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Social Disparities in Educational Research

Symposium in Network 9 (Assessment, Evaluation, Testing and Measurement) at the European Conference on Educational Research (ECER) 2010 in Helsinki, Finland.

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International studies of student assessment reveal a strong connection between the socioeconomic status (SES) of families and the educational success of their children in all participating countries. For about half a century this phenomenon is considered pivotal in explaining the reproduction of social disparities over generations (Shavit & Blossfeld, 1993). In this context Boudon (1974) distinguishes between primary and secondary effects of social origin. The former effects denote the finding that children from privileged homes achieve higher competency levels at school than those from underprivileged homes. According to Bourdieu (1984) this can be explained by the fact that privileged families use their economic, cultural, and social capital to enhance the academic achievement of their children. The latter effects denote the finding that educational choices of parents are closely related to their SES even if the academic achievement of their children is controlled for.

The importance of the task of studying the connection between students' SES and their achievement, and the means how to reduce this connection, is pointed out by article 26 of The Universal Declaration of Human Rights: "(...) higher education shall be equally accessible to all on the basis of merit" (<http://www.un.org/en/documents/udhr/index.shtml#a26>).

This symposium gathers an international panel of speakers on the topic of the correlation between families' SES and the school achievement of their children. The papers to be presented in the symposium reflect the state of the art in educational research on social disparities and address three general aspects at the heart of this field of research:

1. How can “socioeconomic status” be measured as a construct? This question is far from trivial. Common indicators in current studies are, for example: level of education, income, occupational status, number of books in the household, other home possessions, cultural activities, social networks, or poverty. But how can these variables be measured, especially in international comparison? And is it appropriate to summarize them to one single factor (for instance by using factor analysis or item response theory), given that the different constructs – though highly intercorrelated – measure different theoretical aspects of SES.
2. What are the empirical findings on the connection between SES and academic achievement? Although social disparities can be found in all European countries, the amount of social disparities might change over time or differ between countries, regions, different social groups, gender, school subjects et cetera.
3. What measures can be found to decrease social disparities? In order to develop means to decrease social disparities, it is necessary to gain an extensive understanding of the processes causing these inequities. Which characteristics of educational systems, schools, teachers, and families increase respectively decrease the connection between SES and achievement of students? How can actions which help decreasing social disparities be promoted?

The papers to be presented in this symposium address specific questions within the three general aspects described above. Altogether, the symposium consists of nine papers, which are organized in three sessions on the general symposium topic.

Session I – Paper 1

Tobias C. Stubbe (Institute for School Development Research)

Magdalena Buddeberg (Institute for School Development Research)

Social Disparities in Educational Research – Theoretical Issues and Empirical Findings

There is a broad consensus in research, politics and society in general that educational success of young people should not be correlated with their background characteristics such as gender, migration background or socioeconomic status (SES) of their families. However in all European countries, empirical studies reveal a strong connection between the SES of families and the educational success of their children.

This finding motivates the extensive research that deals with social disparities in education at the intersection between social science and educational science.

With this paper we present an overview on this field of research and thereby give an introduction to the topic of this symposium “Social Disparities in Educational Research”. We will outline the theoretical foundations and discuss different methods to measure SES with questionnaires. On this basis, we then present empirical findings from international large-scale studies of student achievement like PISA, PIRLS, and TIMSS, name background characteristics which might moderate the connection between SES and school achievement, and, finally, reveal central desiderata for future research.

Furthermore we will introduce the topics of the other eight symposium papers.

Session I – Paper 2

Jana Straková (Institute of Sociology of the Czech Academy of Sciences)

Vladislav Tomášek (Institute for Information on Education)

Educational Achievement of Roma Students in Czech Basic Schools – Findings from PISA 2009

Many studies show that one of the most important factors related to delivering equity in education is the design of education system, its differentiation, and the age at the time of the first selection. Most studies agree that tracking has no impact on overall achievement but contributes to inequality. In the Czech Republic tracking is very extensive and starts in primary school where, beside the mainstream schools, some students attend schools with extended curricula, while others attend special schools with reduced curricula. In all comparative studies the Czech Republic shows a strong relationship between student achievement and socioeconomic background and large differences in achievement and study conditions between different tracks. The Czech Republic is also repeatedly criticized for disadvantaging Roma children by diverting them to a disproportionately large extent to special schools.

This paper explores the differences in achievement, educational experiences and aspirations between Roma students and students from the majority population and between Roma students educated in different settings. The analysis is based on Czech data from PISA 2009, where schools in areas with high proportions of Roma citizens were oversampled so that the

mainstream schools, schools with majority of Roma students and special schools were equally represented.

Session I – Paper 3

Michel Knigge (Institute for Educational Progress)

Michael Leucht (Institute for Educational Progress)

Olaf Köller (Leibniz Institute for Science and Mathematics Education)

Language Performance and Social Background in Ninth Grade. State Comparisons in Germany

As a consequence of the mediocre performance of German students in large scale assessment studies such as PISA, National Educational Standards (NES) were developed and enacted in Germany in 2003. The NES are described as student competencies for core school subjects. These standards enable the documentation and evaluation of educational outcomes. Educational monitoring through NES aims to raise the average level of achievement of German students but is also concerned with investigating the strong association between the socioeconomic status and students' achievement.

In 2009, the Institute for Educational Progress (IQB) conducted the first state comparison study for languages based on test items assessing the NES. In our paper we will briefly report on the achievement results of 40,000 German students in the subjects investigated, i.e. German as a mother tongue as well as English and French as foreign languages. The association between the socioeconomic status and achievement will then be addressed in detail. Focusing on traditional indices of SES (ISEI, EGP-classes), the results of this connection will be discussed with regard to differences between the German Federal States (Länder).

Session II – Paper 1

Kathleen L. Trong (TIMSS & PIRLS International Study Center, Boston College)

Measuring Equity in Reading Achievement Across PIRLS 2006 Countries Using the Relative Risk-Percentage Equity Index

Equity in educational outcomes, particularly reading, is an important policy issue in all countries. This research used data from PIRLS 2006 participants, including 15 EERA member countries, to explore an approach to measuring equity in reading achievement internationally

at the fourth grade. Berne and Stiefel's (1984) concept of horizontal equity was employed as a guiding framework. Relative risk ratios were selected as a measurement approach and a composite measure, the Relative Risk-Percentage (RRP) Equity Index, was created to compare equity in reading achievement across countries. This index was used to present the likelihood of scoring below the PIRLS 2006 Low International Benchmark for student groups that were traditionally at risk for low reading achievement compared to other students. The 'at risk' student groups that were the focus of this study included those with low parental education, who spoke a language other than the language of instruction, who attended urban or rural schools, and who were boys. Overall, having parents with less than secondary education and not speaking the language of instruction before starting school were associated with inequity in reading achievement in the largest number of PIRLS countries.

Session II – Paper 2

Chryssa Sofianopoulou (Harokopio University of Athens, Greece)

Vassiliki Bountziouka (Harokopio University of Athens, Greece)

Hierarchical Analysis of Socio-economic Factors in Relation to Science Performance Among Greek Students. Results from PISA 2006

This paper examines the PISA 2006 data for Greece, and focuses on socio-economic factors. The research question relies on the detection of "strength" that these factors carry for high and low performing students.

Students below the mean PISA 2006 science performance for Greece (473 scale points) were considered as "low performing students", while students above the mean were considered as "high performing students". Discriminant analysis with the calculation of Wilk's lambda was used to assess the socioeconomic factors that discriminate low performing students from high performing students. Multilevel analyses revealed that the factors that best classified students in the aforementioned sub-groups were rated according to values of the following indices and indicators: "Economic, social and cultural status", "Home educational resources", father's educational status, "Home possessions", mother's educational status, "Cultural possessions at home", and "Family wealth".

In this paper we find evidence that the educational system does not equate but rather tends to reproduce inequalities and thus preserves the existing social structure. It seems that it appears again that the educational system is a mechanism contributing to the reproduction of social

structure and the required corresponding economic and social relations from generation to generation.

Session II – Paper 3

Magdalena Buddeberg (Institute for School Development Research)

Tobias C. Stubbe (Institute for School Development Research)

The Explanatory Power of ‘Poverty’ in Educational Research

International large scale assessments of student achievement employ different indicators to operationalize the socio-economic status (SES) of students. As all of these indicators correlate significantly with school achievement it is common to use aggregates of these variables to measure SES.

The question arises whether the sociological construct ‘poverty’ provides additional explanatory power when describing social disparities in students’ achievement.

For our analyses we use data from three studies, which measure families’ poverty explicitly: (1) a follow-up study to PIRLS 2006 that tests 4th grade students in the German-speaking Community of Belgium in the domain of reading; (2) TIMSS 2007 Germany testing 4th grade students in mathematics and science and (3) the first measurement of the Panel Study at the Research School Education and Capabilities in North Rhine-Westphalia (PARS) testing 5th and 9th grade students in different domains.

Our analyses show a significant relationship between families’ risk of poverty and students’ achievement even if other indicators of students’ SES are controlled for.

We conclude that for in-depth analyses it is beneficial to use a combination of different indicators in order to consider various aspects of SES when analyzing social disparities in educational context.

Session III – Paper 1

Daniel H. Caro (IEA Data Processing and Research Center)

Key Hypothesis Regarding the Influence of Family SES on Reading Achievement - Evidence from Western European Countries in PIRLS 2006

Extensive research has clearly established a positive relationship between family socioeconomic status (SES) and academic achievement (Sirin, 2005; White, 1982). This relationship is referred to in the literature as a socioeconomic gradient because it is gradual

and increases across the range of SES. Willms (2002, 2003) has developed a methodological framework for studying socioeconomic gradients. This paper applies the socioeconomic gradient framework to PIRLS 2006 data of countries in Western Europe. Specifically, it proposes a measure of family SES and evaluates critical hypotheses for policy research regarding socioeconomic gradients in reading achievement. The hypotheses are evaluated with hierarchical linear models (HLM). The results help to understand how achievement disparities related to family background are configured and can be shaped at the within- and between-country level.

Session III – Paper 2

Josef Basl (Institute for Information on Education and Institute of Sociology, Academy of Sciences of the Czech Republic)

Effects of School and Family Background on Science Literacy and the Interest in Natural Sciences-related Educational and Occupational Careers

Generally, several main reasons for countries and governments to support creating positive relationship to (natural) science in young people can be mentioned. The endeavour to strengthen the science expert base should be one of the key aspects of educational policy (OECD, 2007; Palecková, 2007).

This paper analyzes data from PISA 2006 using linear regression and structural equation modelling to determine factors influencing science literacy and interest in science. The analysis studies the impact of student family background on science literacy and on the formation of interest in future science-related educational and occupational careers compared to the impact of school. We focus primarily on students attaining best science literacy test scores – the so-called high-achievers (OECD, 2009a, b).

Our results reveal that the impact of family on interest formation is almost negligible in the Czech Republic, Germany, Finland and Norway (countries represent different proportion of high-achievers). The impact of school from the point of view of preparing students for future educational and career trajectories was found to be strong in all countries studied. Our analyses have also shown that the degree of student awareness of the science-related career opportunities has the strongest share in the variance of the dependent variable “interest”.

Session III – Paper 3

Irmela Tarelli (Institute for School Development Research)

The Contribution of Home Literacy Environment to Explaining Social Disparities in Reading Achievement. Analyses for PIRLS 2006 Germany

A rich home literacy environment (HLE), which comprises the resources and opportunities in families that support the development of children's reading skills, is widely considered as an important aspect for the development of reading literacy. PIRLS 2006 revealed a close correlation between the families' socio-economic status (SES) and the students' school achievement in all participating countries. Although this correlation is repeatedly found in numerous studies, only little effort is spent on describing the factors causing these disparities. For PIRLS 2006, Stubbe, Buddeberg, Hornberg, & McElvany (2007) developed a Rasch score which allows to quantify the extent of HLE in the students' families. Following these analyses, this paper deals with the relationship between HLE, SES and reading literacy achievement in the German sample of PIRLS 2006. The main focus is on the contribution of HLE in explaining the differences in reading achievement between students from socially privileged and those from socially underprivileged families. We conduct path analyses in order to examine the relationship between families' SES and the students' reading achievement at the end of fourth grade. Additionally we test the hypothesis that the HLE mediates this effect. The results are discussed with respect to their implications for educational practice.