

2014

CEMO

Centre for Educational Measurement
at the University of Oslo

ANNUAL REPORT



UiO : Faculty of Educational Sciences
University of Oslo



The Centre for Educational Measurement at the University of Oslo (CEMO) is an international research unit which conducts basic research in educational measurement and applied research in early childhood, secondary and higher education. CEMO develops national competence by disseminating knowledge about educational measurement to stakeholders and teaching of Master and PhD students. The Centre collaborates with similar units in many other countries and is part of an international research network.

CEMO IN BRIEF

The Centre for Educational Measurement at the University of Oslo (CEMO) is a newly established research unit chaired by Director Professor Sigrid Blömeke. As of December 31 2014, CEMO consists of 8 employees, including 2 Professor II positions. Several professorships are still to be decided upon and CEMO will hence continue to grow also in 2015.

During 2014, CEMO initiated a weekly seminar called the Brown Bag seminar. A Brown Bag seminar is a forum, in which students and researchers can present their research in an informal setting during a lunch break. CEMO also hosted the IEA-ETS Research Institute's (IERI) Autumn Academy on Item Response Theory and Population Modeling in Large-Scale Assessments, arranged the European Educational Research Association (EERA) Spring

school, had several invited high-profile talks and organized three PhD-courses; one on item-response theory (IRT) (UV9252), one in regression analysis (UV9214), and one more deepened on multilevel regression analysis (UV9253). In addition there were several guest lecturers and speakers giving talks and workshops on various subjects. It has been an active year at CEMO and the activity is expected to remain high in 2015.

2014 also marked the birth of CEMO's new website and the centre became more active in social media such as Facebook and Twitter. In addition the Faculty of Medicine initiated and invited CEMO to join a project examining the reliability and validity of the newly established examination and grading system in medical education.



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01 THE DIRECTOR'S COMMENTS

In 2014, CEMO has gained momentum. After a start-up year under the leadership of Jan-Eric Gustafsson (University of Gothenburg, Sweden), who took on the challenge of creating a new academic unit at UiO's Faculty of Education from scratch, CEMO could build on this pioneering work. 2014 was consequently characterized by quick growth in staff and activities. Within only a few months, Anne-Catherine Lehre moved fully into her job as Senior Advisor, Johan Braeken was hired as the first CEMO Professor, Ronny Scherer as the first Postdoctoral Fellow, Henrik Zachrisson (The Norwegian Center for Child Behavioral Development/Atferds-senteret, Oslo) as Professor II, Øystein Andresen as Higher Executive Officer and Stephan Daus as PhD student. In August, I had the honor to start as CEMO's director.

We are all very enthusiastic about the chance to build up an internationally recognized research unit in the field of educational measurement. Already our first activities in terms of research and publications, conferences and workshops, talks and project meetings attracted national and international attention. We are particularly happy about the great internal collaboration with our new colleagues at UiO. CEMO could move into new premises at the beginning of 2014 and feels at home now in Niels Henrik Abels hus as a neighbor and collaborator of EKVA (MESA in English) and ILS, ISP and IPED.

CEMO has received tremendous support by the Faculty of Education, the CEMO Board and the Scientific Advisory Board during this past year. They have served as links to existing research and teaching and provided invaluable input to our work. We are looking forward to joint activities, in particular with respect to teaching. Our mission is to establish educational measurement as a field that is profoundly developed in all students enrolled at our

Faculty. Statistical literacy is nowadays an essential and indispensable competence needed in education.

We are now also visible in the world-wide web: www.uv.uio.no/cemo/english/. Our homepage describes our short- and long-term research objectives as well as all upcoming activities. People interested in our work are particularly invited to take part in our weekly Brown Bag seminar where we discuss interesting measurement issues in an informal environment. One major 2015 event will be a conference on "Standard setting in the Nordic countries" – a very controversial topic.

Other current efforts at CEMO are focused on the recruitment of further colleagues: three more Professorships, two Postdoctoral Fellowships (one sponsored by the Medical Faculty) and one PhD position are to be filled. Their announcement attracted applicants from all over the world and it is a pleasure to see the broad range and high level of competence represented. We have already sent out several calls and appointments are soon to be made.

We are all looking forward to 2015 with great expectations!

On behalf of
the CEMO team,



Sigrid Blömeke, Director of CEMO



02 SCIENTIFIC ACTIVITY

The Centre for Educational Measurement at the University of Oslo (CEMO) is a research unit which contributes to development of national competence within the field of educational measurement. The unit conducts applied research within the fields of early childhood education, primary and secondary education, and higher education, and basic research within the field of educational measurement.

Basic research is the primary task for the Centre. We are specialized on methodological challenges of international large-scale assessments and of the assessment of 21st century skills. Applied research is done in collaboration with substantive researchers. Therefore, both broad and specialized methodological competence within CEMO is a necessity. In 2014, we established this by filling several vacant positions within the field of educational measurement. To facilitate substantive collaboration, we created a research group together with EKVA called LEA (Large-scale educational assessment).



Research tasks

CEMO's research tasks are divided into methodological and substantive areas and are identified as follows:

Methodological areas

- Application and applicability of advanced measurement techniques
- Measurement equivalence across groups & time
- Modeling of causes & effects, development & change, and multi-level effects

- Innovative assessment formats & new areas of skills

Substantive areas

- Early childhood, primary, secondary and higher education
- National & international large-scale assessment of student and teacher knowledge, beliefs, skills
- Contextual effects on instructional quality and achievement



03 EDUCATION AND RESEARCH TRAINING

CEMO educates candidates at the master- and doctoral levels within the field of educational measurement. This is done within the framework of already existing programs within the fields of education, special education, and subject didactics. In the near future, CEMO will also offer teaching on the Bachelor level to build competence from scratch.

Besides research, the centre has primarily focused on graduate training. In 2014, we arranged three PhD courses. In addition, CEMO started the weekly Brown bag seminars which have included a number of presentations from both CEMO and the other departments at the Faculty of Educational Sciences as well as other departments and research centers in Norway.

Courses

UV9252: Course on item-response theory (IRT), Dr. Norman Verhelst

The advanced PhD-course UV9252 consisted of 21 hours mixed theoretical teaching and hands-on exercises and was taught by Professor em. Dr. Norman Verhelst from Eurometrics, the Netherlands. The course included latent regression (the use of the program SAUL and its theory), and profile analysis of information on classroom level/school level whether the students have well balanced results/outperform/underperform on some categories of items given their total test score. It took place in April and the students were credited 1 ECTS without documentation and 3 ECTS with documentation.

UV9214: Regression analysis, Associate professor Johan Braeken

The PhD-course focused on basic concepts and principles of simple and multiple regression, and various strategies for using multiple regression. Methods for checking the model assumptions were discussed. The course also addressed the analysis of non-linear relationships and interactions between variables.

This course consisted of 18 hours combined lectures & computer practicals, and is a basic building block towards more advanced regression-based techniques such as multilevel analysis and structural equation modeling. It took place in September and credited 1 ECTS without documentation and 3 ECTS with documentation.

UV9253: Multilevel regression analysis, Postdoctoral researcher Ronny Scherer

This PhD-course consisted of 18 hours combined lectures and hands-on exercises, and built up knowledge and skills that are essential for more advanced multilevel modeling techniques (e.g., multilevel longitudinal and structural equation modeling). The course gave an introduction to multilevel modeling with a focus on regression analysis. In particular, it presented the basic concepts of multilevel structures and evaluated different modeling techniques. It took place in November and credited 1 ECTS without documentation and 3 ECTS with documentation.



04 SCIENTIFIC OUTREACH

Through its research- and development activities CEMO develops and disseminates knowledge to relevant stakeholders in the sector of education. The unit shall in its area of competence also be an advisor to the Norwegian Ministry of Education and Research, Norwegian Agency for Quality Assurance in Education (NOKUT) and the Norwegian Directorate for Education and Training.

Across Norway, CEMO contributes through collaboration to competence development in educational measurement at other universities and higher education institutions.

There are explicit assignments to the centre to disseminate knowledge and develop competence. Educational measurement often has profound impact both on individuals and on processes and outcomes of teaching and learning. This, in combination with the fact that educational measurement often is non-transparent and technically complex generates a need to recognize multiple stakeholders who have different information needs, such as students, parents, teachers, school-leaders, local politicians and administrative bodies and national politicians and administrative bodies.

A central part of CEMO's scientific outreach is the open seminars, e.g. Brown Bag seminars, with prominent researchers. The themes in 2014 varied from a non-technical review on 'Consequences of early childhood education and care for language development and academic attainment in Norway' to more technical methodological issues like modelling interactions between latent variables and debates on the choice between two methods.

EERA Spring School on Advanced Methods in Educational Research 2014

From 5 to 9 May CEMO hosted EERA's 4th annual spring school at the UiO campus. The spring school included discussions of randomized designs, but with more emphasis on alternative designs for when randomization is infeasible: propensity score methods and instrumental variables. Methods were motivated by examples from education.

The target audience of the Spring Schools was early stage researchers including PhD students, postdocs and assistant professors from any field of educational effectiveness research. The limitation of no more than 25 participants offered hands-on activities during the computer-based training modules. During the Spring School all participants had to present a poster, where they presented

their own research to the other participants and senior researchers.

In Oslo, researchers from Cyprus, Dortmund, Gothenburg, Leuven, and Oxford delivered the workshops. Furthermore, Elizabeth A. Stuart (John Hopkins University Baltimore, Maryland) was invited as an external expert. She is a student of Donald Rubin, and is a highly ranked researcher and outstanding teacher who has authored a range of papers and software packages in the field of PSM and Multiple Imputations.

IERI Autumn Academy 2014

CEMO hosted the IERI Autumn Academy from 2 to 4 December. The IERI Autumn Academy was a three-day academy on assessment designs, the use of Item Response Theory (IRT) and population modeling in large-scale assessments. The goal of the Academy was to familiarize participants with the topics related to assessment designs and IRT, and enable them to use commercially available software to conduct appropriate IRT analysis and generate proficiency estimates or plausible values.

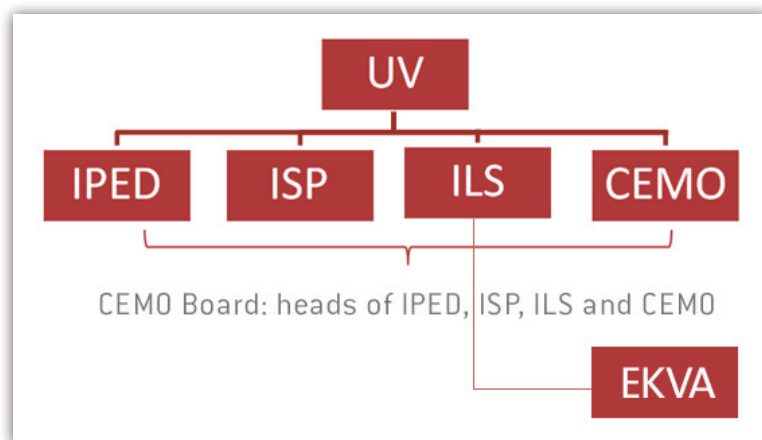
Websites

During 2014, CEMO established a fully working website (www.uv.uio.no/cemo) and got visible on social media such as Facebook (facebook.com/CEMO.UiO) and Twitter (twitter.com/CEMO_UiO). The website is continually updated with information on upcoming events, vacancies, and other news. Despite English being the main language used at CEMO, the information on the website is written in both English and Norwegian. Main features of the website are a personal page for each CEMO member, information on CEMO's research, upcoming events, and list of publications.



05 MANAGEMENT & ADMINISTRATION

CEMO is established as a research unit hosted by the Faculty of Educational Sciences (UV) at the University of Oslo (UiO). The centre is co-located with the research group 'Measurement and Evaluation of Student Achievement' (EKVA) at the Department of Teacher Education and School Research (ILS). The Norwegian Ministry of Education and Research and UiO are CEMO's main financial contributors. They constitute the final reporting entities that define the guidelines under which we are to operate. UV is responsible for the main load of administrative support.



UV = Faculty of Educational Sciences; IPED = Department of Education; ISP = Department of Special Needs Education; ILS = Department of Teacher Education and School Research; CEMO = The Centre for Educational Measurement at the University of Oslo; EKVA = Measurement and Evaluation of Student Achievement

Administrative structure

The Centre is run by the Director, Professor Sigrid Blömeke, and the Senior Adviser Anne-Catherine Lehre. The director is responsible for strategic decisions, selection and supervision of the CEMO team and the CEMO budget. Running and strategic issues are dealt with at regular meetings. The Senior Adviser is responsible for the daily running of CEMO, which includes external communication, facilitating a good reception and stay for guests, taking minutes from board meetings, recruiting interviews, and scientific advisory board meetings, and organizing and implementing the different arrangements like courses, seminars, and

workshops. The Higher Executive Officer Øystein Andresen is also involved in the daily running of CEMO. His main responsibilities are maintenance of the websites, social media, and project management of the conference 'Standard setting: International state of research and practices in the Nordic countries'

The Faculty of Educational Sciences provides support in terms of accounting, and partly for media and external communications. The general IT-support is provided by the Department of Teacher Education and School Research.



Comments by the CEMO Board chair: Rita Hvistendahl

The CEMO Board had four meetings in 2014; on January 20, March 17, April 28 and August 18. The three first meetings were held at the Faculty of Educational Sciences, the last meeting was held at the Department of Teacher Education and School Research where CEMO is located. A number of issues were also decided upon in electronic board

meetings on May 14, June 17 and November 11.

The meeting in April was the very last board meeting with Professor Jan-Eric Gustafsson as director. The CEMO Board thanks Professor Gustafsson for his great efforts during the first one and a half years of the center period. Under his leadership, CEMO has announced and filled several scientific positions and conducted impressive scientific activities. In addition, Professor Gustafsson successfully accomplished the process of appointing a director of CEMO for the remaining 4-year period. At the meeting in August, the CEMO Board had the great pleasure of welcoming Professor Sigrid Blömeke as the new director of CEMO.

The most important issue for the meetings in 2014 has been to re-announce positions that have not yet been filled, unanimously deciding to announce three professorships at CEMO. The evaluation committee found three applicants eligible. The CEMO Board would like to thank the committee for their great efforts. Furthermore, the board also extends their thanks to the internal CEMO Scientific Advisory Board whose representatives have participated in the interview committee. The board has also had the great pleasure of welcoming Henrik Zachrisson as the very first Professor II of CEMO, and Stephan Daus as the center's very first PhD. student. The CEMO administration has been strengthened with Øystein Andresen as Higher Executive Officer of CEMO.

At a meeting with the Secretary of the Ministry of Education October 13th, the CEMO director Professor Sigrid Blömeke presented herself and outlined impressive plans for the center, including scientific activities such as courses at the PhD-, master and bachelor level, seminars and conferences, along with plans for research and dissemination, all in the field of Educational Measurement.



The Board and the Internal CEMO Scientific Advisory Board

The CEMO Board is an administrative body that meets every second month to focus on strategic and control functions as well as approving budgets, accounts, and annual reports.

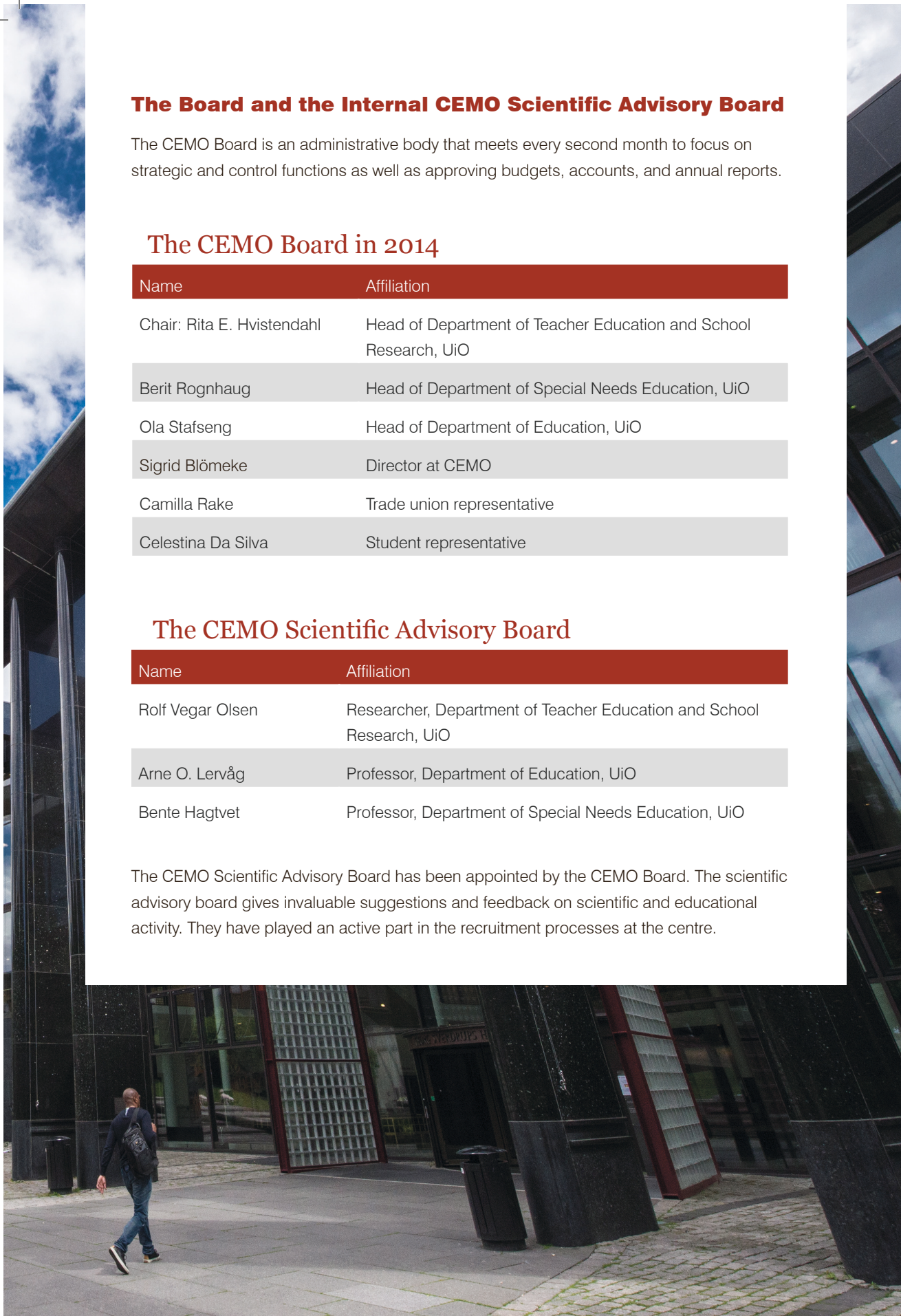
The CEMO Board in 2014

Name	Affiliation
Chair: Rita E. Hvistendahl	Head of Department of Teacher Education and School Research, UiO
Berit Rognhaug	Head of Department of Special Needs Education, UiO
Ola Stafseng	Head of Department of Education, UiO
Sigrid Blömeke	Director at CEMO
Camilla Rake	Trade union representative
Celestina Da Silva	Student representative

The CEMO Scientific Advisory Board

Name	Affiliation
Rolf Vegar Olsen	Researcher, Department of Teacher Education and School Research, UiO
Arne O. Lervåg	Professor, Department of Education, UiO
Bente Hagtvet	Professor, Department of Special Needs Education, UiO

The CEMO Scientific Advisory Board has been appointed by the CEMO Board. The scientific advisory board gives invaluable suggestions and feedback on scientific and educational activity. They have played an active part in the recruitment processes at the centre.



06. FINANCES

Accounting principles

The Norwegian Ministry of Education and Research (6.6 MNOK core-funding per year to CEMO; in 2014 6.831 MNOK) and UiO (several positions) are CEMO's main financial contributors.

In this report, we present revenues and expenditures for 2013 as well as budgeted revenues and expenditures for 2014.

Revenues and expenditures 2014

2014 ended with a profit of 6.631 MNOK (included surplus of 2013) against the budgeted profit 4.641 MNOK. About 6.831 MNOK of the total 2014 budget of 9.375 MNOK came from the Norwegian Ministry of Education and Research. The deviation from the budget of 2 MNOK is due to a delay in scheduled employments, and delayed activity.

		Financial statement	Budget
Opening balance		-2 479 905	-2 479 905
Total opening balance		-2 479 905	-2 479 905
Funding	Core funding	-6 831 000	-7 100 000
	Investment (fixed assets)		
	Grants		
	UiO (own funding)	-2 544 115	-4 938 643
Total funding		-9 375 115	-12 038 643
Staff expenses	Salary (variable)	154 991	24 573
	Holiday pay, payroll tax, pensions	18 483	6 623
	Salary reimbursement	3 259 237	5 305 249
	Salary expenses	68 974	
Total staff expenses		3 526 990	5 336 446
Operating expenses	Depreciations	11 250	
	Rent		250 000
	Courses, conferences, printing	92 185	
	Consultancy service	25 475	
	Grants, membership fees	1 274	
	Representation, marketing	76 584	
	Travel	588 234	1 200 000
	Business equipment	5 863	50 000
	Indirect costs	933 664	1 440 840
	Other operating expenses	40 732	1 400 000
Total operating expenses		1 775 261	4 540 840
Total		-6 631 815	-4 641 263

Budgeted revenues and expenditures 2015

		Budgeted expenses
Opening balance		- 6 631 816
Total Opening balance		- 6 631 816
Funding	Core funding	-6 600 000
	Investment	
	Grants	
	Depreciations	
	Other funding	- 450 000
	UiO (own funding)	-7 571 428
Total funding		-14 621 428
Staff expenses	Salary (variable)	24 677
	Holiday pay, payroll tax, pensions	6 623
	Salary reimbursement	8 043 376
	Salary expenses	
Total staff expenses		8 074 689
Operating expenses	Depreciations	
	Rent	0
	Courses, conferences, printing	
	Consultancy service	
	Grants, membership fees	
	Representation, marketing	
	Travel	1 578 000
	Business equipment	200 000
	Indirect costs	2 180 166
	Other operating expenses	2 210 000
Total operating ex- penses		6 168 166
Total		-7 010 389

07 APPENDICES

CEMO Members

Name	Nationality	Position	Period
Gustafsson, Jan-Eric	Sweden	Professor II	Oct. 2012-
Lehre, Anne-Catherine WG	Norway	Senior Adviser	Jan. 2013-
Scherer, Ronny	Germany	Postdoctoral Fellow	Jan. 2014-
Braeken, Johan	Belgium	Associate Professor	Feb.2014-
Zachrisson, Henrik D.	Norway	Professor II	Jul. 2014-
Blömeke, Sigrid	Germany	Director	Aug.2014-
Andresen, Øystein	Norway	Higher Executive Officer	Aug.2014-
Daus, Stephan	Norway	PhD Candidate	Oct.2014-

CEMO Events (seminars with invited speakers, courses, conferences)

Seminars with invited speakers

Name	Seminar title	Date
Frøslie, Kathrine Frey	'Tall forteller', informal presentation	Jan 27
Blömeke, Sigrid (prof.)	'In search of appropriate ways to assess higher-education competencies'	Mar 17
Hagtvatn, Knut (prof. em.)	'Confirmatory factor analysis with multifaceted error structure'	Apr 8
Tymms, Peter (prof.)	iPIPS	Sep 15, 18
Pollitt, Alastair (prof.)	Workshop on marking and non-marking	Oct 6-7

Brown bag seminars

Name	Seminar title	Date
Braeken, Johan	Welcome + Dimensionality assessment in factor analysis: New and Old	Aug 19

Arnesen, Anne/Braeken, Johan	Progression of Reading Decoding for Children across School Years	Aug 26
Braeken, Johan	Multidimensional IRT with tail dependence between the latent traits	Sep 2
Lervåg, Arne Ola	Explaining the growth of reading comprehension skills: Estimating linear, nonlinear and moderated relationships between latent variables	Sep 9
Olsen, Rolf Vegar	Large-scale databases in Norway	Sep 16
Nortvedt, Guri/Pettersen, Andreas	Item characteristics for good mapping tests	Sep 23
Siddiq, Fazilat	Assessing students' 21st century skills of collaboration and communication	Sep 30
Zachrisson, Henrik D.	Application of instrumental variable modeling in child care research	Oct 14
Nilsen, Trude/ Scherer, Ronny	Measuring instructional quality: On the pitfalls of using student ratings	Oct 21
Zachrisson, Henrik D.	Consequences of Early Childhood Education and Care (ECEC) for language development and academic attainment in Norway: A nontechnical review	Oct 28
Braeken, Johan	Norm-referenced tests: A quick review & Collective Discussion	Nov 4
Scherer, Ronny	Students' self-evaluations in large-scale assessments: Juxtaposing self-efficacy and self-concept	Nov 11
Hovdhaugen, Elisabeth/ Sjaastad, Jørgen	AHELO: OECD's feasibility study and the Norwegian experience of participation	Nov 18
Nilsen, Trude/ Scherer, Ronny	The choice between two methods	Nov 25
Gustafsson, Jan-Eric	Do changes in national levels of school achievement over time result in performance differences between adult age cohorts?	Dec 2
Pettersen, Andreas	X-mas special: Beer brewing	Dec 9

EERA Spring School on Advanced Methods in Educational Research 2014	
Theme	Date
Propensity Score Matching	May 5-9
IERI Autumn Academy 2014	
Theme	Date
Item Response Theory and Population Modeling in Large-scale Assessments	Dec 2-4

Courses

Working with SPSS, Postdoctoral researcher Ronny Scherer, Feb 26
A 6 hours course designed for Master students of the international programme 'Medical Neuroscience' at the Berlin Universitätsmedizin Charité in Germany. It was aimed at (1) introducing hypothesis testing and simple statistical models (e.g., t test, ANOVA); (2) applying basic descriptive analyses in SPSS; (3) applying different kinds of ANOVA models.

UV9252: Course on item-response theory (IRT), Dr. Norman Verhelst, Apr 23-25
A 21 hours advanced course on item-response theory (IRT) at PhD-level including latent regression, profile analysis and hands-on exercises.

UV9214: Regression analysis, Associate professor Johan Braeken, Sep 10-12
An 18 hours course focusing on basic concepts and principles of simple and multiple regression, and various strategies for using multiple regression.

UV9253: Multilevel regression analysis, Postdoctoral researcher Ronny Scherer, Nov 12-14
An 18 hours course combining lectures and hands-on exercises, which builds up knowledge and skills that are essential for more advanced multilevel modeling techniques (e.g., multilevel longitudinal and structural equation modeling).

Publication

Blömeke, S., König, J., Busse, A., Suhl, U., Benthien, J., Döhrmann, M., & Kaiser, G. (2014). Von der Lehrerausbildung in den Beruf [The transition from teacher training to the teacher profession]. *Zeitschrift für Erziehungswissenschaft*, 17, 509-542. doi: 10.1007/s11618-014-0564-8

Gustafsson, J.-E., & Rosén, M. (2014). Quality and credibility of international studies. In R. Strietholt, W. Bos, J.-E. Gustafsson, & M. Rosén (Eds.), *Educational Policy Evaluation through International Comparative Assessments* (pp. 19-32). Münster: Waxmann.

Hall, R. A. S., Hoffenkamp, H. N., Tooten, A., **Braeken, J.**, Vingerhoets, A. J. J. M., & Van Bakel, H. J. A. (2014). Longitudinal associations between maternal disrupted representations, maternal interactive behavior and infant attachment: A comparison between full-term and preterm dyads. *Child Psychiatry and Human Development*, doi: 10.1007/s10578-014-0473-3.

Klem, M., **Gustafsson, J.-E.**, & Hagtvet, B. E. (2014). The dimensionality of language ability in 4-year-olds: Construct validation of a language screening tool. *Scandinavian Journal of Educational Research*, doi: 10.1080/00313831.2014.904416

Lehre, A.-C. W. G., Laage, P., & Sexton, J. A. (2014). Using quantile distance functions to assess inter- and intrasex variability in PISA achievement scores. In R. Strietholt, W. Bos, J.-E. Gustafsson, & M. Rosén (Eds.), *Educational Policy through International Comparative Assessments* (pp. 177-190). Münster: Waxmann.

Maas, A. J., Vreeswijk, C., **Braeken, J.**, Vingerhoets, A., & Van Bakel, H. (2014). Determinants of maternal fetal attachment in women from a community-based sample. *Journal of Reproductive and Infant Psychology*, 32, 5-24. doi: 10.1080/02646838.2013.853170

Nilsen, T., & **Gustafsson, J.-E.** (2014). School emphasis on academic success: Exploring changes in science performance in Norway between 2007 and 2011 employing two-level SEM. *Educational Research and Evaluation*, 20, 308-327. doi: 10.1080/13803611.2014.941371

Rosén, M., & **Gustafsson, J.-E.** (2014). Has the increased access to computers at home caused reading achievement to decrease in Sweden? In R. Strietholt, W. Bos, J.-E. Gustafsson, & M. Rosén (Eds.), *Educational Policy through International Comparative Assessments* (pp. 209-224). Münster: Waxmann.

Scherer, R. (2014). Komplexes Problemlösen im Fach Chemie: Ein domänenspezifischer Zugang [Complex problem solving in Chemistry: A domain-specific approach]. *Zeitschrift für Pädagogische Psychologie*, 28, 181-192. doi: 10.1024/1010-0652/a000136

Scherer, R., & Beckmann, J. F. (2014). The acquisition of problem solving competence: evidence from 41 countries that math and science education matters. *Large-Scale Assessments in Education*, 2:10. doi: 10.1186/s40536-014-0010-7

Scherer, R., Meßinger-Koppelt, J., & Tiemann, R. (2014). Developing a computer-based assessment of complex problem solving in Chemistry. *International Journal of STEM Education*, 1:2. doi: 10.1186/2196-7822-1-2

Strietholt, R., **Gustafsson, J.-E.**, Rosén, M., & Bos, W. (2014). Outcomes and Causal Inference in International Comparative Assessments. In R. Strietholt, W. Bos, J.-E. Gustafsson, & M. Rosén (Eds.), *Educational Policy through International Comparative Assessments* (pp. 9-18). Münster: Waxmann.

Traa, M., **Braeken, J.**, De Vries, J., Roukema, J., Orsini, R., & Den Ouden, B. L. (2014). Evaluating quality of life and response shift from a couple-based perspective: a study among patients with colorectal cancer and their partners. *Quality of Life Research*, doi: 10.1007/s11136-014-0872-8.

Hall, R. A. S., Hoffenkamp, H. N., Tooten, A., **Braeken, J.**, Vingerhoets, A. J. J. M., & Van Bakel, H. J. A. (2014). Child-rearing history and emotional bonding in parents of preterm and full-term infants. *Journal of Child and Family Studies*, doi: 10.1007/s10826-014-9975-7.

Ulriksen, R., Sagatun, Å., **Zachrisson, H.D.**, Waaktaar, T., & Lervåg, A.O. (2014) Social support and socioeconomic status predict secondary students' grades and educational plans indifferently across immigrant group and gender. *Scandinavian Journal of Education Research*, doi: 10.1080/00313831.2014.965792. (CEMO not affiliated)

Van Dinther, D., Dochy, F., Segers, M., Rijk, C., **Braeken, J.**, & Van Bakel, H. (2014). Student perceptions of assessment and student self-efficacy in competence-based education. *Educational Studies*, 40, 330-351. doi: 10.1080/03055698.2014.898577

Vreeswijk, C., Maas, A. J., Rijk, C., **Braeken, J.**, & Van Bakel, H. (2014). Stability of fathers' representations of their infants during the transition to parenthood. *Attachment & Human Development*, 16, 292-306. doi: 10.1080/14616734.2014.900095

Zachrisson, H. D., & Dearing, E. (2014). Family income dynamics, early childhood education in care, and early child behavior problems in Norway. *Child Development*, doi: 10.1111/cdev.12306. (CEMO not affiliated)

Conference Presentations

Ullah, F.S., & Scherer, R. (2014, November). *The Big-Fish-Little-Pond Effect in Computer-Based Math Assessments: Do Computers Really Matter?* Paper presented at the Annual Meeting of the Association for Educational Assessment – Europe (AEA-Europe), Tallinn, Estonia.

Scherer, R., & Braeken, J. (2014, September). *The issue of item dependencies in problem solving assessments.* Paper presented at the Annual Meeting of the European Conference on Educational Research (ECER), Porto, Portugal.

Nilsen, T., Gustafsson, J.-E., Lehre, A.-C., Bergem, O.K., & Scherer, R. (2014, May). Teacher motivation and quality of instruction mediating the effect of school emphasis on academic success on motivation. Poster presented at the EERA-EARLI Springschool, University of Oslo, Oslo, Norway.

Scherer, R. (2014, April). *Issues of construct validity in problem solving assessments: Generalizability and invariance across schools and countries.* Paper presented at the Annual Meeting of the American Educational Research Association (AERA), Philadelphia, PA, USA.

Scherer, R. (2014, March). Schuleffekte bei der Erfassung analytischer Problemlösekompetenz: Eine Analyse der Messinvarianz im Mehrebenenfall [Contextual school effects in analytical problem-solving assessments: A systematic analysis of multilevel measurement invariance]. Paper presented at the 2. Tagung der Gesellschaft für Empirische Bildungsforschung (GEBF), Frankfurt am Main, Germany.

Jansen, M., Scherer, R., & Schroeders, U. (2014, March). *Selbstkonzept und Selbstwirksamkeit in den Naturwissenschaften: Empirische Trennbarkeit und differenzielle Zusammenhänge mit Motiven, Unterrichtsaktivitäten und Leistungen* [Self-concept and self-efficacy in science: Empirical distinction and differential relationships with motivation, science learning, and achievement]. Paper presented at the 2. Tagung der Gesellschaft für Empirische Bildungsforschung (GEBF), Frankfurt am Main, Germany.

Blömeke, S., Hambleton R. K., (2014, November). "Validation of Knowledge Tests with Focus on Differential and Prognostic Validity" at the conference "Modeling and Measuring Competencies in Higher Education", Mainz, Germany.

Outreach

Braeken, J. (November 2014). MIRT with tail dependence between latent traits. RCEC Workshop 2014 on IRT & Educational Measurement, Enschede, The Netherlands.

Braeken, J. (November 2014). Om test-normering. Afasforum 3, StatPed, Oslo Sør-Øst.

Scherer, R. (October 2014). Actions to Improve Learning Outcomes in Germany. Fagseminar om Realfagene at Kunnskapsdepartementet, Oslo, Norway.

Zachrisson, H.D. (August 2014). Barnefattigdom i Norge – kan barnehagen utjevne sosiale forskjeller?. Foredrag på Nettverkskonferanse om barnefattigdom i regi av RBUP, Oslo.

Zachrisson, H.D. (September 2014). Barnehagens betydning for barns utvikling. Språklig og atferdsmessig. Kanvas storsamling, Melsomvik.

Zachrisson, H.D. (November 2014). Barnehagens betydning for atferdsproblemer og sosial kompetanse hos små barn. Foredrag på konferansen «Kunnskapsstatus om små barn i barnehage», RBUP, Oslo.

Blömeke, S. (October 2014). Presentation about CEMO for the Ministry of Education and Research

Blömeke, S. (October 2014). Presentation about challenges to do standardized large-scale assessments of higher education outcomes for the IEA's General Assembly.

Blömeke, S. (August 2014). Effects of opportunities to learn on prospective pre-school teachers' mathematics pedagogical content knowledge, Fourth Meeting of the EARLI SIG 18 Southampton.

Blömeke, S. and Scheerens, J. (August 2014): What operational path models tell us about school leadership and teacher education effectiveness, Fourth Meeting of the EARLI SIG 18 Southampton.

Blömeke, S. (September 2014): Teacher competence: Conceptual framework, assessment and major results, Conference of Swedish the Royal Academy of Sciences Education and the Wenner-Gren Foundation, Stockholm, Sweden.

Blömeke, S. (December 2014): Assessment of teacher competence, ILS Open research day, UiO.









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