

2nd International STEM in Education Conference

November 24-27, 2012. Beijing, China

STEM 2012 Conference Overview



Conference Venue: Yingdong Conference Hall (YCH)



Lunch and Dinner: provided for free at Jingshi Hotel Restaurant



Conference Banquet: Sunday, November 25, 2012.

Date	Time	Event	Location
November 24	14:00 ~ 17:00	Registration	Jingshi Hotel 1F
November 25	08:00 ~ 08:30	Registration	YCH 1F
	08:30 ~ 09:00	Opening Ceremony	YCH Lecture Hall
	09:00 ~ 10:00	Keynote 1	YCH Lecture Hall
	10:00 ~ 10:30	Photograph	Jingshi Square
		Coffee Break	
	10:30 ~ 12:00	Parallel session 1	YCH Lecture Hall Lecture Room2 Lecture Room3 Meeting Room
	12:00 ~ 13:30	Lunch	Jingshi Hotel 1F Jian Wei Xuan
	13:30 ~ 14:30	Parallel session 2	YCH Lecture Hall Lecture Room2 Lecture Room3 Meeting Room
	14:30 ~ 15:00	Coffee Break	
15:00 ~ 16:00	Parallel session 3	YCH Lecture Hall Lecture Room2 Lecture Room3 Meeting Room	

	16:00 ~ 16:30	Coffee Break	
	16:30 ~ 17:30	Parallel session 4	YCH Lecture Hall Lecture Room2 Lecture Room3 Meeting Room Lobby (Posters)
	18:00 ~ 20:00	Conference Banquet	Jingshi Hotel 2F Jin Chao Xuan
November 26	08:30 ~ 09:00	Registration	YCH 1F
	09:00 ~ 10:00	Keynote 2	YCH Lecture Hall
	10:00 ~ 10:30	Coffee Break	
	10:30 ~ 12:00	Parallel session 5	YCH Lecture Hall Lecture Room2 Lecture Room3 Meeting Room
	12:00 ~ 13:30	Lunch	Jingshi Hotel 1F Jian Wei Xuan
	13:30 ~ 14:30	Parallel session 6	YCH Lecture Hall Lecture Room2 Lecture Room3 Meeting Room
	14:30 ~ 15:00	Coffee Break	
	15:00 ~ 17:00	Parallel session 7	YCH Lecture Hall Lecture Room2 Lecture Room3 Meeting Room
	17:30 ~ 19:30	Dinner	Jingshi Hotel 1F Jian Wei Xuan
November 27	08:30 ~ 09:00	Registration	YCH 1F
	09:00 ~ 10:00	Keynote 3	YCH Lecture Hall
	10:00 ~ 11:00	Parallel session 8	YCH Lecture Hall Lecture Room2 Lecture Room3

			Meeting Room
	11:00 ~ 11:20	Coffee Break	
	11:20 ~ 12:00	Closing Ceremony	YCH Lecture Hall
	12:00 ~ 13:30	Lunch	Jingshi Hotel 1F Jian Wei Xuan

STEM2012 Conference Schedule

Saturday, November 24, 2012. Venue: Jingshi Hotel

Time	Event	Location
14:00 – 17:00	Registration	Jingshi Hotel

Sunday, November 25, 2012. Venue: Yingdong Conference Hall

Time	Event	Location	
08:00 – 08:30	Registration	YCH 1F	
08:30 – 09:00	Opening Ceremony	Lecture Hall	
09:00 – 10:00 Keynote 1	Title: Promoting Neuroeducation as a Trans-disciplinary Field Dr. Wei Yu (Academician of CAE, Director of Branch of Electronic and Informatical Division, CAE. Research Center of Learning Science, Southeast Uni. China)		
10:00 – 10:30	Photograph & Coffee Break		
Parallel Sessions 1			
Chair: Dr. Peter Hudson			
	Presenter	Title	Location
10:30 – 12:00	Rainer Knauf, Yoshitaka Sakurai, Kouhei Takada and Setsuo Tsuruta	LONG PAPER Personalized Data Mining for University Curricula	Lecture Hall
	Mei-Chung Lin, Mei-Fang Yang and Chien-hung Chou	LONG PAPER High Self Efficacy Belief with High Critical Thinking Ability	
	Jau-Woei Chen, Chung-Shan Sun and Chu-Mei Ho	SHORT PAPER A Study on Personnel Officers' Satisfaction of E-Learning in Taiwan Public Colleges and Universities	
10:30 – 11:30		WORKSHOP 1-1 LEGO Workshop 1	Lecture Room2
10:30 – 11:30	Janice Bogstad, Mi Qi, Tian Song, Yan Wu and Mingcheng Du	WORKSHOP 1-2 The Pedagogical Alliance of Science and Science Fiction: Preparing the Way for Scientists of the Future	Meeting Room
10:30 – 11:30	Vinesh Chandra and Michelle Mukherjee	WORKSHOP 1-3 Robotics Workshop (Beginner)	Lecture Room3

12:00 – 13:30	Lunch	Jingshi Hotel 1F Jian Wei Xuan
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Parallel Sessions 2			
Chair: Dr. Xinglong Zhao			
	Presenter	Title	Location
13:30 – 14:30	Chen Guo-Wei and Sun Chung-Shan	LONG PAPER Acceptance Level of Junior High School Students of Network Educational Games	Lecture Hall
	Rainer Knauf, Kinshuk, Yoshitaka Sakurai and Setsuo Tsuruta	SHORT PAPER Educational Data Mining by Correlation Analysis	
	Fei Xue and Jean McGivney-Burelle	SHORT PAPER Using Clickers in Calculus	
13:30 – 14:30	Jane Backhaus	WORKSHOP 2-1 Kids' S.T.E.M. Convention: Inspiration/Investigation/Celebration	Lecture Room2
13:30 – 14:30	Marina Milner-Bolotin	WORKSHOP 2-2 21st Century Framework for Science Teacher Preparation: Using Modern Technologies to Affect Science Teaching and Learning	Meeting Room
13:30 – 14:30	Shaun Nykvist and David Nutchey	WORKSHOP 2-3 Intermediate Robotics Workshop	Lecture Room3
14:30 – 15:00	Coffee Break		

Parallel Sessions 3			
Chair: Dr. Carmel Diezmann			
	Presenter	Title	Location
15:00 – 16:00	Aharon Gero	LONG PAPER Enhancing Aviation High School Students' Interest in Physics and Engineering: An Interdisciplinary Program on Aviation Weapon Systems	Lecture Hall
	Alexander S. Zelenskiy	LONG PAPER The Process of Teaching Mathematics by the Use of Non-traditional Formulations	

		of Problems and by Use of Problems with Erroneous Decisions	
	Endah Retnowati	SHORT PAPER Learning Mathematics Collaboratively or Individually	
15:00 – 16:00		WORKSHOP 3-1 LEGO Workshop 2	Lecture Room2
15:00 – 16:00	Louis S. Nadelson, Anne L. Seifert, Sandra G. Nadelson and Melinda Hamilton	WORKSHOP 3-2 Integrated STEM Teacher Professional Development	Meeting Room
15:00 – 16:00	Mark Lockett, Andy Yeh and Rob Clegg	WORKSHOP 3-3 Robotic Workshop (Advanced)	Lecture Room3
16:00 – 16:30	Coffee Break		

Parallel Sessions 4**Chair: Dr. Xinglong Zhao**

	Presenter	Title	Location
16:30 – 17:30	Don Krug	LONG PAPER STEM Education and Sustainability in Canada and the United States	Lecture Hall
	Shaun Nykvist	SHORT PAPER The Trials and Tribulations of a BYOD Science Classroom.	

Chair: Dr. Rainer Knauf

16:30 – 17:30	Guanglun Michael Mu	LONG PAPER Does 'Habitus' Count in Chinese Australians' Mathematics Achievement?	Lecture Room2
	Su Cai, Feng-Kuang Chiang and Xu Wang	LONG PAPER Using the Augmented Reality for Convex imaging Experiment	
	Joel Rioux	SHORT PAPER Teaching from Country: Queensland Aboriginal Narratives and Teaching of the Linnaean Taxonomy in an Indigenous Classroom	

Chair: Dr. Jingjing Zhang

16:30 – 17:30	Peter Hudson and James Hudson	LONG PAPER Research Needed on Cultural Capital,	Lecture Room3
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		STEM Endeavours and Instructional Innovations: A Call for “Collaborations between Nations”	
	Carmel Diezmann and James Watters	LONG PAPER From Scientist to Science Teacher: A Career Change Teacher in Transition	
	David Anderson and Gregory Thomas	SHORT PAPER Parents’ Metacognitive Knowledge on their Interactions with their Children in a Science Museum	
Chair: Dr. Vinesh Chandra			
16:30 – 17:30	Xinxin Fan and Wei Liang	LONG PAPER A Mixed Method Study of Promoting Student Conceptual Understanding through Simulation-supported Inquiry Instruction	Meeting Room
	Margaret Lloyd, Michelle Mukherjee and Alberto Bellocchi	LONG PAPER Re-imagining STEM: Peer Scaffolding ICT in Initial Teacher Education	
	David Nutchey and Vinesh Chandra	LONG PAPER Developing General Capabilities through FLL	

Poster Sessions			
	Presenter	Title	Location
16:30 – 17:30	Radley Mahlobo and Kenneth Zimba	Learner-centredness as an Aspect of South African National Curriculum Statement	2F Lobby
	George Hatsidimitris and Joe Wolfe	A Practitioner’s Guide to the Design of Science Animations	
	Li Junping	To Evaluate and Delve into Science Popularization of Primary School Students–Taking No.1 Primary School of Jiugong Town in Beijing as an Example	
	Fang Jing, Xu Haomiao and Liu Hua	Investigation of Educational Technology Training Platform Based On Moodle	
	Julianne J. Reid and Warren S. Nageswaran	Educational Technologies in STEM: Remote Laboratories at RMIT University	

	Endah Retnowati	Worked Examples in Mathematics	
	Fu Changyi, Sun Yu and Zhang Yuan	Theory and Practice of University Scientific Education under Science Communication	
	Hao Wen	A Study on Government— Industry— University— Research cooperation models in Wuhan Biolake	
	Junjie Wu, Senshan Liang and Songze Li	Inspiration of STEM Education in China for the Cultivation of Interdisciplinary and Innovative Talents in the 21st Century	
18:00 – 20:00	Conference Banquet		Jingshi Hotel 2F Jin Chao Xuan

Monday, November 26, 2012. Venue: Yingdong Conference Hall

Time	Event		Location
08:30 – 09:00	Registration		YCH 1 F
09:00 – 10:00 Keynote 2	Title: Investigations of STEM '5L' Teaching Method Dr. An Baosheng (The Dean of School of Engineering and Technology, Beijing Normal University, Zhuhai, China)		Lecture Hall
10.00 – 10.30	Coffee Break		
Parallel Sessions 5			
Chair: Dr. Jim Watters			
	Presenter	Title	Location
10:30 – 12:00	Tzu-Chyang King, Kuei-Fang Tsai and Chen-Ming Chen	LONG PAPER The Study of Solving the One-dimensional Infinite Square Well Quantum System by the Students in Department of Physics	Lecture Hall
	Jillian Fox	SHORT PAPER A Comparison of Chinese and Australian Early Childhood Mathematics	
	Leonie Rennie and Marian Heard	SHORT PAPER Scientists in Schools: Benefits of Working Together	
10:30 – 11:30	Junjie Wu, Zhongmin Zhu, Jingzhao Yuan and Weiyi Ding	WORKSHOP 4-1 Measure Resistance by a Usb Sound Card Cost Only 3 Dollar	Lecture Room2
10:30 – 11:30	Jiangeng Lin, Yang Xiang , Zhengtao Xuan	WORKSHOP 4-2 The Computer Graphics Teaching Practice and Innovation	Lecture Room3
10:30 – 11:30	George Hatsidimitris and Joe Wolfe	SHOWCASE 1-1 PHYSCLIPS: Multimedia Resources for Learning and Teaching Physics	Meeting Room
12:00 – 13:30	Lunch		Jingshi Hotel 1F Jian Wei Xuan

Parallel Sessions 6

Chair: Dr. Meifeng Liu

	Presenter	Title	Location
13:30 – 14:30	Kar-Tin Lee and Rod Nason	LONG PAPER Reforming the Preparation of Future STEM Teachers	Lecture Hall
	Mijung Kim, Robert Anthony and David Blades	LONG PAPER Argumentation as a Tool to Understand Complexity of Knowledge Integration	
	Kueifang Tsai, Tzu-Chyang King, Chen-Ming Chen and Chih-Shen Owen Lo	LONG PAPER A Case Study on the Underachievement of three College Physics Students	
Chair: Dr. Shaun Nykvist			
	Presenter	Title	Location
13:30 – 14:30	Vinesh Chandra, David Nutchey and Jiyong Park	LONG PAPER The Complementary Potential of Multimedia and Science Demonstrations	Lecture Room2
	Julie Davis	LONG PAPER ESD Starts Where STEM Stops: Integrating the Social Sciences into STEM	
	Gillian Kidman, Tom Cooper and Satwant Sandhu	LONG PAPER Teacher Aides and their Pedagogical Contributions in the Underachieving Indigenous Mathematics Classroom	
13:30 – 14:30	Mark Lockett	SHOWCASE 1-2 How Digital Technologies in Australian Schools Promote and Develop 21st Century Skills Across the STEM Disciplines	Lecture Room3
13:30 – 14:30	Fei Xue	SHOWCASE 1-3 Teaching Calculus in a Flipping Way	Meeting Room
14:30 – 15:00	Coffee Break		

Parallel Sessions 7**Chair: Dr. Guang Chen**

	Presenter	Title	Location
	Kar-Tin Lee and Rod Nason	LONG PAPER The Recruitment of STEM-Talented Students into Teacher Education Programs	

15:00 – 17:00	Samson Madera Nashon and David Anderson	LONG PAPER Teacher Change: The Effect of Student Learning on Science Teachers' Teaching in Kenya	Lecture Hall
	Zhong Sun, Minhua Wu and Jiqiong Zhang	LONG PAPER Entertainment Technology to Promote Language Learning: Design and Implementation	
	Saeed Alshahrani, Rupert Ward, Glenn Hardaker and Martyn Walker	SHORT PAPER The Effect of Using Web Technologies to Gather Educational Research Data, and Impact on Research Results	
Chair: Dr. Jillian Fox			
15:00 – 17:00	Presenter	Title	Location
	Peter Hudson, Lyn English and Les Dawes	LONG PAPER Catapulting into STEM Education: Female Students' Interactions within a Middle School Engineering Project	Lecture Room2
	Merilyn Carter	LONG PAPER A Picture is Worth a Thousand Words: A Cross-curricular Approach to Learning about Visuals in STEM	
	Ming-Der Jean	LONG PAPER The Development of Physical Vapor Deposition Technology for Use in Experimental Zirconium Nitride Modules in Nanotechnology Courses	
James Watters and Carmel Diezmann	SHORT PAPER Mid-Career Professionals in STEM Transiting to School Teaching: Barriers at the Border		
Chair: Dr. Dayong Yuan			
15:00 – 17:00	Presenter	Title	Location
	Lu Xiao, Immaculate Namukasa and Monica Caldeira	SHORT PAPER Reflective Practices in STEM Subjects: A review, Framework, and Examination of Two Studies	Lecture Room3
Gillian Kidman, Stephen Keast and Rebecca Cooper	LONG PAPER Understanding Pre-service Teacher Conceptual Change through Slowmation Animation		

	Immaculate Namukasa	LONG PAPER Attaining and Measuring Knowledge and Beliefs among Teacher Candidates Transitioning to Teaching	
	Patricia Mclaughlin and Julianne Reid	LONG PAPER Establishing STEM Educational Leadership: The RMIT SHEER Centre	
	Jing Nian	SHORT PAPER Analysing the Teaching Evaluation of the Teachers from the Secondary Vocational School in Pudong New Area Shanghai	
Chair: Dr. Jun Liu			
	Presenter	Title	Location
15:00 – 17:00	Yu-Shan Chang, Albert C Wang and Enying Lai	LONG PAPER Instruction of Creative Design in Elementary School Technology Education	Meeting Room
	Carmel Diezmann, Melissa Stevenson and Louise Mercer	LONG PAPER Mathematics Learning Difficulties: An Australasian Perspective	
	Olive Chapman	LONG PAPER Facilitating Prospective Mathematics Teachers' Development of Problem Solving Knowledge for Teaching	
	Lu Chun and Yuan Guilin	SHORT PAPER A Review of the High Schools of Science, Technology, Engineering, and Mathematics (STEM) in USA	
	Ahmed Sher Awan	SHORT PAPER Effectiveness of Constructivist Approach for Promoting Conceptual Change in Chemistry	
17:30 – 19:30	Dinner		Jingshi Hotel 1F Jian Wei Xuan

Tuesday, November 27, 2012. Venue: Yingdong Conference Hall

Time	Event		Location
08:30 – 09:00	Registration		YCH 1 F
09:00 – 10:00 Keynote 3	Title: Preparing Future STEM Teachers: a holistic approach Dr. Kar-Tin Lee (Head of the School of Mathematics, Science and Technology Education, Faculty of Education, Queensland University of Technology, Australia)		Lecture Hall
Parallel Sessions 8			
Chair: Dr. Shengquan Yu			
10:00 – 11:00	Presenter	Title	Location
	Su Cai, Guang Chen and Min Chen	WORKSHOP 5-1 BNU Instructional Innovations Workshop	Lecture Hall
Chair: Dr. Louise Mercer			
10:00 – 11:00	Presenter	Title	Location
	Theodosia Prodromou	LONG PAPER Drawing Connections from Modelling Distribution to Data-centric Distribution	Lecture Room2
	Michael Berry, Vinesh Chandra and Christina Chalmers	LONG PAPER STEM Futures and Practice, Can We Teach STEM is a more Meaningful and Integrated Way?	
Dongmei Li and Jie Wang	SHORT PAPER Meeting the New Challenges: Rethinking STEM in China		
Chair: Dr. Ying Zhou			
10:00 – 11:00	Presenter	Title	Location
	Xie Zuoru	LONG PAPER A STEM High School Curriculum: Interactive Media Technology	Lecture Room3
	Enying Lai, Yu-Shan Chang and Albert C. Wang	SHORT PAPER Developing Students' Engineering Concepts with Learning Module Aid	
Junguo Wang and Su Cai	SHORT PAPER An Explore Study on the Application of Somatosensory Technique to Virtual Experiment		

10:00 – 11:00		WORKSHOP 5-2 LEGO Workshop 3	Meeting Room
11:00 – 11:20	Coffee Break		
11:20 – 12:00	Closing Ceremony Outstanding Papers Award STEM 2014 Presentation by UBC		Lecture Hall
12:00 – 13:30	Lunch		Jingshi Hotel 1F Jian Wei Xuan

Presentation Format

Research Papers/ Teaching practice papers

- **Long paper** : A total of **20** minutes will be allocated for each long paper. At least 5 minutes must be reserved for questions and comments from the audience.
- **Short paper**: A total of **15** minutes will be allocated for short paper. At least 5 minutes must be reserved for questions and comments from the audience.

Workshop / Innovative Showcase Presentations

- A total of **60** minutes will be allocated for each workshop session. Workshop **organizers** will lead the discussion.

Posters

- Put your poster up at least 1/2 hour prior to the start of the poster sessions.
- Your poster must correspond to the title and content of the abstract you submitted.
- Poster presentations must present reports of significant work in research, development and applications with regards to one or more of the conference topics of interest. The display space allocated for posters will be 1.2m wide by 1.2 m high (or 4 feet wide by 4 feet high).
- Plan your poster to be in logical sequence, i.e. introduction, study design and methods, data collected, conclusion.
- To ensure visual effectiveness of your poster, use large lettering and a minimum of text.
- Use of colours can visually enhance your poster.

Facilities (Research Papers/ Teaching practice papers)

- Presentation PCs and projectors will be available in each room. Presenters may also use their own laptops with the Center's multimedia projectors. Any Mac or PC laptop with a standard VGA connector should work. New macs may require a video adapter.