

The Nordic Biophilia Educational Project

The Reykjavík steering group

2014-2016

Final report for the Biophilia Educational Project 2014-2016 by the Reykjavík steering group



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Reykjavíkurborg



This Report is the product of a collaborative effort involving members of the Biophilia Reykjavík steering group and the educational establishments in Reykjavík that have participated in the project.

The Biophilia Reykjavík steering group is responsible for the choice and the presentation of the facts contained in this report.

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The photographs on the cover of this report are all taken at the final exhibition/end of project celebration of the Reykjavík Biophilia Educational Project at the Reykjavík City Hall, 2 June 2016. At this exhibition all participants, staff and children that had participated in the project during the school year of 2015-2016 celebrated and showed their results from taking part in the project.

This report was translated from Icelandic into English by Ragna Skinner.





FINAL REPORT FOR THE BIOPHILIA EDUCATIONAL PROJECT IN ICELAND

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1. Introduction

In the autumn of 2011, artist and musician Björk Guðmundsdóttir invited the City of Reykjavík and the University of Iceland to collaborate on a new and exciting project. The project centred on music and science workshops for children based on Björk's Biophilia album, which was released simultaneously as a CD and as an app for iPads.

Since then, the Biophilia project has developed quite significantly. Through the successful collaboration of the representatives of the aforementioned organisations, the Biophilia Educational Project has evolved and is now used at primary schools in the Reykjavík area. The originators of the project, both from the City of Reykjavík and the University of Iceland, in collaboration with Björk Guðmundsdóttir, requested that Biophilia would become an educational project under the auspices of Iceland during the year of Iceland's presidency of the Nordic Council of Ministers. This became a reality and the Ministry of Education, Culture and Science offered the City of Reykjavík and the University of Iceland to be Iceland's representatives for the project.

A project manager was appointed and a steering group created, which consisted of representatives both from the City of Reykjavík and the University of Iceland, as well as from Björk Guðmundsdóttir herself. The steering group formed the policy for implementing the project within the Nordic Biophilia Educational Project, as well as forming a financial and implementation plan for the project. The steering group worked closely with the University of Iceland, the Reykjavík Department of Education and Youth, the Reykjavík Department of Culture and Tourism, UniSci (the University of Iceland Science Centre), the Ministry of Education, Science and Culture and with Björk Guðmundsdóttir.

By participating in the Nordic Biophilia collaboration and improving the technical environment in primary schools, new foundations were laid in Reykjavík and new objectives were set.

Objectives:

- To increase young people's interest in music, natural sciences and technology.
- To reinforce young people's critical thinking by deepening and strengthening their grasp of concepts related to science, music and society.
- To encourage innovation in education, new teaching methods and interdisciplinary cooperation.
- To encourage young people's innovative thinking.
- To strengthen young people's self-image.
- To promote career-development of teachers with regard to creative teaching methods.
- To meet the requirements of the national curriculum for diverse teaching methods.
- To increase the connection between the city's schools as well as other Nordic educational establishments.
- To develop methods to evaluate young people's work as well as the achievements of the project.



2. Project description

2.1. Statistical overview

Participating educational establishments

Participating educational establishments were chosen based on their applications.

Table 1 - Participating educational establishments

	Type of establishment	Number of teachers*	Number of pupils	Age levels*	Duration of teaching*
Dalsskóli	Composite establishment: preschool, primary school and after school centre	10	68	5 years old at the preschool, year 5 at the primary school and mixed ages at the after school centre	Approx. 1-6 hours weekly for 4-7 months
Fossvogsskóli	Primary school	6	88	Years 6 and 7	3 hours weekly. 6 weeks during autumn semester and 8 weeks during the spring semester
Kvistaborg	Preschool	3+	25	5 years old	Minimum two mornings weekly
Miðborg	Preschool	5	28	4 and 5 years old	Optional subject every day during the spring semester
Sæmundarskóli	Primary school	3	43	Lower secondary level	2 hours weekly for 6 weeks and then again for 7 weeks at lower secondary level.
			200	Years 1 -7	Irregular periods of time at music lessons
Vogaskóli	Primary school	3	30	Year 6	2 hours weekly during the spring semester
Gufunesbær	After school centres	2+	30+	Years 3 and 4	Irregular periods of time
Austurbæjarskóli	Primary school	3+	45	Year 1	Two months period

* See more detailed breakdown for each school in section 2.3

A total of eight educational establishments participated in the project. This included children aged 4-15 years old. Due to the size and structural differences between establishments, the scope of the project varied greatly between locations. Kvistaborg preschool worked with 24 children, i.e. all final year students at the preschool, while Dalskóli, which is both a preschool and a primary school as well as an after school centre, included the final year of the preschool as well as year 5 at the primary school and children of mixed ages at the after school centre. Miðborg preschool is housed at three



different locations and started the project late, when Melaskóli primary school decided to withdraw its participation from the project. They proposed collaborating with Austurbæjarskóli primary school but not as much collaboration took place as planned, although both locations worked well independently. The Gufunesbær after school centre is run at several different locations in the Grafarvogur area, but their project ended up being on a smaller scale than expected. At Sæmundarskóli primary school there was less collaboration between the music teacher and the class teacher than was expected based on their application. The project also took a U-turn at Vogaskóli primary school, as the project's leader never started the project officially, due to being on sick leave, and a new teacher took over. Fossvogsskóli primary school increased its scope of the project compared to the initial application. The school hired a music teacher specifically to teach the project. The music teacher also conducted a case study on the project at the school as a part of her master's thesis for the department of Arts Education at the Iceland Academy of the Arts.

All establishments took part in a joint exhibition/celebration in the spring where the results of the work from the school year was introduced and exhibited.

Collaborators

The Biophilia Educational Project is a collaborative project between the Ministry of Education, Science and Culture, the Nordic Council of Ministers, City of Reykjavik and the University of Iceland. The steering group also collaborated with UniSci, The University of Iceland, Reykjavik Art Museum, the Reykjavik City Library and Björk Guðmundsdóttir.

In addition, the ideas of the educational project were shared elsewhere, e.g. at the University of the Young in Akureyri and at the Swiss arts festival "Culturescapes" in Basel. It was also presented in Hamburg to a large group of directors of education at European concert halls and introduced to a group of foreign postgraduate students visiting Iceland, to name a few examples.

The Reykjavík steering group of the Nordic Biophilia Educational Project

Harpa Rut Hilmarsdóttir, head of the steering group and the project director of children's culture on behalf of the Department of Culture and Tourism and The Department of Education and Youth in Reykjavik. Also the project manager of the Reykjavík Biophilia Educational Project.

Guðrún Bachmann, Manager of Public Science Communication Projects at the University of Iceland. Guðrún is one of the originators of the project and has taken active part in developing it from the start; the methods, the concept and the main teaching guidelines.

Svava Pétursdóttir, specialist in science education, representative of the School of Education at the University of Iceland. Her role has been to provide counseling regarding evaluation and communication with researchers.

Skúli Gestsson, a school music teacher who was a part of the steering group until he left to pursue a graduate degree in music education in October 2015. Skúli was introduced to the project as a music teacher in Reykjavík, and became a curriculum consultant for the Nordic implementation.

Replacing Skúli from October 2015 were:



Elfa Lilja Gísladóttir, music teacher, representative of music teachers in Reykjavík. Also an assistant project manager of the Reykjavík Biophilia Educational Project. Elfa Lilja has been involved in the project from its beginning, first through teaching the project to her own pupils and then by taking part in writing the teaching guidelines and delivering workshops.

Curver Thoroddsen, Biophilia specialist, a well known Icelandic musician, visual artist and educator and a representative of Björk Guðmundsdóttir. He was an assistant engineer on the Biophilia album, the program director for the Biophilia Educational Program during the three year world tour and ran workshops at the Biophilia City residencies.

The steering group formed the policy for Iceland's participation in the Nordic Biophilia Educational Project. According to the terms of reference issued by the Department of Education and Youth, the role of the steering group was "to ensure that Reykjavík is the leader of the Nordic collaborative framework surrounding the Biophilia educational project. The steering group is responsible for Reykjavík's participation in the Nordic project and following it up with the other Nordic establishments. The group is also responsible for implementing and developing the Biophilia project within the Reykjavík city schools¹. The steering group is to ensure that the ideology of the project is followed through during its implementation, where the aim is to promote innovation in schools through the development of educational methods that combine knowledge, creativity and technology" (see Attachment 1: The steering groups terms of reference).

The steering group's first task was to prepare and organise a meeting held by the Ministry of Education, Science and Culture for the steering groups of all participating countries in November 2014. At the meeting, the head of the steering group shared the City of Reykjavík's experience of the Biophilia project with the other steering group representatives. The workshop leaders were music teachers and scientists that had specialised themselves in the project from its very beginning at the Harpa Concert Hall. Representatives from the steering group also gave teacher training sessions in the other Nordic countries, these representatives either being the Biophilia specialists (Skúli and Curver) or the Reykjavík Biophilia delegates (Harpa Rut, Elfa Lilja and Guðrún Bachmann). One could certainly say that the City of Reykjavík's experience was well utilised in sharing the project with the other participating countries.

The steering group held monthly meetings from November 2014, although during busy times the group met more often, sometimes weekly for several weeks at a time. All major decisions regarding the project were made collaboratively by the group. The group also organised the strategy, seminars and meetings with participants, produced promotional material, wrote reports, etc. Monthly meetings were held with representatives from the Ministry to review the objectives, framework and implementation, as well as all decisions made for the Nordic project.

The project manager of the Reykjavík Biophilia Educational Project was Harpa Rut Hilmarsdóttir and her assistant was Elfa Lilja Gísladóttir. The role of the project manager was to be responsible for the implementation of the project in Reykjavík. This included: cooperating with the Ministry of Education, Science and Culture, cooperating with foreign steering groups, writing and delivering

¹ The terms of reference were made before it was decided which preschools and after school centres would participate in the Nordic project. Therefore only primary schools are mentioned here.



reports, supervising the Biophilia toolbox, administration and information for participants in the project, organisation and implementation of training courses for the participating schools, resourcing of specialists visiting the schools (music and science specialists), overseeing the Facebook-group communications, questionnaires and managing focus groups, organising Biophilia workshops at the city's cultural organisations, presenting the Biophilia educational project, delivering presentations both at home and abroad, managing the project finances, preparing visits of foreign guests at Biophilia conferences and meetings in Iceland (both in the beginning and at the end of the project) and disclosure of information to the City of Reykjavík, the Department of Education and Youth and the Department of Culture and Tourism.

2.2 Preparation

It was decided from the very beginning that participation in the Nordic Biophilia Educational Project should be informative, professionally nourishing, enriching and fun and this was emphasised through all communications with participants. With this in mind, workshops and meetings were prepared that would focus on being lively, interdisciplinary and student-centred through experiential learning, in accordance with the ideology of the Biophilia Educational Project itself.

An introductory meeting was held in April 2015 where the project was presented to the establishments of the Department of Education and Youth. Around 60 participants attended the meeting and great interest in the project was shown. The steering group presented the project's interdisciplinary teaching approach, which is intended to enhance the role of natural science teaching and creative methods in schools and other establishments (see attachment 2: Introduction letter to school leaders about participation in the Nordic project and attachment 3: application form).

The meeting schedule

A representative from the Ministry of Education, Science and Culture presented the Nordic project. The project director of children's culture at City of Reykjavík (also the head of the steering group and Biophilia's project manager) presented the project and what it had to offer for the City of Reykjavík's educational establishments. Director of the Reykjavík Department of Education and Youth discussed how the project reflects the educational policy of the city, encourages a shift towards more interdisciplinary teaching methods and increases the role of creativity. A representative from the University of Iceland discussed how the university works with children and how it aims to build a connection between educational establishments. The offer made to all units within Reykjavík's Department of Education and Youth was introduced, where the following support and resources would be made available:

- Assistance and visits from specialists in science, music and technology.
- Financial support that could be used to buy equipment or support co-teaching methods.
- A detailed course in the ideology of the Biophilia Educational Project.
- Borrowing the Biophilia toolbox, which includes around 20 iPads and headphones.
- Dealing with new challenges that can arise in music and science.
- Participation in the collaboration between schools in Reykjavík and the other participating Nordic countries.



Applicants were to create a schedule for their plan of implementation of the project at their workplace. They also had to define the age groups and number of pupils that would participate in the project and explain what potential benefits the children would enjoy by participating in the project. They also had to state which resources would be on offer to implement the project (time, space, technology, professionals) and what influence they thought the project would have on their work with the children (see attachment 3: application form).

Participating establishments were chosen based on their application. The aim was to choose diverse establishments according to pupils' age groups, the different areas of the city, previous experience of the project, human resources, equipment, imaginative approach and facilities for music and/or science teaching.

School resources

Each participating establishment wrote a report at the end of the project. These showed that the facilities to implement the Biophilia Educational Project varied greatly. A common factor was that they all had the flexibility to implement a project that would extend beyond their organisational structure and they all had staff that is experienced in dealing with such situations. This included theme based work, co-teaching, workshops and open plan teaching rooms. Technical equipment needed to implement the project varied from two iPads to 50 iPads. Some schools had facilities to teach both natural science and music while others did not.

2.3 Implementation – Timeline

10 April 2015

The formal opening of the Nordic project in Reykjavik where the Reykjavik steering group invited teachers and directors of Reykjavik schools, preschools and after school centres to a meeting to offer them a package to apply for participation in the project. Applicants were chosen according to certain criteria and in the end, 5 primary schools, 1 preschool and 1 after school centre were chosen to implement the project at their premises in the following school year.

3 June 2015

A meeting with the establishments that had been chosen to participate in the project. The objectives of the project were introduced, teaching guidelines handed out, issues regarding technology discussed and what the next steps would be regarding the project, such as the teacher training course that would be delivered in the following autumn.

13 and 14 August 2015

A two day intensive course at Askja, at the University of Iceland, was delivered to prepare the participants. Our most experienced Biophilia scientists from the University of Iceland and experienced Biophilia music teachers from the schools of Reykjavik gave lessons on the Biophilia Educational Project. Teachers from the participating primary schools, preschool and after school centres attended to prepare themselves to implement the project at their workplace (see attachment 5: Participants training course agenda).



September 2015

Two representatives from the steering group visited all participating establishment to discuss technological issues, facilities and any uncertainties regarding the project (see attachment 4: Skúlis letter on the tabletisation of primary schools).

September 2015 – June 2016

Each participating establishment implemented the project at its site. Communication between participants, as well as the steering group, was done through visits, meetings, Facebook, e-mailing and phone calls.

3 November 2015

An announcement was made regarding changes within the steering group. Music teacher Skúli Gestsson left the group to study abroad and replacing him were music teacher Elfa Lilja Gísladóttir and artist Curver Thoroddsen, who also represents Björk Guðmundsdóttir.

4 November 2015

Status and collaborative meeting. Meeting of all participating establishments at Fossvogsskóli primary school .

18 February 2016

Status and collaborative meeting. Meeting of all participating establishments at Kvistaborg preschool.

4 March 2016

Meeting with everyone from participating establishments to discuss the final exhibition/end of project celebration and final evaluation of the project. After the meeting everyone joined up for science games and improvisation in the spirit of the project.

1 June 2016

Installation of the final exhibition at Reykjavik City Hall. All participants worked together on the installation. The curator was Curver Thoroddsen.

2 June 2016

End of project celebration/exhibition of the Biophilia Educational Project in Reykjavik with all participants, staff and children that participated. This included stage performances such as dancing, singing, videos and other events. The president of the city council opened the festival and a great number of invitees attended.

2-5 June 2016

The Biophilia exhibition at Reykjavik City Hall, where all participating establishments showed the result of their work during the year of implementation. This exhibiton was open to general public.

11 June 2016

Deadline for reports from participants.



1 September 2016

Biophilia focus group with representatives from almost all participating establishments.

2.4 Implementation at each establishment

Here, a detailed report is given on the number of participants and children who took part in the project and the structure of each establishment listed.

Austurbæjarskóli primary school

Teachers: 3 in total; 2 class-teachers and a music teacher

Pupils: 45 in total, all from year 1

Framework: The year 1 class-teachers worked closely together using social studies, natural sciences and outdoor teaching. The music teacher covered the music part in the lessons he taught. They mainly worked with subjects pertaining to the moon and the planets. The teaching methods included co-teaching and experiments were undertaken. The project focused on creative results.

Dalskóli primary school, preschool and after school centre

Teachers: 10 in total; 4 primary teachers, 4 preschool teachers and 2 at the after school centre; art teacher, natural science teacher, music teacher, class teacher, preschool art project manager, preschool music project manager, preschool coordinator, preschool teacher, after school centre consultant and after school centre instructor.

Pupils: 68 in total; 30 pupils from year 5 at the primary school, 28 pupils from the final year of preschool (5 years old) and 12 pupils at the after school centre.

Framework: Dalskóli has a long tradition of interdisciplinary workshops that are incorporated into pupils' timetables as 6 lessons per week. The Biophilia Educational Project was incorporated into a special science workshop that was held over a 6 week period in January and February. The arts and crafts teachers at the school also introduced the ideology and work methods of the project in their teaching throughout the school year. Teachers had the flexibility of taking pupils out of their class to work on the Biophilia project. The ideology of the Biophilia Educational Project also had a great impact on a religion and philosophy workshop that was held during March and April. The after school centre had a fixed schedule for a 45 minute Biophilia/science workshop on Thursdays from December to March, after which extra time of 90 minutes was added on Tuesdays for year 4 pupils.

Fossvogsskóli primary school

Teachers: 6 in total; 1 science teacher, 1 music teacher and 4 class teachers.

Pupils: 88 in total; 36 in year 6 and 52 in year 7.

Framework: Fossvogsskóli has a long tradition of co-teaching as well as 14 years experience with outdoor teaching, where natural sciences are integrated with other subjects. A 6 week Biophilia workshop was held during the autumn for years 6 and 7 and another 8 week workshop was held for year 6 in the spring semester. The teaching took place both indoors and outdoors, once a week from 9am-12 noon in 80 minute lessons. Biophilia was also chosen as a theme-based workshop for year 7 during the school's theme days in the spring semester. The teachers all worked together on planning and preparing the workshops. The school's Biophilia project manager oversaw the project, which was important for organising classrooms and timetables and making sure that all material and equipment was in place.



Kvistaborg preschool

Teachers: 5 in total; 1 music teacher along with both preschool teachers and preschool instructors. All employees of the final year of the preschool took part in the Biophilia project.

Pupils: 24 in total, all 5 years old and attending the final year of the preschool.

Framework: A timetable was made for the project and Biophilia was chosen to be the theme of the school year. A music teacher was hired to come once a week to teach 4 lessons. In the beginning, 2 mornings were dedicated to the project, but later this evolved to all 5 days of the week.

Miðborg preschool

Teachers: 5 in total, both preschool teachers and preschool instructors.

Pupils: 28 in total; 20 children at the age of five and 8 children at the age of four.

Framework: Miðborg entered the project late and started in January 2016. Preparations took place during the first month and then the project was done as a theme during the period of February to May. The daily group work routine was replaced by optional studies and flow where the teachers would set up workstations and each child could choose which project to work on.

Sæmundarskóli primary and lower secondary school

Teachers: 3 in total; 1 Icelandic language teacher, 1 natural science teacher and 1 musician from Tóney, a music school that handles the music lessons at Sæmundarskóli.

Pupils: 43 at the lower secondary level and 200 pupils in years 1-7 at the primary school.

Framework: The Biophilia Educational Project was an optional subject for the pupils at the lower secondary level, where it was taught in two workshops during the spring semester; 2 lessons per week for 6 weeks and then 2 lessons per week for 7 weeks. The music teacher taught pupils from year 1-7 in block schedules where Biophilia was used to break away from traditional music teaching methods. Focus was on the Biophilia app as well as some other interesting music apps and games connected to the project.

Vogaskóli primary school

Teachers: 4 in total; a science teacher, a music teacher and a class teacher with a support worker who was also a teacher trainee during the period.

Pupils: 30 in year 6.

Framework: There is a tradition of team teaching at the school where each year in years 5-7 is not split into classes with a classroom each but each year is taught by more than one teacher in one big open space during each lesson. The Biophilia project was taught two lesson per week (80 minutes), during physics and social studies lessons. The music teacher assisted during the physics lessons with elements such as rhythm, vocalisation and musical structure. She also assisted during general Biophilia lessons by contributing her points of view and musical input.

Gufunesbær after school centres

Two employees handled the preparation and were responsible for the project; the centre manager who holds a master's degree in Education Studies and the assistant manager has an educational background in programming. Quite a few employees participated in implementing the project.

Pupils: 200 in total from year 3 and 4 from various centres.

Framework: From the beginning, the Biophilia project was meant to be central to all after school centres at Gufunesbær. The after school centres in Grafarvogur were 8 in total. The Biophilia apps



were introduced to children in year 3 and 4 in two of the centres which sparked ideas for further project work. In the beginning it was thought that tablets were necessary to work on the project but during a meeting with project managers it became clearer that the project should be much more open to other methods. Participation was great and workshops were held around 20 times. But lack of time as well as human resources made it difficult to start the project. As a result, a total of 3 projects were undertaken at the various centres in Gufunesbær.

3. Project evaluation

The project was evaluated in many ways. Care was taken throughout the project to document minutes from meetings, events and photographs. Schools and organisations were given a template for a final report where the steering group had laid out the major themes to be covered in these reports. All institutions submitted their reports. A focus group meeting with six participants, chosen by the schools to represent different roles and organisations, was held at the end of the project. Furthermore, photos from the spring exhibition in the Reykjavík City Hall and the Facebook group were analysed to see which subjects and themes had been used in different projects.

3.1 Evaluation from each participating establishment

The following evaluation was prepared by the steering group. It was based on the reports that each establishment handed in, which gave an overall picture of how well the project worked in each place as well as the status of communication and followups during the school year.

Austurbæjarskóli primary school

The school entered the project late and therefore didn't have the same preparation as other participating establishments. The project was a challenge but at the same time the teachers saw it as a great way to break away from old traditions and offer new teaching methods. Team teaching is a tradition with this year at the school so the collaboration between teachers went well even though actual co-teaching did not take place. The Biophilia toolbox was used but specialists did not visit the school. This was due to various unexpected circumstances during the implementation period. The project will carry on at the school. The teachers believe that pupils have shown great interest in the project and that it has had positive effects on their studies. Special interest was shown in integrating music teaching into general class teaching.

Dalsskóli preschool, primary school and after school centre

Dalsskóli was one of the schools participating in the Biophilia Educational Project at Harpa Concert Hall during the autumn of 2011 so it had a certain advantage over the other establishments in knowing the project well. The school had also, in previous years, borrowed the toolbox twice and held Biophilia workshops for a few weeks each time.

The ideology of integrating science and arts fits well with the Dalsskóli environment, which has a great emphasis on arts integration, working with theme projects and workshops and collaboration between subjects.

The school provides an opportunity to do a project involving children of all ages by having all the



different sections of the school participate; preschool, primary school and after school centre. These kinds of subject interdisciplinary workshops are included in all timetables. Hence there is already a great tradition of collaboration between teachers as well as great interest in increasing the focus on arts education.

The arts teachers were allocated time to work on the project, as well as the class teachers, during workshop lessons in the pupils' timetables. There was also the flexibility of taking pupils out of lessons to work on the Biophilia project in smaller groups. Dalskóli emphasises collaboration between subjects for a comprehensive school day at the primary school and after school centre.

There is also a tradition of interdisciplinary teaching at the preschool. Creativity was at the centre of teaching at Dalskóli, where scientific knowledge was implemented in creative ways, such as sculptures, graphic design, music, art, videos and dance.

Technical conditions were not great at the beginning of the project, only a few iPads were available and the existing computers could not handle complicated multimedia projects. But this has been greatly improved in the last school year. The school leadership's interest and ambition for the project was of great importance for the internal structure and to react to the situations that arose during the project. All teachers collaborated on planning the implementation of the project by focusing on the grounds for cooperation between the different sections of the school.

Fossvogsskóli primary school

Co-teaching has been a tradition at Fossvogsskóli since its beginning, as well as outdoor teaching where natural sciences have been integrated with other subjects. Experience and creativity has been a central part of the outdoor teaching lessons, which is closely attuned to the Biophilia ideology. The teachers of the project were unafraid to try out new things and to break barriers within their teaching. The school staff's opinion shows that the teachers, as well as the school leadership, were well prepared to implement the Biophilia Educational Project.

The school leadership made sure that the timetables of those working together on the project would support co-teaching, iPads were bought as well as other educational materials that teachers requested. The whole group of teachers prepared and organised the project and the project manager took care of all structural elements such as class rooms, timetables and other data and equipment. It proved successful to hire a guest music teacher specifically for the project to work closely with the science teacher on music in a creative way. Although external conditions were favourable there was a lack of time for further creative work and development of the project.

Pupils created various projects in the form of books, videos and music. They built an instrument out of a bicycle and created their own aliens. The project allowed the school to return back to its core values of interdisciplinary teaching and outdoor teaching. The project became a big part of the school culture and had a great influence on the school's teaching methods.

Gufunesbær after school centres

The Gufunesbær after school centres had already successfully introduced iPad projects and clubs and workshops were already a part of the centre's setup. The staff's idea was that the Biophilia project could enhance the diversity of this setup and cover wider areas of pupils' interests. Each centre had 2-3 iPads that were utilised well.

Each centre focuses on offering the children a range of projects such as outdoors, sports, creativity, music, theatre etc. Participation in the Biophilia project was to focus on activity, participation, communication and caring.



There was a lack of time and human resources at Gufunesbær. At the beginning of the project, changes in management and other staffing at the centre caused delays in the implementation of the project. These circumstances led to delays in forming an overall view of the project and it lacked organised structure. The project did a get bit of a momentum towards the end and all 8 centres took part in the project in some way or other.

The project is considered well suited to the structure of the after school centres where there are no walls between subjects and great possibilities of creative work. Due to various uncontrollable circumstances the project had a difficult start. Despite this, 200 children participated in the project and delivered a beautiful show at the final exhibition at Reykjavik City Hall.

Kvistaborg preschool

Kvistaborg focuses on interdisciplinary and creative education where the fundamental pillars of education are honoured.

An application for participation in the Biophilia educational project was sent due to the human resources available at Kvistaborg; a music teacher works two days per week at the preschool and the final year of the preschool is used to doing creative projects. There is a great interest among the employees in taking on new projects.

Kvistaborg owns a variety of instruments, such as shakers, drums, piano, etc. The timetable was designed around the project and Biophilia became a theme for the school year. At the beginning of the project, one iPad was available and another one borrowed. Since then, 3 more iPads have been bought. The preschool borrowed the Biophilia toolbox which made it possible for 24 children to participate. The preschool lacked a high quality internet connection as a fiber optic connection has not been made available to Reykjavik's preschools. The lack of computing and technology knowledge among the staff was also a certain barrier. The employees were very pleased with the project, which created a spirit of power and innovation among the employees, the children and their parents. The preschool focused on subjects regarding the universe when it became clear that the children were capable of receiving and working with a lot of theoretical information. The children had the same opportunities as all other establishments of receiving a visit from a specialist and they visited the UniSci, which boosted their project work. However, Kvistaborg did not manage to overcome their technology problem, but thanks to the resourceful teachers they managed to get a lot from the project by collaborating with the children.

Miðbæjarleikskólinn preschool

There is a long tradition of co-teaching with focus on interdisciplinary teaching at Miðbæjarleikskólinn. The final year of the preschool, which participated in the project, normally works with predetermined monthly themes, which suited the Biophilia Educational Project well. The preschool owned 3 tablets that could be used for the project but they were mainly used as a teaching resource.

The preschool has the flexibility in their daily routine to be able to adjust to a project like Biophilia. For example, the theme lasted for over a month and group work was replaced by optional studies and flow. The employees set up a project station where each child could decide which project to work on.

Sæmundarskóli primary school

The school has a long tradition of co-teaching and all years up to year 7 are taught in an open space.



At the lower secondary level this applies to the subjects of Icelandic and maths so it was seen as a great opportunity to use Biophilia to try out co-teaching in other subjects.

The school has 50 Samsung tablets and the Biophila project grant was used to buy headphones for the tablets.

The school has no fixed position for a music teacher but the music school Tóney handles the music teaching at the school. The teachers handing in the application for the project were the natural science teacher and the Icelandic teacher, who also has a university degree in music. At the beginning of the project, these teachers had various other tasks to attend to at the school due to the new national curriculum and therefore the Biophilia project started later than planned.

The time spent on the project proved successful. Two groups at the lower secondary level were taught the project as an optional subject which focused on hands-on approach and science and music experimentation. Using the Samsung tablets worked well.

Vogaskóli primary school

The school owns a class set of tablets and laptops that can be moved between different classrooms. A smart board is also available in most class rooms. There is a tradition of team teaching at the school where each year in years 5-7 is not split into classes with a classroom each but each year is taught by more than one teacher in one big open space during each lesson. The Biophilia project was taught two lesson per week (80 minutes), during physics and social studies lessons. The music teacher assisted during the physics lessons with elements such as rhythm, vocalisation and musical structure. She also assisted during general Biophilia lessons by contributing her points of view and musical input.

3.2 Summary

Here follows the steering group's evaluation on how objectives were met. This is mainly based on information gathered from focus group interviews.

Interdisciplinary work and subjects

One of the Biophilia Educational Project's main objectives is to encourage interdisciplinary studies and teaching. It is clear from the focus group that preschools are already used to working in interdisciplinary themes so the project is well suited to the preschools. "One could say we had a four leave clover, but this schoolyear we had a ten leave clover. We added new variants quite purposefully". What was different was adding more subjects and adding new subjects, "it was new to us to use so much technology and science etc". The preschool employees spoke about the interdisciplinary work having been carried out more purposefully and with more effort and ambition than normally, plus more time was spent on each theme.

The same can be said about the after school centres, "yes we do not have subjects so there is no interdisciplinary work but integrating subjects fitted like a glove to what we are already working on". On the other hand, the employees of the centres found the Biophilia project "very complicated and requiring a vast amount of knowledge".



Integration was new to some of the primary schools while for others, integration increased during the school year. “Through Biophilia teachers started adding new subjects”, “you went so much outside the box”. Primary teachers also spoke about Biophilia being “very complicated” and “it was difficult to find the connection to it” but at the same time they spoke about its benefits of the project: “connecting the subjects is without a doubt the biggest benefit. This educational material opens up our world in so many ways and increases the understanding how everything in our universe is connected. Therefore it increases open-mindedness and breaks down prejudice in a broad sense”. Once people had launched the project they could see the opportunities it can bring and “they could envision the projects”.

It is clear that through the project diverse subjects were dealt with and quite often subjects that are normally not a part of the timetable each participating establishment already had in place.

The human body, viruses, living conditions, characteristics of organisms, different organisms, technology and innovation, utilisation of diverse material, high tide and low tide, experiences during trips to the beach, heart, heartbeat, stethoscope, DNA, isolating DNA, planets, black holes, moon, moon stones, reflection, musical instrument making, crystals, crystal making, 3D, shapes, local communities, action competence, society, philosophy, hologram, sound recordings, video making, composition, painting, drawing, colours, prints, about music, John Cage, listening, collages, cartoons, dance, improvised dance, playing musical instruments, singing, modeling (human body, planets, instruments), pulp, photography, theatrical performance, carpentry, installations, visits to museums, visits to the University of Iceland Science Centre, rhythm, sculpture making, composers, technology work (dismantling speakers), bicycle instrument, poetry, English, counterpoint, music apps, iPad, rhythm changes, speed changes, discordant and mellifluous chords, repetition, minor, animals, all kinds of different scales, pentatonic, broken chords, form, melody, rhythm, dynamics, canon.

As well as interdisciplinary integration the project clearly had an effect on increasing the pupils' freedom and choice. One of the primary school teachers spoke about pupils having a full autonomy on how to work on projects; both on the implementation as well as the determining the group sizes, whether to work alone, in small or big groups. Pupils were constantly encouraged to work independently and creatively. Another primary teacher spoke about pupils not coping well with having autonomy and choices and it took time for them to realise they were in control. “They have been told through their entire schooling, you should do this in the top right corner, with a pen. And now we are saying you have a choice, you decide. This is the most difficult task”.

Effect on pupils

All teachers agreed that pupils were motivated and enjoyed working on the project. Music making appealed to older pupils and one of the teachers said “it helps many of them to be left to their own devices while working on something creative”. Pupils enjoyed working with the arts and having the opportunity to utilise their technology skills. One teacher thought the project was best suited to weak students, others mentioned that those known previously as inactive students had blossomed and become more active than ever before by participating in the Biophilia project.

Most teachers specified that the pupils seemed to gradually become more interested in new subject areas and those pupils who had previously seemed disinterested in schooling had started choosing to



work with Biophilia at certain Biophilia optional projects. They specifically spoke about the project being suited to pupils who generally do not seem to flourish in conventional schooling. “Pupils who previously would find it hard to express themselves, experienced themselves as different and special, well there we have a different and special educational material. It was so much fun watching those pupils flourish”. The same teacher added that the project influenced the class atmosphere, “class cohesion improved, those who had thought of themselves as uncool and ill befitting finally allowed themselves to be a part of the group”. Through the work, other pupils had seen the strengths of these pupils that are generally not apparent in a conventional school setting. Similarly, another school reported a group of girls that had previously clashed but were united through the Biophilia work.

The preschool children started acquiring knowledge at home, related to the themes, and were sharing that knowledge with the others at the preschool. The subjects spread into the children’s free play and two of the preschools reported games of viruses taking place outdoors. It was also reported that a primary school pupil informed his father why his hair was getting grey: it was all down to DNA.

The preschool teachers spoke about the children being more open minded than expected at that age and this could be traced to their participation in the project. They had become more open and ready to try different things.

Co-teaching and collaboration

The Biophilia Educational Project is based on co-teaching. It is well suited to the preschool and after school centre environments but in the primary school environment it is more complicated to expect two or more teachers to work in the same space at the same time. But both school leaderships and teachers did find a way to work together by adjusting timetables, preparing themselves together and holding subject-based workshops or workstations. Co-teaching is costly and does not seem to have great potential in the primary schools.

Collaboration varied greatly between establishments. At one of the preschools, the group could not be activated as such and the employees of the final year found themselves isolated and being envied by others. The primary school teachers spoke of the necessity and the usefulness of collaborating often in connection with their own specialism and/or lack of it. They also mentioned that collaborating with others gave them an opportunity to learn more and promote themselves professionally.

- “I felt technologically illiterate and it helped to work with technologically savvy people. One can’t be good at everything”.
- “I had to sit down with people who are better than me at art and music, so I could find the connection”.
- “I started to get to know so many new things, started researching and reading about things I had never done before”.
- “The class teachers started working on new things. We all entered the Biophilia and went through a new phase. This was something different and we all benefited from that”.



- “I have been working successfully with class teachers, a science teacher and a music teacher” (one of the art teachers).

On the whole, the teachers reported that they had learned from collaborating and from the project itself. What followed was a greater discussion at a professional level about the work that had been done with the children, about teaching and communication methods. “I am a better teacher today than I was a year ago, thank you” and “I would say that it has made us much better teachers”.

Despite all this, it does seem that actual co-teaching took place within the primary schools on very few occasions. Teachers and other employees would share the responsibility and planning but ended up being responsible for their special field of expertise. One school stood out where the employees had worked together on creating a timetable including the Biophilia project.

3.3 Evaluation of the management and implementation of the project

What went well

The Reykjavik steering group worked hard on preparing the best way to present the project to the different establishments of the Department of Education and Youth. The project was already known at the primary schools so the steering group thought it important to give the project a fresh new start and show its new focus, such as that participation would be on a larger scale than before and that participation would mean a greater commitment than before, but with greater support and more opportunities. Therefore it was decided to offer a special deal to the establishments that showed interest in participating. This deal included an intensive course, working with scientists and musicians, receiving advice and support from the steering group’s project manager, as well as ISK 200,000 to use for the implementation of the project. All applicants made a plan of how to implement the project at their workplace. By doing this, all applicants had already put in a lot of thought on how to start the project the following spring. This appears to have been helpful in starting the project. The steering group also thought that this would guarantee that only those seriously interested would be able to participate in the project.

There was general satisfaction with the autumn course held on the 13 and 14 August 2015. During the course, Iceland’s Biophilia experts shared their knowledge with participants in a lively way.

The steering group offered **visits from specialists** at the UniSci as well as specialists in music education. These specialists all had expertise in the Biophilia Educational Project. This was done to deepen the Biophilia experience for both children and teachers, but also to offer the participating establishments equal opportunities in their work. Those who lacked a strong enough music background were offered a visit from a music education specialist and those who lacked a strong enough science background were offered a visit from a science specialist. This was well appreciated and it was mentioned that it made the children’s experience of the project “more real”.

The experience gained from the project showed how important and **valuable visits from someone outside the school/specialists** are for the school community. The proximity to the local community is important, enabling participants to both receive and go on visits and giving both children and



teachers work sustenance and boost. The nature of the Biophilia Educational Project enables everyone to extend their knowledge, including the teachers. Everyone mentioned that these visits had given them a lot and that this was something that they would like to increase in the future.

The status and collaboration meetings that were held in the autumn, and again the following spring, received much praise from the participants. These meetings provided an opportunity to share ideas and listen to other participants. Each establishment became a part of a bigger community. This is where unity was formed and encouragement given to all to continue their good work.

A Facebook group was formed at the autumn course. The page maintained the contact between establishments, acted as an open window to gain recognition and encouragement, gave an opportunity to gain an insight into the work of others and provided links that could benefit the project. The Facebook group was an especially good way for the steering group to stay in contact with participants and a good way for the participants to get in touch with the steering group, other participants and specialists. The page was highly active and will most likely continue to be so.

The steering group was in good, close **contact with all the participating establishments** and the project manager focused on responding quickly, thoroughly and with certainty. It turned out particularly well to take the initiative in communications, offer visits and push others to organise fixed meetings during the school year.

The final exhibition/end of project celebration held at Reykjavik City Hall was particularly successful. There, all the different participating establishments got together to show the outcome of their school year. It was considered a key factor to hire a curator that would take care of the overall look of the exhibition and who stayed in good contact with all representatives from each establishment, set up the exhibition with them and kept up the good spirit. The exhibition was a testament to the children's great work all over the city and created a sense of pride in the fact that we all worked on this together.

There was a high demand for **the Biophilia toolbox**. The toolbox travelled between four establishments throughout the school year. Austurbæjaskóli, Dalskóli, Gufunesbær and Kvistaborg had the toolbox for one month at a time, using it once or twice during that period.

What could have been done better

The participants were encouraged to post their teaching ideas on the available **internet forum**. Everyone got sent a password and were encouraged to utilise the forum. In short, it was difficult to get people to post anything and hardly any participation or traffic was noticed.

Problems with the Biophilia app

After the ninth upgrade of the iPad operating system some parts of the Biophilia app ceased to work. That led to these parts not being available to those who had upgraded their operating system to the newest version. This did cause some problems but didn't seem to bother the Reykjavik participants that much, presumably because the ideology of the project becomes more important than the app itself when you have worked on the project for such a long time. The establishments mainly worked



on connecting creativity, music and science and used iPads in their work, but the Biophilia app itself had become less important.

Communication

It was often hard for the project manager to reach the participants, who were very busy with their own time. Employees of preschools, primary schools and after school centres vary greatly in how well they respond to computer communication, partly due to lack of time. It was difficult to find a good time for meetings as everyone's working hours are different, after school centre workers and preschool teachers being at work when primary school teachers had time to meet up.

Visiting specialists

All the participating establishments were offered to receive visits from specialists at UniSci and from specialist music teachers or other musicians. The establishments made use of this in various different ways, but it came as a surprise that three of the establishment did not wish take up this offer in any way. The explanation given was that they found it difficult to organise these visits, or it was unclear at the workplace who should be requesting these visits. Some mentioned that it would have been good to have clearer information about the specialists, their expertise and how they could be used. Those who did receive visits said that it gave their project a big boost and sparked great interest amongst the children.

Technology issues were a challenge. Equipment facilities were often lacking but there was also a lack of someone supervising the equipment (iPads and tablets).

Collaboration

It is clear that it was easier to implement the project for those establishments with a greater number of participants. It also had a great effect on the project if the school leadership was positive and supportive towards the project. Some participants were working alone and it was obviously hard for them to keep up and make use of the opportunities that the project had to offer.

At the deep end

Many participants felt up in the air after the autumn course. Some participants would have chosen to have clearer instructions and more support, even though most of them were happy with the experience and found themselves more secure and stronger professionally afterwards.

Project management

Collaboration with the Ministry

The close collaboration with the Ministry, along with good access to information, strengthened the work and decision making of the steering group. The steering group met the Ministry's project manager regularly throughout the time period, from the preparation stage until the very end, and all communication went well. This only thing worth noting is that it would have been useful to have the Reykjavík group enter the project slightly earlier during the preparation stage.

Meetings and conferences attended by the steering group representatives under the auspices of the Nordic Biophilia Educational Project were both useful and important for the progress of the project. Sharing thoughts and ideas, as well as hearing from other countries, is incredibly important for the



progress of the project. Many were facing similar challenges so it was empowering to be able to share and hear how others were solving these challenges.

The Reykjavik steering group organised an autumn course for the participants in Reykjavík where the Ministry of Education, Culture and Science provided consultancy and the Ministry's representatives discussed the Nordic project.

Conclusions - evaluation

A common thread among all the participating establishments was a lack of time to make use of the full potential of the project and there was often a lack of human resources. Staff changes also had an effect in some cases. These two issues were most likely underestimated when it was decided to go ahead with the project and they ended up weighing heavily on each establishment. The interest and support of the school leadership appeared in most cases to have great influence on how well the project went. This is due to the fact that the school leadership members are in a position to take the project into consideration when adjusting timetables, adjusting access to necessary equipment and hiring specialists, such as musicians. It is in the nature of pilot projects, such as the Biophilia project, to take unexpected turns and experience time delays, so time and human resources are just as important issues as facilities and external factors.

It would be doubtful to talk about Biophilia as a homogeneous project as the implementation varied greatly between establishments. One can nevertheless see from the reports from each establishment and from the final exhibition/end of project celebration at Reykjavik City Hall that what they all had in common was to interweave scientific, musical, artistic, philosophical and technological methods and ideas in diverse ways. Joy was at the forefront and despite difficulties with starting the project, technology issues and lack of time, it is our experience that the project was a great success and both children and personnel benefited greatly from their participation in the project.

3.4 Biophilia research

Research on the Biophilia Educational Project

Bård Vågsholm Husby (2016) *Exploring the Dark Matter of Björk's Biophilia Universe: A Study of the Biophilia Educational Project Based on Grounded Theory Methodology*. MA thesis, Bergen University College. Published on the Bergen Open Research Archive <https://bora.hib.no/nb/item/832>

Bård Vågsholm Husby, a master's student from Norway, visited Iceland, interviewed various members connected to the Biophilia project and examined written data. His research interest was „how did Biophilia evolve and what is it really about? Also “what characterises the learning environment of a Biophilia project?”. His main conclusions on the Biophila project were: „The results show how Biophilia may be understood as a vast, elaborate concept that stretches beyond the end-to-end use of the app album in question and demonstrates how diverse perspectives may affect the perceived usefulness of Biophilia in music education”.

Skúlína Hlíf Kjartansdóttir has been working on her Phd research in the field of connected learning with mobile technologies (tablets and smartphones). Skúlína's current research case is the use of



“Biophilia” in STEAM learning with 5 to 11 year old children, bringing into focus interdisciplinary learning, multimodal literacies and creative application of new media skills. Skúlína visited two primary schools in Reykjavík, where she documented Biophilia lessons and interviewed both pupils and teachers. She has also attended meetings and events related to the Biophilia project since 2012 in Iceland and since the spring 2016 semester in Finland. In 2016, she presented her first results at the University of Helsinki, Finland, and Universidade do Minho, Portugal. These results are due to be published in October 2016 in the article: "Creative and playful learning with Biophilia in preschool, after-school classes and primary schools in Iceland", which is being published by DigiLiEY, an internet research network funded by COST (European Cooperation in Science and Technology).

Ragna Skinner (2016). *Biophilia – að hugsa út fyrir boxið og fara á flug. Upplifun af kennslu Biophilia-menntaverkefnisins á miðstigi grunnskólans og áhrif þess á skólaþróun*. MA thesis, Iceland Academy of the Arts. Published on *Skemman*, the digital repository for the Icelandic Universities <http://skemman.is/item/view/1946/26355>

Ragna Skinner, a music teacher, did her master's thesis on her participation in the Biophilia Educational Project. She carried out a case study where she examined and analysed whether and how the procedures and ideology of the Biophilia Educational Project affected the attitudes of participating teachers and pupils. The results of the study clearly indicate that by using diverse teaching methods, the part played by a creative approach can be increased, both in teaching and studying. The links between experience and studying were strengthened by emphasising practical learning and creating conditions for integration and creative work, e.g. by varying timetables. The significance of music and art education within the school increased and the Biophilia Educational Project showed how much the arts can contribute to the school system.

4. Grant expenditure overview (2014-2016)

Education and teaching	
Workshops and teacher training	ISK 780,000
Specialists visiting schools	ISK 1,289,750
Teaching material (Biophilia toolbox, teaching guidelines)	ISK 16,419
School funding	ISK 1,400,000
Catering for teachers courses and meetings	ISK 328,076
Collaboration and events	
Family workshops in collaboration with cultural organisations	ISK 240,000
Final exhibition/end of project celebration	ISK 469,286
Steering groups	
Costs for meetings and courses	ISK 37,186
Specialised consultancy and steering group support	ISK 1,182,205
Travelling (project manager and steering group)	ISK 1,341,688
Sightseeing trip for our Nordic participants (Final conference 2016)	ISK 300,000
Technology	
iPads (including accessories and software)	ISK 754,327
Taxis and delivery services	ISK 111,236
Total expenditure	ISK 8,250,173



5. Project publicity, presentations and events

The Reykjavik steering group set off as the leader of the Nordic collaboration and worked closely with the project manager at the Ministry of Education, Culture and Science in planning and shaping the project.

The project manager of the Reykjavík Biophilia project shared the experience gained from the Icelandic side of the project and at teacher training sessions in Finland and in the Faroe Islands. Curver Thoroddsen, a member of the steering group, was one of the teachers at most of the Biophilia workshops in the other countries along with Skúli Gestsson, who was a part of the steering group in the beginning stages and taught one of these workshops.

5.1 Presentations outside Iceland

February - April 2015

In February the Biophilia Educational Project was introduced by Guðrún Bachmann at a directorate meeting of NSCF, Nordisk Science Center Förbund. In April the project was also introduced at the annual Science Festival in Göteborg, Sweden, where Nordic specialists in science communication were introduced to new sci-comm initiatives in the Nordic countries.

21-23 October 2015

Biophilia: Workshops in Biophilia educational project for school children

HEK institute – Haus der elektronischen Künste in Basel, Switzerland. 3 workshops a day in collaboration with the Culturescapes multidisciplinary art festival. 9 workshops in total for 170 students. Team:

Head of Project: Irena Müller-Brozovic (Basel)

Music Education: Elfa Lilja Gísladóttir (Iceland)

Scientist: Atilgan Yilmaz (Basel)

Master's student taking part: Ragna Skinner from the Icelandic Academy of Art/Art education

<http://www.hek.ch/programm/events/event/biophilia/0/1443909600.html>

3 and 4 February 2016

THE ART OF MUSIC EDUCATION THE ART OF MUSIC EDUCATION VOL. V: »RE-THINKING THE DIALOGUE THINKING THE DIALOGUE THINKING THE DIALOGUE« RESULTS.

A Presentation at a conference for directors of education at European concert halls and teachers in Hamburg. Elfa Lilja and Harpa did the presentation and delivered a few practical exercises. <http://www.music-education.hamburg/?lang=en>





5.2 Presentations in Iceland

10 February 2016

Introduction of the Biophilia Educational Project at the Ash Wednesday conference titled “The voice of the student”, held for primary school teachers by the Department of Education and Youth. The seminar was titled *Biophilia, Mixtúra and learning opportunities through new technologies*, presented by Guðrún María Ólafsdóttir, teacher at Fossvogsskóli primary school and Harpa Rut Hilmarsdóttir, project manager of the Biophilia project.

<http://reykjavik.is/frettir/rodd-nemandans-oskudagsradstefnan>

19 February 2016

Recreation day 2016 titled “Recreations and technology – opportunities and challenges”, a conference for all employees at recreational centres and students of leisure studies. Harpa Rut Hilmarsdóttir, project director of children’s culture on behalf of the Department of Education and Youth in Reykjavik, delivered the presentation *Biophilia does leisure time*.

http://www.hi.is/vidburdir/tomstundadagurinn_2016

27 May 2016

The Big Preschool Day. The presentation *Something one creates from wire or something – Biophilia Educational Project at Kvistaborg preschool*, delivered by Málmfriður Einarsson, head teacher at Kvistaborg preschool (BA Sociology) and Erna Agnes Sigurgeirsdóttir, teacher at Kvistaborg preschool (BA Art Theory). Kvistaborg also had an exhibiton stand based on its participation in the Biophilia project at Reykjavík City Hall.

<http://reykjavik.is/frettir/stori-leikskoladagurinn-27-mai>

Meetings of Nordic Project Managers

17 and 18 November 2015

The Nordic steering groups meeting in Skodsborg, Denmark. Harpa Rut and Elfa Lilja attended on behalf of Iceland.

8 and 9 February 2016

The Biophilia project managers meeting in Copenhagen, Denmark. Harpa Rut and Guðrún Bachmann attended the meeting on behalf of Biophilia and the Nordic Knowledge Train.

Biophilia workshops

17 and 18 April 2015

Biophilia workshop for elementary school teachers at a natural science teacher conference at the University of Iceland, Department of Education.

<http://malthing.natturutorg.is/>

May 2015

The Nordic Knowledge Train offered Biophilia workshops to 80 students, aged 11 to 16, when the



Train traveled to Höfn and Húsavík. In both of these towns, the Biophilia apps were introduced to families at a science festival given by the train crew (450 guests).

<https://www.facebook.com/Haskolalestin/photos/a.910883195637015.1073741848.168204169904925/910883965636938/?type=3&theater>

June 2015

Biophilia workshops for 50 students aged 12-16 at the University of the Young at the University of Iceland. The Biophilia Educational Project was introduced to 600 guests at the final celebrations of the University of the Young at Háskólabíó Conference and Cultural Centre.

20 – 24 June 2015

Biophilia was one of three themes at the Science School of the Young in Akureyri, where Martin Swift and Curver Thoroddsen were workshop leaders for 5 days. They worked with musicology and natural science based concepts through discussions, experiments, hands on experiments, singing and music making. These Biophilia music workshops at Akureyri were a collaboration between the Reykjavik steering group and the Nordic Knowledge Train.

<http://www.visindaskoli.is/is/um-visindaskolann/daemi-um-stundatoflu>

Open family workshops at Reykjavík's cultural centres in 2016

5 February

Moon workshop at the Reykjavik Art Museum, Hafnarhús, in connection with the exhibition *Aftur í sandkassann – listir og róttækar kennsluaðferðir (Back to the sandbox – art and radical pedagogy)*. Workshop leaders were Sævar Helgi Bragason, astronomer, and Ásta Björg Björgvinsdóttir, music teacher.

19 February

Moon workshop at the Reykjavik Art Museum, Hafnarhús, in connection with the exhibition *Aftur í sandkassann – listir og róttækar kennsluaðferðir (Back to the sandbox – art and radical pedagogy)*. Workshop leaders were Sævar Helgi Bragason, astronomer and Ásta Björg Björgvinsdóttir, music teacher.

25 February

Mutual Core workshop at the Reykjavik Art Museum, Hafnarhús, in connection with the Reykjavik Winter Lights Festival. Workshop leaders were Snæbjörn Guðmundsson, geologist, and Curver Thoroddsen, artist.

19 March

Solstice workshop at the Reykjavik Art Museum, Hafnarhús, in connection with the exhibition *Aftur í sandkassann – listir og róttækar kennsluaðferðir (Back to the sandbox – art and radical pedagogy)*. Workshop leaders were Sævar Helgi Bragason, astronomer, and Ásta Björg Björgvinsdóttir, music teacher.

<http://www.visir.is/ExternalData/pdf/fbl/160319.pdf> page 4.



10 April

Hollow workshop at the Reykjavik City Library, Ársafn. Workshop leaders were Katrín Halldórsdóttir, biologist and Elfa Lilja Gísladóttir, music teacher.

23 April

Thunderbolt workshop at the Reykjavik City Library, Gerðuberg, in connection with the Children's Culture Festival. Workshop leaders were Ari Ólafsson, physicist, and Ásta Björg Björgvinsdóttir, music teacher.

Biophilia musicology workshops run by the University of Iceland in 2016

26 May

Mutual Core workshops were held at the Stóru-Vogaskóli primary school in Vogar under the auspices of Iceland's part of the Nordic Knowledge Train. Workshop leaders were Ragna Skinner, music teacher, and Snæbjörn Guðmundsson, biologist.

<https://www.facebook.com/Haskolalestin/photos/a.1109922512399748.1073741853.168204169904925/1109922642399735/?type=3&theater>

16 June

Solstice workshops were held at the University of the Young. Workshop leaders were Ragna Skinner, music teacher, and Sævar Helgi Bragason, astronomer.

http://ung.hi.is/biophilia_tonvisindasmidjur_ornamskeid

5.3 Press coverage and media

Internet and media coverage in relation to the final exhibition at Reykjavík City Hall:

An interview with Ragnar Þorsteinsson, director of the Department of Education and Youth, and Harpa Rut Hilmarsdóttir, director of children's culture for the City of Reykjavík. 10 April 2015.

<http://www.ruv.is/sarpurinn/ras-1/morgunutgafan/20150410>

From the City of Reykjavík website:

- About the start of the Nordic project at Harpa. *Biophilia fær norræna vængi*:
<http://reykjavik.is/frettir/biophilia-faer-norraena-vaengi>
- About the introduction of the Nordic project for the establishments of the Department of Education and Youth. Biophilia takes on a new form through the Nordic collaboration:
<http://reykjavik.is/frettir/biophilia-tekur-sig-nyja-mynd-i-norraenu-samstarfi>
- About the end of project celebrations/final exhibition at the Reykjavík City Hall. *Mánasteinar, hnettir og hologram, uppskeruhátíð Biophiliu*:
<http://reykjavik.is/frettir/manasteinar-hnettir-og-hologram-uppskeruhatid-biophiliu>

From the University of Iceland Facebook page:

https://www.facebook.com/HaskoliIslands/photos/?tab=album&album_id=10153428816125728



From mbl.is (Morgunblaðið newspaper):

http://www.mbl.is/frettir/innlent/2016/06/02/skopunargledin_i_hamarki_i_biophiliu/
http://www.mbl.is/frettir/innlent/2016/06/02/bjuggu_til_hljodfaeri_ur_reidhjoli/

From RÚV (television) on the 10 o'clock news:

<http://ruv.is/sarpurinn/ruv/tiufrettir/20160602>

Short video from Mixtúra:

<https://vimeo.com/169236484>

Article about the instrument made from a bicycle published on the website of the Icelandic

Cyclists' Federation: <http://lhm.is/hjolamenning/utbunadur/1118-bjuggu-til-hljodhfaeri-ur-reidhjoli>

Article on the Biophilia workshops in Haus der elektronischen Kunst in Basel, Switzerland

<http://www.badische-zeitung.de/schuelertexte/die-natur-macht-musik--115214837.html>

VÍSINDI OG TÓNLIST Í EINA SÆNG

Þau **Sævar Helgi Bragason** jarðfræðingur og **Ásta Björg Björgvinsdóttir** tónlistarkona fjalla um og tengja saman vísindi og tónlist í Biophilia Solstice vinnusmiðju í Listasafni Reykjavíkur í dag. Smíðjan er ætluð börnum frá tíu til tólf ára.

Biophilia-menntaverkefnið er samstarfsverkefni mennta- og menningarmálaráðuneytis, norrænnu ráðherranefndarinnar, Reykjavíkurborgar, Hlíðaklefa Íslands og Hjúkna Grænuvinnu. Í tengdam við verkefnið fer fram Biophilia Solstice vinnusmiðja fyrir fjölskyldur í Listasafni Reykjavíkur klukkan hálf tvö í dag. Þar fjallar jarðfræðingurinn og stjarnfræðingurinn Sævar Helgi Bragason um þyngdaraftur og ferli jarðar um sólkerfið, mynduð halla jarðar og afleiðir hennar á dættirnar. „Biophilia er plata sem hlýst gæð af fyrir sökkum árum. Við höfum undanfarna ár verið með Biophilia-menntaverkefnið í göngu þar sem við höfum sýnt vísindum og listum.“ drókyr Sævar Helgi sem sér um vísindahlöðu í vinnusmiðjunni í dag en vísindafullnám og Ásta Björg Björgvinsdóttir sér um tónlistarhlöðu. „Þar tókum við fyrir lag af plötunni sem heitir Solstice sem þýðir sólsteinn og ég heiti krítkannan og öðrum sem taka þátt í smíðunni um árstíðir og hvern tagna sólsteinn og jafndagur eru, sem er vísindalega rétt þar sem vísindafullnám eru einmitt á morgun.“

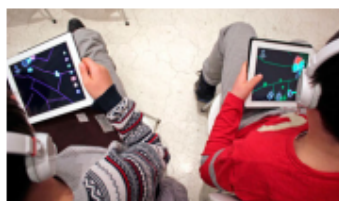
FLÆTTA TÓNLIST OG VÍSINDI

Ásta Björg tekur svo við og skobar hvernig tveir eða fleiri stjörnu- og ljósmenningar eru fluttar um annan í lag og mynduð heit. Þau Ásta Björg og Sævar Helgi tengja þannig vísindi og tónlistina saman, vísna tilfærir og skoða þessi fyrirbæri með aðstoð upplýsingafræðinga Biophilia-verkefnis Hjúkna Grænuvinnu. Það eru aðvæðir nokkur lag á plötunni og því minnastandi þessa eftir því hvaða lag við erum að fjalla um. Til dæmis heitir eitt lagið Moon og þá tölum við um kvartilaskipti og sennu sem heitir Mutual Core og þá fjallum við um jarðfræði og svo hvern og þetta.“ segir Sævar Helgi.

Hann segir þessa samfluttu tónlistar og vísinda hafa gætt áspælinga þá hún Hjúkna tengir ekki alltaf vísindum. „Þú er hægri að nota tilfærir og hugmyndir sem hlýst hafi til að kenna og sýna vísindum. Tónlistin er svo afleiðing allra auðveldari og að finna merktíðir þar og gerir Ásta það allveg lættlega við enda reynir tónlistarkennari. Þetta er í þrjú mínúttir sem við Ásta vísnum



Sævar Helgi Bragason, jarðfræðingur og stjarnfræðingur, og Ásta Björg Björgvinsdóttir tónlistarkona fjalla um Biophilia Solstice vinnusmiðju í Listasafni Reykjavíkur í dag. www.mbl.is



Í smíðunni fara krítkannan og vísindi og tónlist með aðstoð upplýsingafræðinga.

Vísindi og tónlist eru nefnilega lík að mörgu leyti því í báðum tilfellum er verið að reyna að finna eitthvað nýtt.

Sævar Helgi Bragason

saman að ævna smíðju, annars höfum við gert þetta heurt í sínu lagi undanfarna ár.“

ÞAD ER TAKTUR Í ÖÐLU

Biophilia-menntaverkefnið byggir á því að hvetja börn og kvenna til að reyna sköpunarglefa með því að tengja saman tónlist, tækni og náttúruvísindi í sjónræðingum. Sævar Helgi segir viðstíkurar við þeim hluta sem hann hefur komist að hafa verið gláhar. „Þetta er óþægilega skemmtilegt verkefni og mjög skapandi. Tilgangurinn er að ofla sköpunarglefa krakkanna og fú þau til að opna sig sem er svo skemmtilegt því þú færir er líkfræði leikur inni í öki og sérstaklega þegar kemur að sköpun. Verkefnið snertir líka hluti sem við þekkjum í daglegu lífi, við upplifum öll árstíðir, jafndagur og sólsteinnar eru líkfræði

sér ekki endilega grein fyrir því að það sé einhver undirtektning og takur í því einu og er í tónlist. Vísindi og tónlist eru reynilega lík að mörgu leyti því í báðum tilfellum er verið að reyna að finna eitthvað nýtt. Við sýnum sköpunarglefa í bæði vísindum og listum.“ segir Sævar Helgi Bragason. Hann heitir því við að það hafi verið gaman að sjá þessa margar sölu hafiðarkarlar á þessum ári gæta sér grein fyrir því. „Það er gaman að verða vísni að því að það hlundi í líkri, sem kannaði þetta sér ekki grein fyrir því að það hafi tónlist í sér, hafiðarliki til að skapa eitthvað nýtt. Og það er frábært að fjórir gjafi og finni að það gæti gert fráslegt sem það kannaði vísni ekki að það gæti.“

Vinnusmiðjan er ókeypis og aðhafiðerum á aðdráttum í stað tölfráða. Nánari upplýsingar um viðbættan má nálgast á Facebook.

Interview with Ásta Björg Björgvinsdóttir, music teacher and Sævar Helgi Bragason, astronomer, Biophilia workshop leaders at the Reykjavík Art Museum.



6. The Future of Biophilia

Although the steering group has finished its work within the Nordic collaboration many things will continue. The project manager of children's culture will continue working for the City of Reykjavik and among her tasks will be following Biophilia up at primary schools, sharing information, arranging courses and encouraging further work on the Biophilia pedagogy, especially at the primary school level within the City of Reykjavík.

All participating establishments are interested in including Biophilia in their curriculum for the current school year, in one way or another. This spans everything from two week theme work up to the whole subjects of natural sciences, music and arts will be under the influence of Biophilia at Fossvogsskóli primary school, throughout the whole school year. The University Knowledge Train will continue its Biophilia education, covering the country outside of Reykjavik as a part of its program.

Teachers, instructors and school leaders now have knowledge of the Biophilia Educational Project and understand the ideology behind the project, and many have already adopted the methodology. Participants have mentioned that now, feeling more experienced, they would like to deepen their Biophilia-teaching and they all wished they would have had more time for the project. Most of them have mentioned that their dream situation would be to continue having access to visiting specialists from the University of Iceland and the City of Reykjavik. The Biophilia project sparked many ideas that the schools didn't have time to implement within the timeframe given and many would like to implement them at a later date, even though it hasn't been specified exactly how and when.

Some mention that they are interested in carrying on teaching in the spirit of Biophilia in some way with the aid of the tablets that had been bought specifically for the project. The preschools mentioned that many things regarding Biophilia is not so different from the work they already do and the project does fit in particularly well. It has added a new level of professionalism to their job to go through concept development and the developmental work that the project brought. Most of the primary schools mention that they would be up for continuing the Biophilia project with as much power and enthusiasm as in the last school year if there would be financial help available.

New Offshoots of Biophilia coming in Autumn 2016

Tónstofa Valgerðar is working on the Biophilia project in two workshops for its students. In the workshop called *Tón-leik* (tone-play), the school will offer participation in a pilot project that aims to adjust the Biophilia Educational Project to the capability of people with special needs. Participants will be 10 in total, working in two groups of 5 people each. The students will be aged 20 to 64, with many different kinds of severe disability.

In the autumn of 2016, Ármann Halldórsson, the author of the Biophilia teaching guidelines, will be steering experimental teaching of the Biophilia project at Verzlunarskóli Íslands college. The project will be a part of an interdisciplinary course called *Listir og heimspeki* (art and philosophy), where art teaching, mysteries of science and philosophy are interweaved in various ways with yoga practice.



The aim is to focus on social and emotional elements through working with the Biophilia app, but musicological and scientific thought won't be far off.

7. In Conclusion

The standards set by the project receiving a large grant from the Nordic Council of Ministers had a great effect on the project. The framework became more formal and set the tone for the project design. The Reykjavik steering group worked according to terms of reference and had an important role to play here in Iceland, as well as in the Nordic community. The framework on behalf of the Ministry (questionnaires, planned meetings with the other Nordic representatives, writing and delivering reports) helped in deepening the steering group's ideas on the project and encouraged ambition in all implementation of the project. The Nordic fund therefore had various effects on the project. It was also influential, in forming the project in Reykjavik, to hear how others were working on the project in other places. To take part in an educational discussion with outstanding personnel from other countries was constructive and encouraging for those working in education.

The Nordic fund made it possible to present the project in a grander way than before. To be able to offer financial assistance to participants made the framework more attractive and a more feasible option for the establishments of the Department of Education and Youth. This way, the project could offer visits from scientist and music teachers, as well as support and advice from the steering group representatives.

The Reykjavik Biophilia project exceeded expectations and it seems to have had a great influence on those participating in it; both children and teachers as well as officials and the steering group. The project's aim in the beginning was to offer a new approach in schools and recreational centres of Reykjavik. The Reykjavik steering group believes that it has reached further and beyond that which was aimed for in the beginning. This is thanks to the teachers, preschool teachers and the staff at the after school centres, who are passionate about their work with the children, children's creative minds, the leadership team at each participant establishment and last but not least the good system administration and excellent framework with which the Icelandic Ministry of Education, Culture and Science provided the project. The Icelandic steering group would like to thank all these members for their contribution to the project.

There is a consensus among all of the members of the steering group that it would sincerely be willing to enter a similar Nordic project if the opportunity arises.



8. Attachments

Attachment 1: The steering groups terms of reference

Drög að erindisbréf stýrihóps Biophilia verkefnisins
<p>Heiti vinnuhóps: Stýrihópur vegna þátttöku Reykjavíkur í norræna Biophilia verkefninu</p>
<p>Ábyrgðarmaður: Soffía Pálsdóttir</p>
<p>Hlutverk: Hlutverk stýrihópsins er að sjá til þess að Reykjavík sé í forystuhlutverki í norræna svæðasamstarfinu um Biophilia kennsluverkefnið. Hann ber ábyrgð á þátttöku Reykjavíkur í norræna verkefninu og fylgir því eftir á norrænum vettvangi. Jafnframt ber hópurinn ábyrgð á framkvæmd og þróun Biophilia verkefnisins innan skóla borgarinnar. Stýrihópurinn fylgir því eftir að í allri framkvæmd verkefnisins sé hugmyndafræði þess fylgt eftir með það að markmiði að kennsluverkefnið ýti undir nýsköpun í skólasterfi með þróun kennsluaðferða sem sameina þekkingu, sköpun og tækni.</p>
<p>Helstu verkefni:</p> <ul style="list-style-type: none"> • Að fara í gegnum þær kennsluhugmyndir sem þegar eru til staðar í verkefninu. Þróa þær og setja þær í norrænt samhengi. • Þróa nýjar hugmyndir fyrir verkefnið. • Taka þátt í vinnu við að þróa vefvinnusvæði sem er samskiptavettvangur fyrir þátttakendur. • Útfæra verkefnið í Reykjavík og þróa framsetningu þess og kennslufræðilega útfærslu. • Að taka ákvarðanir um ráðstöfun þeirra fjármuna sem verkefninu fylgja. • Að kynna verkefnið í Reykjavík og fyrir hönd Reykjavíkur. • Að vera í tengslum við samstarfsaðila. • Sjá til þess að fyrir hendi sé tækjabúnaður og kennslugögn sem til þarf fyrir verkefnið. • Að safna saman reynslunni sem komin er af verkefninu og nýta hana til að þróa verkefnið áfram svo Reykjavík geti verið leiðandi í framkvæmd verkefnisins í norræna svæðasamstarfinu.. • Að örva og hvetja þá kennara sem vinna að verkefninu í Reykjavík svo þátttaka í verkefninu sé jákvæð reynsla og leið til starfsþróunar fyrir kennara í borginni. <p>Verkefni stýrihóps 2014 – Undirbúningur</p> <ul style="list-style-type: none"> • Að velja verkefnastjóra stýrihópsins. Hlutverk hans er að vera tengiliður við ráðuneyti og er hann meðlimur í og tengiliður við norræna tengslanetið. • Taka þátt í undirbúningi og framkvæmd Biophiliu ráðstefnu og vinnustofum 13. og 14. nóvember þar sem fulltrúar allra stýrihópa svæðasamstarfsins á Norðurlöndum hittast. Taka þátt í fundi og vinnusmiðjum við sama tilefni. • Hefja hugmyndavinna um útfærslu verkefnisins. <p>Verkefni stýrihóps 2015 – Framkvæmd verkefnisins</p> <ul style="list-style-type: none"> • Stýrihópur skipuleggur málstofur/vinnusmiðjur fyrir hagsmunahópa á sínu svæði með aðstoð utanaðkomandi sérfræðings. • Biophiliu verkfærakistan ferðast milli grunnskóla og leikskóla þar sem safnað er hugmyndum. Lögð er áhersla á að allir þátttakendur taki virkan þátt í skapandi hugmyndavinnu og taki mið



af aðstæðum á hverjum stað fyrir sig. Þannig verður verkefnið lifandi og í stöðugri þróun.

- Þátttaka í Biophiliaráðstefnu um frumkvöðla, nýsköpun og sköpun í norrænu samhengi, haustið 2015.

Verkefni stýrihóps 2016 - Samantekt, endurgjöf og eftirfylgni

- Mikil áhersla er lögð á heimildaöflun um verkefnið í gegnum allt ferlið, jafnt myndrænna sem skriflegra heimilda.
- Verkefnastjórar stýrihópanna vinna að því, í samstarfi við matsmenn og sérfræðingahóp á sviði kennslu og rannsókna, að meta verkefnið í heild og þróun þess.
- Þess er vænst að verkefnið leiði til áframhaldandi norræns samstarfs um þverfaglega vinnu milli stofnana og fræðasviða.
- Vefvinnusvæði fyrir norræna samvinnu ólíkra faghópa, þegar verkefninu lýkur.

Fulltrúar í stýrihópi:

Guðrún Bachmann, kynningarstjóri vísindamiðlunar við Háskóla Íslands

Harpa Rut Hilmarsdóttir, verkefnastjóri barnamenningar

Skúli Gestsson, tónmenntakennari í Langholtsskóla

Formaður vinnuhóps:

Harpa Rut Hilmarsdóttir

Starfstímabil:

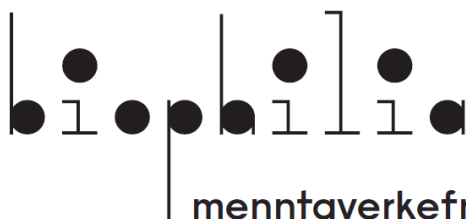
Október 2014 – loka verkefni 2016

Skil:

Til skóla- og frístundaráðs Reykjavíkurborgar



Attachment 2: Introduction letter to school leaders about participation in the Nordic project



menntaverkefnið -tekur á sig nýja mynd

Skólum í Reykjavík býðst að taka þátt í norrænu samstarfi

„Velkomin í Biophilíu, sem er ást á náttúrunni í öllum sínum myndum, frá smæstu lífverum til stærstu risastjarna sem svífa um fjarlægustu víddir alheimsins. Biophilíu fylgir öslökkvandi forvitni, áköf löngun til að rannsaka og uppgötva þá tálfögru staði þar sem við komumst í tæri við náttúruna; þar sem hún leikur á skynjun okkar með litum og formum; ilmefnum og lýkt.“¹

Biophilia er viðamikilið menntaverkefni sem grundvallast á viðtæku samstarfi fræðimanna, vísindamanna, listamanna, kennara og nemenda á öllum skólastigum. Þar eru náttúruvísindi, tónlist og tækni tengd saman á nýstárlegan hátt og sköpunarferlið virkjað sem menntunar- og rannsóknaraðferð. Biophilia menntaverkefnið byggir á samnefndu listaverki Bjarkar Guðmundsdóttur.

Þrjú ár eru liðin síðan Björk kynnti verkefnið fyrir reykvískum grunnskólum og var inntak þess ný tækni og áherslur í kennslu tónsköpunar og náttúruvísinda. Frá þeim tíma hafa kennarar og nemendur í Reykjavík tekið virkan þátt í að þróa og móta Biophilíu menntaverkefnið sem hefur vaxið og dafnað undir þeirra handleiðslu. Án framlags grunnskólanna í borginni væri það ekki orðið það metnaðarfulla verkefni sem það er í dag.

Nýjum áfanga er nú náð, með útgáfu ítarlegs námsefnis sem styður enn frekar við kennslutilhögun og útfærslu efnisins. Í nýja námsefninu er haldið til haga því besta úr reynslu af kennslu verkefnisins til þessa. Helsta nýjungin í efninu er úrvinnsla á tengingum við félagslega og sálræna þætti listaverksins. Almenn reynsla af verkefninu að með því að nálgast viðfangsefnin með þverfaglegum, fjölbreytilegum og skapandi aðferðum eflist sjálftraust nemenda, bæði í tengslum við tónlistarsköpunina og náttúrufræðina.

Markmið Biophilia menntaverkefnis eru að:

- auka áhuga ungs fólks á tónlist, náttúrufræðum og tækni
- efla gagnrýna hugsun nemenda með því að dýpka og efla tök þeirra á hugtökum sem tengjast vísindum, tónlist og samfélaginu
- ýta undir nýsköpunarhugsun nemenda
- styrkja sjálfsmýnd nemenda
- ýta undir nýsköpun í skólastarfi, þróun nýrra kennsluaðferða og þverfaglegt samstarf
- stuðla að starfsþróun kennara í skapandi kennsluháttum
- mæta kröfum aðalnámskrár um fjölbreytta kennsluhætti
- auka tengsl milli skóla í borginni og við norrænt skólastarf
- þróa aðferðir til að meta vinnu nemenda og árangur verkefnisins

¹ Texti eftir Björk og Sjón, fluttur í upphafi Biophilíu tónleika af David Attenborough.



Norrænt samstarf

Árið 2014 fór Ísland með formennsku fyrir Norrænu ráðherranefndina. Biophilia menntaverkefnið, undir stjórn mennta- og menningarmálaráðuneytisins, var eitt af þremur stórum áhersluverkefnum sem Ísland lagði fram. Um er að ræða samnorrænt þróunar- og tilraunaverkefni, fjármagnað af Norrænu ráðherranefndinni. Þetta gefur nýja möguleika á að þróa og endurskoða verkefnið í heild, þar með talið námsefnið, með veglegum fjárstuðningi.

Reykjavík fer með forystu í þessu áhugaverða, samnorræna verkefni, en þátttökuborgir eru; Sisimiut í Grænlandi, Stavanger í Noregi, Þórshöfn í Færeyjum, Álaborg í Danmörku, Mariehamn á Ålandseyjum, Sundsvall í Svíþjóð og Grankulla/Helsinki í Finnlandi.

Gæti þetta verið áhugvert fyrir þinn skóla?

Nú gefst skólum í Reykjavík tækifæri til að stíga nýtt skref í átt að þverfaglegu samstarfi ólíkra námsgreina sem getur eflt náttúruvísinda- og skapandi starf skólans. Áætlað er að gefa fimm skólum í Reykjavík kost á þátttöku í norræna samstarfsverkefninu og mun þeim skólum bjóðast:

- aðstoð sérfræðinga á ýmsum sviðum
- fjárhagslegur stuðningur
- ítarlegt námskeið um aðferðafræði Biophilia menntaverkefnisins
- að takast á við nýjar áskoranir í tónlist og vísindum
- að taka þátt í samstarfi skóla í Reykjavík og norrænu þátttökuborgunum

Kynningarfundur og umsóknir

Stýrihópur Biophilíu í Reykjavík býður stjórnendum og öðrum áhugasömum á skóla- og frístundasviði til kynningarfundar á Biophilia menntaverkefninu í Hafnarhúsinu föstudaginn 10. apríl kl. 14.30–16.00.

Á fundinum verður farið yfir hvernig Biophilia menntaverkefnið getur orðið reykvískum skólum til hagsbóta. Áhugasamir eru hvattir til að skrá sig með því að senda póst á biophilia@reykjavik.is og tilgreina áætlaðan fjölda þátttakenda frá hverjum starfsstað. Allir velkomnir!

Ítarlegar upplýsingar um Biophilia menntaverkefnið er að finna hér:

<http://biophiliaeducational.org/>



Attachment 3: Application form



menntaverkefnið -tekur á sig nýja mynd

Skólum í Reykjavík býðst að taka þátt í norrænu samstarfi

„Velkomin í Biophilíu, sem er ást á náttúrunni í öllum sínum myndum, frá smæstu lífverum til stærstu risastjarna sem svífa um fjarlægustu víddir alheimsins. Biophilíu fylgir óslökkvandi forvitni, áköf löngun til að rannsaka og uppgötva þá tálfögru staði þar sem við komumst í tæri við náttúruna; þar sem hún leikur á skynjun okkar með litum og formum; ilmefnum og lýkt.“¹

UMSÓKNARFORM VEGNA ÞÁTTTÖKU Í NORRÆNUM HLUTA BIOPHILIA MENNTAVERKEFNISINS. TIL ÞÁTTTÖKU VERÐA VALDIR FIMM GRUNNSKÓLAR, EIN FRÍSTUNDAMIÐSTÖÐ OG EINN LEIKSKÓLI Í REYKJAVÍK.

Upplýsingar sem þurfa að koma fram í UMSÓKN:

1. Starfsstaður sem sækir um (nafn starfsstaðar):
2. Tengiliður við verkefnið á starfsstaðnum:
 - a. Nafn:
 - b. Starfsheiti:
3. Hvernig mun framkvæmd Biophilia menntaverkefnisins verða á starfsstaðnum?
4. Hvaða aldur barna mun taka þátt, hversu mörg börn munu njóta verkefnisins?
5. Hvaða tækifæri sjáið þið í verkefninu fyrir börnin á starfsstað?
6. Hvaða aðstæður hefur starfsstaðurinn til að vinna með verkefnið (t.d. tími, rými, tækni, fagfólk)?
7. Hvernig sér starfsstaðurinn verkefnið hafa áhrif á starf með börnum?

Athugið að þátttökustofnanir verða valdar á grundvelli þessarar umsóknar. Vinsamlegast fyllið hana út eins ítarlega og unnt er og sendið til baka á biophilia@reykjavik.is. Umsóknarfrestur stendur til 12. maí 2015.



Attachment 4: Skúlis letter on the tabletisation of primary schools

Vinnuskýrsla frá Skúla Gestssyni

Vorið 2015 fór undirritaður ásamt Hörpu Rut, verkefnastjóra, í heimsóknir á allar starfsstöðvarnar sem munu taka þátt í Biophiliu menntaverkefni á komandi skólaári (2015-2016). Verkefnið byggir á appi sem hægt er að keyra í IOS og Andriod snjalltækjum. Ljóst var að stofnanirnar voru mjög misjafnlega settar tæknilega til að taka þátt og því var ákveðið að ég yrði þeim innan handar í haust að aðstoða við uppsetningu og innleiðslu á Biophiliu.

Hver stofnun fékk nýja spjaldtölvu frá stýrihópi Biophiliu en þær voru settar upp með öppum sem reynst höfðu vel undanfarin ár. Ætlunin var að kennarar og aðrir sem koma að verkefninu myndu kynna sér tæknina, öppin og tækifærin sem feldust í þeim.

Í haust hef ég heimsótt flestar af þessum starfsstöðvum og það veldur nokkrum vonbrigðum hvernig stofnanirnar standa í kunnáttu á tækninni. Fundir mínir hafa aðallega verið tæknilegs eðlis en svo virðist sem skólarnir – sem eru nú æ fleiri að kaupa spjaldtölvur – séu engan veginn nógu vel að sér um hvernig eigi að halda utan um tækin, hvernig setja eigi öpp í tölvurnar, hvernig nota megir forrit í borðtölvum til að stýra þeim o.fl. Einn skóli skar sig úr en í honum var einn starfsmaður skólans búinn að taka að sér verkefnastjórn með spjaldtölvum. Hinir staðirnir höfðu ekki gert slíkar ráðstafanir. Væri ekki eðlilegast að stuðningur kæmi frá borginni – líkt og gert er með borðtölvur?

Ef ætlunin er í raun að spjaldtölvur eigi að vera eitt af verkfærum í kistum kennara hlýtur að þurfa frekari stuðning frá borginni, alveg eins og með borðtölvurnar. Þessi tækniaðstoð hamlaði nokkuð umræðunni um kennslufræðilegar áherslur verkefnisins og ljóst að stýrihópurinn þarf að standa þétt að baki skólunum í þeim hluta verkefnisins.



Attachment 5: Participants training course agenda

Biophilia haustnámskeið

- fyrir Bíófílíska starfsstaði SFS

Dagsetning: 13. – 14. ágúst 2015

Staðsetning: Askja, Sturlugötu 7 (Sjá: www.hi.is/askja)

Tími: 9.30 – 16 fimmtudag 10 - 16 föstudag

Þeir sem mögulega geta komi með spjaldtölvu með Biophilia appinu í. Einhverjar spjaldtölvur verða á staðnum en ekki svo allir geti fengið.

Fimmtudagur 13. ágúst 9.30 – 16.00

9:30 – 10:00

Skráning og kaffi

10.00- 10.30

Heimur Biophiliu – Hvaðan kemur hún og hvert ætlar hún? - Curver

10.30 – 12.30

Biophilia kennsla undir stjórn vísindafólks frá HÍ og tónlistarkennara úr grunnskólum Reykjavíkur og víðar. Kynning á Dark Matter, Solstice, Thunderbolt:

12.30 – 13.30

Matur í Hámu á Háskólatorgi (í boði Biophiliu)

13.30 – 14.00

Tækni og tækifæri Biophilia appsins: Skúli Z. Gestsson

14.00 – 14.30

Biophilia námskennsla/kynning á kennsluleiðbeiningum: Ármann Halldórsson

14.30 – 15.20

Hópavinna: Moon – Hollow – Crystalline – Cosmogony – Virus - Sacrifice

15.20 – 16.00

Kynning á Mutual Core undir stjórn reyndra Biophilia kennara

Föstudagur 14. ágúst 10.00 – 16.00

10.00 – 10.30

Biophila menntaverkefnið í norrænu samstarfi: Auður Rán Þorgerisdóttir og Arnfríður Sólrún Valdimarsdóttir, verkefnastjórar hjá Mennta- og menningamálaráðuneytinu.

10.30 – 12.30

Hópakynning á hópavinnu fimmtudags

12.30 – 13.30

Matur í boði Biophiliu



13.30 – 14.45

Samstarf, námsmat, hindranir, nálgun ólíkra skólastiga og fleira sem brennur á - Ármann Halldórsson ritstjóri Biophilia námskennsluleiðbeininganna.

14.45 – 15.00

Kynning á heildarmati norræna verkefnisins: Auður Rán Þorgerisdóttir og Arnfríður Sólrún Valdimarsdóttir verkefnastjórar Biophiliu.

15.00 – 16.00

Umræður, niðurstöður og lok

16.00-?

Hamingjustund á Stúdentakjallaranum