origin. The questionnaires of the teachers and principals are used to collect valid information on the school-context. Furthermore, the context persons are partly asked comparable questions to the students to get a multi-informant perspective for example on learning environments at home or educational decision making processes or characteristics of the students. If the target person is leaving the institutional context of the school, NEPS accompanies their life course by telephone interviews and individual testing.

The first wave of NEPS 9th graders cohort started in the end of autumn 2010. First the tests and questionnaires in the schools were conducted. Afterwards the telephone interviews with the parents started. Besides covering basic information on migration background, language use and social origin, the first wave is guided by questions to the upcoming transitions. There is a priority to questions on the occupational plans of the students and their occupational and educational aspirations, whether they have already applied for vocational training and if so some more detailed questions to the kind of vocational training. With regard to this topic the parents are asked about the support they can give to their children at this transition point and the principals of the schools are asked whether there are any actions of the school to prepare the students for the transition. From the theoretically
point of view social capital is a very important resource to successfully manage the transition especially to vocational training at that point. Therefore NEPS puts emphasis on the measurement of the social network of the parents with an adjusted measurement of the position generation (Lin & Hsung 2001). Not only for the transition to vocational training but also for an ongoing pathway on the academic track and for the educational aspirations norms and values of the peers are an important factor, so that the students are asked about the aspirations of their friends. Beside social capital, the students and their parents are asked about their cultural capital as – according to Bourdieu & Passeron 1971 – one important determinant of the educational attainment. As known from research social competencies, motivational aspects and personality traits are highly important to measure in relation to competence development and educational attainment (see also Wohlkinger, Ditton, von Maurice, Haugwitz & Blossfeld 2011). Therefore NEPS puts high efforts to measure academic self concept and implements the Big-Five (Rammstedt & John 2007) and subscales of the Strength and Difficulties Questionnaire (SDQ, Goodman 1997, 1999). In order to have a multi-informant perspective on these characteristics the selected subscales of SDQ are also conducted in the interviews with the parents. Furthermore informal learning environments are taken into account: The students are asked if they engage in several associations. Furthermore there are some questions on the usage of personal computers, about their life satisfaction, health and actual funding. Especially important for children with migration background and the investment in their academic or vocational education is the degree of assimilation of the parents in the country of destination (Kristen et al. 2011). Therefore in the interview with the parents questions on assimilation and identity are asked. All teachers give some information on their sociodemographics (including background of migration; native tongue of the family), their occupational choice, formal qualifications, further vocational training, pedagogic orientation and perceived workload. Especially the class teachers of the students give us further information on the class-context: class composition (referring to social class and migration background), equipment, and educational quality in classes. To get a deeper insight to the school context the principals are also asked about the characteristics of the school, school composition (referring to social class and migration background), support for migrants and the competitiveness of the school in its environment.

Of special importance in the first wave of the 9<sup>th</sup> Grade starting cohort is the measurement of competencies because it will be the first measurement which will be used as a reference for the competence development during upper secondary education (for a detailed description of the competence tests used within NEPS see Weinert et al. 2011). Therefore several domains are tested in wave 1: mathematical science as well as reading literacy, ICT literacy, and an indicator of language proficiency (vocabulary test). Furthermore procedural aspects of metacognition are included in the test design. All in all it takes four hours to take the test and to fill out the questionnaire.

5. Tracking and Next Waves

The NEPS has been set up to describe and analyze the long-term development of educational careers. Its central theoretical foundations are the research paradigms and findings from sociological life-course research and life-span psychology. These are used to explain and understand the cumulative processes in educational careers by which later states are an outcome of a multiplicity of prior decisions and exploited or neglected learning
opportunities (see also Blossfeld & von Maurice 2011). Therefore, a longitudinal design is implemented in the NEPS. In most cohorts, annual measurement waves are conducted. In the 9th Grade cohort, a modified design is needed, since there is so much change in individual live trajectories in this age group (see figure 3 for the measurement points in the 5th and 9th Grade cohort in comparison).

![Figure 3: Panel Waves in the Starting Cohorts “Grade 5” and “Grade 9”](image)

As explained in section 3 the 9th Grade cohort splits up in an academic and a vocational track after Grade 9 or Grade 10. Within the NEPS both pathways are included with adapted instruments.

### 6. Data Documentation and Data Dissemination

The NEPS is an infrastructure project. Its first aim is to disseminate high-quality data to researchers from different disciplines (for data dissemination within NEPS see Barkow et al. 2011). After the data collection and first cleaning processes in the data collection institutes, the NEPS has to further anonymize, clean and edit the data. Also some coding (e.g. of occupational information) has to be done. In a very structured way all information needed (about the study, the sample, the instruments, the data) is prepared and offered to the users via the Web (see figure 4). Thereby, information is – corresponding to the NEPS design – primarily structured by the six main cohorts of the NEPS.
Figure 4: Getting Access to NEPS Research Data via Internet (http://www.uni-bamberg.de/en/neps/scientific-use-data/)

The NEPS will be offering different types of data dissemination – depending on the sensitivity of the data delivered: a download option from the NEPS website, a remote access technology (RemoteNEPS), and an on-site access. With this solution of nested access ways, as shown in figure 5, we are able to use standards for documentation and syntax development and are able to care about the different affordances of data handling depending on the sensitivity of the data.
7. Outlook

The NEPS will deliver the first nationally representative database on educational processes and competence development over the life course in Germany. It is a rich data source for researchers from various disciplines (such as cultural studies, demography, developmental psychology, diagnostics, economics of education, educational psychology, educational science, employment research, family research, gender studies, migration studies, poverty research, research on childhood and adolescence, sociology of education, survey methods, and test theory). Besides discipline-specific progress NEPS data will make it possible to formulate integrative approaches toward interdisciplinary theories in educational science and to engage in international comparison.

References


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