

# SCIENCE & DISCOVERY CENTERS: UPPTECH

Case Study

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## AWAKENING INTEREST IN SCIENCE

First and foremost, Science and Technology Centers are revealed to be a powerful tool to trigger curiosity and convey the scientific knowledge among children, youngsters, and adults. These institutions are capable of inspiring and engaging individuals, and serve as a connection among science, technology, the scientific community, and the general public.



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## CONTACT US:

SB International, Verktgsvägen 1, 553 02 Jönköping (Sweden).  
Tel.+46 (0)36 37 50 30 / E-mail: [info@sbisweden.com](mailto:info@sbisweden.com)  
[www.sbisweden.com](http://www.sbisweden.com)

## SCIENCE AND DISCOVERY CENTERS



### Arousing the curiosity of children and adults

A museum is defined as "a non-profit, permanent institution in the service of society and its development, open to the public, which acquires, conserves, researches, communicates and exhibits the tangible and intangible heritage of humanity and its environment for the purposes of education, study and enjoyment." (ICOM, 2017).

Museums are widely varied ranging from archeology, or art museums, to maritime, or war museums, among others. Science and Technology Museums in particular are those "devoted to one or more exact sciences such as astronomy, mathematics, physics, chemistry, medical science, construction and building industries, manufactured objects, etc." (EGMUS, n.d.).

Within this category, it is also possible to find Science and Discovery Centers whose main purpose is to arouse curiosity and interest in science and technology.

### DID YOU KNOW?

*Standing at a massive 450,000 square meters and with 137,500 square meters of floor, Guangdong Science Center (广东科学中心), located on the Chinese island of Xiaoguwei, is the largest Science Center worldwide.*

*In the Scandinavian region, the winner by size is Universeum (in Gothenburg).*

## SCIENCE AND DISCOVERY CENTERS



### A Global Science Movement

The more than 3,000 Science Centers existing around the world attract around 300 million visitors annually (Persson, 2015; ISCSMD, n.d.). These figures evidence a keen interest in visiting this kind of educational facility.

Several international and regional networks for science centers and science museums work in collaboration to support these institutions (UNESCO, n.d.).

In Sweden, Svenska Science Centers comprises 20 Science Centers. This association works together with the European Network of Science Centers and Museums (Ecsite), educational institutions, and public and private organizations to disseminate scientific findings (SSC, n.d.).

### KEY FIGURES

- *No. of Science Centers worldwide: 3,000.*
- *No. of Annual Visitors: 300 million.*
- *Economic impact of Science Centers: 7-17 billion USD.*



## UPPTECH, JÖNKÖPING SCIENCE CENTER



### Enjoying the Planetarium and the experimental stations offered by Upptech

Located at the heart of Jönköping, Upptech is a Science and Technology Center that promotes learning through play and discovery. The Center is mostly financed by the State and the municipality (Upptech, 2020).

Its 1,000 sqm Experimental Hall presents more than 80 experiments linked to science, technology, and mathematics where young and not-so-young can test their knowledge and abilities (Upptech, 2019). Planetary displays and experiment shows are highly popular activities (Upptech, 2020).

Upptech's facilities can also be used for corporate events, meetings, and conferences, as well as private events such as birthdays (Upptech, 2020).

UPPTECH - Jönköping Science Center  
 Västra Holmgatan 34 A  
 553 23 Jönköping (Sweden)  
 Telf. 46 (0) 36 10 60 77  
[upptech@jonkoping.se](mailto:upptech@jonkoping.se)  
[www.upptech.se](http://www.upptech.se)



Barbro Jarl, Responsible for Marketing, Administration, and Information at Upptech

## UPPTECH, JÖNKÖPING SCIENCE CENTER



### Science and technology in and out of the classroom

In line with the purpose of discovery science and technology through the first-hand experience, various initiatives are being developed by Upptech (Upptech, 2020).

"Naturskola" is the Swedish pedagogical expression that refers to the method of "learning outside" ["att lära in ute"]. There is no better way to learn about nature than in nature itself. Outdoor activities are organized from Upptech to bring understanding on various school subjects with a hands-on approach (Upptech, 2020).

KomTek is a complement to the school's technology education, and provides comprehensive technical knowledge, with emphasis on mechanics, electronics, and IT. It belongs to a national network operating in 20 municipalities around Sweden (Upptech, 2020).



“

*Upptech is a place to explore, and discover, having fun along the way.*

”



## UPPTECH, JÖNKÖPING SCIENCE CENTER



### Science and technology in and out of the classroom (continued)

KomTek aims to attract the interest of children and young people in technology by offering them education focused on creativity, experimentation, and problem-solving. The kids can design, build, and test a technical creation to understand the fundamentals of technology. The courses are intended for children and youth from preschool (Förskola - Grade F, in Sweden) to high school (Gymnasiet - Grade 9, according to the Swedish education system) (Upptech, 2020).

NTA School Development operates nationwide, and supports schools and preschools in Sweden in the area of science and technology. NTA School Development supports Jönköping municipality with training for coordinators, educators, and development groups. In Jönköping, all municipal primary schools collaborate with NTA (Upptech, 2020).



“

*Everyday, I interact with lots of people, from kids, to teachers, team members, and collaborators. There is always something happening, and that is stimulating!*

”

## UPPTECH DRIVING SCHOOL



### Brum Brum, Upptech Driving School

Driving schools for children are becoming increasingly popular as children love to drive, and road safety is core in their education. Therefore, theory and practice, education, and entertainment, all combine seamlessly within the driving school concept.

At an early age, key principles of traffic safety and mobility education are essential to raise awareness among the youngest, and help them to become responsible drivers of tomorrow. In Europe, road safety is included in the curricula of primary education in all States. In Sweden, it is given in pre-primary and secondary education as well (ESTC, 2019, p.16-17).

From May to August, the Upptech Traffic Park becomes the center of attention for the youngest, since the most representative age group that uses this facility is children between 4 and 6 years old (Upptech, 2020).



“

*Our driving school is really nice and popular.*

*When kids are getting closer and see the houses, the roads, and the cars, they get very excited, eager to jump into the track and start driving!*

*The maintenance of the cars is not a big deal, but if something happens, we just pick up the phone and call SBI and that's it.*

”

## UPPTECH DRIVING SCHOOL



### Brum Brum, Upptech Driving School (continued)

The track occupies a surface of around 400 sqm, and it is equipped with a paved route, traffic signaling, and different buildings that nicely reproduced a traditional Swedish neighborhood in miniature. The facilities also include a storage/charging room.

The fleet is formed by battery-operated vehicles. Both, the source of energy along with the power consumption make the cars highly cost-effective and sustainable. The battery enables full-day operation, which means no interruptions for recharge.

At the wheel of a fire truck, the children feel like real firefighters for a while. Upon successful completion of the activity, they receive their (fictitious) driving license.

“



*The traffic park is available for public visitors during the opening hours. A small fee is charged for use. The cars are operated with tokens delivered at the reception. It is also possible to book the electric vehicles for special events.*

*As part of our educational program, we offer 1-hour traffic safety lessons. At first, we have a theoretical class. After theory comes to practice, and children drive at the track to apply the lesson learned.*

”

## MORE IDEAS SUCCESSFULLY APPLIED BY SCIENCE CENTERS: HYDRAULICS



### Learning hydraulics while digging

Hydraulics is an engineering discipline that explains the generation of energy through the use of liquids under pressure. Pascal's law states that pressure in a fluid is transmitted equally in all directions. In the hydraulic press, this law is used to gain an increase in force. A small force applied to a small piston in a small cylinder is transmitted through a tube to a large cylinder, where it presses equally against all sides of the cylinder, including the large piston (Encyclopedia Britannica, n.d.).

Advanced hydraulics can be found in heavy earth-moving equipment, lifting platforms, industrial machinery, and cranes, among others. Therefore, diggers are great examples to show how hydraulics works, while training movement and coordination skills.

The diggers become a perfect activity for reduced spaces, both indoor and outdoor, since the machine is stationary.

### DID YOU KNOW?

*The giant dinosaurs of Jurassic World Fallen Kingdom come to life thanks to hydraulic technology.*



## OTHER SUCCESSFUL STORIES

From Sweden to the USA, both our driving school and digging zone become great attractions for the little ones. Other science and discovery centers that have successfully applied these concepts are the following:

- Universe Science Park (Nordborg, Denmark).
- Saint Louis Science Center (Saint Louis, USA).
- Oklahoma Science Center (Oklahoma, USA).
- LEGOLAND Discovery Center (Dallas Fort Worth, USA).
- LEGOLAND Discovery Center (Manchester, UK).
- Petrosains Discovery Center (Kuala Lumpur, Malaysia).



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**CONTACT US:**

Verktysvägen 1, 553 02 Jönköping (Sweden).  
Tel. +46 (0)36 37 50 30 / E-mail: [info@sbisweden.com](mailto:info@sbisweden.com)  
[www.sbisweden.com](http://www.sbisweden.com)