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Title	The Evolving Scientific Mind through a Transdisciplinary Lens	Problem-Oriented Approaches to Teaching and Learning across Disciplines	Building the scientific mind across the disciplinary divide - why deconstructing and reconstructing the 'social' is important	Developing young scientific minds: The role of the arts
Session type	Flexible and dialogic to fit in with the style and format of the Colloquium	Workshop	Small group presentation and ensuing discussion with those individuals interested in this topic	Roundtable discussion. Conversation will be provoked by an overview of relevant research and images and quotations from scientists with life-long interest in the arts.
Short description	The complexity of outer trends and global events requires complex, higher order ways of thinking, understanding and action. Three areas of academic research have pointed to the emergence of significant changes in how humans think: postformal psychology, integral studies and global/planetary studies. Insight into the evolving scientific mind can be gained through this evolution of consciousness research with significant implications for scientific and other academic research and for ability to have long-range vision.	This workshop focuses on problem-oriented learning (POL) as a more flexible approach to problem-based learning (PBL). This flexibility appears to be a natural evolution as POL expands beyond its initial applications in medical science to the humanities and social sciences. After a brief discussion of the results of a study done with several university faculties, we will work with participants to surface approaches in use and strengths and challenges inherent in these approaches and unique to the discipline.	The current planetary sustainability crisis is a transdisciplinary challenge. Looking for sustainable ways in which the arts can play a role in solutions within the fragmentary mindset that gave rise to the disciplinary divide in the first place, may prove to be both a logical and practical impossibility. For a meaningful trans-disciplinary dialogue to happen between the natural and social sciences, it is essential that existing ideas, concepts and notions of the 'nature', 'science' and 'society' be critically reviewed and changed, if necessary. In this presentation, it will be argued that the replacement of substantialist notions of the 'social' in social science with that of a 'networking' perspective may very well be a crucial move we need to make in order to develop and sustain a truly trans-disciplinary dialogue capable of meeting the challenges of current planetary crisis.	This roundtable discussion will focus on the early childhood. An overview of work that advocates providing children with multiple possibilities for representing and developing their knowledge will begin the discussion, followed by engagement with the findings of a study of mature scientists who have engaged with the arts since they were children and whose artistic endeavours facilitate their creativity in science.

Gary Hampson

Shahinaz Ibrahim Mekheimer

Martin F. Gardiner

Enriching the academic mind through deepening the scholarship of integration

Health promotion and raising critical awareness with special emphasis on qualitative research
Arts, Language, Purposeful Action, Development of Consciousness, and Development of the Scientific Mind: Implications for Education for Sustainable Human Life

A brief presentation followed by round table dialogue (default)

multi way communication with participatory learning , using pictures as discussion starters. the presentation is a power point presentation , and the setting is a round table or U shaped setting allowing group interaction

Paper presentation followed by discussion

The abstract presented opens up multiple possibilities for inquiry and dialogue. It is intended that the avenues pursued are in relation to particular interests voiced by participants. This may involve interest in a degree of formal presentation; questions directed toward the presenter-coordinator either during or after presentation; and/or open-ended discussion among the participants.

the session aims at the appreciation of: working with people (the bottom up approach) of empowering and unabling, of the importance of qualitative research, of using communication materials as discussion starters and raising the critical awareness techniques.

Previously proposed theory addressing evidence of the impact of arts skill training on broader learning (Gardiner, 2008) will be further developed to discuss connection to recent work by Jaynes, Lakoff, Damasio and others concerning metaphor, verbal language and development of consciousness. Arts address and help develop essential cognitive and emotional interactions with the world that cannot be fully addressed by verbal language, or science alone. The human need to act purposefully to maintain life that fuels the development of consciousness also fuels needs for science, verbal language and the arts. In this difficult and rapidly developing world the opportunity to learn from each and all of these disciplines cannot be ignored as we seek to develop humanity's place in a world where we and other living creatures can live.

Faiza Hussein Abd Alla

Which home we want to replicate in the Universe and is there any room for "the Third World people"?

Paper presentation + discussion

The only practical way for our survival is to search for a new home in the universe. This new home would not even be possible to dream about without having in mind the technology that has erupted during the Industrial Revolution, the revolution that was originally anticipated to pave the way for the era of controlling the nature.

The Industrial Revolution duration was a time of great technological innovations that have transformed, by the beginning of the eighteenth century, the entire economic and social fabric of Britain and then the remainder of the industrial world. This massive qualitative shift has furnished the way for the establishment of centers of power in their final holistic shape. Whereas, Third World countries - were at that time suffering the occupation under the colonial and neo-colonial rules, they have been kept impoverished by the movement of economic resources towards capitalist centers in the advanced industrial societies. Thus, the Third World unjustifiably chosen to contribute significantly to the development of the 'Developed World' while the later impaired their development route and kept them in dependency relations. Actually and more specifically, these relations are not merely dependency- inducing, but a form of systematic and structured (through frequently covert) exploitations through the medium of international finance capital.

The progress in science and technology achieved by the industrial societies enabled them to achieve economic primacy and has ensured that their citizens enjoy a material standard of living which enormously exceeds that of the Third World. Whereas, the Third World countries after independence inherited shapes of economical activities that were controlled either by individuals or private corporations that are intimately linked -in most cases- to the previous occupiers, so that, the social and economical inequalities in human societies that exist in present time of globalization have never existed before in human kind history. Accordingly, which modality of social justices we are going to establish in the universe?

The flow of the technology and know-how to the Third World countries has always been restricted and more recently by the WTO. The Third World nomadic individual with his/her nomadic mentali adopts "post modernity" model that is not deskbound in space and does not need to be stabile in one place. It only needs from an individual to be a hauler and not a permanent dweller. This created a second type of dependency and colonialization. Actually, all post modernity is seen as a conceptual mask for late capitalism.

On the other hand it is soon expected that modern biotechnology will possess the power to change the genetic-makeup of our offspring and even their behaviour which is suggested to create a new biological system of 'classes'. So, the question here is which human being are we exactly going to transfer to universe?

What is left is that! Is there any hope for the Third World people to possess a home in the universe?

Before you answer, please look at the world we devastated, right to the bone!

Arthur Jordan	Aziza Ragai Ellozy, Tiffany Vora, Kathryn Lawrence, & Brandon Canfield	Benjamin B. Olshin, & Paul Grobstein	Rasha Moustafa Awad
Approaches to the explanation and learning of scientific studies for non-science stakeholders	On teaching "Scientific Thinking": a collaborative approach to a student centered active learning and technology enhanced course design	Looking for New Ways of Making Sense of the Building Minds for a Complex Future Universe and the Place of Humans in It: Foundational and Non-Foundational Thought	

Workshop	Panel discussion	brief paper presentation + discussion	Brain storming session
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This workshop starts with a discussion of scientific studies – environmental impact as a grouping of applied sciences usually outside academe. Frequently results are gauged against set criteria, with those criteria poorly set for the understanding of the stakeholders (regulator, proponent and general public). The goal is to build scientific understanding for decision making. The initial approach is to understand the stakeholders and their understanding of science. We will expand the discussion using actual case studies.

The panel will address the approach adopted in designing "Scientific Thinking" a core curriculum multi-section course required of all first year students at the American University in Cairo. The emphasis of the course is to cultivate the habits of mind characteristic of a scientific approach to the world. The panel will discuss the objectives of the course, the collaborative effort of faculty in designing it, the emphasis on a student-centered learning approach and the role of technology in promoting a collaborative, active learning environment.

This paper presents a new model of looking at the human mind and how it engages the world. The model draws from brain science, philosophy, and elements of cultural anthropology, and may serve as a foundation for constructing new hypotheses for talking about the cognitive process and the creation of human cultures. The model we present here is what we call "foundational" versus "non-foundational" worldviews.

Howard Gardner, in his most recent book "Five Minds for the Future", identifies five types of mind. These types are the disciplinary, the synthesizing, the creative, the respectful, and the ethical mind. And these five minds we need to keep front and center going forward. although the existing models of learning are reasonably good for developing a disciplined mind, they have almost less to say about the synthesizing and creative minds, though these are arguably the most important minds for the future. Accordingly, this may impose five vital challenges, concerning the following:

- Why are these five types of mind so important right now?
- How they work and how we could develop them?
- How to measure and assess these five kinds of mind?
- Do we need other types of mind to cope with the future challenges?
- How to integrate these different kinds of mind in one, in a trial to seek perfection?

Nesreen Khaled El Molla

Bringing Science to Politics

The session can take the form of an informal roundtable discussion .It can start b raising a pre-determined set of questions that needs to be discussed and later answerd by the participants. The session could have a moderator and a rapporteur. The Moderator will prepare a set of suggested questions that can be further enlarged by the participants later. He/She will also moderate discussions. The rapporteur of the session will gather ideas that are solution - oriented and reflect them on a mind map or a flip chart (this form of setting shall stimulate debate and ideas freely)
At the end of the colloquium, participants are expected to work as a drafting committee to draft a 2 - 3 pages compiling policy recommendations of their discussions. (Starts with short presentation of 15-20 minutes.)

Nowadays politics and political discourse of leaders has been manipulated by interests. due to this fact, political discourse may turn inconsistent with applied politics. the evident result is a divorce between science and politics. To this end , in some cases politics that are not based on evidence or science may result in catastrophies. Accordingly the aim of this activity is to brainstorm on how can we bring science into the lives and practices of politicians.

Jinan Kodapully

Indigenous games.
A natural way of awakening the senses and knowing the world.

workshop with activites , powerpoint presentation and dialouge

Knowing is an act of being in the world.
Children, in the process of making sense of the world observe, touch, smell, taste, twist, break, make and simultaneously develops the cognitive tools, skills and other qualities for being in the world.
Children play and create toys as part of this process.
Beauty is the way in which children connects and acts in the world.
Sense is the link to the inner and the outer world..

Marten de Vries, & Jaap Swart

The role of media, mind and identity in a "liquid" social universe

Seminar motivated by questions for which we have as yet no answers

Identities are not given they are created. But, today there is a vexing shortage of firm and reliable orientation points to guide our way, a problem compounded by a context of rapidly changing information and social structures, both proximal/local, distal/global (and universal).
Communication and the current rapidly growing world of mixed media productions play an important role in creating our global mind set ranging from inspiring wonder and mutual respect to instigating anxiety and hatred.
Our current work uses the full arsenal of a managed mixed media - - performing arts, print, TV/radio to web -- under a variety of "normal" and calametous circumstances in order to play a supportive role in the world of individualized and constantly "becoming" persons. Yet, man throughout history is at once a social being and a self, but old ideologies and strategies that defined this relationships no longer provide the security they once did and leave the modern person a hungry consumer of identities offered through identifications in the medium of mass communication. The discussion in the seminar would focus on exploring these issues by means of examples of existing media efforts under different social and situational conditions. Do they help or hinder, can they assist with answering: "who am I, what is my place among others and things, how will I know who I am" etc..

Carlo Fabricatore, & Ximena López

Gaming and the scientific mind - Designing games to develop the scientific mind.

150 minutes game design workshop, actively involving all the participants. The workshop is one of the two activities belonging to a trail titled "Gaming and the scientific mind", aimed at analyzing from different perspectives the influences of gaming on the development of the scientific mind.

Workshop participants will face the challenges of designing games that embed cognitive processes related to the development of the scientific mind. In the beginning of the workshop, experts in the fields of game design and educational gaming will explain the basic principles to design gaming and analyze cognitive processes involved in the gaming experience, illustrating how to apply them to create "serious" games that can foster the development of the scientific thinking. Then, participants will be organized in groups, and will be required to design a game concept especially aimed at this purpose, supported by facilitators.

Carlo Fabricatore, & Ximena López

Gaming and the scientific mind - The impact of digital gaming on the development of the scientific mind

30 minutes seminar followed by an up to 30 minutes debate, open to all the participants. The activity will be complemented with a poster describing the learning principles underlying the gaming experience that may be exploited for developing the scientific mind. The seminar is the first of two activities belonging to a trail titled "Gaming and the scientific mind", aimed at analyzing from different perspectives the influences of gaming on the development of the scientific mind.

The session will be aimed at analyzing and discussing the relevance of digital games for the development of the scientific mind. Research evidence, game-industry wisdom and real-world examples will be analyzed and used to illustrate the potential of digital games as means to develop the scientific mind in a situated way and beyond formal educational contexts and scientific environments. The presentation will be followed by a debate involving the audience, in order to allow the convergence of different backgrounds to further enrich and extend the scope of the analysis. In addition, two PC stations with 2 videogames will be available in the poster area for assistants to play and analyze the cognitive processes that go on during gameplay. An on-the-fly questionnaire will be handed to players to collect their opinions about the potentiality of the games for developing the scientific mind.

Shahinaz Ibrahim Mekheimer, Maha Mahmoud, & Ayman Amine

The socio-demographic and some personality traits of those who value imagination as a quality that children can be encouraged to learn at home , in Egypt . A descriptive study.

Power point presentation of the study with discussion. to be incorporated with the SIGs on the topic concerning : Early child development and the scientific mind .

Based on the results of the WVS conducted by the IDSC in Egypt , Imagination was the least quality valued by the respondents which can be encouraged to learn at home . Hence this paper aims at shedding the light and drawing a profile (personality traits) of those who valued imagination

Roy McWeeny

Science publishing in Africa: Problems of printing and distribution

Round table consultation

Much material is already available on the web, for free downloading (e.g. from <learndev.org>). Many readers find it easier to work from printed versions but have no facilities for producing their own copies. Commercial publishing houses have the facilities for both printing and distribution, but will not handle open-access material, viewing it as unwelcome competition. Experience shows that there is no conflict: potential readers (forming a vast market) will purchase their own hard copies of books they have seen on the web if they are available at low cost. The publishers have nothing to lose: there are no type setting costs, all the work they once had to do is nowadays done for them by the authors themselves. Printing from pdf files is easily done by unskilled printers in the countries where the books will be used. Who will make the end product available in the places where it is most needed? -- and at a price affordable by students.

Jan Visser

Carolina Ödman

The scientific mind: Why should we care?

Universe Awareness

Presentation with discussion

Workshop with children attending the FEDA school (1.5 hours) and open discussion group (4 hours).

The presentation will delineate major features that pertain to the construct of the 'scientific mind' and expound reasons why caring for its development is essential for the future of humanity and the planetary habitat. Issues related to the scientific mind in the context of multiple other mindsets and diverse cultures and worldviews will equally be highlighted. An attempt will be made to situate the proposed topics of discussion for BtSM2009 within the referred argument. During the discussion part of the session members of the audience are invited to critically contribute to the argument.

A workshop will be carried out with children attending the school at FEDA. The experience and aspects of building the scientific mind for young children of the universe awareness programme will be discussed. The workshop should not take more than 1.5 hours, the discussion group 4 hours.

David Blanks

Big History: From Hydrogen to Humans in Ten Easy Lessons

Keynote address

A creation myth is a story we tell ourselves about how it all began, how we got here, what it all means. Every society has one. In our earliest days, before writing, the stories we told ourselves about the natural world mirrored what we knew of our own lives. The sun, moon and stars; the earth itself; the mountains, forests, plains and rivers; the plants and animals that nourished us—even those we fought against: all had spirits like the spirits inhabiting our bodies. In those days the shamans moved back and forth between these worlds and helped us to understand the unpredictability of everything around us.

After we learned to grow and raise our own food and had settled into village life, after big men came to rule over us, religious specialists laid claim to the knowledge of the natural world for themselves, and creation myths became more esoteric and austere. The world, in a sense, was made more mysterious: the natural and the supernatural drifted into separate spheres and there were things that humans were no longer capable of understanding. In the ancient Indian hymn, the Rig-Veda, for example, the Brahmins admitted that they just did not know where we came from, adding that perhaps the gods did not know themselves, for they came afterwards, with the creation of the universe. Before that “there was neither non-existence nor existence.”

The Axial Age and the advent of monotheism brought new stories. God created all. There was, once again, and more than ever before, a newfound certainty.

In our own day—in the scientific age—our creation myth is built on evidence, experiments and axioms. With every hard-working generation we feel we move closer to knowing how it all began and where it all is going. We have the Big Bang, evolution, the theory of relativity, and quantum mechanics. As a result, uncertainty has returned with a vengeance. Even the shamans, Brahmins and high priests of science admit that we are living in a universe whose age we cannot determine, filled with matter we cannot identify, and operating according to principles we do not really understand. Big History tells this story and aims to make it accessible to everyone. It explains how worldviews affect human behaviour and how our behaviour affects the world around us. Big History is an attempt to put everything into perspective.

Mohsen Tawfik

Science and Religion Perspectives: Conflict, Interdependence,
Dialogue or Integration

Presentation followed by group discussion

Religion and science have been ever among the main factors that nurtured the minds of politicians who made the history of the world. The relation between science (scientific mind) and religion (religious mind) at different times throughout the history of the world has decided the path of humanity according to how science and religion were interpreted and used. The four possible perspectives (Conflict, Interdependence, Dialogue and Integration) will be presented and analyzed referring to some concrete examples. The following group discussion has to explore the possible future scenarios of this relation and what could be done to realize peace and sustainable development for the humanity.