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the interacademy partnership
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Concept of One Belt One Road Fusion of Civilizations Curriculum Design Forum 3-4 July 2017 Beijing

1.0 Background

In the fight against global terrorism, ISIL is undoubtedly the global target. from their bases in Syria and Iraq, terrorist attacks have spread throughout the world Terrorism due to religious fundamentalism is not confined to ISIL Communal violence, religious strife, genocide and mass population dislocation continue to occur in most corners of the global, perpetuated by normally rational people of every colour and creed. Political and religious dialogues have been ongoing for decades to tackle this human aberration without much success. I believe a better solution may well lie in the education of our young through IBSE or evidence based science education.

In the 'Children and Sustainable Development" in the Vatican 13-15 November 2015, a novel concept was born, defining children are the agents of change against societal ills of our world. In our internet and digital age, children are much more adept in acquiring and sharing information knowledge through social media. Indeed, they can be really positive agents for peace and harmony.

A working example is the "Model United Nations" movement in Malaysia. This is a growing movement amongst the students of ages 13 to 18 of international schools in Malaysia. By themselves, they have organised through internet and social media many model UN assemblies debating all the major issues confronting the UN and her specialised agencies. They have become staunch supporters of UN.

I truly believe a possible solution for world peace and harmony may well lie in the education of our young through IBSE or evidence based science education. It has been proved in thirty years of IBSE initiatives throughout the world, especially the LAMAP experience in France and some 60 other countries that IBSE improves science literacy, numeral literacy and language literacy of school children. IBSE enables children to question and doubt every proposition of the so-called "prophet" unless his proposition is supported by experiment and borne out by evidence. In other words, IBSE trains rational citizens who will base decisions on the assessment of evidence the scientific way.

IAP SEP Global Council approved my proposal for the development of a

"Fusion of Civilizations" IBSE curriculum in its meeting in Santiago Chile April 2015. The proposed curriculum is inspired by LAMAP thematic program "Discoveries in Muslim Countries" based on the ground-breaking discoveries in the Golden Age of Islam that encompassed outstanding scientific discoveries in Samarkand, Bukhara, Persia and Turkey in the East and the Maghreb, Andalusia in the West. Another LAMAP thematic program "Discoveries in European Countries" follows the spread of the Islamic scientific knowledge to Europe that sparked the European Renaissance and led to our current Western led scientific and technological civilisation. Through the ancient Silk Road, Islamic discoveries interacted eastwards with the civilisations in the India subcontinent and China.

The "Fusion of Civilizations" IBSE curriculum is given modern relevance by China's "One Belt One Road" (OBOR) Initiative that aims to uplift the human conditions of the developing world by harking back to the tenets of the Islamic Golden Age:

- **Seek and share knowledge freely throughout the world;**
- **Be knowledgeable not only in science, but also in religion, poetry, literature, music and the arts.**

As the initiative embraces education, science and culture, I sought the support of UNESCO through a letter to the Director General to get the "Fusion of Civilizations" school curriculum design off the ground. I am very pleased that she gave her support.

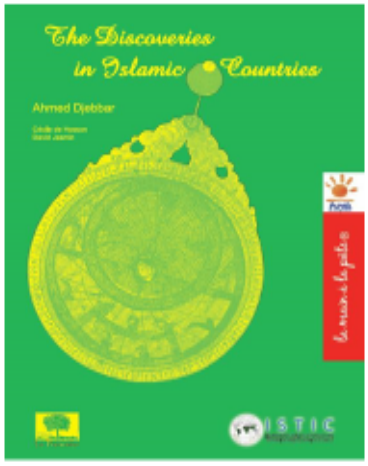
The design of the "Fusion of Civilizations" school curriculum will initially focus on Islamic S&T in the Golden Age and how by its ethos of knowledge acquisition and sharing, sparked the European Renaissance and lay the foundation of our present-day civilization. Whilst in the East, it interchanged science, technology and culture through Central Asia with India and China. By acquainting our younger generations of our common heritage, they will hopefully rediscover our common humanity and help reduce sectoral tension and violence.

The "Fusion of Civilisations" curriculum is graphically represented below:

Fusion of Civilizations IBSE Curriculum

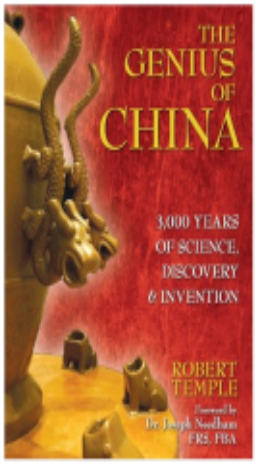
LAMAP European Discoveries

LAMAP Discoveries in Islamic Countries



INDIA Subcontinent: Bust of Mathematical Genius Aryabhata Unveiled in UNESCO Paris

CHINA



The LAMAP thematic book "Decouvertes en pays d'islam" or "The Discoveries in Islamic Countries" in English was authored by Professor Ahmed Djebbar with pedagogical contribution from Cecille de Hosson and David Jasmin. Prof. Djebbar shows how the history of Islamic science and technology can be turned into a pedagogical tool for IBSE in schools. For LAMAP, Prof. Djebbar has built 'learning by doing" modules around "scientific" topics related to discoveries made by outstanding Muslim scientists during the Golden Age of Islam:

- Al-Farisi's model of the rainbow,
- Ibn al-Nafis's discovery of the pulmonary blood cycle,
- Al-Jazari's water pump,
- Al-Haytham's light and vison,
- Al-Khwarizme's astrolabe,
- Al-Kashi's decorative symmetry and
- Al-Khazini's balance of wisdom.

The LAMAP thematic book "Discoveries in European Countries" highlights the following discoveries:

- Measurement of the Earth by Eratosthene (Greece)
- The Sail by Gil Eanes (Portugal)
- Parachute by Leonardo da Vinci (Italy)

- Herbal Medicine by Garcia da Orta (Portugal)
- Moon on Jupita by Galileo Galilei (Italy)
- Photosynthesis by Joseph Priestley (UK)
- Hot Air Balloon by Denis Diderot (France)
- Cyanometer by Jacques Balmat (Switzerland)
- Telegraph by Claude Chappe (France)
- Voltaic Pile by Alexandre Volta (Italy)
- Condensation by Justus von Liebig (Germany)
- Pasteurisation by Louis Pasteur (France)

The Indian mathematical genius Aryabhata was born in CE 476 in modern day Patna. Aryabhata's work was of great influence in the Indian astronomical tradition and influenced several neighbouring cultures through translations. The Arabic translation during the Islamic Golden Age was particularly influential. Some of the results were cited by Al-Khwarizmi and in the 10th century Al-Biruni stated that Aryabhata's followers believed that the Earth rotated on its axis. Aryabhata's astronomical calculation methods were also very influential. His major work, Aryabhatiya, a compendium of mathematics and astronomy, was extensively referred to in the Indian mathematical literature and has survived to modern times. The place-value system was clearly in place in his work. While he did not use a symbol for zero, the French mathematician Georges Ifrah argues that knowledge of zero was implicit in Aryabhata's place-value system as a place holder for the powers of ten with null coefficients. The bust of Aryabhata was unveiled in UNESCO Head Office in April 2016.

As for the contribution of China to science and technology, the 2008 Olympics in Beijing reintroduced the four great inventions to the world in the opening ceremony. These are paper, printing, compass and gun powder. Dr. Joseph Needham’s opus “Science and Civilization in China” was popularized by Professor Robert Temple in his book “The Genius of China: 3000 Years of Science, Discovery and Invention” that chronicles many Chinese scientific discoveries throughout the age. The book attempts to claim many of the Chinese discoveries predating similar European discoveries by centuries.

The intent of this “Fusion of Civilizations” curriculum for schools should avoid such claims that tend to portray one civilization as superior to another. This is against the very concept of our initiative. We should instead emphasize how the discoveries from one civilization improve the human condition of human beings in all other civilizations.

2.0 IAP SEP High Level IBSE Forum on "Fusion of Civilisations" Curriculum Design, 6-7 February 2017 Khartoum Sudan

Whilst it is easy to gather together learned historians of science and technology to discuss the outstanding discoveries in their own civilizations, it is much more difficult to turn the tales of such discoveries into school curriculum material of use to teachers and students. As stated above, LAMAP has done remarkable work in their thematic books for French primary and secondary schools: "European Discoveries" and "Discoveries in Muslim Countries".

The IAP SEP proof of concept forum was held in Khartoum Sudan on 6-7 February 2017 at the invitation of the Sudan Federal Minister of Education, Her Excellency Suoad Abdelrazig M. Seed. The organisation was entrusted to the Sudan National Commission for UNESCO and the Sudanese National Academy of Sciences. The forum was graced by the presence of IAP President Professor Liu Depei and founder President Professor Mohamed Hassan who is also the President of the Sudanese National Academy of Sciences. The forum was attended by expert historians of S&T from China. India, Jordan, Malaysia and Sudan with experienced curriculum designers from Egypt, France, Indonesia, Malaysia and Sudan.

During the forum, questions were raised whether the term "curriculum" was appropriate as it is generally associated with national education, and whether the word "fusion" would diminish the values of different cultures and traditions. I responded to the above questions after the forum in a letter to IAP SEP Global Council. Its essence is as follows:

"I would like to recapitulate on the main points of my proposal. The "Fusion of Civilisations" curriculum design is aimed at very young children throughout the world to foster world peace by demonstrating that we are all the same under the skin. We who are older than the very young, are unfortunately creatures of our own cultures and civilizations and too set in our ways. We tend to believe our culture, religion, science, technology, military hardware etc are superior to others from different cultures and civilizations. This is one of the principal reasons why wars and conflicts have never ceased.

I do not subscribe to the preservation of all cultural characteristics and practices. During the rule of the First Emperor of China, Emperor Qin, books were burnt. This cultural practice seems to have been preserved and emulated down the ages. Hitler and his Nazis burnt books and in more recent times, some religious leaders in USA burnt Islamic books. Emperor Qin also buried alive tens of thousands that were conscripted to build his mausoleum so that its entrance would remain a

secret down the ages. This genocidal practice was magnified many folds by the Holocaust during the Second World War and repeated in more recent times in Bosnia and elsewhere. In India, the 'untouchables" are still very much the disadvantaged caste. The nomadic tribes in the forest in S.E. Asia, in sub-Saharan Africa and in the Amazon have been championed by the West that they should not be spoilt by modern education, housing, clinic and sedentary farming but should remain within their culture and tradition so their songs, dances, languages and other cultural traits can continue to be enjoyed by the "civilised" world. I believe by keeping them from modern civilisation, they will remain in poverty, hunger and disease. That is the surest way to assure that their culture and civilisation will disappear from the earth.

Another argument for the preservation of cultural diversity was the rich diversity in the field of astronomy in many civilizations. The richness in astronomical knowledge is claimed to be due to its different flowering in different parts of the world. I would venture to suggest the same inborn curiosity about the heaven will be manifest by any child whether he/she is white, yellow, brown, red, or black. He/she looks up to the sky and wonders what causes the twinkling in the heaven. It is the cultural and societal environment that will make him/her different from other children. We must enhance this inbred curiosity of the very young in telling them about our common humanity. I consider much of the ills of our world has been due to nationalism nurtured by national education curriculum. During the First World War, a generation of British youth laid buried in Flanders fields for 'King and Country". Toward the end of the Second World War, under the Imperial Edict of the Emperor, many Japanese youths became the first State organised suicide bombers in kamikaze suicide squads against the US Navy fleets. Japanese society is still proud of their exploits. Has the nationalistic education of the many independent nations after the Second World War contributed to peace in the world? Is it not time to infuse universal human values like peace and harmony in school curriculum?"

On the side of the Khartoum forum, I obtained the agreement of IAP President Professor Liu Depei and Professor Sun Xiao Chun to advance the IAP SEP "Fusion of Civilisations" curriculum design under the OBOR Initiative by convening the next Forum and Workshop in Beijing in consultation with IAP SEP Global Council member Zhu He of China Association for Science and Technology (CAST).

3.0 One Belt One Road

China's "One Belt One Road" (OBOR) Initiative follows the ancient land and sea silk routes that ran through the continents of Asia, Europe and Africa. The Silk Road Economic Belt focuses on bringing together China, Central Asia, Russia

and Europe. The Maritime Silk Road is designed to go from China's coast to Europe through the South China Sea, the Indian Ocean and East Africa in one route, and from China's coast through the South China Sea to the South Pacific in the other.

China President Xi Jinping announced OBOR in the BoAo Forum in Hainan, China on 28 March 2015 "*The Silk Road Economic Belt and the 21st Maritime Silk Road initiative, proposed by China, will push trade and investment between China and countries along the routes and their common development. China pledge US $40.0 billion for the 'One Belt One Road' initiative. We hope the annual trade volume between China and these countries to surpass 2.5 trillion U.S. dollars in a decade or so.*" He also announced the release of China's "Vision and Actions on Jointly Building Silk Road Economic Belt and 21st-Century Maritime Silk Road" document. The vison and actions are based on four principles 1) openness and cooperation; 2) harmony and inclusiveness; 3) market operation; and 4) mutual benefits, emphasizing policy coordination, connectivity, unimpeded trade, financial integration and people-to-people bonds.
http://news.xinhuanet.com/english/china/2015-03/28/c_134105858.htm

OBR has become China's vision and mission for the developing world of the 21st Century, especially the 60 odd countries along the OBOR. Its ultimate objective is given by President Xi Jinping in his speech at the UN General Assembly, 28 September 2015 "Working Together to Forge a New Partnership of Win-Win Cooperation and Create a Community of Shared Future for Mankind".

Quote

History is a mirror. Only by drawing lessons from history can the world avoid repeating past calamity. We should view history with awe and human conscience. The past cannot be changed, but the future can be shaped…The United Nations needs to address the central issue of how to better promote world peace and development in the 21st century…We should be committed to multilateralism and reject unilateralism. We should adopt a new vision of seeking win-win outcomes for all, and reject the outdated mindset that one's gain means the other's loss or that the winner shall take all….. We should resolve disputes and differences through dialogue and consultation…. We should promote open, innovative and inclusive development that benefits all.

Unquote

The IAP SEP "Fusion of Civilisations" Curriculum Design resonates with the OBOR Objective as outlined by President Xi Jinping above by engaging the very young to appreciate their common heritage along the OBOR.

4.0 Fusion of Civilizations Forum Beijing 3-5 July 2017

The coming Beijing Forum at its core must be a working forum for historians of S&T and school curriculum designers to get down to work to produce the "Fusion of Civilizations along OBOR". The Working Group must be formalised in Beijing defining its work scope, timeline and budget.

Taking advantage of the presence of eminent S&T historians and IBSE advocates from home and abroad, a one day high level policy level should be organised to engage key stakeholders of OBOR in China, CAST, Chinese Academy of Sciences, Chinese Academy of Engineering, Ministry of Education and science teachers and school administrators etc. The Chinese National Commission for UNESCO should be invited as a supporting organisation.

As for the substance of the curriculum design, we already have proven material form the two LAMAP thematic programs about discoveries in Europe and in Muslim countries. I would however like to suggest that we need to focus on selection of outstanding scientists and inventions in Central Asia, the Indian Subcontinent, South East Asia and of course China. I suggest we should not confine ourselves to scientists, but also the pioneers of travel along OBOR like Zhang Qian of the Han Dynasty, Xuan Zang of the Tang Dynasty and Zheng He of the Ming Dynasty. Zhang He made seven epic voyages to South East Asia, Indian Ocean, Arabia and East Africa. We could not only look at the technologic innovations of the Chinese fleets and the advancement in the use of navigation aids during his seven epic voyages but also the interaction of cultures and civilizations. From west to east, we can look at Alexander and Marco Polo. On the Indian Subcontinent, we must not forget the contribution of the
Mughal in architecture that gave rise to the Taj Mahal. In modern age, the influence of the Nobel prizes is pervasive. Perhaps we should include Alfred Nobel and some outstanding Nobel Laureates along OBOR.

30 March 2017