



THE PONTIFICAL ACADEMY OF SCIENCES

WORKSHOP ON

Children and Sustainable Development: A Challenge for Education



13-15 NOVEMBER 2015 • CASINA PIO IV • VATICAN CITY

The Canticle of the Sun

FRANCIS OF ASSISI



Most high, all powerful, all good Lord! All praise is yours, all glory, all honor, and all blessing. To you, alone, Most High, do they belong. No mortal lips are worthy to pronounce your name.

Be praised, my Lord, through all your creatures, especially through my lord Brother Sun, who brings the day; and you give light through him. And he is beautiful and radiant in all his splendor! Of you, Most High, he bears the likeness.

Be praised, my Lord, through Sister Moon and the stars; in the heavens you have made them, precious and beautiful.

Be praised, my Lord, through Brothers Wind and Air, and clouds and storms, and all the weather, through which you give your creatures sustenance.

Be praised, My Lord, through Sister Water; she is very useful, and humble, and precious, and pure.

Be praised, my Lord, through Brother Fire, through whom you brighten the night. He is beautiful and cheerful, and powerful and strong.

Be praised, my Lord, through our sister Mother Earth, who feeds us and rules us, and produces various fruits with colored flowers and herbs.

Be praised, my Lord, through those who forgive for love of you; through those who endure sickness and trial. Happy those who endure in peace, for by you, Most High, they will be crowned.

Be praised, my Lord, through our Sister Bodily Death, from whose embrace no living person can escape. Woe to those who die in mortal sin! Happy those she finds doing your most holy will. The second death can do no harm to them.

Praise and bless my Lord, and give thanks, and serve him with great humility.



Workshop Concept

In May 2014 the Pontifical Academies jointly held an excellent Workshop on *Sustainable Humanity, Sustainable Nature: Our Responsibility*. A remarkable series of contributions produced a clear picture of the issues, and stressed the urgency to act. It also raised the need for spiritual and moral leadership. But the Workshop stopped short of elucidating the role of education in the changes to come, and making proposals for action in this direction. These essential questions form the basis of the present Workshop of November 2015, *Children and Sustainable Development: A Challenge for Education*.

The goal is to build, through education, an inclusive society in which all people can have the resources to develop a life project in harmony with their culture and beliefs, transcultural universal values and respect for the environment. Children must develop an approach open to the other as oneself so that the world, without losing the richness of diversity, can become ever more integrated. To prepare their active participation in the common good, promoting a cooperation between students in their relationships with civic awareness, valuing cooperation and solidarity above all forms of competitive selfishness are essential. Cognitive and health sciences provide today a better understanding of the way children grow, from birth onward, develop their cognitive abilities to read and write but also to reason, as well as their emotional senses and empathy.

In many countries one may already observe that “education for sustainable development” is becoming part of the agenda of education leaders and authorities. As science plays an essential part in the acceptance and understanding of the issues, it appears that science education of children and youngsters (and their parents) is at the heart of the action, hence this new Workshop convened by the Pontifical Academy of Sciences. Progress in general education is slow and the UN Millennium Goals for the period 2000-2015 have not been achieved, although some progress has been noticeable in various parts of the world, including Africa and Asia. Progress in science education is much slower, despite the efforts of science academies, Unesco and some private institutions. The number of poorly educated children is increasing, affected by population migrations, urban uprooting and poverty, wars, forced labor, refugees conditions and other changes of migrant work force. In many countries, especially developed ones, anti-science movements arise

questioning the ability of scientists to arrive at some truth about natural phenomena, showing a poor understanding of the nature of scientific reasoning and a lack of confidence in the scientific institutions which disseminate the results of research. In other countries, parents and maybe official agencies, basing themselves on religious principles, oppose scientific evidence to the detriment of children. In both cases the lack of understanding, by the general public, of the nature of science is evident: it has not been transmitted by a proper education pattern.

Today’s children will be the adults of tomorrow, confronted to the consequences of today’s actions or inactions. More important even, they will be the ones to act, and to act properly if properly prepared. Education has to convey to them hope, not despair or grim perspectives, giving them self-confidence in their intelligence. Hope and trust in human capabilities need to be first embedded in a solid knowledge, then deeply rooted in a message of spiritual nature, since so many factors could lead these children, students in today’s schools, to despair. Children are of special concern in the Gospel (Mat 19, 13-15) and education, not only religious, has always been treated as an essential gift to humanity by the Church. The Church itself having millions of students in Catholic schools, these can therefore play a significant role. Indeed, in Chapter 6, the Encyclical *Laudato Si’* makes a plea for “education and ecological spirituality”.

Schools in today’s world are confronted with massive urban migrations, the digital revolution, the lack of qualified teachers and their low income, the explosion of scientific knowledge, the deep changes in jobs requiring new skills. It is in this context that schools will have to absorb the UN Sustainable Development Goals, proclaimed in the fall of 2015, and to reconsider their science education in order to deal with interdisciplinary, complex issues which demand a new vision. There lies a formidable task in connecting education with the urgency of the issues of climate, development and sustainability, caring for poverty, inequalities and social conditions.

At the end of the Workshop, a global discussion will lead to the establishment of guidelines for action.

Introducción al seminario sobre “Los niños y el desarrollo sostenible: Un desafío para la educación”

En mayo 2014 Las Academias Pontificias organizaron en conjunto una excelente sesión sobre *Humanidad sostenible: Una naturaleza sostenible. Nuestra responsabilidad*. Una serie notable de contribuciones mostraron una clara visión de estos temas y enfatizaron la urgencia de actuar. También expusieron la necesidad de guía espiritual y moral. Pero este seminario no alcanzó a plantear el papel de la educación frente a los cambios que se avecinan y proponer acciones en esta dirección. Son estas las preguntas esenciales del presente seminario de noviembre 2015: *Los niños y el desarrollo sostenible: Un desafío para la educación*.

El objetivo es crear a través de la educación una sociedad inclusiva donde todos puedan tener los recursos para desarrollar un proyecto de vida en armonía con sus culturas y creencias, con valores universales transculturales y el respeto por el medio ambiente. Los niños deben desarrollar una actitud abierta al otro como a uno mismo de manera que el mundo, sin perder la riqueza de su diversidad, pueda integrarse cada vez más. Es esencial preparar su participación activa en el bien común, promoviendo la cooperación entre alumnos en sus relaciones con la conciencia cívica y valorar la cooperación y la solidaridad sobre todas las formas de competitividad egoísta. Las ciencias cognitivas y de la salud ofrecen hoy una mejor comprensión sobre el crecimiento de los niños desde el nacimiento, el desarrollo de sus habilidades cognitivas para leer y escribir y también el de sus capacidades para razonar tanto como el de sus emociones y sentido de empatía.

En muchos países ya se puede observar que la “educación para un desarrollo sostenible” comienza a ser parte de la agenda de líderes y autoridades. Teniendo en cuenta que la ciencia juega un papel esencial en la aceptación y la comprensión de estos temas surge que la educación de las ciencias para niños y adolescentes (y sus padres) está en el centro de acción, de aquí que la Pontificia Academia de Ciencias haya propuesto este nuevo seminario. En la educación general el progreso es lento y los Objetivos del Milenio de las Naciones Unidas para el período 2000-2015 no han sido alcanzados, aunque se hayan evidenciado algunos progresos en varias partes del mundo, incluyendo África y Asia. Sin embargo, el progreso en la educación de las ciencias es más lento aún, a pesar de los esfuerzos de las academias de ciencias, de la UNESCO y de algunas instituciones privadas. El número de los niños pobremente educados está creciendo, por efecto de migraciones de poblaciones enteras, desarraigo urbano y pobreza, guerras, trabajo esclavo, condiciones de los refugiados y cambios en la fuerza de trabajo de los migrantes. En muchos países, especialmente en los desarrollados, aparecen movimientos anti-ciencia que

cuestionan la habilidad de los científicos para alcanzar alguna verdad sobre los fenómenos naturales, lo que muestra una limitada comprensión de la naturaleza del razonamiento científico y un falta de confianza en las instituciones que difunden los resultados de la investigación. En otros países los padres y ciertas agencias oficiales basándose en principios religiosos se oponen a la evidencia científica, algo que va en detrimento de los niños. En ambos casos la falta de comprensión de la naturaleza de la ciencia por parte del público general es evidente: no ha sido transmitida por un medio educativo adecuado.

Los niños de hoy serán los adultos de mañana que se confrontarán con las consecuencias de las acciones o de las inacciones del día de hoy. Y, lo que es más importante, son ellos los que actuarán, y lo harán correctamente si han estado bien preparados. La educación debe transmitirles esperanza no desesperación o perspectivas desalentadoras, debe ofrecerles confianza en sus inteligencias. La esperanza y la confianza en las capacidades humanas necesitan ante todos estar incorporadas en un conocimiento sólido y ancladas profundamente en un mensaje de naturaleza espiritual teniendo en cuenta que hay tantos factores que pueden llevar a esos niños que estudian en las escuelas de hoy a la desesperación. Los niños son tomados muy en consideración en los Evangelios (Mat 19,13-15) y la educación, no solamente la religiosa, ha sido siempre considerada por la Iglesia como un don esencial a la humanidad. La misma Iglesia tiene millones de niños en escuelas católicas, quienes pueden desempeñar por consiguiente un importante papel. De hecho, la Encíclica *Laudato Si'* hace un alegato para la “educación y la espiritualidad ecológica”.

Las escuelas en el mundo actual se confrontan con las migraciones urbanas masivas, la revolución digital, la falta de docentes capacitados y con bajos salarios, la explosión del conocimiento científico, los cambios profundos en trabajos que requieren nuevas habilidades. Es en este contexto que las escuelas deberán implementar los Objetivos de Desarrollo Sostenible de las Naciones Unidas, proclamados en septiembre de 2015, y reconsiderar la educación de las ciencias para poder lidiar con asuntos interdisciplinarios complejos que requieren una visión nueva. En esto estriba la tarea formidable de conectar la educación con la urgencia de los problemas del clima, el desarrollo y la sustentabilidad, ocupándose de la pobreza, las inequidades y las condiciones sociales.

Al término del seminario se hará una discusión general que llevará al establecimiento de guías de acción.

Introduzione al Workshop su “I bambini e lo sviluppo sostenibile: una sfida per l’educazione”

A maggio 2014 le Pontificie Accademie hanno organizzato un workshop congiunto su *Umanità sostenibile, natura sostenibile*, molto riuscito. Una notevole serie di contributi ha prodotto un panorama chiaro delle problematiche e ha sottolineato l’urgenza di agire. Ha inoltre messo a fuoco la necessità di una leadership spirituale e morale. Tuttavia, il Workshop non si è spinto fino a chiarire il ruolo dell’educazione nei cambiamenti in atto e non ha avanzato nessuna proposta di azione in questo senso. Questi temi fondamentali formano la base dell’attuale Workshop di novembre 2015 intitolato *I bambini e lo sviluppo sostenibile: una sfida per l’educazione*.

L’obiettivo è quello di costruire, tramite l’educazione, una società inclusiva in cui tutti possano trovare le risorse per sviluppare un progetto di vita in armonia con la propria cultura e la propria fede, con i valori universali transculturali e con il rispetto per l’ambiente. I bambini devono sviluppare un approccio di apertura all’altro come se stesso, in modo che il mondo, senza perdere la ricchezza della diversità, diventi sempre più integrato. È essenziale, al fine di preparare una partecipazione attiva al bene comune, promuovere la collaborazione tra alunni nel loro rapporto con la consapevolezza civica e mettere al primo posto la collaborazione e la solidarietà sopra ogni forma di egoismo competitivo. Oggi, infatti, le scienze cognitive e della salute forniscono una migliore comprensione del modo in cui i bambini crescono, dalla nascita in poi, sviluppano le capacità cognitive della lettura e della scrittura così come le loro emozioni e l’empatia.

In molti paesi si può osservare che “l’educazione allo sviluppo sostenibile” sta già iniziando a far parte dei programmi educativi. Dal momento che la scienza ha un ruolo essenziale nell’accettare e comprendere le questioni, l’educazione scientifica di bambini e adolescenti (così come dei loro genitori) sembra essere al centro dell’azione. Da questo contesto è partita l’idea di questo nuovo Workshop organizzato dalla Pontificia Accademia delle Scienze.

I progressi nell’educazione in genere sono lenti e gli Obiettivi del Millennio, sviluppati dall’ONU per il periodo 2000-2015 non sono stati raggiunti, sebbene ci siano stati dei risultati positivi in varie parti del mondo, Africa e Asia incluse. Nonostante gli sforzi delle accademie scientifiche, dell’Unesco e di alcune istituzioni private, i progressi nell’educazione scientifica sono più lenti. Aumenta il numero di bambini con un’educazione di scarsa qualità a causa di migrazioni di popoli, spostamento di città in città, povertà, guerre, condizioni dei rifugiati e altri cambiamenti che hanno a che vedere

con una forza lavoro in costante migrazione. In molti paesi, soprattutto in quelli sviluppati, sorgono movimenti contro la scienza, che mettono in dubbio la capacità degli scienziati di arrivare ad una qualche verità sui fenomeni naturali, dimostrando una scarsa comprensione della natura del ragionamento scientifico e una mancanza di fiducia nelle istituzioni scientifiche che fanno circolare i risultati delle ricerche. In altri paesi, i genitori e forse anche le agenzie ufficiali, sulla base di principi religiosi, si oppongono alle prove scientifiche, a danno dei bambini. In entrambi i casi risulta evidente la mancanza di comprensione da parte del vasto pubblico della natura della scienza: non è stata trasmessa con un modello educativo adeguato.

I bambini di oggi saranno gli adulti di domani e si troveranno di fronte alle conseguenze delle azioni o inazioni di oggi. Cosa ancor più importante, saranno coloro che dovranno agire e agire in modo adeguato se adeguatamente preparati. L’educazione deve trasmettere speranza, non disperazione o mancanza di prospettive, e deve dare ai bambini fiducia nella loro intelligenza. La speranza e la fiducia nelle capacità umane devono essere basate, prima di tutto, su di conoscenze solide, poi profondamente radicate in un messaggio di natura spirituale, dal momento che vi sono troppi fattori che potrebbero condurre questi bambini, gli alunni delle scuole di oggi, alla disperazione. Il Vangelo ha una considerazione particolare per i bambini (Mat 19:13-15) e la Chiesa ha sempre trattato l’educazione, non solo quella religiosa, come un dono essenziale all’umanità. La Chiesa stessa ha milioni di studenti che frequentano scuole cattoliche, che possono quindi avere un ruolo significativo.

Nel mondo di oggi la scuola si trova ad affrontare le migrazioni urbane di massa, la rivoluzione digitale, la mancanza di insegnanti qualificati e il loro basso reddito, l’esplosione delle conoscenze scientifiche, i profondi cambiamenti nel mondo del lavoro che richiedono nuove competenze. È in questo contesto che le scuole dovranno assorbire gli Obiettivi di sviluppo sostenibile dell’ONU, che sono stati proclamati a settembre 2015, e riconsiderare l’educazione scientifica che forniscono, per poter gestire questioni complesse ed interdisciplinari che richiedono una nuova visione. Il compito di collegare l’educazione con l’urgenza delle questioni del clima, dello sviluppo, della sostenibilità, occupandosi anche povertà, disuguaglianze e condizioni sociali, è arduo.

Al termine del Workshop si discuterà su una serie di linee guida all’azione.

Introduction à la Session de travail sur “Les Enfants et le développement durable : un défi pour l’éducation”

En mai 2014, les deux Académies pontificales tinrent Ensemble une excellente Session de travail portant sur le thème *Humanité durable, Nature durable* : notre responsabilité. Un ensemble remarquable de contributions à cette Session fournit une vision claire des enjeux et insista sur l’urgence de l’action. Les conclusions soulignèrent également l’importance d’un leadership moral et spirituel. Néanmoins, la Session se termina sans que soit abordé et élucidé le rôle de l’éducation dans les nécessaires changements à venir, ni sans formuler de propositions sur ce point. Ces questions essentielles forment l’ossature de la présente Session de novembre 2015, intitulée *Les Enfants et le développement durable : un défi pour l’éducation*.

Le but est de construire, grâce à l’éducation, une société inclusive au sein de laquelle chaque personne puisse trouver les ressources nécessaires, lui permettant un projet de vie en harmonie avec sa culture et ses convictions, les valeurs universelles qui transcendent les cultures ainsi que le respect de l’environnement. Les enfants doivent être préparés à s’ouvrir à l’autre, afin que le monde, sans perdre la richesse que lui donne sa diversité, devienne toujours davantage intégré.

Afin de préparer leur participation active au bien commun, il est essentiel de promouvoir chez les élèves les capacités de coopération dans leur rôle de futur citoyen, mettant en valeur la solidarité au-dessus de toutes les formes d’égoïsme âpre à la compétition. Les sciences qui traitent de la santé ou de la cognition fournissent aujourd’hui une meilleure compréhension du processus de croissance de l’enfant depuis sa naissance, de la façon dont les capacités cognitives pour lire, écrire, mais aussi raisonner se développent, tout autant que les capacités émotionnelles ou d’empathie. Dans maints pays on peut observer qu’une éducation au développement durable représente déjà un objectif pour les autorités éducatives. Puisque les sciences jouent un rôle central dans la compréhension et l’acceptation des défis d’un tel développement, il doit être clair que l’éducation à la science des enfants et adolescents (comme celle de leurs parents) est au cœur de cet objectif. Voici pourquoi cette nouvelle Session est organisée par l’Académie pontificale des Sciences.

Dans le monde, les progrès de l’éducation sont lents et les Objectifs du Millénaire pour la période 2000-2015 n’ont pas été atteints, malgré quelques progrès notables en Afrique et Asie. Les progrès dans l’implantation d’une éducation à la science de qualité sont plus lents encore, malgré l’effort de nombreuses Académies des Sciences, de l’Unesco et d’institutions privées. Le nombre d’enfants médiocrement éduqués ne cesse de croître, affectés qu’ils sont par les migrations de populations et de travailleurs, la surpopulation et le déracinement urbains, la pauvreté, les guerres et les réfugiés qu’elles entraînent, le travail

forcé. Dans bien des pays, en particulier développés, des mouvements anti-science se développent, mettant en question la capacité des scientifiques à rechercher la vérité et la confiance qui peut être faite aux institutions scientifiques et à leurs résultats. Ces doutes manifestent souvent une très mauvaise compréhension du processus même de construction et de progression de la science. Dans d’autres pays, les parents, et parfois des institutions officielles, se fondant sur des principes religieux, mettent en doute les preuves fournies par la science. Dans l’un et l’autre cas, il s’agit d’une incompréhension, par le public, de la nature même de la science, mettant ainsi en cause l’éducation reçue.

Les enfants et élèves d’aujourd’hui seront les adultes de demain, confrontés aux conséquences des actions et inactions du présent. Plus important encore, ils seront en position d’agir, et d’agir de façon adéquate s’ils y ont été convenablement préparés. Plutôt que de sombres perspectives, l’éducation doit leur transmettre une espérance et leur donner confiance dans leur propre intelligence. L’espérance et la confiance dans les capacités humaines requièrent d’être d’abord appuyées sur des connaissances solides, mais aussi d’être profondément enracinées dans un message de nature spirituelle, puisqu’il existe tant de facteurs qui aujourd’hui peuvent induire le désespoir chez les jeunes scolaires. Les enfants sont l’objet d’une sollicitude particulière dans les Évangiles (Mat 19, 13-15) et l’éducation, pas seulement religieuse, a toujours été traitée par l’Église comme un don fondamental pour l’homme. Cette Église accueillant elle-même, dans les écoles catholiques, des millions d’enfants, peut jouer un rôle essentiel. De fait, dans son Chapitre 6, l’Encyclique *Laudato si’* plaide pour “une éducation et une spiritualité écologiques”.

Dans le monde d’aujourd’hui, les écoles sont confrontées à des migrations massives, à la révolution numérique, au manque d’enseignants qualifiés et à leurs faibles salaires, à l’explosion des connaissances scientifiques, aux immenses changements affectant l’emploi et les qualifications qu’il requiert. C’est dans un tel contexte que les écoles devront intégrer les Objectifs du Développement durable des Nations-Unies, proclamés en 2015, et reconsidérer avec une vision nouvelle l’éducation à la science, afin de prendre en compte la complexité et l’interdisciplinarité qui caractérisent ces Objectifs. C’est une tâche formidable que de connecter l’éducation de demain aux actions urgentes que requièrent le changement climatique, les ressources renouvelables, l’éradication de la pauvreté, des inégalités et des pesanteurs sociales.

En fin de Session, une discussion globale, préparée les jours précédents par les participants, devra établir un schéma de propositions et recommandations d’action.

Programme

Honorary President of the Workshop: Courtney Sale Ross

Scientific Committee

Antonio Battro (PAS)	Organiser
Pierre Léna (PAS)	Organiser
Veerabhadran Ramanathan (PAS)	Organiser
Marcelo Sánchez Sorondo (PAS)	Organiser
Jorge Allende (University of Chile, Chile)	
Joachim von Braun (PAS)	
Yves Coppens (PAS)	
Manzoor H. Soomro (ECO Science Foundation, Pakistan)	
Courtney Sale Ross (Founder, Ross Institute, USA)	

Observers

A number of observers will be present at the Workshop. Their questions and remarks will be collected during each session in written form. During Session 6 on Sunday 15 an afternoon slot is reserved for addressing these questions, or the comments the observers will like to make verbally.

FRIDAY 13 NOVEMBER 2015

9:00 OPENING

Werner Arber (President, PAS), *Word of Welcome*
Pierre Léna (PAS), *Presentation of the Workshop*

Session 1

BUILDING AN INCLUSIVE SOCIETY AND ENVIRONMENTAL RESPECT THROUGH EDUCATION
Chair: **Yves Quéré** (PAS)

09:30 *Inclusive Schooling from the Perspective of Scholas Occurrentes*
Enrique Palmeyro (Scholas Occurrentes, Argentina)

9:50 Discussion

10:00 *Education in Refugee Camps*
Gonzalo Sánchez-Terán (CIHC, Spain / Africa)

10:20 Discussion

10:30 Coffee break

11:00 *Children, Work and Education*
Kaushik Basu (World Bank, USA)

11:20 Discussion

11:30 *Scholas Citizenship, a Paradigm Shift in Education*
María Paz Jurado (Scholas Occurrentes, Argentina)

11:50 Discussion

12:00 General Discussion

12:30 Lunch at the Casina Pio IV



Session 2

SUSTAINABLE DEVELOPMENT, CHALLENGES AND ACTIONS IN EDUCATION

Education has to face facts revealed by science in climate, energy, resources, biodiversity, consumption, and demographic issues. These facts and emergencies represent not only scientific issues, but also a moral and ethical challenge for humanity. This requires new pedagogy (inquiry in science and engineering, pluridisciplinarity), new expertise for teachers and new curricula.

Chair: **Wolf Singer** (PAS)

14:00 *Educating Children Who Will Be Living in a Warmer World With Major Climate Disruptions*
Veerhabhadran Ramanathan (PAS)

14:20 Discussion

14:30 *Education and Sustainable Development Goals*
Jeffrey Sachs (Columbia University, USA)

14:50 Discussion

15:00 *Children as Agents of Change for Sustainable Development*
Joachim von Braun (PAS)

15:20 Discussion

15:30 *Educating for Sustainability with La main à la pâte*
David Wilgenbus (Foundation La main à la pâte, France)

15:50 Discussion

16:00 Coffee break

16:30 *Evidence Based Education to Meet the UN Sustainable Development Goals (SDGs) 2016-2030*
Lee Yee Cheong (ISTIC, Malaysia)

16:50 Discussion

17:00 Testimonies and good practices:
The Assumpta Science Center in Owerri
Anyadike Tobechei (ASCO, Nigeria)

17:20 Discussion

17:30 *Learning, Literacy and Sustainable Development*
Dan Wagner (University of Pennsylvania, USA)

17:50 Discussion

18:00 *Education in a Challenging World*
H.E. Msgr. Angelo Zani (Congregation for Catholic Education, Vatican City / Italy)

18:20 Discussion

18:30 General Discussion

19:00 Dinner at the Casina Pio IV

SATURDAY 14 NOVEMBER 2015

Session 3A

STRUCTURAL AND POLITICAL ASPECTS OF CHANGES IN EDUCATION

Chair: **Yves Coppens** (PAS)

9:00 *Structures, Processes and Agents of Educational Changes*

Margaret Archer (President, PASS)

9:20 Discussion

9:30 *Low Attainers in a Global Knowledge Economy*

Sally Tomlinson (University of Oxford, UK)

9:50 Discussion

10:00 *Unequal World, Unequal Education*

Bernard Hugonnier (Former OECD Director, France)

10:20 Discussion

10:30 Coffee break

Session 3B

DIVERSITY OF CHILDREN, LEARNERS AND LEARNING SOCIAL CONTEXTS

Chair: **Jorge Allende** (University of Chile, Chile)

11:00 *Fe y Alegría: Popular Education and Social Promotion for Sustainable Development*

Ignacio Suñol (Federación Internacional de Fe y Alegría, Colombia)

11:20 Discussion

11:30 *Biospheric Consciousness: A Moral and Ethical Imperative for Education*

Courtney Sale Ross (Founder, Ross Institute, USA)

11:50 Discussion

12:00 General Discussion

Session 3C

THE VOICE OF CHILDREN AND TEENAGERS

Chair: **Courtney Sale Ross** (Founder, Ross Institute, USA)

12:30 The Voice of Children and Teenagers

14:00 Lunch at the Casina Pio IV

Session 4

CHILD DEVELOPMENT AND LEARNING, FROM BIRTH TO ADOLESCENCE

Chair: **Antonio Battro** (PAS)

15:30 *Formative Childhood from a Neurobiological Perspective*

Wolf Singer (PAS)

15:50 Discussion

16:00 *Lessons from the Reading Brain for Addressing the Challenge of Global Literacy*

Maryanne Wolf (Tufts University, USA)

16:20 Discussion



16:30	<i>Scientific Learning and Education for Human Security and Well-being</i> Hideaki Koizumi (Engineering Academy of Japan, Japan)
16:50	Discussion
17:00	<i>Digital Revolution and Education</i> Daniel W. Hillis (Applied Minds, USA)
17:20	Discussion
17:30	Coffee break
18:00	<i>Children Facing Screens. An Educational Project for Helping Children Develop Their Critical Thinking Skills</i> Elena Pasquinelli (Foundation La main a la pâte, France)
18:20	Discussion
18:30	<i>Computerized Vocational Education</i> Rao R. Bhavani (Amrita University, India)
18:50	Discussion
19:00	<i>Large Scale E-education in India</i> Nedungadi Prema (Amrita University, India)
19:20	Discussion
19:30	<i>What a Child Should Know About the Origin and the Evolution of Man</i> Yves Coppens (PAS)
19:50	Discussion
20:00	General Discussion
20:30	Dinner at the Casina Pio IV

SUNDAY 15 NOVEMBER 2015

Session 5

TEACHERS: MODEL, QUALIFICATION, TRAINING, SOCIAL STATUS

Chair: **Rafael Vicuña** (PAS)

9:00	<i>Teacher Power</i> Sidney Strauss (Centre for Academic Studies in Or Yehuda, Israel)
9:20	Discussion
9:30	<i>Professional Development of Teachers at the Science Learning Centres in the UK</i> John Holman (University of York, UK)
9:50	Discussion
10:00	<i>Qualifying Teachers for Science in Latin America</i> Jorge Allende (University of Chile, Chile)
10:20	Discussion
10:30	<i>The Formation of Schoolteachers in Haiti</i> Jacques Blamont (University of Paris, France)
10:50	Discussion
11:00	Coffee break



11:30	<i>Ethics and Education in Pakistan-Principles, Policies and Practice</i> Manzoor H. Soomro (ECO Science Foundation, Pakistan)
11:50	Discussion
12:00	<i>Education and Poverty Reduction in Rural China</i> Lu Mai (China Development Research Foundation, China)
12:20	Discussion
12:30	<i>Education, a Renewable Energy?</i> Marguerite Léna (Apostolic Community of St. Francis Xavier, France)
12:50	Discussion
13:00	General Discussion
13:30	Lunch at the Casina Pio IV
<p>Session 6 ETHICAL VALUES, RESPECTING DIVERSITY, INSPIRE GUIDELINES AND ACTIONS</p> <p><i>In the context of climate change, urbanization, biodiversity and resources challenges, this final session aims at establishing concrete guidelines for educators, schools, politicians, scientists, and to inspire actions adapted to the local/national contexts. They may outline a comprehensive plan for what children need to know (standards/guidelines), how these are taught/implemented (based on different factors, contexts/settings—poverty, etc. and the preparedness of teachers), with emphasis on common moral values and role of religious leaders.</i></p> <p><i>Moderator/facilitator of the general discussion and guidelines: Joachim von Braun (PAS)</i></p>	
15:00	Suggested recommendations from the speakers
15:30	Comments and questions from the observers
16:00	General discussion of Guidelines
Conclusions and closure	
17:00	H.Em. Card. Peter K.A. Turkson (Pontifical Council for Justice and Peace, Vatican City / Ghana)
18:30	Dinner at the Casina Pio IV

MONDAY 16 NOVEMBER 2015

09:30-12:00	Session for Observers <i>Informal Discussion</i>
-------------	---

List of Participants

Honorary President of the Workshop

Courtney Sale Ross (Founder, Ross Institute, USA)

Scientific Committee

Antonio Battro (PAS) Organiser
Pierre Léna (PAS) Organiser
Veerabhadran Ramanathan (PAS) Organiser
Marcelo Sánchez Sorondo (PAS) Organiser
Jorge Allende (University of Chile, Chile)
Joachim von Braun (PAS)
Yves Coppens (PAS)
Manzoor H. Soomro (ECO Science Foundation, Pakistan)
Courtney Sale Ross (Founder, Ross Institute, USA)

Speakers

Allende Jorge (University of Chile, Chile)
Arber Werner (President, PAS)
Archer Margaret (President, PASS)
Basu Kaushik (World Bank, USA)
Bhavani Rao R. (Amrita University, India)
Blamont Jacques (University of Paris, France)
Coppens Yves (PAS)
Hillis Daniel W. (Applied Minds, USA)
Holman John (University of York, UK)
Hugonnier Bernard (Former OECD Director, France)
Jurado María Paz (Scholas Occurrentes, Argentina)
Koizumi Hideaki (Engineering Academy of Japan, Japan)
Lee Yee Cheong (ISTIC, Malaysia)
Léna Marguerite (Apostolic Community of St. Francis Xavier, France)
Léna Pierre (PAS)
Lu Mai (China Development Research Foundation, China)
Palmeyro Enrique (Scholas Occurrentes, Argentina)

Pasquinelli Elena (Foundation *La main a la pâte*, France)
Prema Nedungadi (Amrita University, India)
Ramanathan Veerabhadran (PAS)
Ross Courtney Sale (Founder, Ross Institute, USA)
Sachs Jeffrey (Columbia University, USA)
Sánchez-Terán Gonzalo (CIHC, Spain / Africa)
Singer Wolf (PAS)
Soomro Manzoor H. (ECO Science Foundation, Pakistan)
Strauss Sidney (Centre for Academic Studies in Or Yehuda, Israel)
Suñol Ignacio (Federación Internacional de Fe y Alegría, Colombia)
Tobechi Anyadike (ASCO, Nigeria)
Tomlinson Sally (University of Oxford, UK)
von Braun Joachim (PAS)
Wagner Dan (University of Pennsylvania, USA)
Wilgenbus David (Foundation *La main a la pâte*, France)
Wolf Maryanne (Tufts University, USA)
Zani Angelo (Congregation for Catholic Education, Vatican City / Italy)

Observers

Azar Gabriela
Basnage Mark
El Shahat Sameh
Foglia José
Humphrey Chevy
Keller Matt
Lambert Dominique
Macchi Odile
Maillard Sébastien
McCarty Steve

McCarty Trish
Moawad Karen
Pascucci Anna
Pedregal Christopher
Pennington Hilary
Shank Michael
Sinclair Cameron
Suárez-Orozco Carola
Suárez-Orozco Marcelo
Vecchio Giancarlo

Biographies

Jorge E. Allende was born in Costa Rica on 11/11/1934. His father was Octavio Allende a Chilean diplomat and his mother Amparo Rivera, a citizen of Costa Rica. He is married to Dr. Catherine Connelly has 3 sons and a daughter. At age 14 he moved to the U.S.A. where his father was Consul in New Orleans and in New York. He graduated from Jesuit High School, Louisiana State University and Yale University where he obtained a Ph.D. in Biochemistry. His research has centered on the mechanism of protein synthesis, on the action of progesterone in oocyte maturation and on the specificity of protein kinases. He is a professor at the Faculty of Medicine, University of Chile and has been Research Vice Rector of his University. In recent years he has dedicated himself to promote inquiry-based science education in elementary and secondary levels in Chile. He is a member of the Chilean Academy of Sciences and of the U.S. National Academy of Sciences and National Academy of Medicine and of the Academies of Sciences of Latin America, Argentina, México, India and of TWAS.

Kaushik Basu is Chief Economist and Senior Vice President of the World Bank. Prior to this, he served as Chief Economic Adviser to the Government of India and is currently on leave from Cornell where he is Professor of Economics and the C. Marks Professor of International Studies. Mr. Basu holds a PhD in Economics from the London School of Economics, and is a recipient of one of India's highest civilian honors, the Padma Bhushan. His contributions span development economics, welfare economics, industrial organization and game theory. He has taught at the Delhi School of Economics, Harvard, Princeton and MIT.

Rao R. Bhavani is Associate Professor and Director, AMMACHI Labs, Amrita Vishwa Vidyapeetham University Research in use of Multimedia and robotic technology for skill development. She is presently head of the R&D centre that focuses on HCI technologies for education, disaster management, medical simulation and rehabilitation and the chair of the graduate engineering program in Robotics and Automation. Since 2014, Rao R. Bhavani is Principal Investigator of the Women Empowerment Project – Amrita Serve, an initiative of the Mata Amritanandamayi Math, Project Head of the Mobile Vocational Education Project of Amrita University and Principal Investigator of the Sakshat Amrita Vocational Education Project.

Jacques Blamont, professor at the university of Paris (1957 -96) now emeritus, is an experimental physicist who turned from atomic spectroscopy to space science. He was given the task of creating the French space agency CNES in 1962, as Scientific and Technical Director. In 1972 he became Chief Scientist and advisor to the Director General of CNES. He is still advisor to the President of CNES. Involved in atmospheric research, Jacques Blamont discovered the turbopause of the Earth (1959), the interstellar wind (1970), the hydrogen envelope (or halo) of comets (1971), the polar noctilucent clouds (1973), developed the scientific ballooning in Europe and the Lidar technique for atmospheric probing, proposed and helped exploration of planets by balloons, with the successful flights of two balloons in the atmosphere of Venus during the soviet mission Vega (1985). He was a Prime investigator on many Soviet and US spacecrafts (Voyager, Pioneer Venus, Vega, Phobos, Clementine).

Daniel Hillis is Co-founder of Applied Minds, a research and development company. He is also Co-founder and director of several Applied Minds spinoff companies, including Applied Invention, Applied Proteomics, TouchShare, and Metaweb (acquired by Google). Hillis is also a visiting professor at the MIT Media Lab, and Judge Widney Professor of Engineering and Medicine at the University of Southern California. Previously, Hillis was Vice President, Research and Development at Walt Disney Imagineering, a Disney Fellow, and Co-founder of Thinking Machines Corp. Hillis is an inventor, scientist, author, and engineer, and holds hundreds of U.S. patents. He is the designer of a 10,000-year mechanical clock, and is a Fellow of the Association of Computing Machinery, the American Academy of Arts and Sciences, and a member of the National Academy of Engineering.

John Holman is Professor in the Chemistry Department, University of York, UK, and adviser in Education at the Wellcome Trust and the Gatsby Foundation. He was the founding Director of the National Science Learning Centre and adviser to the English government until September

2010. He was elected President-elect of the Royal Society of Chemistry in 2015 and is a Trustee of the Natural History Museum. After studying Natural Sciences at Cambridge, John taught in secondary schools and in 1994 he became principal of Watford Grammar School for Boys. From 2000 to 2004 he was Salters' Professor of Chemical Education at York and was the founding director of the Salters Advanced Chemistry programme. John was knighted in 2010, for services to education.

Bernard Hugonnier is presently professor at the Institut Catholique de Paris and Co-research director, Collège des Bernardins in Paris. During the past 33 years he has been working at the Organisation for Economic Cooperation and Development (OECD) in various areas such as multinational enterprises, liberalisation of capital movements, regional development, public affairs and communications, and management and restructuring of services. His last position from 2002 till 2012 was deputy director for education.

María Paz Jurado manages the program "Scholas Citizenship International" of Scholas Occurrentes. She also serves as Senior Advisor for the General Direction of Education Planning and Innovation (Ministry of Education of the Buenos Aires City Government). More in detail, she is Project Manager at the Learning Metrics Task Force, a UNESCO and Brookings initiative, and she is designing a policy to introduce the teaching of entrepreneurship at the City's secondary schools. From June 2014 through July 2015 she was the Executive Director for the Argentina Emprendedora Foundation (Buenos Aires, Argentina).

Hideaki Koizumi, Ph.D., graduated from the University of Tokyo in 1971 and is currently Vice President of the Engineering Academy of Japan and Fellow and Corporate Officer of Hitachi, Ltd. He is recognized worldwide as an early proponent and major advocate of the new "trans-disciplinary fields" with innovations in "Analytical Science" including Polarized Zeeman-Effect Atomic Absorption spectroscopy (P-ZAA) for environmental measurement and analysis and the "Science of Humanity" including "Brain-Science Based Education" via such noninvasive brain-function-imaging technologies as Magnetic Resonance Angiography (MRA)/Optical Topography (fNIRS). His numerous positions include Advisory Board Member of many academic institutions worldwide.

Lee Yee Cheong, Academician Dato' is the Malaysian Chairman, Governing Council, International Science Technology and Innovation Centre for South-South Cooperation under the auspices of UNESCO (ISTIC), Kuala Lumpur. He is also a Member of the National Science and Research Council of Malaysia; Pro-Chancellor of the Infrastructure University of Kuala Lumpur, Chairman of the Global Council Inter-Academy Partnership (IAP) Science Education Program and former Chairman of Governing Board of the Institute of Energy Policy and Research (IEPRE) at the University Tenaga Malaysia (UNITEN), as well as Adjunct Professor of UNITEN. Furthermore, he is Advisor to MIGHT International; a Member of Global Science Innovation Advisory Council (GSIAIC); Vice Chairman of the UN Sustainable Development Solution Network (SDSN) Malaysia; and Patron of the International Young Professionals Foundation.

Marguerite Léna is a French professor and philosopher specialised in educational questions. She was a student of the philosopher Paul Ricoeur and is a member of the Apostolic Community of St. Francis Xavier. The philosophical work of Marguerite Léna is in the wake of the French philosophy of reflection, as it unfolds from Descartes to Nabert and Maine de Biran to Gabriel Marcel.

Lu Mai, Secretary General of China Development Research Foundation (CDRF), has extensive expertise on poverty alleviation. For over a decade, Mr. Lu has led CDRF to advocating childhood development in China and played a crucial role in advancing its progress and relevant policy-making. Mr. Lu led the completion of *China Human Development Report 2005*, which received UNDP's 2007 *Human Development Award for Excellence in Policy Analysis and Influence*. In 2011, LGOPAD Leading Group Office of Poverty Alleviation and Development (of the State Council) named Mr. Lu as one of the "National Pioneers in Poverty Alleviation and Development". Before joining CDRF in 1998, Mr. Lu served as senior research fellow in Development Research Center (DRC) of State Council of China. Mr. Lu started his career in the Research Center for Rural

Development of the State Council of China in the late 1980s, where he assumed a number of positions including the director of Experimental Area Office for Rural Reform, and played a significant role in China's rural reform. Mr. Lu holds M.A. in public administration from John F. Kennedy School of Government, Harvard University, and B.A. in economics from Beijing College of Economics. He receives the special allowance from the State Council of China for his contribution to the development research.

Enrique Palmeyro is the Founder and Director of Scholas Occurrentes, the first global initiative launched by Pope Francis with the goal of promoting peace amongst people through education. It connects more than 400,000 schools and educational networks, both public and private and of any religion. Its mission is to generate a paradigm shift in education through the integration of educational communities with a focus on the low-income ones. It relies on technology to design global classrooms that complement art and sport, and to recover the educational pact to realize an integrated and peaceful society.

Elena Pasquinelli works at the "Fondation La main à la pâte pour l'éducation à la science". She currently develops her research activity as associate member of the Institut Jean Nicod (Ens, EHES, CNRS), which is one of the research labs of the Institut pour l'étude de la cognition (IEC) of the Ecole normale supérieure (Paris). Her domain of research is the philosophy of cognitive sciences, in particular mind-brain-behavioral studies and their application to domains of social interest, namely: education, the media and technology. Together with Daniel Andler and Roberto Casati, she teaches a course on education, cognition and the brain at the Master of Cognitive Sciences of the Ecole normale supérieure, Paris.

Nedungadi Prema Her large scale projects developed and deployed across India include: Amrita Rural India Tablet enhanced Education (RITE) in remote villages (scalable student education for the poor) which is 2 hours of an 8 hour teaching curriculum she and her team have developed; Intelligent Tutoring Systems for School Education (scalable teacher education); eGovernance Systems for Schools; Big Data Analytics in Education and Health; Health Awareness and Monitoring Systems and Simulations. The education technology is deployed at 4357 schools, with 5200 teachers trained and 178,000 students impacted. The technology also supports the 50+ schools including the hearing impaired and differently-abled schools managed by our parent NGO, the Mata Amritanandamayi Math. Our eLiteracy and health awareness program aims to train 1000 tribal children and youth including abused girls at Nirbhaya centers. Our sustainable development model is offered at 140 rural village centres in 22 states across India.

Courtney Sale Ross, has championed a transformation in education for the past 25 years. She recognized that preparing students to meet the challenges of the 21st century required a new education model. As Founder and Chair, she conceived of the Ross Learning System – inclusive is its Spiral Curriculum, which will be published next year. Ross School students, grades PK-12, attend from over 20 countries. In addition, Ross Institute offers teacher professional development, convenes workshops, commissions research, and co-publishes books. Prior to her philanthropy, Mrs. Ross was an award-winning documentary filmmaker and was conferred an Honorary Doctorate from her alma mater: Skidmore College.

Jeffrey D. Sachs is the Director of the Earth Institute, Quetelet Professor of Sustainable Development, and Professor of Health Policy and Management at Columbia University. He is Special advisor to United Nations Secretary-General Ban Ki-moon on the Millennium Development Goals, having held the same position under former UN Secretary-General Kofi Annan. He is Director of the UN Sustainable Development Solutions network. He is co-founder and Chief Strategist of Millennium Promise alliance, and is director of the Millennium Villages Project. Sachs is also one of the Secretary-General's MDG advocates, and a Commissioner of the ITU/UNESCO Broadband Commission for Development. He has been named one of Time Magazine's "100 Most Influential People in the World" twice, in 2004 and 2005 and has authored three New York Times bestsellers in the past seven years: the End of Poverty (2005), Common Wealth: Economics for a Crowded Planet (2008), and the Price of Civilization (2011). His most recent books are To Move the World: JFK's Quest for Peace (2013) and The Age of Sustainable Development (2015). Professor Sachs is widely considered to be one of the world's leading experts on economic development and the fight against poverty. His work on ending poverty, promoting economic growth, fighting hunger and disease, and promoting sustainable

environmental practices, has taken him to more than 125 countries with more than 90 percent of the world's population. For more than a quarter century he has advised dozens of heads of state and governments on economic strategy, in the Americas, Europe, Asia, Africa, and the Middle East. Sachs is the recipient of many awards and honours, including membership in the Institute of Medicine, the American Academy of Arts and Sciences, Harvard Society of Fellows, and the Fellows of the World Econometric Society. Professor Sachs is also a frequent contributor to major publications such as the Financial Times of London, the International Herald Tribune, Scientific American, and Time Magazine. Prior to joining Columbia, Sachs spent over twenty years at Harvard University, most recently as Director of the Centre for International Development and the Galen L. Stone Professor of International Trade. A native of Detroit, Michigan, Sachs received his B.A., M.A., and Ph.D. degrees at Harvard.

Gonzalo Sanchez-Terán is currently Deputy Humanitarian Programs Director at the Center For International Humanitarian Cooperation (CIHC). He worked for the Jesuit Refugee Service from 2001 to 2015 as Country Director in Guinea Conakry, Liberia, Côte d'Ivoire and the Central African Republic, and as Program Officer in Eastern Chad and the Somali-Ethiopian border. During this time he has organized, managed and implemented emergency projects in refugee and IDP camps with a special focus in education. He has also done consultancy work on humanitarian assistance, development and advocacy for international NGOs in Zimbabwe, Madagascar, Zambia, Côte d'Ivoire, Kenya, Chad, Uganda, Republic of the Congo and the Democratic Republic of the Congo. Since 2011 he is a Researcher at Fordham University (New York) where he also teaches at the International Diploma on Humanitarian Assistance. He is also the Director of the Education in Emergencies Course and the Strategic Issues in Humanitarian Assistance Course for the MIHA (Master on International Humanitarian Assistance). Gonzalo is also a regular lecturer for the Humanitarian Cooperation Master at Comillas University (Madrid), NOHA Master in International Humanitarian Action at Deusto University (Bilbao), and the Master of International Cooperation in Sustainable Emergency Architecture at the UIC (Barcelona). In the last years he has conducted training courses for local NGOs in Sudan, Jordan, South Korea, Kenya, Myanmar, Malaysia, India and Nicaragua. From 2010 to 2011 he was the director of Intermon-Oxfam's book collection.

Prof. Dr. **Manzoor Hussain Soomro** (Officer, Order of Academic Palms, France) is President of ECO Science Foundation (ECOSF) since 3 June 2013. ECOSF is an Inter-governmental Specialized Agency of Economic Cooperation Organization (ECO) with 10 member countries. Prof. Soomro has a brilliant academic career with first positions & scholarships from primary school till Ph.D. He is Gold Medalist & winner of Quaid-i-Azam Scholarship for Ph.D. from the President of Pakistan. He did Ph.D. in Crop Protection from the University of Reading, England in 1987 with UK's ORS Award for 3 consecutive years. When chairing the Pakistan Science Foundation until 2013, he developed large programs for basic science education in Pakistan.

Sydney Strauss received his Ph.D. in the School of Education at the University of California at Berkeley in 1967. After doing two years post-doctoral work in the Psychology Department at Berkeley, he immigrated to Israel where he taught in the School of Education and Department of Psychology at Tel Aviv University (TAU) for 38 years. He is currently teaching at the Centre for Academic Studies in Or Yehuda near Tel Aviv. His major work in the recent past revolves around humans' remarkable ability to teach.

Ignacio Suñol Esquirol Born 03.02.1943, Barcelona, Spain. Jesuit Priest. Degree in Philosophy. Facultad Pontificia de Filosofía San Francisco de Borja. San Cugat, Spain. 1972 Enrolled in Libro Escalafón Nacional del Magisterio de Bolivia; 1967-2004 Classroom teacher in rural education, humanistic high school and higher technical education programs; 1979-2004 Rector, Instituto de Aprendizaje Industrial (IAI). Oruro, Bolivia; 1984-1990 Director, Centro de Investigación y Servicio Popular (CISEP). Oruro, Bolivia; 1984-2000 Board Member, Centro de Apoyo a la Educación Popular (CAEP). Huanuni, Bolivia; 1994-2001 Vice President, Directorio Escuelas Radiofónicas Fides. El Alto, Bolivia; Member of Fe y Alegría's International Education through Technology Committee; 1999-2010 Province Consultant, Society of Jesus in Bolivia; 2009 Country Director, Fe y Alegría Bolivia, La Paz, Bolivia; 2010-Present, General Coordinator, Federación Internacional de Fe y Alegría, Bogotá, Colombia.

Father **Anyadike Tobechei** is President of the Association for Assumpta Science Centre Owerri (ASCO). ASCO is a non-profit association with

the aim of promoting and participating in the dialogue between science and faith, acting as a platform for collaboration and practical cooperation between European and African students. Its main objective is to foster and animate this dialogue through activities in science communication as a way to sustainable development of the African continent.

Sally Tomlinson is Emeritus Professor at Goldsmiths, London University, and an Honorary Fellow in the Department of Education, University of Oxford. She has been teaching, researching and writing for many years in the areas of educational policy, special education, and the education of ethnic minorities. Her recent books are “Ignorant Yobs?: Low attainers in a global knowledge economy” (2013 Routledge) and “The Politics of Race, Class and Special Education: the selected works of Sally Tomlinson” (2014 Routledge).

Dan Wagner is UNESCO Chair in Learning and Literacy, and Professor of Education at the University of Pennsylvania, USA. He is Director of the International Literacy Institute, co-founded by UNESCO and the University of Pennsylvania, and Director of the University of Pennsylvania's International Educational Development Program. He received his Ph.D. at the University of Michigan, was a postdoctoral fellow at Harvard University, a Visiting Fellow at the International Institute of Education Planning in Paris, a Visiting Professor at the University of Geneva, and a Fulbright Scholar at the University of Paris. He is a fellow of the American Psychological Association, the American Anthropological Association, and the American Educational Research Association.

David Wilgenbus, former astrophysicist, is a member of the *La main à la pâte* team in Paris since 2001. He leads the “resource production” department

of the Foundation *La main à la pâte* and coordinates several large-scale educational programs, most of them dealing with sustainable development issues (health education, global warming, ecological housing, ecomobility natural hazards, oceans and so on). These projects have involved dozens of thousands of classes in primary and secondary school. David Wilgenbus also acts as teacher trainer, in France and abroad.

Maryanne Wolf is John DiBiaggio Professor of Citizenship and Public Service; Director, Center for Reading and Language Research, Tufts University. With degrees from Harvard University and St. Mary's College/Notre Dame, she researches the reading brain, dyslexia, and global literacy in over 130 scientific publications. Wolf wrote *Proust and the Squid: The Story and Science of the Reading Brain*; *What It Means to be Literate: A Literacy Agenda for the 21st Century*, and *Letters to the Good Reader: The Contemplative Dimension*. She and colleagues at MIT and GSU are developing digital learning tools to bring literacy to children in poverty around the world.

H.E. Msgr. **Angelo Vincenzo Zani**, Archbishop, is Secretary of the Congregation for Catholic Education at the Vatican since 2012. He was Professor of Social Sciences at the seminary and at the University of Brescia Catholic Sacred Heart (section of Brescia) and was responsible of pastoral education in that Diocese. H.E. Msgr. Zani was Director of the National Education Office, School and University of the Italian Episcopal Conference. He has been Under-Secretary of the Congregation for Catholic Education since 2002.

For the biographies of the other Academicians of the PAS and PASS see www.pas.va and www.pass.va

MEMORANDUM

1) From 13, 14, 15 November the buses for the Academicians and the Speakers will leave the hotels as follows:

Domus Sanctae Marthae-Casina Pio IV-Domus Sanctae Marthae	
Friday 13 November	h. 8.45 a.m. h. 8.30 p.m.
Saturday 14 November	h. 8.45 a.m. h. 9.30 p.m.
Sunday 15 November	h. 8.45 a.m. h. 8.30 p.m.
Monday 16 November	h. 9.15 a.m.
Hotel Columbus-Casina Pio IV-Hotel Columbus	
Friday 13 November	h. 8.45 a.m. h. 8.30 p.m.
Saturday 14 November	h. 8.45 a.m. h. 9.30 p.m.
Sunday 15 November	h. 8.45 a.m. h. 8.30 p.m.
Monday 16 November	h. 9.15 a.m.
Hotel della Conciliazione-Casina Pio IV-Hotel della Conciliazione	
Friday 13 November	h. 8.45 a.m. h. 8.30 p.m.
Saturday 14 November	h. 8.45 a.m. h. 9.30 p.m.
Sunday 15 November	h. 8.45 a.m. h. 8.30 p.m.
Monday 16 November	h. 9.15 a.m.

2) Lunch and dinner for the Speakers and Academicians will be served at the Academy. If you are a vegetarian, please let us know as soon as possible.

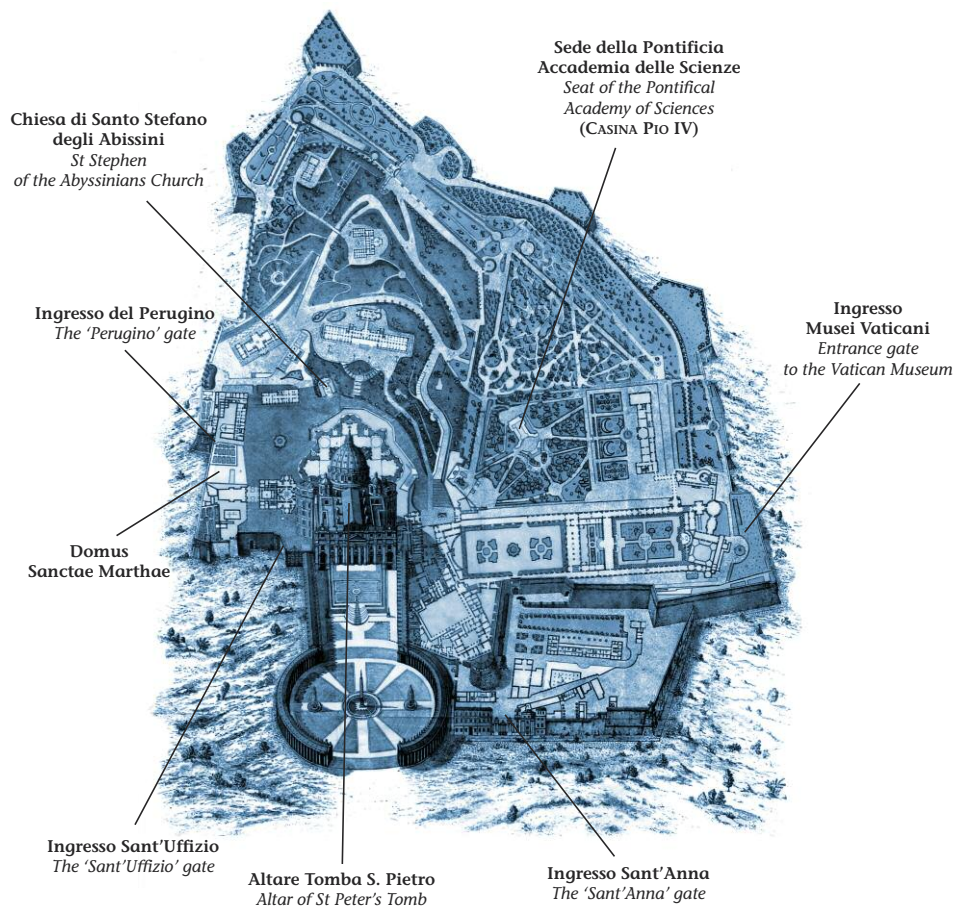
3) Lunch for the Observers. Observers may have lunch at the Vatican canteen, for 8,00 euros per meal payable to the canteen cashier.

4) Wifi is available in the Casina Pio IV's Conference Hall. Please log in to the network called WLAN_PADS using “guest” as the username and “password” as the password.

5) Cable internet access is available at the Domus Sanctae Marthae for 3,00 euros per day.

Note for the Speakers/Academicians:

Please give your form for the refunding of expenses to the Secretariat.



THE PONTIFICAL ACADEMY OF SCIENCES • CASINA PIO IV • V-00120 VATICAN CITY
Tel: +39 0669883451 • Fax: +39 0669885218 • Email: pas@pas.va

For further information please visit:
www.pas.va