

National Strategy for Science Popularisation

Knowledge is the Source of Wealth

(It-tagħlim huwa l-għajn ta' kull ġid)

Dun Gorg Preca

Compiled by the Malta Council for Science and Technology for the Government of Malta

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01. Introduction

The development of the country continues to become increasingly dependent on the **exploitation of scientific knowledge**. Three areas where this is amply manifested are the economy, governance and the general well being of the population.

Hardly any aspect of the **economy** can function without reliable technology. From high value jobs to communication, efficient financial transactions to constant power supply.

The implementation of measures by **government** in the face of current and future challenges can be significantly facilitated through a science-literate population. People are more likely to support government-led initiatives if they are aware of hazards related to improper disposal of waste, our sources of energy and their potential alternatives, the water cycle, sources and effects of pollution.

The **quality of life** of the people, their health, risks on the road and work-place, stress reduction and diet are correlated to how much the population grasps the scientific concepts behind them.

i. Economy

Having a home-grown technologically prepared work force not only helps the economy to expand, but also allows for the creation of high value added jobs. In a globalised economy, unskilled labour is no longer a sustainable option for the Maltese job market. We have comparative advantages (hardworking people, geographical position, cost of living) that can only be fully exploited if we can have a consistent supply of Science, Engineering and Technology (SET) professionals.

The major benefits of new investment such as that by Lufthansa Technik and Tekom can only be reaped if our workforce can perform with the required degree of excellence the relevant technical tasks.

Opportunities for SET professionals are not restricted to traditionally technology-intensive industries. Banks, financial institutions, insurance companies, and tourist resorts have never been as dependent on advice and solutions from such people as they are today. This trend is here to stay and set to grow.

Basic technical literacy of all workers, not just those directly in SET, contributes to greater general efficiency on the place of work.

ii. Governance

The role of technology in the analytical stages of all major government decisions keeps growing, whether a new hospital, alternative energy supplies or higher productivity. Unless the public has an idea of the basic principles for such decisions, there is a tendency for it to feel distant from the decision making process and disillusioned by authorities.

To the contrary, if people understand better these principles, they can appreciate more the decisions being taken for their benefit, adopt new behaviour patterns in response to technological change easier, and be more willing and capable to cooperate in projects that can only succeed effectively with public participation, such as waste separation, efficient lighting, and cleaner fuel.

Participation in the debate on a number of issues that are of general interest to the public and gaining in importance needs a basic understanding of scientific principles in order to form an educated opinion. Such issues include biotechnology, cloning, GM products, animal welfare, stem cell research, alternative energy, pandemics, phone radiation hazards and the environment. Lack of such basic knowledge presents the real danger of a democratic deficit whereby either most people do not participate in the discussion, leaving it solely to the 'experts', or else are easily manipulated by lobby groups for their own interests. Social cohesion can be achieved by narrowing the gap between those able to participate in the S&T debate and those who are unable to.

As the amount of public money spent in research and innovation grows, the public will also need to understand more its importance in order to support it.

iii. Well Being

The greater the S&T knowledge of the public, the more it stands to gain from what S&T developments have to offer. Basic computer skills and possibility to use the internet certainly add to opportunities in one's life. Awareness of the different elements in our diet, the harm associated with excessive use of alcohol and tobacco, the positive effects of exercise, all should contribute to a healthier lifestyle.

All this has also a direct effect on the economy in the long term.

02. Rationale

For many years, major technological developments have transformed our societies without there being any apparent choice (electricity, airlines, television, mobile telephony, internet, biotechnology, the nature of the food available, etc.) At the same time, scientific research has produced a more and more dense and complex body of knowledge, less and less accessible to the layman. As a result, sciences are becoming each day more unknown and strange to the general public. This differentiation between those knowledgeable, mainly SET professionals, and the public leaves the door open to mistrust, all kinds of obscurantism, and perceived if not potential whittling of our democratic rights.

A low level of public awareness of S&T developments impedes the effective utilisation of existing know-how and of future inventions and innovations. On the contrary, providing citizens with information and advice that will help them build informed opinions on the risks and options of new technologies can create a wider public consensus for a sustainable development based on continuous scientific progress and technological advance. Moreover, making RTD results known to a wide segment of the public, i.e., to a larger number of potential entrepreneurs, specialists, users and consumers, can optimise the valorisation and exploitation of research. An S&T communication policy, by helping citizens to better conceive the S&T issues penetrating most social issues and global problems of our times, and to screen among available technological solutions, can pave the way for an active public support to the implementation of chosen innovative solutions.¹

It is of paramount importance to give to an enlarged circle of innovation actors a chance to perceive opportunities and risks in several RTD areas. Without giving this chance to such a wider public, many RTD results will continue to remain unexploited, and more important, technological innovation will increasingly confront a passive, if not a hostile, public.²

For achieving such a wide participation of the public, citizens should be given sufficient general information on matters of S&T for helping them to perceive 'why' and 'how' these cardinal human endeavours are becoming increasingly important in our modern society.³

Society cannot optimise the benefits of Science and Technology unless the public is in its favour or at least open to it. Lack of S&T awareness and knowledge leads the public to perceive them as dangerous and risky. By time this develops into an anti-S&T feeling, with the risk of citizens rejecting the opportunities they offer. This is precipitated with bad news related to S&T, such as Chernobyl, accidents on the work place, climatic disasters, mad cow and bird flue diseases, war and aviation accidents.

¹ Human resources & communication methods and media employed in European activities aiming at the popularisation of S&T or at the awareness of the public on S&T matters. Evaluation of structures, methods and media. Study CP3-02 G&G Consultants, December 1995

² Ibid

³ Ibid

03. Awareness -> Interest -> Knowledge -> Expertise -> Innovation

In a society characterised by the barrage of information we constantly have to deal with, one can confidently assume that in general people are aware of S&T related developments, even if for many the association is not obvious. If one can make this association, it will not be difficult to realise the many career possibilities there are for those opting for an S&T career.

The next level, raising interest in S&T, should lead the public to be keen on learning more, participate in the S&T debate, as well as using more and better S&T developments. This is where knowledge comes in. Interest without sound knowledge can be dangerous, and in several instances can even lead to a backlash.

The economic engine is no longer fuelled by labour, nor natural resources, nor capital, but by knowledge. Science, applied through work, is the key to prosperity and quality of life. If world competition is about research and development, it is also about science and technology education.⁴ Without broad public understanding of industry and support for innovation, Malta is set to lose the race.

While the ability to read and write is regarded as the foundation for personal and national development, the scientific and technological equivalent has not yet got sufficiently off the ground to provide an intelligent basis for managing our future.

The word 'culture' is readily accepted when it applies to reading, concerts, cinema, art exhibitions, theatre, and opera. However it is not yet acceptable for an industrial visit, an astronomical observation, a public meeting on a scientific topic, or a nature trail.

S&T communication cannot remain a peripheral activity but is becoming a strategic necessity. We are therefore in need of a strategy aimed at providing the non-specialist with the possibility to form a sound opinion on scientific and technological opportunities and risks, as well as to discuss realistically the options available. This should contribute to the creation of an undistorted public perception of S&T and of how these generators of societal wealth can be employed for securing a better quality of life and a sustainable development for our society.

04. Vision

A prosperous nation in a participative democracy, wherein decisions based on sound science are supported by the public.

05. Needs

- A technologically prepared workforce.
- A scientifically educated public.

Although listed distinctly, both have a direct impact on the other.

06. Objectives

- Promote a scientific culture.
- Increase the numbers of those opting for SET professions.
- Bring science policies closer to the people.
- Strengthen citizen participation in debates raised by scientific advances.
- Ensure a qualitative scientific education.
- Reduce gender inequality in S&T matters.

⁴ ibid

The aims are not to make everyone a science expert, but a) to give a broad part of the general public the ability to understand and assess competing arguments in policy controversy, and b) have sufficient numbers of S&T professionals.

07. Activities to Date

Contrary to a common perception, science popularisation activities are not sparse in Malta. A lot of activities by a wide range of S&T providers have been developing in the last years.

The first initiative undertaken by the Malta Council for Science and Technology towards Science Popularisation dates back to the beginning of the organisation itself. Such initiatives continued to develop, and several other institutions have contributed significantly to this mission. These include public institutions, NGOs and industry (Annex 1).

Further coordination between these initiatives can lead to better use of resources and improve existing synergy. One has to be careful not to mix coordination with centralisation. The distinct character of all these actors is to be encouraged.

08. Current Situation

The Malta Council for Science and Technology, in spite of being a pioneer in the field, has not done any significant science popularisation activity since 2003.

The Science Centre is constantly developing tools to assist in the delivery of the subject at primary level. It also trains support teachers that in turn visit schools. It encourages activities for students and their parents. It is currently working on a multi-media series on prominent scientists in Maltese. Its building is in great need of refurbishment.

The Education Division has been without an EO for Science since 2005. This puts the teaching of the subject in government schools at a handicap due to the impression that the subject is not of any major importance. Never-the-less Subject Co-ordinators have taken up several responsibilities and initiatives.

Government is investing in school laboratories. However, due to trade union directives, experiments are regularly skipped.

When it comes to students with special needs, whereas several efforts are done to assist students with learning difficulties, there is no concerted effort to address gifted students.

Whereas religion, Maltese, English, Social Studies and Mathematics are being examined for Junior Lyceum entries, science is not, together with, amongst others music, art, and PE. A pilot project on continuous assessment of the subject is under way. Performance task assessments have been developed and this may be a way of assessing science. A ministry decision on how science should be assessed is pending.

Channel 22 airs some science, but its ratings are too small to be considered of much significance, hardly ranking in the Public Broadcasting Authority continuous audience assessment.

NSTF has increased considerably its science activities, establishing itself as the major NGO working in this field.

09. Proposed Action

The aim of Science Popularisation activities should not be to trivialise the subject, but more to combat the impression that scientific topics are only for some super intelligent elite. In their monitoring, participation according to gender should be taken into account.

(i) Science and Technology Festival

An annual major event dedicated to S&T should be the flagship activity of the national Science Popularisation Programme. Taking the form of a fun fair, this should include a considerable number of events by different S&T providers (NGOs, MCST, University, government departments, industry, foreign representations, schools, individuals), giving the opportunity to the public to experience S&T in their various forms, and the possibility to these stake holders to be together. The concentration of so much activity in the same area for a definite period of time creates a socialising and fun atmosphere, the impact of which can be enormous. With proper timing and investment it should attract considerable media attention, serving also MCST to get closer to the public. This should eventually encourage corporate sponsorship. Building on previous editions of S&T Weeks (Malta was one of the first countries to plan such an event in 1994) this event should become an annual appointment in the national cultural calendar.

(ii) Science in the Community

In collaboration with Local Councils, a series of science events shall be organised, bringing local S&T players from the locality together to communicate what they provide to their constituency. These can include telecom companies, ISPs, energy providers and distributors, IT shops, schools, band clubs and individuals. Through these events the public should appreciate the S&T behind these products and services. Where necessary, MCST and the Science Centre can complement the event with their own resources.

(iii) Industry Visits

Industrial visits by schools help students understand better the careers that await them if they opt for a technological career. They also contribute to the students' learning by giving them the opportunity to witness the application of principles they learn in their science classes. A list of industries interested in this venture should be compiled and distributed to schools. This should contribute to a greater education-industry collaboration culture.

(iv) Media

A quality TV Science Programme for children should be produced, building on the experience of the Science Centre, and corresponding to science subjects' school curricula. These should help those who are afraid of science or those with difficulties with their teachers.

For the general public, short slots are to be prepared to be aired during prime time, either as advertorials or as anchor slots in popular programmes. These slots should vary between domestic science, science in day-to-day life, scientific issues of general concern such as climate, energy, telecommunication, as well as big science that could raise awareness and curiosity in the general public. This campaign has to be sustained to obtain the desired effect.

Similar slots can be offered to radio stations.

A national science quiz between schools on TV, with the possible participation of viewers, could have a great impact on the general interest.

Attempts should be made with PBS to include as many of these media interventions as possible under the public service obligation programmes.

(v) St James Cavalier

Incentives should be offered to this centre for creativity to increase its S&T content. This could take the form of science-art exhibitions / demonstrations, as well as fora with celebrity scientists for both the general public and the scientific community.

(vi) Science Bus

A science bus consists of a large vehicle with a series of hands on exhibits on board. Although an innovative approach to Malta, such initiatives have proved to be popular wherever they were introduced. Leaving from the premise that science is not popular (enough), we cannot expect people to come to science, but we have to take science to them. This is a concrete way of doing it. Apart from the possibility to link it with the Science in the Community initiative, the bus can participate in popular events, such as the Trade Fair and Notte Bianca.

Investing in something like this is more value for money than a permanent site. Such an investment will be written off over a number of years.

(vii) Field Study

Currently our students do not have a proper place where to conduct field studies. Villa Psaignon used to serve such purposes, but has been beyond the management of the Education Division for some time. Efforts should be made to turn again this place to educational purposes.

Other locations that can serve the same objective are Wied Għollieqa, currently managed by the University of Malta, the bird sanctuary, and nature reserves.

(viii) Science Centre

The Science Centre should be given the resources to upgrade its premises. This should turn the place into a showcase of the priority government gives to S&T education.

In collaboration with the Education Division, the wealth of material developed in-house at this Centre should be developed further and made available to the wider public.

(ix) NSTF

As a strategic partner, a grant will be given to this NGO to develop 3 science activities per year between 2008 and 2010, in collaboration with the Malta Chamber of Scientists. These are a school contest for young scientists, a competition on science and art (both leading to a week dedicated to science), and an activity directed towards primary school children.

(x) Grants

A scheme of financial assistance to institutions interested in holding Science Popularisation events should be put in place. This should empower other organisations to join in this collective effort.

(xi) Talented Students

A study on the needs of talented students in S&T, and how to better help them develop their full potential should be conducted. Corrective measures coming out of such a study should be implemented.

(xii) Laboratories

Fuller use should be made of school laboratories. No safety or industrial impasse should prevent students from learning by doing longer than strictly necessary.

Attempts should be made to utilise these labs for the education of the general public.

(xiii) Education Division

The post of Science Education Officers should not remain vacant unnecessarily.

(xiv) Human Resources

In collaboration with the Faculty of Education and the Education Division, a course in science animation should be developed for personnel who could help in the delivery of these projects. Foreign assistance in this initiative would prevent attempts to reinvent the wheel. It is not foreseeable that people will be able to make a living out of science animation in the short term, so the course should be directed to serving and retired science and drama teachers, TV and radio front people, those preparing for such a career and other enthusiasts. With a pool of trained people, one can introduce science in the Theatre in Education programme.

(xv) The Scientific Community

Activities for the existing scientific community should be encouraged, promoted and supported. These contribute to a culture of life-long learning and a space for scientists to meet.

(xvi) International dimension

Participation in international fora should help in learning from the experience of others, as well as share Malta's experience.

Membership to the European Science Communication Events Association (EUSCEA) should be sought immediately. The creation of a Euro-Mediterranean forum for science popularisation promoters should be studied.

This annex is aimed at highlighting some of the activities and initiatives taken in science popularisation in Malta in the last few years. It is not meant to be exhaustive.

MCST set up a working group in 1989 to prepare the necessary groundwork towards the setting up of a Science Museum. Staff members have been trained for the task, a business plan was prepared and several potential venues identified. A historical collection started being built, saving from perish artefacts of significant relevance to the history of technology on the Islands. Several potential sponsors were willing to contribute on top of government investment. The Government, while expressing its willingness to go forward with the project, never came up with the necessary capital.

Several initiatives were also undertaken to save industrial heritage sites. MCST offered its full assistance to initiatives taken by others, such as in the establishment of a national IT museum, a transport museum, the Aviation Museum, the Junior College Science Museum, and the Natural History Museum.

The science museum business plan envisages a facility dedicated not only to the historical aspect of technology, but also an Interactive Science Centre. For this purpose MCST commissioned the Science Centre with the building of 60 interactive exhibits. A decision was taken in 1994 to stage an event to test these exhibits, and use the event as a launching pad for a national drive towards science popularisation. This resulted in the first National Science and Technology Week in January 2006 on the University campus, involving over 300 different activities, 500 workers and according to media reports, around 60,000 visitors.

The Malta Student Science Forum was established in 1994 by NSTF, targeting post-secondary students.

YMCA opened the first cyber café in Malta in May 1996, using IT as an instrument for social inclusion. Several other Internet cafes were subsequently opened.

Fgura was the first Local Council to organise computer courses in 1996, in collaboration with Woodco Ltd. In due course 22 local authorities worked with the same company to reach some 5200 people directly. Within a few years, all 68 Local Councils organised some form of IT literacy initiatives.

In 1997 a number of industries were invited to open their doors to students for a week. Eighty industries gave 2/3 of all secondary schools a tour of their processes. This gave students the opportunity to observe the application of scientific principles learnt at school, as well as get first hand information on careers that exist for those who opt for a technological career. Industries taking part included establishments that are normally not associated with technology even if it is inherent to their operations, such as hotels, banks, cinemas, private hospitals, and media stations. As a direct follow-up, 25 industries accepted to continue receiving students throughout the year. The public was reached through a huge collaboration with local media and science oriented NGOs. This activity was repeated in 1998, 1999, 2003 and 2004. For the latter edition the number of participating industries grew to 143. As a follow up, over 25% of these accepted to continue taking students throughout the rest of the scholastic year. After informing schools of these companies, schools could contact these industries independently, contributing to a culture of industry-school co-operation.

As part of the celebrations of Valletta as the Cultural Capital of Europe, a month-long Hands-On activity was held in June at St. James Cavalier, contributing to technology being accepted as part of culture.

In the same year the Ministry of Education and National Culture set up a network on initiatives for the popularisation of science and technology. This group refrained from reconvening after its administration was handed to MCST. During this period a new network was set up in MCST on 'Science Education' (in parallel with the Science Popularisation Network). This network was wound up soon after taking part in a research project on the State of Science Education in Malta by the Faculty of Education.

As from 1997, NSTF became the focal point of the EU Contest for Young Scientists. Through this annual initiative, post-secondary students develop technological projects, with the best ones participating in a European competition.

Also in 1997, the Fgura Local Council launched the first cyber-nursery in Malta. Apart from general courses, others were tailor made for disabled members of the community and for housewives.

Other Local Councils pioneering IT&T initiatives include Lija with Web-Week.

The first local S&T Week was organised in collaboration with the Mosta Local Council in 1997. For this event the community was invited to come and experiment with the Hands-On exhibits.

For the second one, in Fgura, other technology players from the community were involved. In both of these events schools from the area took an active interest, and opening days were extended on requests by the Local Councils.

Considerable use has been made of television. Apart from programmes produced by MCST and the Science Centre, regular science slots were included in light entertainment and children's programmes. Three series of such spots were aired on TVM, one in a fashion programme, another in a programme on what to do in the weekend (Žvog), and one in the first real TV show in Malta (Lajf)

Since 1997 the weekly Children's Supplement of The Times started including a science corner.

An initiative on gender in science was started with the Parliamentary Secretariat for Women's Rights and the National Commission for the Advancement of Women in 1998, but abandoned with the change in administration.

The Malta Mathematical Society was formed in 1998, and includes amongst its objectives increasing interest and improving the teaching of the subject. It organises a monthly public talk and a biennial interschool Olympiad.

Radju Kottoner aired a series of 13 programmes on popular science called Teknoloġija fit-Trieq.

University Radio produced a programme in 1999 aimed at parents who would like to revise what they learnt at school to be able to assist their children in their physics homework.

The planning of Baystreet Complex in St Julian's in 1999 included an interactive science entertainment facility. Unfortunately this closed down after some months as it did not meet the investors' financial expectations.

Project Edison was launched in Senglea in 1999 through an activity in which half the children from the locality participated. This initiative aimed at empowering people to use technology as a way of improving their living conditions.

In collaboration with the Education Division, Men of the Trees and the Water Services Corporation, the World Day of Water in 2000 was commemorated through the distribution of a field study guide on Chadwick Lakes to all schools. In order to be able to maximise the benefits from the guide, three days on site were organised for teachers to get a first-hand experience on how to use the publication with their students. Over 100 teachers booked for these visits.

In the same year the Education Division participated in a project on Agenda 21 launched by the UNESCO Associated Schools Project Network (ASPNET). School-based environmental projects were encouraged, and an international Internet conference for participants was promoted.

The NSTF Science Fair was launched in 2000, and it became an annual event.

A Policy on Science Popularisation was formulated in 2001 (Annex 2). This policy served as a reference guide in MCST's efforts to increase the number of students opting for science subjects, and to raise awareness of technology with the general public.

The Embassy Shopping Complex in Valletta set up a popular activity during the Easter period of the same year. Patrons had the opportunity of experiencing our Hands-On Equipment, assisted by trained staff.

Young Enterprise launched the Best Use of Technology Award in 2001, and continued to award it every year. This Award instils in participants the value of technology in business.

The Fifth Edition of Science and Technology Week was held in 2001 at Baystreet and in collaboration with the Eden Leisure Group. In addition to workshops set up for the occasion, a good number of retail outlets within the complex participated by exposing the technology behind their products and services. Visits were also held at the IMAX theatre. The format adopted gave the general public as many possibilities to participate as it gave to students. For the first time it included specific activities aimed at the scientific community. Over 1000 separate activities took place in the space of a week, with the participation of over 10,000 students from 68 schools in 51 different workshops. These included events in collaboration with various embassies and foreign cultural institutes, such as the British Council, EU Delegation, French and German Embassies, Italian Cultural Institute, and the Russian Centre for Science and Culture.

S&T and Industry Weeks served as an instrument to raise awareness on S&T with the Government and politicians. Official visits were organised every year for the President of the Republic, the Prime Minister, Leader of the Opposition, several Ministers, Members of Parliament and Ambassadors.

Inspired by the National Science and Technology Week, a school in Qormi started organising its own Science Week every year.

Another local science week was hosted by the Bormla Local Council in 2002. This was the first time when all stands represented technology exclusively from the area. Participants included public and private schools, Malta Dry Docks, Enemalta, St George's Band Club, an enthusiast on 3D photography, and MCST. This activity was part of Project Edison, involving the local band club, individuals involved in civil society and various other technology providers in the region.

The Cospicua Community took part in the Bangemann Challenge, a contest on ICT initiatives that enhance the quality of life of local communities, organised by the City of Stockholm and supported by the EU Commission.

A Science Art Contest was launched in 2002 by NSTF with the objective of encouraging children between the ages 8-10 to express their idea on a scientific topic through art. Some 200 students from around 15 schools participate each year.

In the same year this organisation launched a School Contest for Young Scientists aiming at encouraging those between 11 and 14 years of age to participate in scientific research and experimentation. This activity attracts some 300 students from around 15 schools.

In November of the same year the Astronomical Society of Malta organised the first National Astronomy Week. This included activities for students, the general public, as well as enthusiasts. This NGO organises sky observations on a regular basis, as well as on the occasion of specific celestial events.

Public lectures by foreign scientists visiting the Islands are organised regularly. These vary between Robotics and Artificial Intelligence, to Mind Altering Substances, as well as a talk by a specialist for goldsmiths. One of these talks (Nov 02) was given by the Director of the Istituto Culturale Italiano di Cultura on 'Italia – Non Solo Arte'.

e-zone was A TV programme specifically targeted at information and communication technology initiatives produced by DeeMedia.tv in 2002.

In April of the same year a course on 'Science and Society - Science Popularisation and the Media' was organised for journalists in collaboration with the Tumas Fenech Foundation for Education in Journalism.

As a follow-up to this basic course, and as a result of its popularity and success, the British Council accepted to organise a course on Science Communication in collaboration with British experts in the field in 2003. Its objectives were to help scientists communicate better with media and the general public, and improve the delivery of scientific messages by journalists.

Selecting Malta in November 2002 for the EU Workshop for policy makers on Benchmarking the Effectiveness of Government Supported Initiatives to Promote Public Understanding of Science was recognition by the European Commission of the country's contribution in this field.

British Council commemorated the 50th anniversary of the discovery of the double helix structure in 2003 through an exhibition on DNA.

MCST was partner in an FP5 project dealing with better understanding of nuclear science launched in 2003 by the Public Awareness of Nuclear Science Network (PANS). This project aimed at developing web-based tools for teachers to be able to teach the subject better and highlight the benefits of nuclear science. Malta served as a test-bed for the developed tools. <http://www.nupex.org>

The Maltese Association of Science Educators (MASE) was set up in March 2006

Home-Sci-Home is a project launched in 2006 and repeated in 2007 aiming at highlighting the technological content in a house. Students are taken for a day to a house and they go around in the different rooms doing science investigations related to the actual room, e.g. investigating how a washing machine or an oven works. This project received an award by the Commonwealth Association for Science and Technology.

Fondazzjoni Temi Zammit is developing physics on-line modules financed by UNESCO. These could eventually be produced in TV programmes.

In spring 2007, the newly established Cottonera College embarked on a project in the area on History and Science.

An international photographic competition organised by MILSET was publicised on local newspapers at the same period.

Other Science popularisation activities include workshops at the Book Fair by the Science Centre, the setting up of a Junior Chamber of Scientists, and a fair dose of S&T in career events in schools.

At the international level, Malta has been active in the International Council for Museums of Science and Technology (CIMUSET), the European Collaborative for Science, Industry and Technology Exhibitions (ECSITE), and in 2002 became one of the first members of the European Science Communication Events Association (EUSCEA).

Various Maltese individuals and institutions participated in international meetings on public understanding of science.

A Science Popularisation Policy for Malta

Science Popularisation Programme **Malta Council for Science and Technology**

Giovanni Buttigieg
28 January 2001

Terms of Reference for a Science Popularisation Unit within the Malta Council for Science and Technology

The Main Task of the Science Popularisation Unit is to put into operation the Science Popularisation Policy for Malta to be adopted by Council. This, by developing an annual work plan to be approved by the Chief Executive Officer and implement it. It also recommends updates to this policy to be adopted by Council.

Composition

A Full time Co-ordinator

A part-time Assistant

Team of facilitators to be employed on particular projects.

It is also to make use of the support staff at MCST.

Function:

It can be responsible for the Action of the Fifth Framework Programme 'Improving human research potential and the socio-economic knowledge base'

Co-ordinate the National Science and Technology Week Annually

All Science Popularisation Activities

Build bridges with industries

Prepares arrangements for commitments MCST in partnerships

Join International Networks on Science Popularisation.

Co-ordinates MCST representation in projects with ETC, Planning Authority, Malta Development Corporation, Malta Council for Economic Development

Looks after the MCST historical collection and set of Interactive Exhibits

Is to work closely with the PRO

International proposals that are related to the dissemination of technology

Students, Scientific Community, Industry, General Public

Proposes to Council what financial support to be given to different projects

Genesis

The Science Popularisation Programme was set up in 1995 out of the Science Museum Working Group. Its two main tasks were to raise a greater awareness of technological concepts amongst the general public, and to encourage more students to take up sciences at school. The objectives of these tasks were to ensure that no one is left out of the opportunities and debate on the threats presented by advances in technology, and also to have a work force technologically prepared for our Country's needs.

The Programme was launched in January 1996 with the first National Science and Technology Week, one of the most successful undertakings by MCST to date.

Data about students pursuing science studies at all levels, from secondary to post-graduate, started to be compiled. We had also built a number of interactive science exhibits.

Three annual events heavily involving industry brought some 150 companies in direct contact with MCST. During these events students have the opportunity to witness the application of scientific principles they learn in the classrooms, and also get a better perception of careers that exist in the technology sector. Encouragement to go on with such initiatives comes from both schools and industries.

We participated in the activities as part of Valletta as a cultural capital of Europe, thus getting recognition that technology is part of our culture.

On a local level, we organised science weekends in collaboration with local councils in Mosta and Fgura. On both occasions we had to increase the duration of the event due to the response from these and nearby communities. We assisted a number of other municipalities, schools and organisations in their science popularisation initiatives.

We have co-staged two national events for schools with the Education Division. One of these was about nature studies at Chadwick Lakes and the other about Agenda 21.

The media was targeted extensively. We participated regularly with a science slot in three TV series, two of which on PBS. We made other sporadic appearances on educational and popular shows. We also participated in a number of radio programmes and talk shows. In the printed media, we started a science corner in The Times children's supplement that is still going on. Before and during main events, we compiled articles and submitted them to newspapers. Science Popularisation is the Programme that attracted the greatest media attention within MCST, even if one had to leave out that generated for the 1996 Science and Technology Week (over 80 newspaper entries during 2 months).

For the scientific community, we co-organised a number of talks by foreign experts on various matters.

Follow-up of initiatives we held with science-oriented NGOs has been less consistent.

We contributed to the Social and Economic Development Plan for the South of Malta. We made proposals to be included in international bilateral agreements and financial protocols. We also contributed to the reform in the museums sector.

We participated in a number of international activities, thus gaining from the experience of others who had been before us in the field. We were instrumental in facilitating assistance from abroad to third parties. This includes a course on developing new products and markets for existing products through the Internet, and listing on international databases.

Some of the activities we started were taken up and developed by others. The number of industry open-days, science exhibitions in schools, and programmes for the dissemination of technological knowledge by local councils was never as high as it is today. It would be presumptuous to claim that all this is only due to our efforts. Other organisations, individuals and circumstances contributed to this culture that was practically non-existent when we started.

After five years of activity it is time to revise what has been achieved, examine changes in the scenario, and build an integrated plan based on current and future needs.

The objectives of facilitating the delivery of benefits from technological change to everyone and responding to the country's economic needs remain relevant and will continue to be in the foreseeable future. MCST is in possession of a number of resources, but there are many more available outside that can be put to use in line with these objectives.

Assessment

It is high time to assess quantitatively current and future needs of our industry. This can be done in collaboration with the Malta Council for Economic Development, the Malta Development Corporation, the Employment and Training Corporation, and the Federation of Industry. The idea is to come up with a weighted list of skills that our economy requires for present and future development. A similar exercise was held in the UK, and seeking their assistance could help in the direction of our efforts.

Different organisations may take the responsibility to ensure the availability of particular skills. The MCST is to focus on scientific and technological ones. In collaboration with relevant partners, we could assess the resources available and identify missing ones, in order to devise a long-term plan for nurturing such skills.

Such an exercise cannot be completed in a short time. Its benefits however are also long term, as are the consequences of not undertaking it.

Another policy initiative is to ensure that technology becomes an intrinsic part of Regional and Local Development Plans of the Planning Authority. If not consulted, we shall take the initiative to send recommendations ourselves.

We shall also seek to have science and technology part of international collaboration and financial agreements that Malta signs with other countries or international organisations. In the majority of these the bias at present leans heavily towards the arts. In some, science and technology is non-existent.

Rationale

Science Popularisation is not just for children. If parents and grandparents appreciate technology, it will be simpler for kids to opt for science subjects. One advantage in organising activities is that the understanding of science concepts, or the lack of it, transcends age. Unlike historical, aesthetical and emotional ideas, unfortunately science concepts usually stop developing when one leaves school in most cases. This makes it easier to target many audiences with the same programme.

Offering activities to the science-literate or those interested in science encourages them to develop their knowledge, skills and interest further.

If guidance teachers are convinced of the careers that exist in technology, and that science learning is attainable not just for an elite, they will feel more comfortable recommending this area to students under their care.

The scientific community also suffers from a lack of activities of interest to its members.

A lot of the above does not have to be done necessarily or exclusively by us.

It would be foolish to wait for the finalisation of the mentioned study in order to take any action. Many benefits derived from science popularisation are obvious, and we should at least strive to achieve those. Awareness of applied technology in day-to-day life and the study of scientific processes can hardly ever be considered as in over-supply. Much less so in a population that depends almost completely on its own human resources, and at the same time practically exclusively on the material resources of others.

Activities

The flagship activity of the Science Popularisation Programme and main MCST activity for the public should remain the Annual Science and Technology Week. By attracting authorities, scientists, students and the general public, this should serve as a showcase of what MCST is and does. It should invite the participation of the various actors in the technology sector in order to explain basic technological processes in an interactive manner. These include public and private companies, NGOs, schools and individuals. Carefully planned, it should not be too difficult to attract corporate sponsorship as MCST cannot, and should not, bear the full cost of the event. The success of such an event depends a lot on the backing of the highest authorities within MCST and beyond, the collaboration of all project co-ordinators within the organisation, and its PR mechanism. Having managed with astounding success when still without experience, we can be confident to repeat the accomplishment.

Activities in localities should also be held on a regular basis. Through co-funding with Local Councils, we can take technology to people who otherwise would not come near it. These activities should include suppliers of technology already present in the community.

Existing collaboration we brokered between industry and schools should be enhanced. We shall increase the number of industries willing to take students throughout the year. This list currently has 36 entries.

The project with ETC to utilise second hand computers to disseminate the use of Information Technology should be given a serious push.

As in the past we can capitalise on the social appeal of international days such as those for Water, AIDS, Non-smoking, Energy and Food to explain the science and technology behind these topics. This we can do in collaboration with the national authorities that co-ordinate them locally.

The media is also an effective way of enhancing a technological culture. Science TV programmes do not attract enough advertising yet, an important criterion in the setting up of schedules. MCST can support such programmes by making up for part of the advertising money and negotiating the rest. In conjunction with this, we shall seek ways of including science content in purely educational programmes, as well as spots in popular / entertainment ones. We shall also support radio programmes on science, and encourage more scientists to contribute to the printed media.

In science, as in many other areas in the Country, the NGO sector is not fully appreciated and still under-utilised. The introduction of legislation regulating voluntary work, due this year, is bound to bring adjustments in this regard. Through their activities these organisations contribute greatly towards increasing interest in scientific knowledge. They nurture in their members and audiences a science culture. Supporting them should be viewed as the implementation of our tasks at a lower cost. Unlike organisations dedicated to the arts, such as amateur theatre companies and young orchestras, these NGOs find very few doors open for assistance. Creating a fund to be distributed in grants exclusively to these organisations is one way of supporting them. Alternatively or additionally, we shall lobby with the Parliamentary Secretariat in the Ministry of Education to earmark a number of grants for science activities from those distributed to youth organisations. We should also seek ways of doing activities together, such as with the NSTF Science Fair, the YMCA Valletta Festival, and scientific talks with the Chamber of Scientists. In no way we shall try to centralise what is already being done by others.

Teaching science is not the role of MCST. The Education Division is one of the biggest government departments and has a developed structure for performing this mission. We should be in a position to contribute to the formulation of their policies in the sector, and suggest developments to the schools' science curriculum. As in previous years, we can work together on individual projects, and should always consult them regarding our activities that involve schools. They have always supported our activities and recommended them to the schools. Our main task is to remain focussed mainly on encouraging students to take up science subjects, and popularise science with the general public.

With large-scale technology providers on the Island we can set up joint projects that while bringing forward our objective of science popularisation are beneficial to our partners. Greater public awareness of how much technology is behind having constant running water should in turn result in a reduction of water wastage. If more people understand better the real cost of producing electricity they will in turn be more economical in its use. Facilitating greater use of IT should result in a bigger customer-base for computer giants.

We can make use of existing technology attractions. The number of these has increased significantly in the last years, and the trend is bound to continue. The Natural History Museum, Telecommunications Museum, Maritime Museum, Aviation Museum, Junior College Science Museum, Automobiles Museum and

Discovery Centre are some of those with which we already worked in the past or can work with in the future. We shall encourage a greater emphasis on the technological aspects of their collections, and jump on opportunities to influence their programme of activities. In return we can help in their promotion. The scheme of quasi-permanent loans from our collection to these museums is to be continued.

In collaboration with the newly established heritage commission, we should propose amendments to the Antiquities Act to preserve better our technological and industrial heritage. We have already done some work on this.

International

There are several programmes that fund international co-operation in the diffusion of technology. In the main these are under-utilised locally due to two broad reasons. They are generally not well known and in many cases local partners are unable or unwilling to come up with their contribution. We can encourage the exploitation of such opportunities by filling these gaps. The minimum we can do for their diffusion is to list them on our web site. For programmes without a local focal point we can work to take the role or encourage someone else to do so. By offering to manage the projects on behalf of local partners in return for guaranteeing that they will not have to fork out any money, such an exercise can be an opportunity to raise funds for MCST. Staff should be given incentives to help in this initiative. The International projects undertaken by the Programme so far cost nothing to the MCST budget, and in some instances left a positive balance. The pilot scheme on co-management we started recently can be expanded with proper conditions.

Malta's participation in the EU Educational Programmes is to be monitored and evaluated. As for SOCRATES, we should encourage the greatest number of science under-graduates to participate in its ERASMUS strand. LEONARDO is probably the programme that assists most the training in new technologies. We should also encourage themes around information technology and scientific topics for Exchanges within the YOUTH Programme. All these Programmes have their management structure and it is still immature to try and enter into these structures. However we can help in publicising the opportunities that exist for international projects with themes related to technology, and encourage young people to create projects around such themes.

Proposals for the VIth Framework Programme indicate that Science Popularisation will be a main theme. We should be geared to exploit it to the fullest when it comes into effect.

We shall seek to participate also in the European Science and Technology Week. This is currently held in November, coinciding with our last three national S&T weeks. Funds are available for giving it a European dimension. We can propose activities ourselves and also join proposals of others.

Under the same Action we can participate in Networks on Science Popularisation.

Participation in international science popularisation networks can be of benefit to us as well as for other partners in the network. Whereas this keeps us up to date with current thinking and techniques, we are in a position to offer the experience we have developed in building exhibits and designing activities around them.

Having received official requests for information from the Federal Government of Germany and the South African Embassy in Rome about a specific activity of ours should fill us with courage to expand our work.

The Science and Technology Division within the Commonwealth Science Council is one forum in which we should have an active presence.

When our programme is fully developed and running, we can contribute with it to the region. Some of our neighbours are behind us in this field and we can help them with catching up.

Resources

Existing:

A full-time co-ordinator who also assists the Acting Chief Executive Officer;

A member of the staff trained in the network but currently working on other projects;

Seven school technicians trained with building interactive exhibits and animating activities around them;

A set of 70 interactive exhibits;

A small but significant historical collection;

A store holding the exhibits and part of the collection;

A building in Bighi that needs some repair;

Proposed:

The trained member of the staff to dedicate part of his time to the Programme;

Utilise more the interactive exhibits. In 5 years they have been on show for just 51 days plus some TV programmes;

Lend parts of the collection to existing science museums. We already have an airplane engine at the aviation museum;

Get rid of the store and utilise the rent for the Programme;

Secure part of Bighi to store the exhibits till they are put on a permanent display.

When funds are made available, the Zymotic block is to be converted into a permanent science attraction. It can be used to display our interactive science exhibits permanently, which is what they were originally intentioned for. Now that a private enterprise has undertaken the setting up of a similar project, Council might want to consider alternatives. One such alternative could be to house a national laboratory to be utilised by all schools instead of having expensive equipment under-utilised in each school. In either case, we should try to develop ways of co-operation with the Discovery Centre.

Conclusion

If we are to champion science popularisation, we need first of all to improve the corporate image of MCST. Business cards still bear the address of West Street and the website has never been in such a poor state. No such organisation should refrain from publishing a general report on its activities for over three years, or remain without a brochure for so long. Without these tools it is extremely difficult to do any serious outreach. Everyone we approach on serious collaboration requests these upfront. The damaging effect on postponing their update due to 'imminent' changes is far higher than their cost.

There is a lot that can be done. We do not have to work on our own. There are many potential partners with whom we can develop activities of mutual benefit. Staff engagement can be project-based.

By showing the opportunities available in science and technology, our economy can find a technically prepared workforce without the need of coercion. More jobs and wealth will be created if we have a bigger pool of such people. By nurturing a science and technology culture, more people can make better use of the growing number of opportunities available. The negation of this can lead to a crisis in participative democracy whereby less people can form an educated opinion on matters effecting them and humanity in general.