FAMILY-BASED

Open science schooling

WHAT ARE MISSIONS?

JOINT SCIENCE MISSIONS WITH FAMILIES AND COMMUNITY MEMBERS

THE MISSIONS

The core concept is student teams working in missions.

"Missions" is similar to "projects" but takes "project" further and to another level, indicating intention, creating something useful for the community and accomplishing something important through community collaboration and alliances.

The word "mission" also refers to the logic of good video games, in which you need to stepwise build up resources and powers to succeed.

Missions are based on student teams' analysis of what the community needs, what does not work well – or what new resources the community might benefit from.

The missions might last from some weeks to an entire school year or more, depending on the nature of the missions.

In the European projects it is also possible for a student team to engage in virtual missions as long as the mission is in line with the fundamental mission principles.

Quality focuses:

1 Are the missions selected in line with the project's learning strategy?

2 Are the missions likely to create relevant material to the project outcomes?

3 Are the selected missions powerful enough to feed the project's knowledge creation?

No teaching, no teachers

There is no teaching in the missions, and no teachers.

The needed content learning takes place on the flight, when needed and when relevant and meaningful to the students and to the missions.

The teachers work in the missions as coaches and guides, and as critical friends and facilitators of the student teams' collaboration with community resources and the teams from the other participating countries.

Mostly, the teachers are involved in the missions at the same level as the students: the relation between students and teachers changes dramatically. In most missions, teachers need to learn alongside the students: and that makes them the best coaches!

"One interesting thing about this kind of teaching is that the teacher need not necessarily know very much about the "content" of the students' projects at all."

Marc Prensky, "Education to Better their World – Unleashing the power of 21st century kids", 2016

Quality focuses:

1 Are the student teams leading and driving the missions?

2 Are the teachers serving as mentors and critical friends?

3 Are the student teams able to organise the support and help they need?

Missions selected by the students

The missions are defined by the student teams.

The first step is to research the community, talk to people, investigate and conclude: what will be our mission to accomplish something important benefitting the community, or part of the community.

A student team might work through several missions along a 2-year European project – or immersively in one very important and powerful project.

Quality focuses:

1 Are the selected missions really defined by the student teams?

2 Are the missions selected based on student teams' acting as "change detectives"?

3 Are the students feeling ownership and dedication in connection with the selected missions?

 ## Working with the community

All missions or projects are devoted to create something useful in the community: new technology or support to old people, whatever.

The missions always need to be carried through in collaboration with community resources: parents, politicians, experts, end-users – or other young people.

The student teams need to create alliances with powerful community resources and negotiate their way to accomplishing the mission.

We sometimes use the expression "mission brokers" about the young people's community negotiations.

Accomplishments are celebrated in the community, in the project and in the social networks.

Quality focuses:

1 Are the teams creating the needed networks and resources to work in the missions?

2 Are the teams capable of sufficient negotiation in support of the missions?

3 Are the teachers able, as mentors, to support the teams' networking and resource creation?

 ## Real-life and real-time

The missions can never be artificial or made-up but must be real-life and real-time missions.

This means that the student teams engage in problems, challenges and needs in today's community – including anticipating near-future opportunities for the community.

Working in real-life and real-time missions requires much attention, patience and focus from the students.

Quality focuses:

1 Are the missions authentic?

2 Are the missions important to society or to a group of people?

3 Can the missions impact the challenges in real time through the missions?

 ## Team based accomplishing

The students work in teams, never individually.

Students always state that this kind of teamwork is very complicated and demanding, but they also state, after some time, that they would prefer to work that way in the normal school activities.

From time to time a student team of 5-6 students might wish to split up and go in different directions.

Quality focuses:

1 Are the students able to work in teams?

2 Are the missions relevant and attractive to all the students in the team?

3 Are the teachers, as mentors and guides, able to support and improve the teamwork?

Storytelling

The student teams are requested to tell the stories from the mission: to the other students in the school, to the other teams in the European project, to the parents – and to the community.

The form of documentation used in these projects is creative storytelling using creative media.

The storytelling helps the students reflect on and evaluate their accomplishment – what went well and what did not.

Evaluation and assessment are always based on this storytelling – and in some projects the storytelling is integrated in a portfolio of accomplishments.

In short, storytelling is key to new forms of assessment and evaluation.

Quality focuses:

1 Are the student teams able to tell the stories from their activities?

2 Are they able to make the stories attractive to the other teams in the project?

3 Are the teachers, as mentors and guides, able to inspire the students to tell their stories in powerful ways?

Creative technology

Technology does not play a special role in the missions, unless the mission is about technology in the community.

The students are invited to use whatever technology they find appropriate and use available technology as creatively as possible.

Video usually plays a very big role in the students' storytelling.

In the near future we hope to be able to challenge the students with another way of using technology: *based on the nature of your community project, why not develop precisely the technology you need yourself?*

Quality focuses:

1 Are the students using creative technology to communicate their experience?

2 Are the students able to get support for using advanced technology?

3 Are the teachers or other resources able to inspire the students to use creative technology?

Learning on demand

Traditional education is based on "learning when scheduled", for example math on Tuesday morning from 08 to 10.

This form of learning is based on an abstract reasoning; the logic is the logic of the educational SYSTEM itself.

"Learning on demand" means learning about various forms of content when the students need it and when the learning therefore appears relevant to them.

When the student teams are working in their missions, a number of "learning on demand" breaks are organised for the students to build specific knowledge they need to progress in their missions.

Quality focuses:

1 Are the missions designed to offer time-outs with "learning on demand"?

2 Are the student teams able to benefit sufficiently from the "learning on demand" sessions?

3 Are the teachers or other resources able to flexibly organise such "learning on demand" when needed?

International collaboration

The student teams will share their missions, challenges and obstacles with student teams from other countries. In the case of the project they will share with the student teams from the other participating schools from across Europe. However, they are also invited to share in their social and gaming networks in which an increasing number of young students spend considerable time.

Local and global sharing converges for the 21st century students: the team from another European country or a friend from the gaming network is "as close" as the students in the school.

Fluent and seamless collaboration with other people, online and on location, is a key capacity in the 21st century labour markets and entrepreneurial environments, and therefore it forms part of Mission Based Learning.

Quality focuses:

1 Are the student teams able to communicate with the teams from other countries to share experience and ideas?

2 Are the students sharing with peers outside the project?

3 Are teachers able to support the students' transnational communication?

Mission progression

Missions might, of course, look different, but the 10 steps are quite typical for most science missions:

STEP 1

Students and families as science detectives

STEP 2

Science engagement dialogues with the school team and with the eco-system of science resources

STEP 3

Agreeing on science missions driven by students and families

STEP 4

Science learning on demand and dialogues with mission resources and stakeholders

STEP 5

Discussions with end-users, involved people and institutions and others with an interest in the science mission

STEP 6

Designing the science missions and negotiating needed resources

STEP 7

Working in the science missions (students and families, school team, eco-system)

STEP 8

Evaluation of successes and failures

STEP 9

Sharing the experience with the other teams and in the project and with creative media – storytelling

STEP 10

Lessons learned