Maker Culture in Espoo

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Maker & FabLearn movement
Maker Culture in Espoo Schools

• Human and technology theme in National Curriculum 2004
• Kouluimestari School in Espoo started in 2007
  – Technology and Innovation Education in focus
• Learning Center Innokas! inspires others
  – Inno (Innovaatio->Innovation) kas (kasvatus->Education)
  – City wide and beyond
  – Expanding activities (teacher training, students participation)
  – Development based on research
• Innokas Network 2014
  – Headquarters University of Helsinki, Faculty of Educational Sciences
  – towards nationwide and global network
  – Together with 10 coordinator cities around Finland
• Innokas FabLearn Lab in Espoo 2017
  – Otaniemi Aalto University campus area
  – Hubs around
Innokas Network

• Develop and promote the Innovative School Model
• Innovative school research; research on the adoption of innovations
• Innokas Network in Finland: Over 600 schools, 10 sub-coordinators, universities, companies, libraries
• Global Innokas: Erasmus 3T, Stanford University, Global Educational Community (GEC)
• https://www.innokas.fi/en/
Innovative School (ISC)

Teachers, students, principals, parents, and other partners as innovators

**LEARNING AND LEARNING ENVIRONMENTS**
- What, where, when and how do we learn
- Different learners and their needs
- Active learning

**TEACHERS’ PROFESSIONALISM**
- Subject matter and pedagogical knowledge
- Skills for collaboration and problem-solving, creative skills
- Learning, teaching, and assessment methods

**LEADERSHIP**
- Shared leadership and management
- Teams and teamwork
- Goal orientation and interaction
- Quality assurance

**PARTNERSHIPS**
- Collaboration
  - Home and school
  - Nearby community
  - National and international networks

Versatile use of technology in teaching, learning, and collaboration

Educating the active learners of the 21st century
Innovative School as an ecosystem

Learning and Learning Environments:
active learning, participation

Professional Teachers: team-teaching,
sharing knowledge

Leadership: shared leadership,
teamwork

Partnerships: co-creation,
networking
Design Based Research

- Practitioners and researchers work together
  - Produce meaningful changes in practical activities
  - Design cycles and iterative development
  - Iterative development of an Artefact

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Analysis of practical problems by researchers and practitioners in collaboration

Development of solutions informed by existing design principles and technological innovations

Iterative cycles of testing and refinement of solutions in practice

Reflection to produce “design principles” and enhance solution implementation

Refinement of problems, solutions, methods and design principles

Reeves 2006
Innovation Education

- Combines cross-disciplinary Finnish traditions in handcrafts, arts, science and other school subjects with the methods of digital fabrication, hands-on learning and technology education
- Is related to “maker culture”, an approach for learning through doing in a social environment
- Students and teachers as innovators

STEAM
- Science
- Technology
- Engineering
- Arts
- Mathematics
Innovation Education

Ubiquitous (digital) technology
• Learn to understand
• Learn to use
• Learn to learn
• Learn to invent something new

Ubiquitous (digital) technology
• Utilise digital technology in
  • Knowledge building
  • Interaction
  • Communication
  • Self-expression and
  • As a tool for innovation
Maker culture

Innovation Education

Everyday Technology

Programming and Robotics
Educational Innovation

Learning Innovations

• Innovations created by students and by teachers
• Use creative planning processes to learn thinking skills
• Engage in teamwork and projects that cross traditional boundaries between school subjects
• Makes use of ubiquitous technology and applies the knowledge and skills students have learned in new areas
• Dancing robot, smart clothes

Operational Innovations

• Innovations on the learning environment aimed at supporting the learning of 21st Century Skills
• Can be created by all actors in the school and include new ways to use ICT in the school’s organizational and pedagogical approach
• Break clubs organized by students, tutor student model
• Team teaching
• Shared leadership
• Learning Environments
• Partnerships and networking
Programming in Different Subjects and in broad based themes, projects and phenomena

- Draw, knit, sew and build according instructions
- Use a recipe and bake
- Learn the dance moves

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Broad based competencies and skills in curriculum

Development as a human being and as a citizen

- Thinking and learning to learn (C1)
- Cultural competence, interaction and expression (C2)
- Participation and influence, building the sustainable future (C7)
- Competence for the world of work, entrepreneurship (C6)
- Taking care of oneself and others, managing daily activities, safety (C3)
- Multiliteracy (C4)
- ICT-competence (C5)
Learning competencies

Ways of thinking
Creative and critical thinking
Problem solving

Ways of working
Problem based learning
Hands on learning
Teamwork

Tools for working
Broad literacy
Crossing school subject boundaries
Technology

Context for working
Personal
Local
Global

Attitude needed for working
Engagement
I can / we can

https://youtu.be/Q1CrTUOasqo
Co-creation / National Micro:bit pilot

- 50 schools & 100 teachers
- 6 Innokas trainers
- Co-creation
- Sharing best practices
- Research
VR, AR and IoT
Activities in schools, kindergartens, libraries, clubs and camps
Collaboration with cities, companies and other partners
Events and Trainings
Fairs, exhibitions, conferences
Innokas Fab Learn Lab Espoo

Technology and innovation education
Maker culture
Learning by doing
STEAM
Life long learning
Together
Maker spaces in the city libraries

Espoo
• Entressen Paja
• Esponlahden Paja
• Ison Omenan kirjaston Paja
• Sellon Paja
• Tapiolan Paja
Co-creation and learning together

A Grid is the stable for future unicorns located right in the heart of innovation within Finland.

Aalto University invests in children and young people – Aalto University Junior is ready for adventure.

Omnia AI Lab

Co-working and Co-creation Platform Prototype for Urban Innovations – Entrepreneurial Thought in Action!
Espoo schools form an innovative Living Lab ecosystem
Schools co-create products and services together with companies and communities (EdTech)
The aim is to accelerate learning by combining experimenting with pedagogical excellence, new technology and entrepreneurship
xEDu EdTech-accelerator as a partner
KYKY-introduction video
http://kykytori.espoo.fi/
The Smart Learning Environments for the Future
6Aika, the Six City Strategy

https://www.oppimisenuusiaika.fi/the-new-era-of-learning/
Thank you!
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