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Comment

SCIENCE FESTIVALS

National Science Festival of Thailand: historical roots, current activities and future plans of the National Science Fair

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ABSTRACT: *Thailand's National Science Fair is an annual two-week event held to promote science, encourage learning and prove that science is for everyone. Derived from the first 'Thai National Science Day' in 1982, the fair now hosts over 1 million visitors, with exhibits from over 50 national and international companies and institutions from governmental, educational and commercial sectors. Whilst the fair is normally held in Bangkok the outreach program holds mini fairs for 32 Universities and numerous schools across the nation for local participation in science week. This paper discusses the past, present and future of the fair, incorporating existing evaluation findings and identified key challenges.*

Science Festival in Thailand

In 1982 the Science Society of Thailand (under the Royal Patronage of His Majesty the King) proposed to the Thai Cabinet that August 18th each year should be designated as 'Thai National Science Day'. It was chosen on this date to commemorate the day in 1868 that King Rama IV of Thailand had predicted a full solar eclipse would take place in the Southern province of Thailand. The King achieved this prediction over 150 years ago when there were neither computers nor calculators. With a strong interest in and comprehension of science and astronomy, the King proved to the people that an eclipse was a scientific phenomenon and can be predicted through the understanding of science. King Rama IV is honored in Thailand as 'The Father of Thai Science'.

After the Cabinet approval of the National Science Day, the first Science Festival in Thailand began in the same year, organized by the Science Society of Thailand using the National Science Center for Education in Bangkok as a venue (see Figure 1). Two years later in 1984, the Ministry of Science and Technology took part and organized a special event called 'National Science Week' which became very popular not only for the scientific community, but with the youth and the public. Deemed as a success, The Thai Cabinet announced that 'National Science Week' was to be an annual event and

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Figure 1. Hand-made brochure of the first Thailand National Science Fair in 1982 and the news from the event. Photo from the archive of Dr. Kamjad Mongkonkul, former President of the Science Society of Thailand.

it was written into the national policy, with an aim to inspire interest in science within the public. The Ministry of Science and Technology was assigned to act as the organizing body to work in co-ordination with various agencies to organize the fair (to see the development see Figure 3).

Since the first 'National Science Week' in 1984, the event has gradually expanded from just one venue in Bangkok to several venues country-wide. In Bangkok, the venue was changed to a large convention center to accommodate more visitors with several activities and exhibitors. Regional universities take part as a hub to organize activities to support citizen and youth development in the provincial areas. Various schools also adapt the idea and organize a small science event within schools. However, the major event is still organized in Bangkok, the capital city of the country, showcasing research and activities from various agencies. During the week, award ceremonies take place for outstanding scientists, science projects and science teachers of the past year, all selected by the Foundation of Science and Technology Council of Thailand. In recent years the awards have been given by HRH Crown Princess Sirindhorn in recognition of the importance of these outstanding contributors to science and technology development (see Figure 2).

Figure 2. National award ceremony for those showing outstanding qualities in science, given by HRH Crown Princess Sirindhorn.

Science week and youth science competitions

As August became the month of science, the Science Society of Thailand has taken this opportunity to conduct a number of nationwide youth science competitions to create a forum for more interactive engagement with science among young people in schools. Completion categories include: student science project, science show, science quiz, science creative drawing, scientific problem-solving, science invention and innovation, for example. The science competitions are organized at district level at schools or science centers and finalists go on to the regional level competitions during science week at six regional centers (hosted by faculties of science in various local universities). Each year, the Science Society of Thailand provides approximately 16,000 United States Dollar (USD) for each center to organize the science competition with the total amount of support around 95,700 USD. The budget is usually spent on awards, judges, and logistical arrangements, with extra budget contributed by the university itself. Six major universities are given support from the Science Society of Thailand, to be a hub for activities to organize youth competitions during the science fair period.

More than 1500 youth science projects enter the science week competition each year. Other activities engage at least 10,000 students in the process. After the regional competition in August, the final competitions are organized in October for 'Thai Technology Day'.

National Science Week and the public

The scale of National Science Week grows every year and does so at a rapid pace. A specialist agency is required to be fully responsible for organizing the event to make sure of quality and to ensure the projects' time line is met. In 2006, the Ministry of Science and Technology designated the National Science Museum Thailand (NSM) to be the responsible organization, working as a secretariat agency on behalf of the Ministry

of Science. NSM organizes the major large scale festival in Bangkok by coordinating with all relevant agencies, managing the budget, overseeing the activities and exhibitions, and conducts all public relations to ensure the effectiveness of the event in promoting the public awareness of science.

Figure 3. The Development of the Science Festival in Thailand.

The new setting at the Convention Centre has turned the festival into a more public event, through strong public promotion campaigns and the introduction of more thematic exhibitions and raising scientific issues relevant to people's daily lives. The festival has adopted a new trading name: 'The National Science and Technology Fair (NSTF)'. The fair currently covers about 40,000 square meters of indoor space with exhibitors coming from 15 organizations under the Ministry of Science and Technology, 5–7 other Ministries, the private sector, science associations, 20–30 universities and international partners. The duration of the fair is usually more than 10 days ranging from 10–17 days, depending on the availability of the venue. The fair mainly exhibits activities and exhibitions for the purpose of publicizing science and is not for commercial purposes. Even the private sector contributors are asked to avoid using the exhibition area to conduct any commercial activities. A small shop area (which is less than 10% of the total fair area) is provided outside the exhibition area to allow scientific / educational products or technology related products to be sold to the visitors. The fair has set new standards and new perspectives of 'the science fair' model within Thailand to a more public oriented event with thematic exhibitions and hands-on activities, based on edutainment approaches. Other public activities such as science workshops, technology transfer workshops for the community, science talks and seminars are also organized within the National Science and Technology Fair.

The NSTF attracts about 1 million visitors per year and approximately 8 million USD is spent on the fair. The major portion of the budget is provided by the Ministry of Science and Technology and other budgets are contributed by partner organizations through their investment in exhibitions and activities. The Ministry of Education also plays a very important part in giving policy support to all schools to participate in the event. The Ministry also allocates extra funding for universities and schools to participate in the science projects. This can be seen as an interweaving effort among several sectors in trying to promote science and science popularization amongst Thai society.

The fair has now become the largest and most talked about science fair in the country and perhaps one of the largest annual science events held in a single venue within the Asia Pacific region.

The question is, how does NSFT attract so many visitors every year and why are numbers growing? As well as offering the 'spectacle' of an exhibition, from an educational point of view, NSFT offers an enriched learning environment by surrounding the exhibition with other activities shown in the flow diagram in Figure 4. The images in Figure 4 show an example of the audiences participating and enjoying these activities. These activities are designed to reach out to many stages of learning and interest; from shopping to workshops to seminars. A main challenge and success of NSFT is its ability to attract non-interested audiences to an educational event.

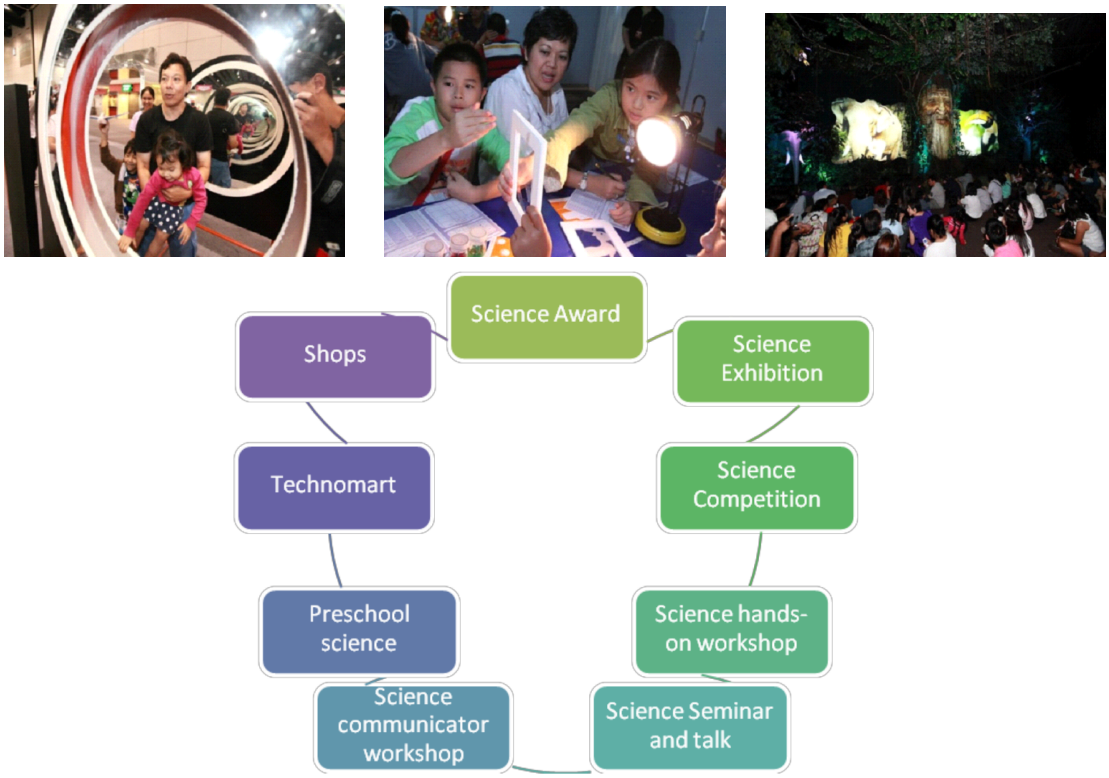

Figure 4. The flow diagram shows the various activities organized in the Thailand NSTF, the images show the audiences enjoying these activities.

Attracting non-interested audiences

There are two main strategies used to attract visitors who are not already interested in science. The first strategy is purposely using thematic exhibitions and special experiences to draw people's attention to the event (see Figure 5). Special subjects such as: Light and Laser, Forensic Science, The Amazing World of Crystals or The Year of Chemistry, have all been used to attract visitors, especially teenagers and families. This approach provides the image of soft science and edutainment rather than a hard scientific-theory

or technology-based exhibition. To ensure relevancy, thematic exhibitions cover various angles of global and social issues each year such as water, energy and climate change to make our citizens aware and ready for global changes. This is also in order to keep society updated with world trends and topics within science and technology. NSTF also includes UNESCO yearly topics such as International Year of Biodiversity or International Year of Family Farming for example. World class exhibitions from Europe, America and Asia are introduced to the public at the fair such as Sultan of Science or Ice Age exhibitions. Special experiences such as a 4-D Theatre with a film on global crisis simulation and Free Fall for example give visitors memorable experiences — they therefore talk about the fair to friends, family and colleagues, which in turn brings in more audiences on following days. Hands-on activities such as science workshops are popular among the students and family groups with queues of visitors all day long. There are quite a number of visitors who revisit the fair multiple times to experience the activities again, bringing other people along or visiting exhibits they did not get time for during their initial visit.

Figure 5. Examples of thematic exhibitions displayed at NSTF 2014.

The second strategy is that in order to attract young people and teenagers and to promote the image of science is for everyone, two famous young actors are invited to be the fair Presenters each year shown is Figure 6. They both act as ambassadors of the fair within all public relations (PR) materials, marketing campaigns and press conferences. They also visit the fair from time to time and talk to visitors showing that they can do and play with science as well. The presenters are seen to join all activities themselves such as the Free Fall or Science Lab. This also helps to introduce special areas in the event such as The Animatronics Exhibition, Science for Kindergarten or Science Library for example. This second strategy greatly draws the interest of young people and promotes a new perception that science can be for anyone.

On the other hand, from evaluation it was found that some adult visitors came not because of the PR campaign or special exhibitions. Interviewing visitors showed that certain families come back at the request of their children, who attended initially with their school but did not have enough time to visit all the exhibitions and participate in many other activities. From this it is reasonable to suggest that child visitors are genuinely interested and find enjoyment at the fair and that this is a strong enough interest for them

Figure 6. Youth idols as presenters of NSTF 2014.

to insist that their parents bring them back again. Originally uninterested parents thus have a chance to visit the fair for the first time and get an opportunity to experience the fun and excitement of science at the fair. The returning visitors not only bring their parents but also their brothers and sisters and sometimes grandparents or other adult relatives to the fair. Our observations show that teen visitors revisit the fair during the weekend with their friends to enjoy the excitement of special exhibitions and also to get a chance to see the famous presenters at the fair.

A Survey of 3000 visitors taken at the National Science and Technology Fair in 2012 shows that visitors come from a range of backgrounds and with a variety of different expectations, as shown in Figure 7 and Table 1.

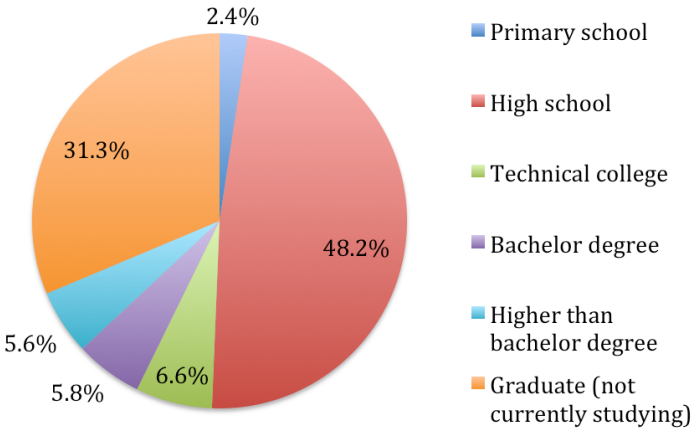

Figure 7. Visitor profile of NSTF attendees in 2012 (n=3000). 68.7% of respondents were current students at varying degrees of study, whilst 31.3% were classed as 'graduates' ie not currently studying.

Question	Description	Percentage (%)
Motivation and expectation to the fair Question: why did you come to visit the NSTF?	To learn something new	28.7
	It is just for study trip with school	19.8
	To gain new experience outside class room	19.4
	To have entertaining experience	8.7
	To gain new knowledge and information about science	22.1
	Others	1.2

Table 1. Visitor motivations: results from visitor NSTF survey 2012 (n=3000).

Despite the strategy of using presenters and extreme experiences, most visitors felt that the main benefit of their attendance was new knowledge and information related to science from the fair. Table 2 below clearly shows that the 'spectacular' design of the fair does not deviate from the learning and essential elements of science that are integrated in every part of the event.

Question	Description	Percentage (%)
Main benefit gained from visiting the fair	Knowledge	89.0
	Entertainment	10.8
	None	0.2

Table 2. Visitor benefits: results from visitor NSTF survey 2012 (n=3000).

Visitors reflected that this type of knowledge gained is considered as new knowledge or added to their existing interests (Table 3). About 12% were confident that they got enough understanding and would be able use it and 21% found that things they learned would be applicable to their life. About 13% mentioned that they now realize the relevance of science and technology.

Question	Description	Percentage (%)
Type of knowledge gain	New knowledge	31.0
	Information that I have an existing interest in	22.1
	Understanding and know how to use	12.1
	Application in life (include study or work)	21.5
	Recognition of the importance and concern about science	12.8
	Others	0.4

Table 3. Visitor knowledge gains: results from visitor NSTF survey 2012 (n=3000).

After visiting the fair visitors were asked about the impact they thought the fair had on them, particularly with regards to changing their perspectives on science and technology. Table 4 (below) shows the results of visitor answers to this question.

Question	Description	Percentage (%)
Change to visitor perspectives towards science and technology	Have better knowledge and understanding of science and technology	34.5
	More aware of the importance of science	20.8
	Like science better	19.4
	Feel inspired to study in the field of science	14.1
	Feel enthusiastic to learn more about science	10.9
	Others	0.3

Table 4. Changes to visitor perspectives towards science and technology: results from visitor NSTF survey 2012 (n=3000).

Other impacts

The NSTF (through the National Science Museum) has become the main arm of the Ministry of Science and Technology in organizing the large fair in the central part of Thailand. However the science fairs in the provinces are still supported directly by the Ministry, and as many as 32 universities per year across Thailand are funded by the Ministry of Science and Technology to organize local science festivals. This has an average budget allocation of about 5000 USD per university and the total annual spending on regional fairs is approximately 150,000–300,000 USD. Even though the budget provided is not very large, it has become 'seed money' for the university to start with and add extra budget either from university allocations or from sponsorship from local businesses. This also helps to spread the opportunity to students and other people in the provinces as they not only have the chance to learn and enjoy science but also the chance to be part of the organization of the event. With the success of the NSTF, the regional fairs have also become more enthusiastic and NSTF is seen as a benchmark in terms of the quality of the exhibition and activities. More collaboration has been established between research institutes, universities and private agencies to increase the quality of science engagement with the public.

In 2014, the first NSTF was organized outside of Bangkok. The 2014 fair was organized in Chiang Mai in the Northern province of Thailand which is, for the moment, the only place with a large enough space to accommodate all activities and exhibitions at an equal standard as Bangkok. The fair was successfully welcomed, giving an opportunity for people in the Northern region to acquire new angles on science, whilst also reaching out to less-privileged students and people of the minority hill tribes who would normally be unable to travel to Bangkok for the fair. Chiang Mai Convention and Exhibition Centre and an example some of those normally unable to attend NSFT Bangkok are shown in Figure 8, with images from NSFT 2014.

The future challenges of the science festival in Thailand

There are two major challenges that we are currently addressing. Firstly, to ensure the effectiveness and the impact of the fair on society, on both short- and long-term scales. To do this we must find ways to understand and assess the standard of quality for NSTF in its ability to inspire science and technology within the public. As the fair is organized in an informal setting, evaluating knowledge and understanding using standard formal education techniques will not be applicable. Appropriate follow up and evaluation should be established in order to improve the quality of the fair. International experiences shared by other countries will be beneficial in developing such assessments.

Secondly, there are tensions around organizing the large-scale fair in provincial areas whilst still attracting high levels of attention and maintaining a high impact and quality experience. Only a few venues are sufficiently equipped for a large-scale fair, limiting the organizational options. This could lead to reduced exhibitors, due to the limited space and high cost of travelling. Although, regional fairs provide more opportunity to involve people in the region that the fair is organized, holding the fair in Bangkok is much more feasible for exhibitors, allowing visitors full participation in term of quality of exhibition and activities. However the drawback is that it reduces the possibility of students and visitors from other parts of the country to visit due to the travelling distance. To solve this problem, it might be better to strengthen and develop the mini-fairs in local universities and provide more support, so they become attractions and highlights themselves.

These challenges will require policy maker involvement, as well as strong leadership by the scientific community in order to help improve the mechanisms to make sure that the budget and effort spent on promoting science to our public has contributed to a positive impact on the nation.

Figure 8. NSTF 2014 at Chiang Mai International Convention and Exhibition Center and the smiles of our visitors of an ethnic northern group.

Author

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