Center for Advanced Research in Education

Universidad de Chile

UNIVERSIDAD DE CONCEPCIÓN

THIS CENTER HAS BEEN FUNDED BY
CONICYT
COMISIÓN NACIONAL DE INVESTIGACIÓN CIENTÍFICA Y TECNOLÓGICA


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PRESENTATION

The Center for Advanced Research in Education is being established within the University of Chile –the principal and oldest university in the country– in association with two other leading universities: the University of Concepción and the Pontifical Catholic University of Valparaíso. For its operation it has received a grant from the National Council of Science and Technology, CONICYT, through the Bicentennial Program of Science and Technology (PBCT). Specific research projects are funded by CONICYT (FONDECYT, FONDEF) and other sources (FONIDE). The Center houses as well a project funded by the Millennium Scientific Initiative of the Ministry of Planning.

The Center's overall purpose is to contribute, from an academic base, to the improvement of education in Chile. To this end, the Center has as its mission to carry out research and development activities with a focus on teachers, teaching, development, learning, educational management, and educational policies. The Center is multidisciplinary, promotes excellence and engages in joint activities with the Chilean school system. The Center encourages the establishment of networks among academics in different institutions. In Chile, it has cooperation programs with the Institute for Educational Research and Development of the University of Talca, and the Center for the Study of Psychosocial Development and Stimulation (CEDEP), as well as with University of Chile's world level academic centers, such as the Center for Applied Economics (CEA), the Center for Computing and Communication for the Construction of Knowledge (C5), the Microdata Center, and the Center for Mathematical Modeling (CMM). The Center is also engaged in international links with various universities, research institutes and international organizations. Finally, the Center acts as a locus for the preparation and development of new researchers wishing to contribute to the advancement of knowledge in the field of education.

The Center is organized into five areas involved in basic and applied research as well as development and dissemination activities. In line with its academic capacity, each area has identified research priorities and projects.

RESEARCH AREAS

EDUCATIONAL POLICIES

The effectiveness of policy and educational management depends on the quality of their design and implementation strategies. These in turn are influenced by strong social, cultural and institutional factors that explain the technical complexity of the process.

The goal of this area is to produce research referred to those factors so that educational policies are increasingly based on scientific evidence. It entails four research strands: the educational system; local educational management and strategy; educational outcomes and higher education policies.

Photograph: Revista Nuestros Temas, Ministry of Education.

PBCT Projects

- Recent advances in theoretical modeling of the education market and secondary effects of educational interventions. Dante Contreras, Aldo González, Diana Krueger.
- School choice, educational quality and performance in the labor market. Alejandra Mizala, Mattia Makovec.
- Evaluation of supply side public financial instruments for higher education. Carlos Cáceres, Atilio Bustos, Osvaldo Larrañaga.
- Knowledge management in highly vulnerable educational institutions. Jorge Ulloa, Jorge Dresdner, Oscar Nail.
- Distributed leadership and organizational learning in schools; exchange of successful practices at district level. Luis Ahumada, Verónica López, Vicente Sisto, Juan Pablo Valenzuela.
- Academic achievement of university students from highly vulnerable backgrounds. María Inés Solar, María Elena Acuña, Lucía Domínguez.

Projects funded by other sources

- FONDEF D0611038, 2008-2010
  Creation of a system for the register, monitoring, evaluation and certification of technical assistance services to schools. Cristián Bellei, Juan Pablo Valenzuela, Carmen Sotomayor, Dagmar Raczynski, Alejandra Osses, Dante Cajales, Paulina Sepúlveda, José Luis Ramos, Paulina Enero, Patricia Echaiz, Ana Rojas, Leonor Varas. (www.asistenciatecnicaeducativa.cl) (www.registroate.cl).
- FONIDE 2008
  Factors that explain the improvement of the results of Chilean students between PISA 2000 and PISA 2006; learning and policies. Juan Pablo Valenzuela, Cristián Bellei, Alejandra Osses, Alejandro Sevilla, Amanda Telias.

TEACHERS

Teachers and teaching quality are critical factors of the education system that help to explain students' school performance. More so, the effectiveness of educational policies and other educational inputs are very much linked to how teachers interpret and use them in their day-to-day interactions with students.

This area examines factors which have an impact on teacher quality –the professional status and working conditions of teachers, teacher education and teacher effectiveness.

PBCT Projects

- Professional knowledge of future teachers. Beatrice Avalos, Marcela Pardo.
- Evaluation and incentive policies for teacher development: subjective and social dimensions in school management, principals and teachers. Vincente Sisto, Luis Ahumada, Cristián Bellei, Abelardo Castro, Carmen Montecinos.
- Outcomes, teachers and principals: entering the black box of the educational production function. David Bravo, Jere Behrman, Claudia Peirano.

Projects funded by other sources:

- Scientific Millennium Initiative Project, 2008-2010
  The teaching profession in Chile: policies, practices and projections. Beatrice Ávalos, Carmen Sotomayor, Cristián Bellei, Juan Pablo Valenzuela, Marcela Pardo, Danae De Los Ríos, Alejandro Sevilla, Paula Cavada. (www.nucleodocentes.cl).

Photograph: Revista Nuestros Temas, Ministry of Education.

TEACHING AND LEARNING.

This area focuses on teaching and learning in mathematics, language, natural sciences, and social sciences. From this prism it is concerned with quality of teaching and learning; teacher preparation, the beliefs of students and teachers, content knowledge; the cognitive role of metaphors and representations; mathematical modeling of learning and mental representation of basic concepts such as number, or comprehension of written texts.

PBCT Projects

- Scientific knowledge and conceptions about the nature of sciences and sciences learning. A comparative study of secondary students exposed to innovative and traditional instructional methods. Corina González, Verónica López, Juan Gavilán.
- Comprehension of written texts in elementary education students: the relationship between initial teacher education and teaching practices. Carmen Sotomayor, Carmen Julia Coloma, Romualdo Ibáñez, Giovanni Parodi.
- Cognitive strategies for mental calculation. Jorge Soto, Diego Cosmelli, Lino Cubillos, Grecia Gálvez, Arturo Mena, Eric Tanter.
- Student civic education at the end of the second cycle of elementary education; ten years after the International Civic Education Study. Carlos Muñoz, Leonora Reyes, Nelson Vásquez.
- The origins of the difficulties of learning fractions: a study from a scientific point of view. Pablo Dartnell, Roberto Araya, Gamal Cerda, César Flores, Marcela Peña.
- The effect of item characteristics on the equity in the Mathematics PSU test. Nancy Lacourly, Leonor Varas.
- Measurement of teacher knowledge about mathematics learning in elementary education. Leonor Varas, Nancy Lacourly, Alejandro López, Andrés Ortiz.

Projects funded by other sources

- FONDEF 1023, 2007-2009
  Strategies and tools for mathematics teaching based on metaphors. Roberto Araya, Pablo Dartnell. (www.metaforas.cl).

COGNITIVE SCIENCES AND NEUROSCIENCE APPLIED TO EDUCATION

This area studies the neural and cognitive basis of learning under different conditions relevant to education, with the purpose of adding scientific evidence to the current neuro-cognitive models of learning. It explores how humans learn upon the basis of an integrated analysis of behavior, brain activity, cognitive risk and socio-cultural environment.

Its work is organized around two kinds of activities. The first one focuses on an experimental research program, whereas the other carries out varied kinds of research aimed at informing early childhood education policies. The experimental research program entails four lines of investigation: (i) learning, early development and plasticy; (ii) learning and nutrition; (iii) learning, sleep awake cycle and chronobiology and (iv) learning and executive function. The second strand focuses on the design of an instrument for the assessment of the development of children aged 0-6 years old.

This area will involve the creation of a Cognitive Neuroscience Laboratory implemented with modern technologies allowing us the exploration of neuro-cognitive basis of successful and failed learning.

› PBCT Projects

- How children learn: symbolic learning in preschool children. Marcela Peña, Luis Aguayo, Andrea Slachevsky, Ennio Vivaldi.

› Projects funded by other sources

- FONDEF DO711029, 2009-2011 Design of an instrument for the assessment of the development of Chilean children between 0 and 6 years-old. Marta Edwards, Marcela Pardo, Nancy Lacourly, Marcela Peña, Teresa Segure, Ximena Seguel, Patricia Zañartu, Tomás Santibáñez, Nicole Eisenberg, María Isabel Lira, Isabel Margarita Haeussler.

- FONDECYT 1060767, 2006-2009 Linguistic abilities of young infants: A comparison between full-term and extremely premature infants linguistic development. Marcela Peña, Enrica Pittaluga, Patricia Fernández.

- FONDECYT 1060778, 2006-2009 Effects of the intentional development of gestural communication in younger infants. Chamarrita Farkas, Marcela Peña.

LEARNING, COGNITION, INFORMATION TECHNOLOGIES, AND THE BRAIN

This area examines the relationships between technology, education and learning; its object is to design, develop and validate models for the use of technology in the classroom; and research the relationship modes that groups with specific disadvantages form with the technology. To achieve this, it is proposed to develop studies about the context in which technology is adopted, examine the impact and results of using information technology (ICT), for learning and the development of the intellect. Of particular interest is the impact of classroom environments on learning conditions (motivation, pedagogical practices in the classroom, ICT resources); teachers' development (outcomes in terms of teachers' reflectivity, improvement in teachers' disciplinary and pedagogical methods, school management and school leadership); impact on the development of students' high level skills (critical and creative thinking, problem solving, communication, teamwork); and curriculum management. The main research areas are: (i) the impact of an interactive virtual environment on learning and cognition; (ii) videogames for learning and the development of skills in the school; (iii) models of the integration of ICT in the curriculum; (iv) brain plasticity and interaction with digital technology among sighted and unsighted users.

PBCT Projects

- Integration of ICT, and learning and teaching styles. Eduardo Meyer, David Contreras, Nibaldo Gatica, Jaime Sánchez; Álvaro Salinas, Miguel Ripoll, Jorge Valdivia.
- Mobility and orientation through videogames for apprentices, MOVA. Jaime Sánchez, José Miguel Garrido, Luis Guerrero, Miguel Ripoll, Mauricio Sáenz.

Projects funded by other sources

- FONIDE 10837, 2008-2009
  Factors that influence secondary education teachers' development and sustainability of innovative practices for the curricular integration of information technologies (ICT) in the classroom. Álvaro Salinas, Jaime Sánchez, Orietta Purcell.
- FONDEF TIC-EDU TE0811004, 2008-2010
  Videogames for the development of science skills through cellular phones, VIDHAC2. Jaime Sánchez, Álvaro Salinas, Mauricio Sáenz, Héctor Flores, Mauricio Zúñiga.
- FONDECYT 1060797, 2006-2009
  Virtual worlds for social inclusion. Jaime Sánchez, Nelson Baloian.

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INTERNATIONAL SCIENTIFIC COMMITTEE

The membership consists of international scientific leaders with the task of providing a medium-term strategy in terms of research, results, and emerging issues; for monitoring the quality of the Center's scientific output; and to promote an active international network for research and the training of new researchers.

Jere Behrman
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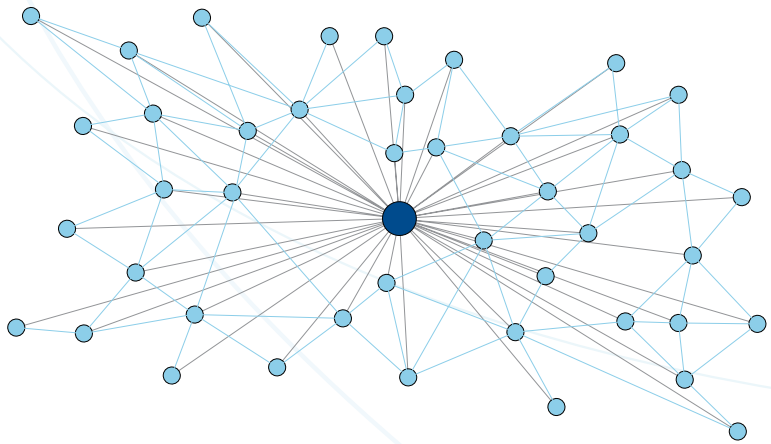

COUNCIL OF REPRESENTATIVES OF INSTITUTIONS RELEVANT TO THE CHILEAN EDUCATIONAL FIELD.

Their mission is to provide guidance about themes and issues of interest and to support transfer and diffusion activities.

Víctor Pérez
Rector of the University of Chile.

Alfonso Muga
Rector of the Pontifical Catholic University of Valparaíso.

Sergio Lavanchy
Rector of the University of Concepción.

Servet Martínez
President of the Chilean Academy of Sciences

Jaime Gajardo
President of the Teachers Union.

Pablo Zalaquett
Coordinator of the Education Commission at the Chilean Association of Municipalities.

Rodrigo Bosch
President of the National Council of Private Schools.

Iván de la Maza
Prefect of the Valparaíso Region.

María Angélica Fuentes
Prefect of the Bío Bío Region.

ACADEMIC STEERING COMMITTEE OF THE UNIVERSITY OF CHILE PROGRAM FOR EDUCATIONAL RESEARCH

The Committee is formed of an academic staff linked to education from the University of Chile's different faculties. Its task is to strategically guide the work of researchers from the University at the Center as well as monitoring and evaluation progress.

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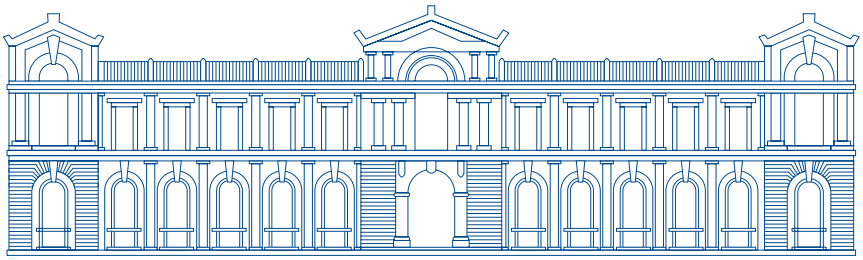

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