

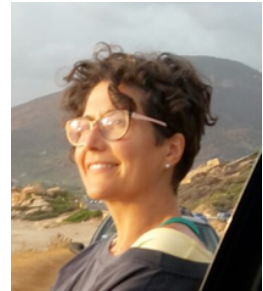
CRISTINA SABENA - CURRICULUM VITAE

PERSONAL INFORMATION

Birth date: May 12, 1978

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CURRENT POSITION

Associate Professor in Mathematics Education at the Department of Philosophy and Education, University of Torino, Italy.

STUDIES

- March 18, 2002: Master degree in Mathematics with full marks, 110/110 cum laude, University of Torino (Italy). Title of the thesis: “Meaning construction of the integral starting from measure promems (La costruzione di significato di integrale a partire da problemi di misura)”. Supervisor: Prof. O. Robutti.
- February 19, 2007: PhD title in Mathematics, University of Torino (Italy). PhD thesis titled “Body and Signs: A Multimodal Semiotic Approach to Teaching-Learning Processes in Early Calculus”. Supervisors: Proff. F. Arzarello and L. Radford.

GRANTS AND COMPETITIONS

- October 2002: I win “Premio Optime (Menzione)” of the Industrial Union (Unione Industriale) to best graduated students of the University of Torino and Polytechnique of Torino.
- October 2002: I win a PhD grant in the competition in the University of Torino and I enter the PhD program.
- March 2007: I win post-doc grant at the Department of Mathematics and Computer science of the University of Siena, within the European Project “Representing Mathematics with Digital Media” (ReMath). Local Unit Coordinator: Prof. M.A. Mariotti.
- February 2008: I win a Post-doc grant, Department of Mathematics, University of Torino, with the research program: “Elaboration of a model of mathematics learning processes with the use of ICT technologies”. Supervisor: Prof. F. Arzarello.
- October 2010: I win Premio Giorgio Tomaso Bagni (second position) of the Research Center “U. Morin” to the best research works in Mathematics Education produced by Italian young researchers, with the paper: ‘On the semiotics of gestures’.
- December 2010: I win a permanent position at the University of Torino, as Research Assistant in Mathematics Education (MAT/04 Matematiche Complementari).
- March 2014: National Scientific Qualification as Associate Professor in Mathematics Education (Abilitazione Scientifica Nazionale alle funzioni di professore di seconda fascia per il settore concorsuale 01/A1 – Logica Matematica e Matematiche Complementari, Bando 2012 – DD n. 22/2012).

SCIENTIFIC POSITIONS AND INVITATIONS

- September 2004 to May 2005: I was invited by prof. L. Radford at the *Laboratoire de recherche en sémiotique culturelle et pensée mathématique*, École du sciences de l'éducation, Laurentian

University (Sudbury, CA). I contributed to theoretical and methodological aspects of the theory, as the several co-authored publications witness. My stay has been supported by a grant of the Project “*Artefact-Mediated Kinaesthetic Actions, Semiotic Activity, and Algebraic Thinking*” funded by the Conseil de Recherche en Sciences Humaines du Canada CRSH / Social Sciences and Humanities Research Council of Canada SSHRC. (Subvention ordinaire de recherche).

- Team Member of the Topic Study Group 37: Theoretical Issues in Mathematics Education at the 12th International Congress on Mathematical Education (ICME-12), Seoul, 8-15 July 2012.
- Member of the International Scientific Committee of 11th International Conference for Technology in Mathematics Teaching (ICTMT11), held in Bari, July 8-12, 2013.
- Board member of ERME (European Society for Mathematics Education), from February 2013.
- Local Organizer for CIEAEM65 Conference, Torino 22-26 July 2013.
- Member of CIEAEM (Commission Internationale pour l'Etude et l'Amélioration de l'Enseignement des Mathématiques), from July 2013, and Secretary from July 2017.
- International Program Member for CIEAEM66 Conference, Lyon 23-27 July 2014.
- Scientific responsible and Local Organizer for the VII and VIII Convegno Di.Fi.Ma., Torino, 2015 and 2017.
- Member of the International Program Committee for CERME10, Dublin 1-5 February 2017.

PRINCIPAL INVESTIGATOR IN INTERNATIONAL PROJECTS

January 2014 – December 2016. Principal Investigator of the European Project FaSMEd - Formative Assessment in Science and Mathematics Education (FP7, project number 612337).

MEMBER IN SCIENTIFIC TEAMS NATIONAL AND INTERNATIONAL RESEARCH PROJECTS

- *PRIN03 – Concepts and proofs in mathematics: meanings, models, theories* (n. 2003011072). Funded by Italian MIUR. University of Torino.
- *PRIN05 – Meanings, conjectures, proofs: from embodied cognition research to curricular implications* (n. 2005019721). Funded by Italian MIUR. University of Torino.
- *PRIN07 - Instruments and representations in teaching-learning mathematics: theory and practice* (n. 2007B2M4EK). Funded by Italian MIUR. University of Torino.
- *European Project ReMath ‘Representing Mathematics with Digital Media’* (n. IST4-26751). 2007-2009 University of Siena, Dep. Mathematics and Computer Science.
- *Artefact-Mediated Kinaesthetic Actions, Semiotic Activity, and Algebraic Thinking*. Funded by the Conseil de Recherche en Sciences Humaines du Canada CRSH / Social Sciences and Humanities Research Council of Canada SSHRC. (Subvention ordinaire de recherche). 2004 – 2007 Laurentian University, Sudbury (CA).
- *Eye tracking Project: MIUR–Inter-University Cooperation with Sweden (INTERLINK Project); Torino-Lund* (A.F. 2006-CAP. 1712). 2007 - 2009 University of Torino.

EDITORIAL BOARDS AND REVIEWS

- From October 2016 member of the Editorial Board of the Journal *Educational Studies in Mathematics*
- Reviewer for the following journals:
 - *International Conference PME - Psychology of Mathematics Education* (from 2007)
 - *Journal for Research in Mathematics Education* (from October 2008)
 - *Educational Studies in Mathematics* (from November 2010)

- *International Journal of Science and Mathematics Education* (from February 2013)
- *Gesture* (from November 2016).

CONTRIBUTION TO INTERNATIONAL CONFERENCES

I contributed with one or more paper presentations to the following Conferences (all with peer-review process):

- CERME (Conference of the European Society for Research in Mathematics Education): 2005, 2007, 2009, 2011, 2013, 2017.
- CIEAEM conference (Commission Internationale pour l'Etude et l'Amélioration de l'Enseignement des Mathématiques): 2003, 2012, 2013, 2014, 2015, 2016.
- CME conference (Children's Mathematical Education): 2010.
- ICME (International Congress on Mathematical Education): 2004, 2008, 2012, 2016 (Invited Lecture).
- ICMI Study 19 conference: Proof and Proving in Mathematics Education, May 10-15, 2009, Taipei (Taiwan).
- ICTMT (International Conference on Technology in Mathematics Teaching): 2013, 2017.
- *Interacting Bodies conference* (2nd Conference of the International Society for Gesture Studies (ISGS)): 2005.
- MAVI Conference (Mathematical Views): 2009, 2010, 2015.
- PME (Annual Conference of the International Group for the Psychology of Mathematics Education): 2004, 2005, 2009, 2010, 2011, 2013, 2014, 2015, 2016.

PLENARY LECTURES TO NATIONAL CONFERENCES

- Seminario Nazionale di ricerca in didattica della matematica 'Giovanni Prodi', Rimini 28-30 Gennaio 2016, titled "L'analisi semiotica in ottica multimodale: dalla costruzione di un quadro teorico al networking con altre teorie" (materials at the website http://www.airdm.org/sem_naz_2016_25.html)
- Plenary lecture at the XXXIV Conference UMI-CIIM, titled: "Promuovere processi di valutazione formativa attraverso l'argomentazione matematica (e viceversa)", Bari, 6-8 October 2017.

PUBLICATIONS

As shown in the official University website <https://www.unito.u-gov.it>, I am author and co-author of several scientific publications of international relevance (with referee). In the official University ranking I have been ranked "A level" (namely best class).

The current list of my *peer-reviewed publications* (from the most recent ones) is the following:

Sabena, C. (2017). Early child spatial development: a teaching experiment with programmable robots. In G. Aldon, F. Hitt, L. Bazzini & U. Gellert (eds.), *Mathematics and technology: a C.I.E.A.E.M. source book* (pp. 13-30). Springer Series 'Advances in Mathematics Education'.

Cusi, A., Morselli, F., and Sabena, C. (2017). Promoting formative assessment in a connected classroom environment: design and implementation of digital resources. *ZDM Mathematics Education*, 49:755–767.

Cusi, A., Morselli, F., and Sabena, C. (2017). Promuovere strategie di valutazione formativa in Matematica con le nuove tecnologie: l'esperienza del progetto FaSMEd. *Annali online della Didattica e della*

Formazione Docente, Vol 9, N° 14, Strategie e metodologie didattiche in Matematica e nelle Scienze, pp. 91-107. ISSN 2038-1034.

- Cusi, A., Morselli, F. & Sabena, C. (2017). "Every time I fell down (made a mistake), I could get up (correct)": affective factors in formative assessment practices with classroom connected technologies. In C. **Andrà, D. Brunetto, E. Levenson, & P. Liljedahl**, (Eds.), *Teaching and Learning in Maths Classrooms: Emerging Themes in Affect-related Research: Teachers' Beliefs, Students' Engagement and Social Interaction (Research in Mathematics Education)* (pp. 265-275). Dordrecht, Heidelberg, New York, London: Springer.
- Aldon, G., Cusi, A., Morselli, F., Panero, M & Sabena, C. (2017). Formative assessment and technology: reflections developed through the collaboration between teachers and researchers In G. Aldon, F. Hitt, L. Bazzini & U. Gellert (eds.), *Mathematics and technology: a CIEAEM source book* (pp. 551-578). Springer Series 'Advances in Mathematics Education'. Radford, L., Arzarello, F., Edwards, L., and Sabena, C. (2017). The Multimodal Material Mind: Embodiment in Mathematics Education. In J. Cai (Ed.), *Compendium for Research in Mathematics Education* (pp. 700-721). Reston, VA: National Council of Teachers of Mathematics.
- Panero, M., Arzarello, F. & Sabena, C. (2016). The mathematical work with the derivative of a function: teachers' practices with the idea of "generic". In I. M. Gómez-Chacón, L. Vivier (Eds.) *Mathematical work: the role of teacher, knowledge and interactions. Boletim de Educação Matemática (BOLEMA)*, 30(54), 265-286. ISSN: 0103-636X. DOI: <http://dx.doi.org/10.1590/1980-4415v30n54a13>.
- Maffia, A., & Sabena C. (2016). Teacher gestures as pivot signs in semiotic chains. In C. Csikos, A. Rausch, & J. Sztànyi (Eds.), *Proceedings of the 40th Conference of the International Group for the Psychology of Mathematics Education* (Vol. 3, pp. 235-242). Szeged, Hungary: PME.
- Sabena, C., Krause, C. & Maffia, A. (2016). L'analisi semiotica in ottica multimodale: dalla costruzione di un quadro teorico al networking con altre teorie. *Relazione al XXXIII Seminario Nazionale di ricerca in didattica della matematica Giovanni Prodi, Rimini 28-30 Gennaio 2016*. http://www.airdm.org/sem_naz_2016_25.html.
- Sabena, C. (2015). La concettualizzazione spaziale nel bambino: una sperimentazione con un robottino programmabile. *L'insegnamento della matematica e delle scienze integrate, vol. 38 A-B, n°3* (maggio-giugno 2015), pp. 213-234.
- Aldon, G. & Sabena, C. (2015). Formative assessment in the FaSMEd project: reflections from classroom experiences. In C. Sabena, B. Di Paola (eds.), *Teaching and learning mathematics: resources and obstacles, Proceedings of CIEAEM 67, Quaderni di ricerca didattica, 25-2* (pp. 83-86). Aosta, July 20-24, 2015. ISSN: 1592-4424. http://math.unipa.it/~grim/CIEAEM%2067_Pproceedings_QRDM_Issue%2025_Suppl.2.pdf
- Maffia, A. & Sabena, C. (2015). Networking of theories as resource for classroom activities analysis: the emergence of multimodal semiotic chains. In C. Sabena, B. Di Paola (eds.), *Teaching and learning mathematics: resources and obstacles, Proceedings of CIEAEM 67, Quaderni di ricerca didattica, 25-2* (pp. 405-417). Aosta, July 20-24, 2015. ISSN: 1592-4424. Open access → caricato sul AperTO http://math.unipa.it/~grim/CIEAEM%2067_Pproceedings_QRDM_Issue%2025_Suppl.2.pdf
- Aldon, G., Cusi, A., Morselli, F., Panero, M., & Sabena, C. (2015). Which support technology can give to mathematics formative assessment? The FaSMEd project in Italy and France. In C. Sabena, B. Di Paola (eds.), *Teaching and learning mathematics: resources and obstacles, Proceedings of CIEAEM 67, Quaderni di ricerca didattica, 25-2* (pp. 631-641). Aosta, July 20-24, 2015. ISSN: 1592-4424. http://math.unipa.it/~grim/CIEAEM%2067_Pproceedings_QRDM_Issue%2025_Suppl.2.pdf.
- Bazzini, L. & Sabena, C. (2015). Participation in mathematical problem-solving through gestures and narration. In U. Gellert, J. Giménez, C. Hahn, S. Kafoussi (Eds.), *Educational Paths to Mathematics: A C.I.E.A.E.M Sourcebook*. Cham: Springer.
- Radford, L. & Sabena, C. (2015) The Question of Method in a Vygotskian Semiotic Approach. In A. Bikner-Ahsbabs, C. Knipping & N. Presmeg (Eds.), *Approaches to Qualitative Research in Mathematics*

Education. Examples of Methodology and Methods (pp. 157-182). Springer: Dordrecht, Heidelberg, New York, London.

- Morselli, F. & Sabena, C. (2015). "Let's play! Let's try with numbers!": Pre-service teachers' affective pathways in problem solving. In K. Krainer & N. Vondrova (Eds.), *Proceedings of CERME9* (pp. 1231-1237). Prague: Charles University in Prague, Faculty of Education and ERME. <https://hal.archives-ouvertes.fr/CERME9>.
- Panero, M., Arzarello, F. & Sabena, C. (2015). Practices of Italian teachers with the derivative concept: a problematic meeting between Algebra and Analysis in secondary school.. pp. 605-617. In *Mathematical Working Space, Proceedings Fourth ETM Symposium*.
- Coppola, C., Di Martino, P., Pacelli, T & Sabena, C. (2015). Crucial events in pre-service primary teachers' mathematical experience. In K. Beswick, T. Muir, J. Wells. (Eds.), *Proceedings of PME39, Vol 2* (pp. 193-200). Hobart, Australia: PME.
- Andrà, C., Lindström, P., Arzarello, F., Holmqvist, K., Robutti, O., Sabena, C. (2015). Reading mathematics representations: an eye-tracking study. *International Journal of Science and Mathematics Education*, Volume 13, Issue 2, pp 237-259.
- Sabena, C. (2014). Early childhood spatial development through a programmable robot. In G. Aldon, B. Di Paola, C. Fazio (2015). *Mathematics and reality, Proceedings of CIEAEM 66, Quaderni di Ricerca in didattica*, 24(1), pp. 265-278. ISSN 1592-4424. http://math.unipa.it/~grim/quaderno24_suppl_1.htm.
- Sabena, C. (2014). La concettualizzazione spaziale nella scuola dell'infanzia. In G. Cerrato, C. Sabena, E. Scalenghe (Eds.), *L'apprendimento nella scuola dell'infanzia. Riflessioni teoriche ed esperienze didattiche* (pp. 109-126). Roma: Aracne Editrice.
- Sabena, C. (2014). Description of the data: Introducing the session of Carlo, Giovanni and the exponential function. In A. Bikner-Ahsbabs & S. Prediger (Eds.), *Networking of Theories as a Research Practice in Mathematics Education. ZDM-Series Advances in Mathematics Education* (pp. 13-28). New York: Springer.
- Arzarello, F. & Sabena, C. (2014). Analytic-Structural Functions of Gestures in Mathematical Argumentation Processes. In L.D. Edwards, F. Ferrara & D. Moore-Russo (Eds.), *Emerging perspectives on gesture and embodiment* (pp. 75-103). Charlotte, NC (US): Information Age Publishing, Inc.
- Arzarello, F. & Sabena, C. (2014). Introduction to the approach of Action, Production and Communication (APC). In A. Bikner-Ahsbabs & S. Prediger (Eds.), *Networking of Theories as a Research Practice in Mathematics Education* (pp. 31-45) . ZDM-Series Advances in Mathematics Education. New York: Springer.
- Martignone, F. & Sabena, C. (2014). Analysis of argumentation processes in strategic interaction problems. In P. Liljedahl, C. Nicol, S. Oesterle, & D. Allan (Eds.). *Proceedings of the Joint Meeting of PME 38 and PME-NA 36*, Vol. 1, pp. 218-223. Vancouver, Canada: PME.
- Morselli, F. & Sabena, C. (2014). Emozioni e risoluzioni di problemi di matematica. Un'indagine sui futuri insegnanti della scuola dell'infanzia e primaria. *Pedagogia e Vita*, 72(2014), pp. 183-200.
- Dreyfus, T., Sabena, C., Kidron, I., & Arzarello, F. (2014). The Epistemic Role of Gestures – A case study on networking of APC and AiC. In A. Bikner-Ahsbabs & S. Prediger (Eds.), *Networking of Theories as a Research Practice in Mathematics Education* (pp. 127-151). ZDM-Series Advances in Mathematics Education. New York: Springer
- Sabena, C., Arzarello, F., Bikner-Ahsbabs, A., & Schäfer, I. (2014). The epistemological gap - A case study on networking of APC and IDS. In A. Bikner-Ahsbabs & S. Prediger (Eds.), *Networking of Theories as a Research Practice in Mathematics Education. ZDM-Series Advances in Mathematics Education* (pp. 179-200). New York: Springer.
- Bikner-Ahsbabs, A., Sabena, C., Arzarello, F., Krause, C. (2014). Semiotic and theoretic control within and across conceptual frames. In P. Liljedahl, C. Nicol, S. Oesterle, & D. Allan (Eds.). *Proceedings of the Joint Meeting of PME 38 and PME-NA 36*, Vol. 2, pp. 153-160. Vancouver, Canada: PME. ISBN 978-0-86491-362-3. ISSN 0771-100X. <http://www.pme38.com/>.

- Giorda, C., Leone, M., Morselli, F., & Sabena, C. (2014). Lo spazio in geografia, fisica e matematica. Un concetto ponte per didattiche interdisciplinari?, *Ambiente, società, territorio*, LVIV (XIV), pp. 10-15.
- Arzarello, F., Robutti, O., Sabena, C., Cusi, A., Garuti, R., Malara, N., Martignone, F. (2014). Meta-didactical transposition: A theoretical model for teacher education programmes. In A. Clark-Wilson, O. Robutti & N. Sinclair (Eds.), *The Mathematics Teacher in the Digital Era. An International Perspective on Technology Focused Professional Development* (pp. 347-372). Dordrecht, Olanda: Springer.
- Coppola, C., Di Martino, P., Pacelli, T., & Sabena, C. (2013). Inside teachers' affect: teaching as an occasion for math-redemption. In M. S. Hannula, P. Portaankorva-Koivisto, A. Laine & L. Näveri (Eds.) *Proceedings of MAVI 17 Conference* (pp. 203-215). Helsinki, Finland: Finnish Research Association for Subject Didactics.
- Coppola, C., Di Martino, P., Pacelli, T., & Sabena, C. (2013). Primary teachers' beliefs and emotional disposition towards mathematics and its teaching. In B. Di Paola (Ed), *Quaderni di ricerca in didattica (mathematics), Issue 23.1*, pp. 217-226 . Torino, July 22-26, 2013.
- Coppola, C., Di Martino, P., Mollo, M., Pacelli, T., & Sabena, C. (2013). Pre-service primary teachers' emotions: the math-redemption phenomenon. In A. M. Lindmeier & A. Heinze (Eds.), *Proceedings of the 37th Conference of the International Group for the Psychology of Mathematics Education* (vol 2, pp. 225-232). Kiel, Germany: PME.
- Aldon, G., Arzarello, F., Cusi, A., Garuti, R., Martignone, F., Robutti, O., Sabena, C., Soury-Lavergne, S. (2013). The Meta-didactical transposition: A model for analysing teacher education programs. In A. M. Lindmeier & A. Heinze (Eds.), *Proceedings of the 37th Conference of the International Group for the Psychology of Mathematics Education* (vol 1, pp. 97-124). Kiel, Germany: PME.
- Bazzini, L. & Sabena, C. (2012). Participation in mathematics problem-solving through gestures and narration. In S. Kafoussi, C. Skoumpourdi, F. Kalavasis (Eds.), *Hellenic Mathematical Society International Journal for Mathematics in Education, Vol. 4 Special Issue* (pp. 107-115).
- Sabena, C., Robutti, O., Ferrara, F., Arzarello, F. (2012). The development of a semiotic frame to analyse teaching and learning processes: examples in pre- and post-algebraic contexts. In Coulange, L., Drouhard, J.-P., Dorier, J.-L., Robert, A. (Eds.), *Recherches en Didactique des Mathématiques, Numéro spécial hors-série, Enseignement de l'algèbre élémentaire: bilan et perspectives* (pp. 231-245). Grenoble: La Pensée Sauvage.
- Coppola, C., Di Martino, P., Pacelli, T. & Sabena, C. (2012). Primary teachers' affect: a crucial variable in the teaching of mathematics. *Nordic Studies in Mathematics Education*, 17(3-4), 107-123.
- Sabena, C. (2011). Studiare la multimodalità dell'insegnamento-apprendimento: focus sui gesti. *L'insegnamento della matematica e delle scienze integrate*, vol. 34 A-B, n° 3, 333-342.
- Arzarello, F., & Sabena, C. (2011). Semiotic and theoretic control in argumentation and proof activities. *Educational Studies in Mathematics*, Vol. 77(2), pp.189-206.
- Arzarello, F. & Sabena, C. (2011). Meta-cognitive unity in indirect proofs. In M. Pytlak, T. Rowland & E. Swoboda (Eds.), *Proceedings of the 7th Congress of the European Society for Research in Mathematics Education* (pp. 99-109), Rzeszów, University of Rzeszów, Poland.
- Di Martino, P. & Sabena, C. (2011). Elementary pre-service teachers' emotions: Shadows from the past to the future. In K. Kislenko (Ed.), *Proceedings of MAVI 16 Conference: Current State of Research on Mathematical Beliefs XVI* (pp. 89-105). Tallin, Estonia: Tallinn University of Applied Sciences.
- Arzarello, F., Ascari, M., & Sabena, C. (2011). A model for developing students' example space: the key role of the teacher. *ZDM Special Issue on 'Examples in Mathematical Thinking and Learning from an Educational Perspective'*, vol. 43, n° 2, pp. 295-306.
- Arzarello, F., Ascari, M., Baldovino, C., & Sabena, C. (2011). The teacher's activity under a phenomenological lens. In U. Behiye (Ed.), *Proceedings of the 35th Conference of the International Group for the Psychology of Mathematics Education* (vol. 2, pp. 49-56), Ankara, Turkey: PME.
- Holmqvist, K., Andrà, C., Lindström, P., Arzarello, Ferrara, F., Robutti, O. & Sabena, C. (2011). A method for

quantifying focused versus overview behavior in AOI sequences. *Behavioural Research Methods*, 43, 987–998.

- Arzarello, F., Bazzini, L., Ferrara, F., Sabena, C., Andrà, C., Merlo, D. Savioli, K., Villa, B. (2011). *Matematica: non è solo questione di testa. Strumenti per osservare i processi di apprendimento in classe*. Trento: Edizioni Erickson. ISBN: 978-88-6137-844-5.
- Sabena, C. (2010). Are we talking about graphs or tracks? Potentials and limits of 'blending signs'. In M.M.F. Pinto & T.F. Kawasaki (Eds.), *Proceedings of the 34th Conference of the International Group for the Psychology of Mathematics Education* (vol. 4, pp. 105-112), Belo Horizonte, Brazil: PME.
- Di Martino, P. & Sabena, C. (2010). Teachers' beliefs: The problem of inconsistency with practice. In M.M.F. Pinto & T.F. Kawasaki (Eds.), *Proceedings of the 34th Conference of the International Group for the Psychology of Mathematics Education* (vol. 2, pp. 313-320), Belo Horizonte, Brazil: PME.
- Arzarello, F., Birkner, A. & Sabena, C. (2010). Complementary networking: Enriching understanding. *Proceedings of the 6th Congress of the European Society for Research in Mathematics Education* (pp. 1545-1554), January 28th-February 1st 2009, Lyon France © INRP 2010, www.inrp.fr/editions/cerme6.
- Bazzini, L., Sabena, C. & Strignano, C. (2010). Imagining a mysterious solid: the synergy of semiotic resources. In B. Maj, E. Swoboda, K. Tatsis (Eds.), *Motivation via Natural Differentiation in Mathematics* (pp. 159-168). Rzeszów: Wydawnictwo Uniwersytetu Rzeszowskiego.
- Arzarello, F., Bazzini, L., Politano, L., Sabena, C. (2010). Multimodal processes in teaching and learning mathematics: A case study in primary school. In G. Pérez-Bustamante, K. Phusavat, F. Ferreira (Eds.) *Proceedings of the IASK International Conference Conference* (pp. 286-292). Siviglia: IASK.
- Bikner-Ahsbabs, A., Dreyfus, T., Kidron, I., Arzarello, F. Radford, L., Artigue, M. & Sabena, C. (2010). Networking of theories in mathematics education (Research Forum). In M.M.F. Pinto & T.F. Kawasaki (Eds.), *Proceedings of the 34th Conference of the International Group for the Psychology of Mathematics Education* (vol. 1, pp. 145-175), Belo Horizonte, Brazil: PME.
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- Arzarello, F., Paola, D. & Sabena, C. (2009). Logical and semiotic levels in argumentation. In F.-L. Lin, F.-J. Hsieh, G. Hanna & M. de Villiers (Eds.), *Proceedings of Icmi Study 19 conference: Proof and Proving in Mathematics Education* (vol. 1, pp. 41-46). Taipei, Taiwan: Department of Mathematics, National Taiwan Normal University.
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RESEARCH THEMES

- Multimodality and semiotics in mathematics classroom processes;
- Mathematics education from early grades to primary school, with special attention to the development of theoretical thinking through argumentation;
- Formative assessment and argumentation in the mathematics classroom;
- The mediation of technology in mathematics learning and proposals for teaching sequences;
- Empirical studies on networking theories strategies in mathematics education, and related theoretical reflection;
- Teachers' and future teachers' attitudes and emotions towards mathematics.

ACADEMIC TEACHING

- Tenureship of several courses of Mathematics Education at Faculties of Education of the University of Torino and the University of Valle d'Aosta, from 2006.
- Lecturer at several Undergraduate, Master and PhD courses and at the Department of Mathematics of the University of Torino.
- Professor at the Doctorate School in Science and Technology of the University of Torino.
- Co-supervision of PhD thesis in Mathematics Education by Monica Panero, Scuola di Dottorato in Scienze e Alta Tecnologia, Università di Torino. Title of the dissertation, discussed in March 2015: "Teaching practices with the derivative concept. A problematic meeting between Algebra and Calculus in secondary school".

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