

The Norwegian knowledge train- Jærmuseet Science Circus

The purpose and aims

- Bring together universities, research institutes and science centres in the Nordic countries, offering a joint platform for cooperation, consultation and dialogue across boundaries and disciplines.

This is something that the Knowledge train have achieved. The cross disciplinary cooperation across borders between the universities and science centers have been a good one. And it have given Jærmuseet as both a science center and a museum new contacts with universities, museums, science centers in the Nordic countries.

- Spark interest and self-confidence in children and teenagers for learning and discovering.

YES☺ Look at the pictures from Fossvogsskól

- Encourage curiosity and excitement about science, engineering, technology and mathematics.

YES☺ Look at the pictures from Fossvogsskól

- Connect natural sciences, technique, art and innovation between different school stages, institutes and industry.

The Science Fair in Flekkefjord shows that it is possible to get businesses, local business association, fire brigade, the local scouts and a Science center to cooperate to make an event that sparks curiosity and excitement about science, engineering, technology and mathematics for children, teenagers and adults . The day after the event the local school was in contact and declared the event and school visit a success, and asked if this could be repeated next year.

- Encourage new methods in formal and informal education.

Our experience with the teacher students in the Faroe Islands showed us a more efficient way to reach the teachers than doing workshop with them after they have finished their education. We are currently working

on getting an agreement with the university in Stavanger which hopefully will allow teacher students to do part of their practical periods with us.

- Combine educational value and entertainment for all age groups by using interactive and dynamic pedagogical approaches.

Science shows, interactive exhibits and workshops

- Offer opportunities to present local businesses, innovation and knowledge companies, thus provide insights for young people into the opportunities offered by education, and how it can be harnessed locally in the future.

The Science Fair at Flekkefjord had this as the local business association was heavily involved in the arrangement. No businesses presented their products in the Science Feast, but a lot of business leaders were present. They have given signals that a lot of businesses could be interested in participating if there is a new arrangement. Now they know what a Science Feast is!

- Providing opportunities for reaching remote areas, or hard to reach communities, that seldom have access to events of this type, opening up new possibilities of social inclusion.

Flekkefjord is one of the places in this region that is placed furthest away from a science center, actually it belongs to the region of an another science center that is placed 5 hours drive away.

Activities

Date	Activity	Number of participants/visitors
20/4-2015	Information meeting Biophilia at the university of Stavanger Science Circus participated in this meeting and presented the Knowledge train, and that the participating schools could ask us for an inspirational visit.	
22-23/4-2015	Visit to Fjelltun skole i Strand	579 pupils, and 34

	kommune with science show, workshops, and exhibition	teachers
10-15/5-2015	Faro Islands-Seturstokid Workshops with teacher students, science show and workshops with pupils from all over Torshavn, and science show at the Science Fair at the university	10 students, 538 pupils, 42 teachers, and 41 children and 38 adults on open day at the university
30/9-2015	Visit to Bore ungdomsskole with science show, workshops, and exhibition	246 pupils, and 19 teachers
12-15/10-2015	Participation at the museumsfestival at the Faroese national museum. Science show and workshops both at the museum and in a shopping center in Torshavn	585 children and 321 adults
4/4-2016	Visit to Fjelltun skole i Strand kommune with science show, workshops, and exhibition	300 pupils, 25 teachers
2-3/5-2016	Science Fair in Flekkefjord The event starts with science shows and workshops for all 5-7 graders in the town. We will also bring our traveling exhibition. This is a cooperation with some the schools in Flekkefjord, the local business association, the scouts, and not at least "Teknisk senter Flekkefjord, a local organization promoting learning of science and technology. On the evening of the 3 of may there will be a Science fair/Open house open for everyone to visit at Søyland skole in the middle of the town. The visitors here can see science shows, make som things at workshops, discover the interactive	At school 471 pupils, 42 teachers Open day after school 270 children, 109 adults

	traveling science center exhibits, and also be part of some science spectacles	
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A total of 3030 children and 640 adults have been visiting/participating in activities in connection with the Norwegian knowledge train.

In addition Science Circus did a two day workshop for 20 teachers in mechanics and electronics on behalf of the Faroese institution Nám. This work shop was not a part of the Nordic Knowledge train, but came as a consequence of the train.

Evaluation

All events and school visits have been evaluated in meetings shortly after the visit/event. We have not asked the children, but talked to the teachers, headmasters and other parts involved.

“Visits from Science Circus is a big motivation for the pupils, as well as a lot of fun. The pupils get to explore and discover by themselves, and get fascination and new knowledge. The outcome of the visit was higher the second visit. This due to that all teachers knew what to expect, and prepared the classes for the visit. One of the workshops the second visit was to make your own instruments out of straws. This has been a favorite activity in many homes after the visit. We hope for new visits, there still a lot to be learnt and discovered. “

Mette Bakke, Headmaster Fjelltun skole/project leader Biophilia educational Norway

Science Circus – evaluering

Samstemte i at dette var veldig bra !! Positivt at det skjedde noe på kvelden også.

Ønske om at de kommer igjen neste år.

Med andre ord veldig positivt. Velkommen tilbake !

Lykke til videre !

Hilsen Svein Tore Åtland, rektor Sunde skole

The result of the overall expected outcomes:

- *to promote innovation in schools through the development of teaching methods that bring together knowledge, creativity and technology, and can be adapted to all school levels, institutions and businesses.*

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- *wedge traditional teaching practices through a cross-disciplinary approach, across all ages, subjects and disciplines.*

We think we may have accomplished this in some way by our visit in the Faroe islands by introducing new activities and new ways to teach science. This is also accomplished by showing teachers how to teach science by activities, and leave them equipment so they can do it themselves afterwards.

- *encourage young people´s interest in Natural Sciences and technology, and thus progressively increase the competitiveness of the Nordic Countries.*

This is our main task as a Science Center, but also the most difficult goal to measure .

The International Science Center Impact Study(2014) have shown these results:

Results strongly supported the contention that individuals who used science centres were significantly more likely to be science and technology literate and engaged citizens.

- For both youth and adults, visiting a science centre significantly correlated with increased: Science and technology knowledge and understanding; Science and technology interest and curiosity; Engagement with and interest in science as a school subject (youth); Engagement with science and technology-related activities out-of-school; and Personal identity and confidence in science and technology.
- Although correlations were significant for both youth ages 14-15 and adults ages 18 and above, the effect sizes were almost universally stronger for adults.
- The more frequent, the longer, and the more recent the science centre experience, the stronger the correlation for all outcomes.
- For adults in general and youth relative to interest and curiosity, there appeared to be a threshold effect with greatest incremental change seen when individuals visited between two and four times a year, but not more. Similarly, correlations were relatively flat for visits lasting up to four hours, but then increased markedly after five or more hours.
- In general, visiting a science centre resulted in significant correlations regardless of the specific nature of the experience. An important exception was adults who said their typical science centre experience was a school field trip.

- Help teachers to learn methods of interdisciplinary learning and give them concrete examples

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- Help science centers to understand, document and measure learning, to spread all over the country

Dissemination

The project have been presented for Jærmuseet staff in staff meetings. It has also been presented for staff from other Norwegian Science Center during other project meetings.

