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Reflecting the cultures and languages in Swedish mathematics classrooms

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Abstract

In Stockholm and its suburban schools there are approximately 35 % minorities or immigrant students, in some schools up to 98 %. Their origins are from different countries and together they speak more than 100 diverse languages.

Over a period of time there has been a change of attitude in Swedish suburban schools regarding which language of instruction to use in mathematics education. Since long time mathematics teachers are supposed to vary teaching of mathematics in a conceptual discourse including ways of communicating mathematics in the classrooms, using problem solving as a base for understanding. According to the curriculum Swedish mathematics teachers are supposed to contrast the teaching of mathematics in relation to their students' earlier informal mathematical experiences and their communities.

Today some schools in suburban Stockholm have started immense or smaller projects teaching mathematics using student's mother tongues as languages of instruction. The teachers are bilingual themselves, having immigrant backgrounds and most of their education in their countries of origin. As the teachers have the same language and cultural background as their students we assume them to use code-switching and ethnomathematic perspectives as tools for teaching and learning mathematics. We expect all teachers to consider students first languages as resources for constructing mathematical knowledge and communicating mathematically.

Information

The project this text refers to, *The Mother-Tongue Teaching of Mathematics Project* is run by the City of Stockholm Competence Development Fund. The project ends in December 2006. Irene Rönnberg and Lennart Rönnberg are project managers and supervisors; they also supervise a network within the project. The project is evaluated by the Stockholm Institute of Education, as part of a research project, *Mathematics Education and Multilingual Students* by Eva Norén.

Background - evaluation

Since 1977, according to the Swedish curriculum, it has been possible for minority students to study their mother tongue (Hyltenstam & Tuomela 1996). During a period of approximately fifteen years from then there was a variation of studying mother tongue from being a student having approximately 100 minutes a week to be a student in a mother tongue class, i.e. the teachers and the students were speaking the same language and the mother tongue was the language of instruction. This was practiced mostly from first to sixth grade in immigrant and multilingual areas around the three big cities, Stockholm, Malmö and Gothenburg. The languages were Spanish, Turkish, Greek, Arabic and Finnish as those languages then were spoken by a large number of immigrants. Other languages where not spoken by the same amount of people so the "smaller" languages were never taught on in mother tongue classes. The students in mother tongue classes studied Swedish as a second language, and the aim was that they were going to move ahead to Swedish speaking classes as they entered seventh grade. The changeover was gradually.

Late arrivals, have since the same period of time, had opportunities to study their first years in Swedish schools in a, so called, *preparation group of students*. In these groups the age of the

students were, and still are, heterogenic and they learn Swedish in the language of teaching and learning; Swedish. The aim is, the same as mentioned above, that students are able to join a main stream Swedish speaking class within a year or two. During time in preparation group there is little time for extending content knowledge in different school subjects – including mathematics. A small number of lessons a week are designated to study mother tongue.

According to what research say today about learning a second language and subject matter content simultaneously (Gibbons 2002, Ovando, Collier & Combs 2003) we can say that there was a backlash in the nineties. An official tune saying *if they just learned Swedish* was at hand and both instruction on and in mother tongue was diminished in Swedish multilingual classrooms and preschools even though it was a curriculum statement (Skolverket 2002). A consequence was that mother tongue teachers no longer belonged to the ordinary staff at schools. At the same time the curriculum was changed and studies in mother tongue were (and still are) supposed to be out of compulsory courses and students who chose to take it, often had (and still have) to study one or two lessons in late afternoons.

The discourse (Foucault 1971/93) was, and still is to some extent, *only Swedish* (including language, culture, values and habits). It still works within the borders of institutions, at schools and preschools. Sjögren (also see Douglas 1986) writes:

> It's not so much Swedes themselves who are 'Swedish,' but institutions-the Swedish schools, parliament, police, press, and so on. And being institutions, they are extremely slow to change. They support the existing ideology and way of thinking. (Sjogren 2001, p 16 cited in Banno Gomes, Bigestans, Magnusson & Ramberg 2002)

Lately the complexities of learning a second language and learning content on the second language simultaneously in Swedish multilingual classrooms (Obondo 2000, Axelsson 2000) have been focused by teachers and politicians. One explanation to this is that lots of minority students show below minimum results in the three main subjects in accordance with our curriculum; Mathematics, Swedish and English (as a foreign language). Eventually politicians have alerted that *something has to be done*.

The mother-tongue teaching of mathematics project is a result of this awareness. It is possible to look at the changes in attitude as an ongoing change in discourse and as a challenge to existing practices in multilingual mathematic classrooms in Swedish schools. It's also at hand to say, along with Cummins (1996), that it is a way to *empower* both multilingual teachers and students. It can also be looked up on as a way of distributing *power*. That is if we look at both language and knowledge in mathematics as *symbolic capital* (Bourdieu 1997).

As suggested in our headline we assume that cultures and vernacular life of students also have an impact on achievement in mathematics and have to bee explicit and reflected in everyday mathematical activities in mathematics classrooms (Johnsen Høines 1987/2002). We also propose that ethnomathematic (D'Ambrosio 1985/1997) perspectives will naturally arise in teaching mathematics as the bi- or multilingual teachers have potential to do so. As Rönnberg & Rönnberg (2003 p. 272) write: *How teachers organize their mathematics instruction is influenced by their own views on mathematics as a subject*. Through this arrangement, teachers, politicians and researchers hope that a greater amount of minority students will achieve advanced levels in their mathematics studies.

Possible theoretical perspectives - evaluation

To look into a complex matter, such as teaching mathematics in multilingual classrooms, demand a variety of theories from different research areas. There is not simply one. We need to know more about how multilingualism and learning mathematics in monolingual majority's school system interplay. We certainly need theory concerning mathematics education and mathematics learning, but also theory of second language acquisition, inclusion and exclusion, domination and power. Yet we have to put the actual situation in some kind of context of which the era we live in are one.

The processes of modernity that started about thirty years ago, called late modernity, have brought socio economical changes and new forms of cultural production and consummation to Sweden. The former working classes in industry of production are almost gone. Their children work in the industry of information. Simultaneously there has been a big immigration and a lot of refugees have come to Sweden. Frequently they work in production industry and constitute a new working class or remain unemployed. According to Haglund (2005) late modernity seems to be a period when main stream values are questioned and tendencies in different ways threatens the privileges of the middle classes. Haglund associates late modernity with development of post structuralism when meaning and authenticity is constructed in social activities and discourses. Cummins (2002, p v) writes:

> The standards-based reform movement has been fuelled by parallel developments in many countries. The common context is one where educational systems are attempting to redefine themselves in light of rapidly changing economic, technological, and social conditions that are affecting countries around the world. The shift from an industrialized to a knowledge-based economy has highlighted the need for workers with higher level of literacy and numeracy than was previously the case.

Post structuralism is close to theories of deconstruction, as in return question the limits of languages. All language can be manipulated to communicate opinions and intentions. There is no neutral language; no secure notion about what is true. Languages are bound in certain social forms and are not interdependent to reality but construct a reality (Haglund 2005). It is close to Dewey (1934/80) who writes: *Language exists only when it is listened to as well as spoken* (p. 106) and *Communication is consummatory as well as instrumental. It is a means of establishing cooperation, domination and order. Shared experience is the greatest of human goods* (1958 p. 202).

According to Sjögren (1993) minority students can end up in a position where contradictions appear between their culture in heritage and structures in society. As a consequence personal characteristics are put in disparity to existing personal positions. Among others, Young (2000) has criticized ethical and political theories taking for granted all individuals are equal in an identical way. Such theories make individuals oppress parts of their experiences and needs. Her interest in diversity mediates respect to each human being and her right to articulate experiences. When Dewey (1934/80) talk about *normal processes of living* (p. 10) he relates to people living in the context of his time. To Dewey the concept *experience* is about human experiences, how they connect and are continuous in activities. In other words, how human experiencing is situated in a cultural and societal context, backwards as well as ahead in time. Dewey acted in a changing time in some ways similar in present days. At his time a lot of people immigrated to the US, industrialism increased; changing life conditions and education.

Bourdieu (1997) introduced *habitus*, a sort of embodied symbolic capital as individuals hold, probably without being conscious about it. Habitus make people think, act and orientate in a

social world. Habitus is rooted in individuals' socio economic and cultural background. If we use the tone of Bourdieu, habitus create borders or limits within which a person handles. In the context of a mathematics classroom, where Swedish is the only accepted language of teaching and learning, students' ability to express themselves in Swedish also puts limits to their capacity to perform mathematics proficiency.

In a post structural perspective knowledge is not seen as universal, but something as, with no questioning, are constructed among people in communicating connections in social and cultural contexts along with activities. Mathematics knowledge as well have been and still can be seen as constructed the same way, it's not a universal object. One aspect of learning mathematics is – *ethnomathematic* – a view on mathematics where cultural and/or political situations influence mathematical development and education in mathematics (D'Ambrosio 1997).

D'Ambrosio as well as Engström (2005) points at mathematics education's democratic dimensions; communicating mathematics can be seen as bearing elements in which opinions, apprehensions and values can be diverse but equal. He, as Wittgenstein (1953/92), emphasizes the playful character of mathematics.

Adler (2001) points at three factors interplaying in a multilingual mathematics classroom:

- Access to the language of instruction
- Access to the mathematical discourse
- Access to the discourse of the classroom

Adlers and Setatis (2000) research show that multilingual students achieving well in mathematics participate in a conceptual mathematical discourse (Cobb 2000); are communicating mathematical concepts and understanding and wherein the students themselves are active. Both teachers and students use code switching.

In a Swedish study Parszyk (1999) showed that the more diversity between students' and Swedish culture the harder it was for students to solve text problems in Swedish mathematics national tests. As both instruction and national tests were based on western main stream perspectives it made it difficult for students to achieve good results as their earlier experiences were not the same. As Stiegler and Hiebert (1999) stress teaching is a cultural activity.

The mother-tongue teaching of mathematics project

The aim of the project is to give schools the opportunity of finding organisational models for providing bilingual teaching in mathematics for students who have a mother tongue other than Swedish. During the years of the project, the schools receive financial resources for bilingual mathematics teachers and project leaders. The project is in progress in five schools in the City of Stockholm and covers students from age nine to fifteen. In the present school year, teaching is being given in Somali and Arabic. Three different organisational models are being tested:

- all teaching is done by the bilingual teacher (one of the schools).
- the students have half their lessons in Swedish and half in their mother tongue.
- mother-tongue teaching involves extended time and is in addition to the regular teaching which only takes place in Swedish.

One condition for participation in the project is that the teachers giving mother-tongue teaching in mathematics, and the teachers who teach mathematics in Swedish to the students involved, meet regularly in networks for guidance and exchanges of experience. A national evaluation of Swedish compulsory school in 2003 showed that by far the most common form of teaching in mathematics is students each working individually with textbook tasks (Skolverket, 2004). In view of this, simply changing the teaching language for mathematics teaching is not enough to bring about a radical improvement in the results achieved by bilingual students in mathematics. Another purpose of the networks is therefore to make teachers aware of the difficulties of second-language students concerning teaching content, working forms and methods and the language used in teaching and textbooks (Rönnberg & Rönnberg, 2001), and how the teachers who teach the same students are to be able to cooperate on this.

Teaching content

All children, regardless of cultural and linguistic background, develop basic, informal, mathematical concepts before they start school (Allardice & Ginsburg, 1983). These concepts are tied to the children's language and experiences from their local environment (Kilborn, 1991). However, Swedish maths teachers often consider that students who have a mother tongue other than Swedish do *not* possess the concepts and experiences that are seen as necessary to benefit from the teaching. This can be because the student's concepts are rooted in other languages and experiences than those the school's teaching is based on and the students therefore have difficulties referring to them in majority-language teaching. To prevent the students coming to a standstill in their knowledge development when they start school, mathematics teaching must connect with this knowledge and these experiences and the connection must be clear to the student (Hiebert et al, 1997). *It is therefore important to discuss how the students' informal maths knowledge and their own experience of mathematics can be made visible in the teaching.*

In her thesis (1999) Parzyk shows that the greater the differences between the students' culture and Swedish culture, the greater the difficulties the students have in solving word problems in Swedish National Tests. The fact that students are unable to cope with mathematics teaching can be due to the context in the mathematics tasks being perceived as foreign by the student or can be because the teaching is based on experiences the students do not have, which may be the case if teaching is based on a western middle-class perspective. *We must therefore also discuss how we should select content so that students with different cultural backgrounds see it as relevant.*

Working forms and working methods

One important step between the students doing practical work with objects and abstract work on mathematics and symbolisation is a step where they have to *imagine* the objects and develop their ability to create inner images. The ability to be able to "imagine" mathematical concepts and events and phenomena is important for the ability to solve mathematical problems (Sterner & Lundberg, 2002). In order to develop such mental representations the students must be given help to create inner images of mathematical concepts through "explorative talk" in connection with practical work (cf. Barnes, 1971). *The teachers must agree on how and in what language(s) the practical work will be conducted.*

To enable the students to see connections between the mathematics they encounter in school and their informal mathematics and to develop understanding of mathematical concepts and the language of mathematics, it is essential for them to be given the opportunity of reflecting

on and communicating about and with the mathematical concepts being studied, both orally and in writing. *How can the teachers help one another to change teaching in that direction?*

Language in teaching and textbooks

Mathematics teaching makes great demands on command of language regardless of whether it is given in students' mother tongue or in a second language. Solving text problems in mathematics, known as "described problems", without illustrations, which is common in traditional textbook-based teaching, involves having to use language in a cognitively demanding, situation-independent and often context-reduced communication (Chamot & O'Malley, 1987). Mathematics teaching also makes demands on mastering and being able to express oneself using a symbolic language and the mathematical "register". This requires decontextualised, school-related, language skills (Obondo, 1999; Säljö, 2000). Catching up with first language students of the same age in language skills of this kind takes five to eight years, if students have a year or so of mother-language schooling in their home country. If they don't, it takes even longer (Thomas & Collier, 1997). One way of facilitating concept understanding for students before they have mastered school-related skills in their second language is for them to be given concrete experiences of the concepts being introduced before the names of the concepts are introduced. Another method is for them to work with different forms of representation and expression (practical models, images, everyday language, symbolic language, etc.). *Through discussions in the network, teachers can develop teaching sequences with such tasks. We must also discuss how the students' bilingualism can be a resource in the teaching, so that they can use their languages to facilitate concept formation, to facilitate work on cognitively demanding tasks and to develop their mathematical register in both languages.*

The mother-tongue mathematics project – flexible learning

To give the students whose mother tongue is only spoken by a few students in a school the opportunity of instruction in their mother tongue, the Competence Fund of the City of Stockholm is also funding a project with the purpose of developing material and methods for bilingual distance teaching in mathematics. The languages involved in the initial phase are Spanish, Arabic and Persian

Methods of finding results of the project - evaluation

Participating observation have been used alongside informal talk with students, teachers and project coordinators and more formal interviews among bi- or multilingual teachers and project coordinators. Classroom and mathematical discourses (Cobb) as well as language use by teachers and students are observed. Field notes are taken according to ethnographic methods (Kullberg 2004). Some lessons are audio taped and listened to and discussed by observer and mathematics teacher after lessons. All languages used in the project are not spoken by the observer. It might seem unusual but as different languages are used in the project there are problems finding researchers who speak them all. In a way the observer are put in the same situation as many minority students in Sweden, not familiar with Swedish as a language of learning. Questions about teachers' views on teaching and learning mathematics are answered in interviews. Assessment of students' mathematical knowledge and tests of students' achievements in mathematics have been run by project coordinators. An investigation of attitudes to mathematics among students has been carried through in two of the schools participating in the project. The questionnaire used was prepared by the network. The networks' process has been observed for a year and it is still followed up. During the

spring of 2006 we will go on interviewing students of all ages. We will also audiotape students learning mathematics in small group activities.

Preliminary assumptions/results - evaluation

The project is going on for one more year and so far we can say that there seem to be diverse aspects of interpreting results of the project *Mathematics on mother tongue*. One aspect doesn't concern learning mathematics but the structures of power that are distributed through the project. When students get access to mathematics, which has a high amount of symbolic capital in Swedish society at large, through their first language, it seems as though the status of students' first languages increase, it gets additional symbolic capital. *My language is good enough for learning mathematics* is a thought expressed within some of the students' and multilingual teachers' ways of speaking about mathematics and language. Higher interest for studying mother tongue is a consequence for some students, but some students seem to develop a deeper interest in mathematics and better results in tests.

The students who seem to achieve most are being taught mathematics by bilingual mathematics teachers (Arabic & Swedish and Somali & Swedish). These students (age 14-15) are late arrivals in Sweden and reach the finale classes in Swedish compulsory school within a year or two. If they hadn't been in the project they would have had all their instruction in Swedish, in a preparation group, struggling learning basic conversational fluency and probably not getting the same chance to reach mathematical progress.

Another finding, that is not surprising, is that senior students participating in the project preferably speak their second language, Swedish, during mathematics class, if they have had Swedish as the language of instruction for many years. They tend to use their first language in their homes and with friends though. It shows that language use is context bound. This happens even though the bilingual mathematics teacher speaks mostly mother tongue. The students answer teacher's questions (put in first language) in Swedish. Some even ask the teacher to speak Swedish. Later arrivals prefer mother tongue and when they work together in small groups they influence their better Swedish speaking group mates to use mother tongue.

As the Swedish curriculum promotes mathematics teachers to vary teaching in a conceptual discourse, including ways of communicating mathematics in the classrooms and using problem solving as a base for understanding, it is a disappointment to say that a procedural discourse is as common in the project as it is in Swedish mathematics classroom generally (Skolverket 2003). Mathematics pre-produced textbooks have vast influence on mathematics teaching practices and it is frequent that students are working by themselves through a book without much guidance from teachers in their own speed, *speed individualizing* (Runesson 1999). Students request for help and teachers try to help each individual as prompt as possible.

It is not much visible signs of ethnomathematic perspectives in the teaching, even though the multilingual teachers are educated in their countries of origin and the network has discussed the issue at many occasions. The pre-produced textbook's domination is influencing western mainstream mathematics teaching. It might also indicate that Swedish mathematics teacher's have implicit preferential rights of interpretation, making multilingual teachers feeling obliged to follow the same script as they do. Power relations don't seem to bee equal.

It has been difficult motivating Swedish mathematics teachers to participate in the network. Some of them make other priorities and say they have too little time. Provided all teachers are

interested in teaching methods for enhancement of second language learners' achievement in mathematics this is an unexpected preliminary finding. This may perhaps be a sign of only Swedish speaking teachers' interpretation of students' low achievement as failures within the students' personalities, backgrounds, experiences and culture rather than the teaching?

These issues indicate that mathematics education designed for multilingual students includes more to deal with than switching languages of instruction.

References

Adler, J. (2001) *Teaching Mathematics in Multilingual Classrooms.* Kluwer Academic Publishers, Dordrecht

Allardice, B. & Ginsburg, H. (1983). Children´s Psychological Difficulties in Mathematics. In H. Ginsburg (Ed.), *The Development of Mathematical Thinking* (pp. 319-350). Orlando: Academic Press, INC.

Axelsson, M. (ed) (1999) *Tvåspråkiga barn och skolframgång – mångfalden som resurs*. Rinkeby Språkforskningsinstitut, Stockholm

Banno Gomes, N. Bigestans, A. Magnusson, L. & Ramberg, I. (ed) *Reflections on Diversity and Change in Modern Society. A Festschrift for Annick Sjögren*. Mångkulturellt Centrum, Botkyrka

Barnes, D. (1972). *From Communication to Curriculum.*Penguin, London.

Bourdieu, P. (1997) *Kultur och kritik.* Daidalos, Uddevalla

Chamot, A. U. & O´Malley, J. M. (1987). The Cognitive Academic Language Learning Approach: A Bridge to the Mainstream. *TESOL Quarterly . 21(2).* 227-249.

Cummins, J. (1996) *Negotiating identities: Education for Empowerment in a Diverse Society*. California Association for Bilingual education, Los Angeles

Cummins, J. (2000) *Language, power and pedagogy. Bilingual children in the crossfire*. California Association for Bilingual Education, Ontario

Cummins, J. (2002) Foreword in Gibbons, P. *Scaffolding language scaffolding learning. Teaching Second Language Learners in the Mainstream Classroom*. Heinemann, Portsmouth, NH

Cobb, P. (2000) From Representations to Symbolizing: Introductory Comments on Semiotics and Mathematical Learning. I (editors) Cobb, Yackel & McClain, *Symbolizing and Communicating in Mathematics Classrooms, perspectives on discourse, tools, and instructional design*. Lawrence Erlbaum Associates, Publishers, London

D'Ambrosio, U. (1985/1997) Ethnomatematics and its Place in the History and Pedagogy of Mathematics. I (editors) Powell & Frankenstein, *Etnomathematics: Challening Eurocentrism in Mathematics Education*. State University of New York Press, Albany

Dewey, J. (1934/80) *Art as experince*. Perigee books, New York

Dewey, J. (1958) *Experience and nature*. Dover Publications, New York

Douglas, M. (1986) *How institutions think*. Syracuse University Press, New York

Engström, A. (2005) *Tema: Bildning och demokrati i matematikutbildningen*. I Utbildning & Demokrati, tidskrift för didaktik och utbildningspolitik. Vol 14 Nr 2, 2005. Pedagogiska Institutionen, Örebro Universitet, Örebro

Foucault, M. (1971/93) *Diskursens ordning*. Brutus Östlings Bokförlag, Symposion, Stockholm/Stehag

Haglund, C. (2005) *Social Interaction and Identification among Adolescents in Multilingual Suburban Sweden – A study of institutional order sociocultural change.* Centre for research on Bilingualism, Stockholm University, Stockholm

Hiebert, J., Carpenter, T., Fennema, E., Fuson, K., Wearne, D., Murray, H., Olivier, A. & Human, P. (1997). *Making Sense, Teaching and Learning Mathematics with Understanding.* Portsmouth, NH: Heinemann.

Hyltenstam, K. & Tuomela, V. (1996) Hemspråksundervisningen. In Hyltenstam, K. (red) *Tvåspråkighet med förhinder? Invandrar- och minoritetsundervsining i Sverige.* Studentlitteratur, Lund

Johnsen Høines, M. (1987/2002) *Matematik som språk – verksamhetsteoretiska perspektiv.* Liber, Malmö

Kilborn, W. (1991). Matematikundervisning och hemspråk. *Nämnaren 18(3/4)*, 54-62.

Kullberg, B. (2004) *Etnografi i klassrummet.* Studentlitteratur, Lund

Obondo, M. (1999). Olika kulturer, olika språksocialisation - konsekvenser för utbildning och social integrering av invandrarbarn. I M. Axelsson (Red.), *Tvåspråkiga barn och skolframgång - mångfalden som resurs.* Stockholm: Rinkeby språkforskningsinstitut.

Ovando, C. J. Collier, V. P. & Combs M. C. (2003) *Bilingual & ESL Classrooms, teaching in multicultural contexts.* Third edition. McGraw Hill, Toronto

Pimm, D. (1987) *Speaking Mathematically: Communication in Mathematics Classrooms*. Routledge Kegan & Paul, London

Runesson, U.(1999) *Variationens pedagogik – skilda sätt att behandla ett matematiskt innehåll*. Acta Universitatis Gothoburgensi, Göteborg

Rönnberg, I. & Rönnberg, L. (2001). *Minoritetselever och matematikundervisnin- en litteraturöversikt.* Skolverket. Stockholm.

Rönnberg, I. & Rönnberg, L. (2003) On Guiding Second Language Learners in Their Numeracy Development - the Importance of Beliefs and Attitudes. In Banno Gomes, N. Bigestans, A. Magnusson, L. & Ramberg, I. (ed) *Reflections on Diversity and Change in Modern Society. A Festschrift for Annick Sjögren*. Mångkulturellt Centrum, Botkyrka

Setati, M. & Adler, J. (2000). Between languages and discourses: Language practices in primary multilingual mathematics classrooms in South Africa. *Educational Studies in Mathematics 43*, 243-269

Sjögren, A. (1993) *Här går gränsen*. Arena Förlag, Stockholm

Skolverket (2002) *Fler språk – fler möjligheter – utveckling av modersmålsstödet och modersmålsundervisningen 2002*. Rapport till Regeringen 15 maj 2002.

Skolverket (2003) *Lusten att lära.* Kvalitetsgranskning 2001/2002

Stiegler, J. W. & Hiebert, J. (1999) *The Teaching Gap. Best ideas from the world's teachers for improving education in the classroom.* The Free Press, New York

Thomas, W. & Collier, E. (1997). School Effectiveness for Language Minority Students. *NCBE Resource Collection Series, No. 9.* George Washington University. Downloaded from NCBE web adress: www.ncbe.gwu.edu/ncbepubs/resource/effectiveness/.

Wittgenstein, L. (1953/92) *Filosofiska undersökningar.* Thales, Stockholm

Wittgenstein, L. (1969(92) *Om visshet.* Thales, Stockholm

Young, I. M. (2000) *Inclusion and democracy*. Oxford University Press,