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ABU DHABI
SCIENCE
FESTIVAL



Science Communication Among
Societies through Public Science Events

Parallel Session B-1

Friday, November 07, 2014

لجنة أبوظبي
لتطوير التكنولوجيا
ABU DHABI TECHNOLOGY
DEVELOPMENT COMMITTEE



Dr. Linda Abraham Silver
Abu Dhabi Technology Development
Committee

Origins of Abu Dhabi's commitment to Informal Science Education (ISE)

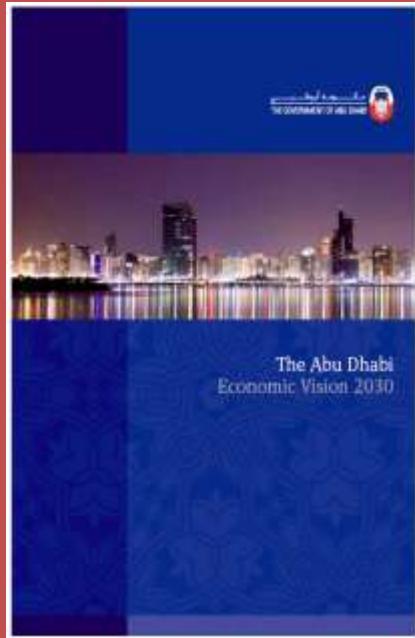
Abu Dhabi Technology Development Committee's current portfolio of ISE initiatives

Abu Dhabi Science Festival & its evolution over the past 4 years

Public Engagement in Science Communication & the unique role of Science Communicators

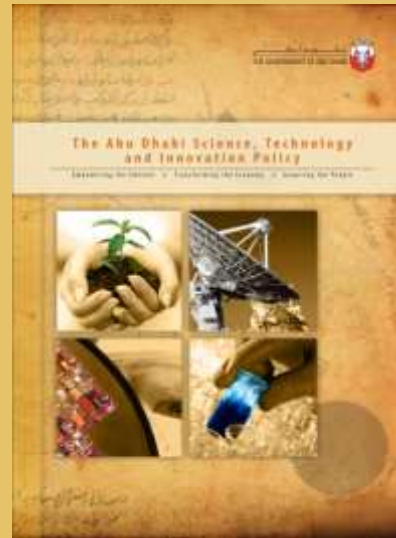
Origins: The Abu Dhabi Science Festival (ADSF) plays a vital role in the implementation of the Abu Dhabi Economic Vision 2030

Abu Dhabi Economic Vision 2030



“Abu Dhabi as a sustainable, diversified, high-value added economy that encourages enterprises and entrepreneurship and well integrated in the global economy leading to better opportunities for all”

Abu Dhabi Science, Technology and Innovation (STI) Policy



Vision

“In 2030, Abu Dhabi will be an Emirate in which the benefits of science, technology and innovation pervade every aspect of life - empowering the Emirate, transforming the economy and inspiring the people”

3 Key Goals

1. Develop a globally competitive and sustainable STI base in areas of societal & economic priority
2. Support the creation of a vibrant enterprise base capable of identifying & capturing current & future opportunities
- 3. Foster world-class talent equipped with the right skills & attitudes**

Workforce development in sectors requiring science and technology skills is one of TDC's roles relative to the Vision

In line with the **Abu Dhabi Economic Vision 2030**, the Abu Dhabi Science, Technology and Innovation (STI) Vision aims to build a sustainable and diversified economy that is well integrated into the global ecosystem.

To realize this vision, the Abu Dhabi Government has given priority to a number of Science and Technology areas and has already committed and will further commit significant investments to industries within these areas.

The first set of areas is focused on economic advancement - strengthening existing industries and developing new STI industries for growth and diversification



Oil/Gas Services

- Geophysical analyses
- Drilling & well services
- Production services



Semiconductor

- Wafer Fab



Aerospace

- Composite structures
- MRO
- Aircraft assembly



Clean Tech

- Solar power
- Carbon capture and storage



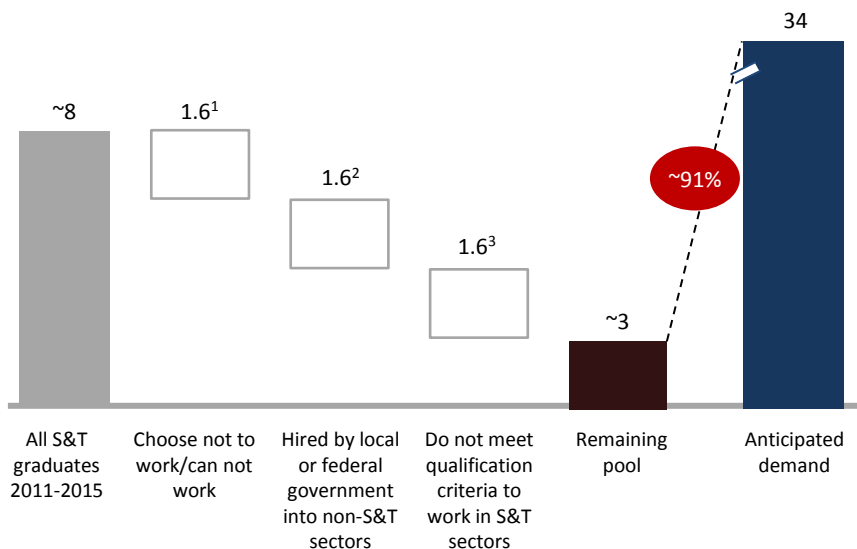
ICT

- Telecommunications
- Mobile satellites
- IT Services
- Arabic digital content

Informal science education initiatives are a key focus area of TDC to help address Abu Dhabi's critical human capital gap

The number of available graduates with relevant S&T degrees will not be sufficient to meet market demands

Numbers in 000's



- 1) 20% of graduates become inactive and drop out of the workforce
- 2) ~33-50% of graduates are hired by government organizations – Assumed 20%
- 3) ATIC interviews with potential employees revealed quality issues with graduates – assumed 20% not qualified to work in S&T sector

Source: Abu Dhabi Census 2005; UAEU; ADEV 2030; ADEC Higher Education Team Analysis; ADEC; HC Team analysis

Youth engagement in informal science education influences their choice to pursue STI careers



US National Science Foundation survey suggests that the majority of American scientists credit a visit to a science center or participation at a science festival as critical influencing factors inspiring their early interest in science and later decision to pursue science related career.



Studies on early planning for careers in science found that a child's excitement about science expressed between the ages of 6 and 11 years old is the **single most reliable** predictor of future career selection in STEM.

Ti, R.H., Liu, C. Q., Maltese, A.V., & Fan, X. (2006, May 26). Planning early for careers in science. Science, 312, 1143-1144.

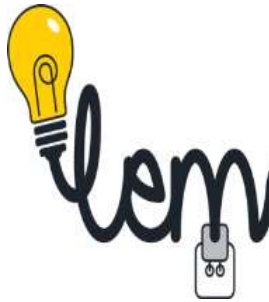
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Informal Science Education Initiatives launched in the past 3 years by TDC



2011

2012

2013



The Abu Dhabi Science Center was announced in June and is expected to open in late 2016



150,000 attendees
100 Science communicators

Projected #s
100 schools p.a.
1000 students p.a.

Capacity Building
Takamol
Innovation Hub
Tech Shop



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The Abu Dhabi Science Festival

“إن أفضل استثمار للمال هو استثماره في
خلق أجيال من المتعلمين والمثقفين.”

المغفور له بإذن الله تعالى الشيخ
زايد بن سلطان آل نهيان
تغمده الله بواسع رحمته

“The best investment of our wealth is in
creating cultured and educated citizens.”

SHEIKH ZAYED BIN SULTAN AL NAHYAN
MAY GOD HAVE MERCY ON HIS SOUL

ADSF features 150+ workshops, shows and interactive exhibit experiences aimed at children ages 5-15 and their families

Explainer-led workshops
(45 minutes)



Interactive Exhibits
(Open-Ended)



Big Science Shows
(30-45 minutes)



The 2014 strategy has evolved in response to audience demand and will offer more local content and more whole-family engagement

- Early editions focused on workshop and show formats that worked best for schools – structured 45 minute workshops
- Since ADSF's initial inception, TDC has launched science outreach into schools – serving ~40,000 students a year in their classrooms
- Hence, 2014 will **focus more on families** – providing significantly more open-ended and drop-in activities.
 - Better accommodates family visiting patterns
 - Allows for multi-generational experiences
 - Allows for breadth of experiences
- 2014 will feature significantly **more local partners**
 - Content more relevant to local families
 - Partnerships with other organizations invested in Abu Dhabi's youth



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Operational Approach to developing an effective Science Communicators Program

11 Partner Universities/ 1,000+ Students recruited for 2014

STI students as well as education students and other liberal arts students

❖ Science Communication Training

- ❖ 12 hours (2 days) on their university campus
- ❖ Foundations in science communication
- ❖ Introduction to basic science education pedagogy
- ❖ Led by professional science communicators
- ❖ Assessment of all students at end of 2 days and assignment to ADSF activity – quality control and best fit

❖ Science Content Training

- ❖ 16 hours on site at ADSF prior to event
- ❖ Basic science concepts behind the workshop or demonstration they are assigned to
- ❖ Operational aspects of the workshop or demonstration
- ❖ Alumni can return as “Team Leaders” in subsequent years

Review of the Literature — Reaching individuals who are not pre-disposed to STEM by employing facilitators they can relate to

If students can identify with **role models** they may be more likely to see the relevance in the subject matter. This holds for both genders, but has a stronger impact with female students who are more interested

Students **who the** groups a

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Learning subject with students' culture, outside interests or social lives – helps to increase student motivation in STEM subjects.



Brozo (2005); McMahon and Kelly (1996)

Outcomes for Science Communicators



1. Communications & Leadership Training
2. Exposure to hands-on science
3. University “credit”
4. Inclusion in a Government-Sponsored event that is viewed as important to the Vision for their country’s future – contributing to the national agenda
5. Access to visiting delegates and importantly to HHS
6. Social Opportunity to mix w/ Peers
7. Awarded certificates at the culmination
8. (We hope) future science communicators for future initiatives in Abu Dhabi and the UAE

Outcomes for Visitors – surveys 2011, 2012, 2013

Visitors expressed a preference for human facilitation by Science Communicators over self-facilitation of activities or labels on exhibits

- ❖ Findings reflected a regional/cultural preference for dialogue over reading
- ❖ A general unfamiliarity with the concept of ISE led parents and teachers to ask for more support in workshops and at exhibits
- ❖ Parents and teachers strongly endorsed the use of bilingual science communicators (especially those w/ “local” Arabic)

- *“My preference is to have explainers who can explain in English and Arabic both”*; Emirati mother

- *“[The learning] should be supported by voice”*, Emirati father



Concluding Thoughts on Science Communication at Events

1. Authentic engagement is more easily achieved by using individuals who come from within the community you are seeking to serve
2. Developing an effective Science Communication strategy requires an understanding of desired outcomes for both the audience and the communicators
3. Prioritizing local content provides the community with greater relevancy and thus a greater chance of deeper and longer-lasting engagement



ABU DHABI
**SCIENCE
FESTIVAL**



www.abudhabisciencefestival.ae

Please visit us
**November 13-22
2014**

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