Research and Policy Needs for Environmental Health - 2017

Schools
and
New Technology

Mr. Reuven Kurman, CIO
Haifa Municipally
Education System

עיריית חיפה
מערכת החינוך והתרבות

21st Century Skills

Ways of Living	Ways & Tools of Working	Ways of Thinking
•• Independent learner •• Communication •• Collaboration & Social adaptation	•• Computer & Information Literacy (CIL) •• Information & Communication Technology (ICT)	• Creativity & innovation • Critical thinking, problem-solving, decision making • Metacognition: Learning to learn

ATC21S™
ASSESSMENT & TEACHING OF 21ST CENTURY SKILLS
HEADQUARTERED AT THE UNIVERSITY OF MELBOURNE
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Computer-assisted Learning

Goal: Improve learning, teaching & assessment processes

Tool:
Design & implementation of
Innovative learning environments

Computer-assisted Learning

Alliance middle school, Haifa

- Blogs
- Digital Boards
- Online questionnaires
- Social networks
- Thinking maps
- Collaborative workspace: docs, presentations
- Comics
- Digital books
- Interactive maps

Using technology in the classroom: Advantages

- ✓ Relevant to the children
- ✓ Innovative Environment for the Development of 21st century skills
- ✓ Access to latest information
- ✓ Ability to learn anywhere, anytime, including during emergency
- ✓ Automates tedious tasks & reports for teachers

We need Communication!

Using technology in the classroom: Disadvantages

- Dependency on equipment & internet connection
- Distraction from the main point ?
- No equal access to technological resources at home
- Privacy & bullying issues
- Does it guaranty independent thinking ?
- Is the teaching level necessarily improved ?
- Digital Dementia ?
- **Might expose to radiation**

Using technology in the classroom:

When to start?

- Kindergarten?
- Elementary school?
- Middle school?
- High school?

Keep Continuity

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Data Communication

School

Public ISP:
Infrastructure +
Content providers

LAN
Local Area Network

Router

The Last Mile

WAN
Wide Area Network

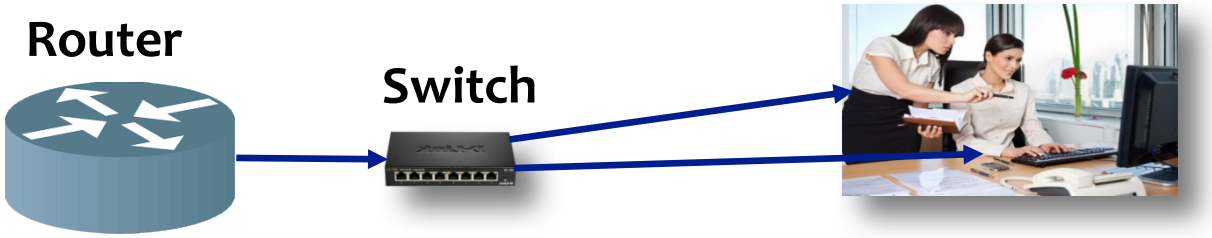
Google ישראל

YouTube

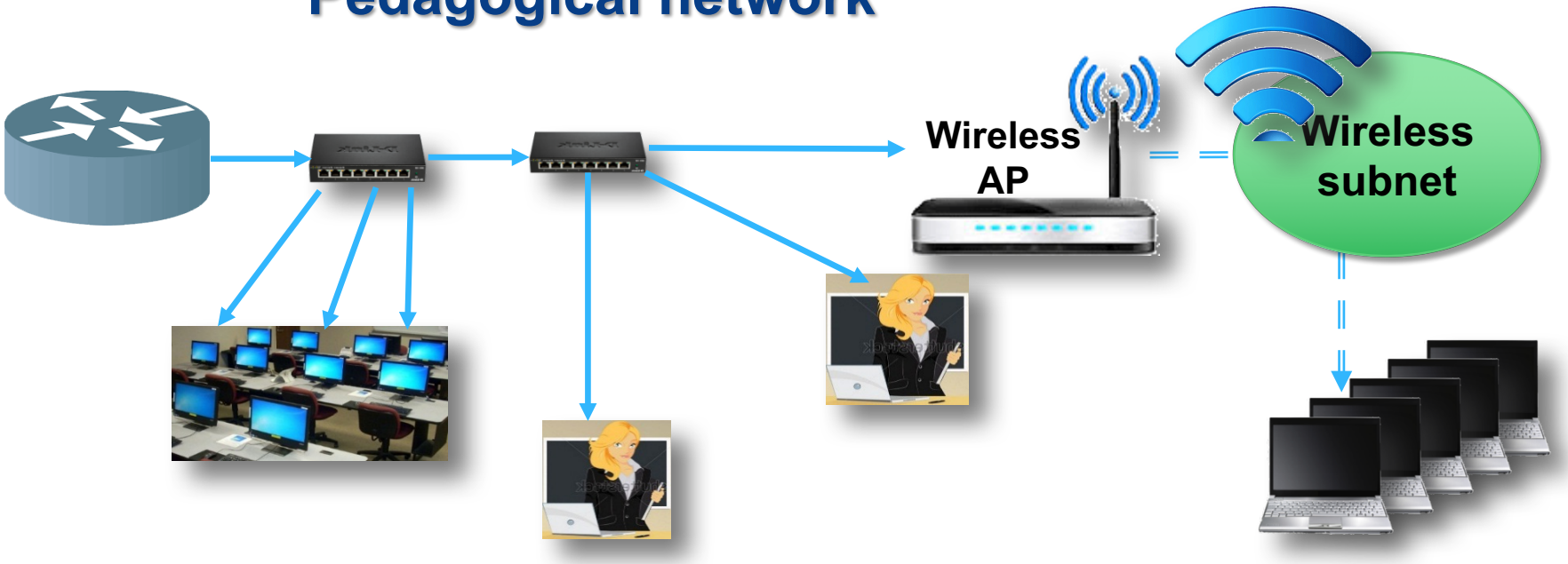
facebook

School's networks

Executive network



Pedagogical network



WiFi equipment used in Haifa:

- A central controller on our premises
- Passive beam scanning
- **M**ultiple **I**nput **M**ultiple **O**utput (MIMO) technology

Radiation levels measured in schools in Haifa

Recommendation:	Radiation level Micro Watt /cm^2
USA: Federal Communications Commission	1,000
Israel (recommendation): Ministry of Environmental Protection	50-100 (in closed space)
Israel: Parents	1
Haifa: **Measured**	**0.1**

- Is the data measured relevant? Should we measure heat ?
- Should we measure radiation at the wireless router only ?
- When should we measure radiation in a closed space ?
- Does the measuring equipment have the correct sampling rate ?

Precautionary Principle

- **Avoid** activities that may lead to harm
- The decision maker is **responsible** for any harm caused
- Lack of scientific evidence **doesn't justify taking risks**

WiFi deployment in schools

Ministry of Education Memo:

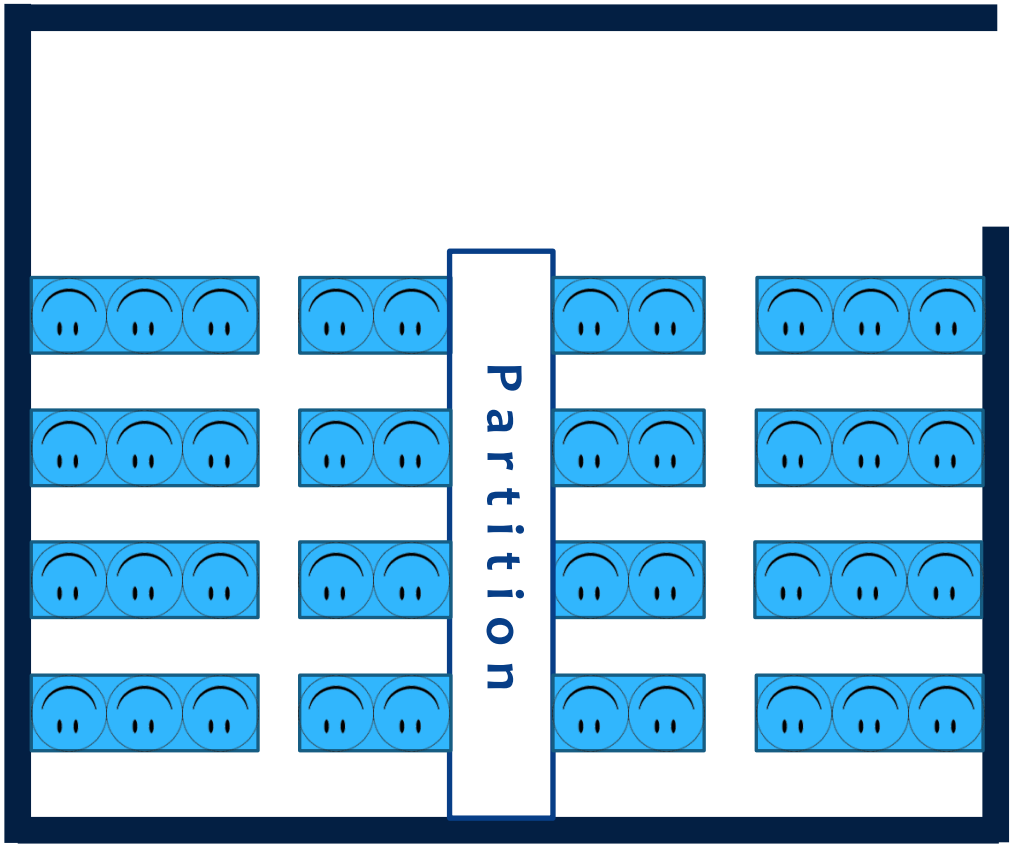
- Curriculum regarding radiation awareness to start from 1st grade
- Turn off wireless devices when not in use
- Charge devices during night
- Restrict use of equipment by age

Municipality of Haifa:

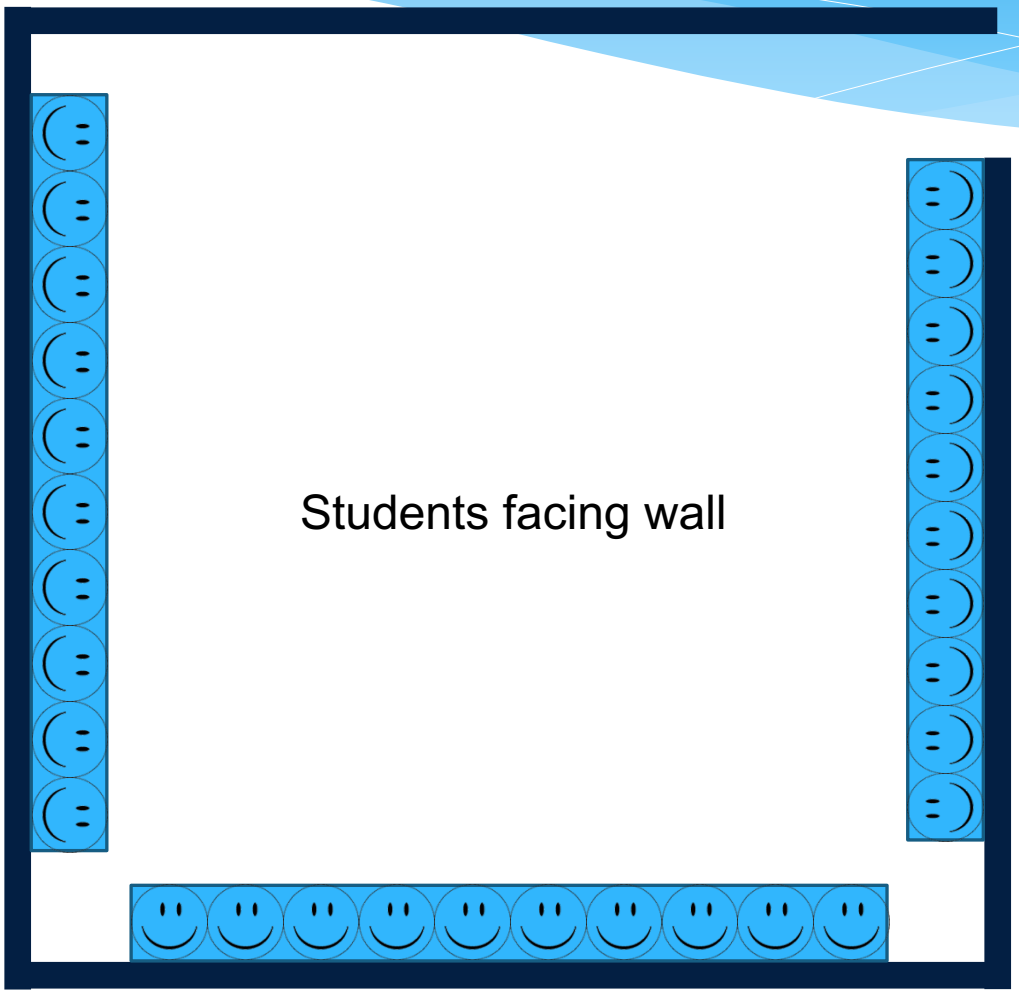
- Wired internet preferred
- Auto reduction of wireless transmission to required min
- At least 1 router per space to reduce transmission intensity
- Elevated router to reduce transmission intensity

Wired classroom: Architecture 1 (in use)

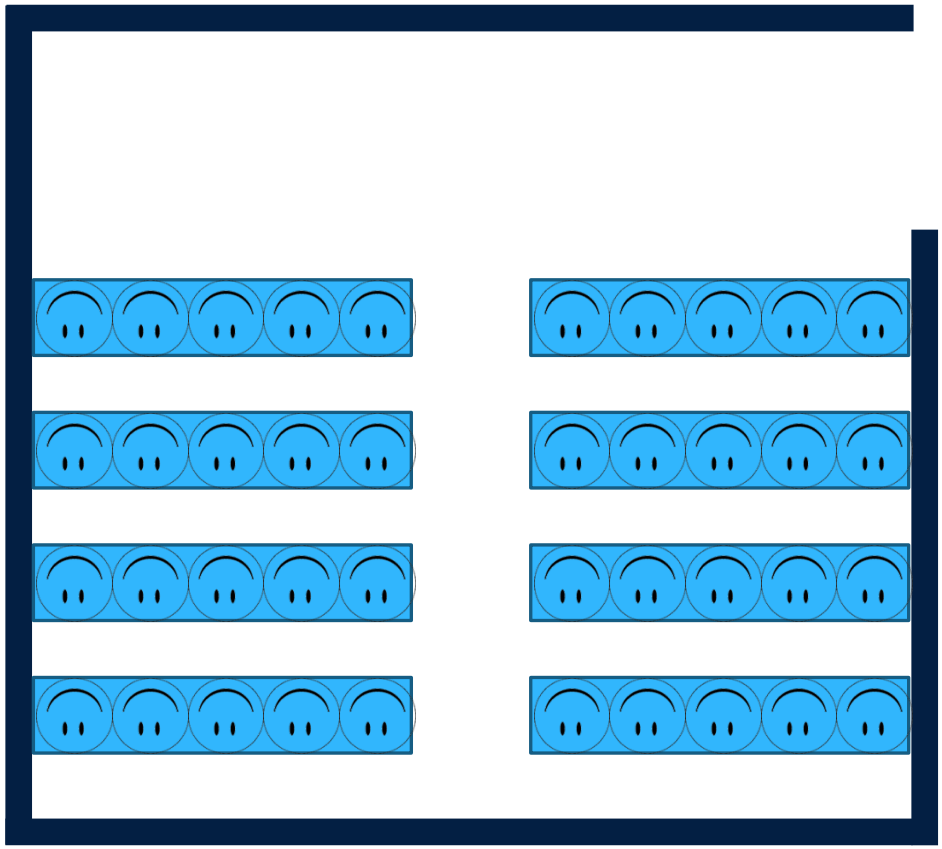
Partition height ~ 1m



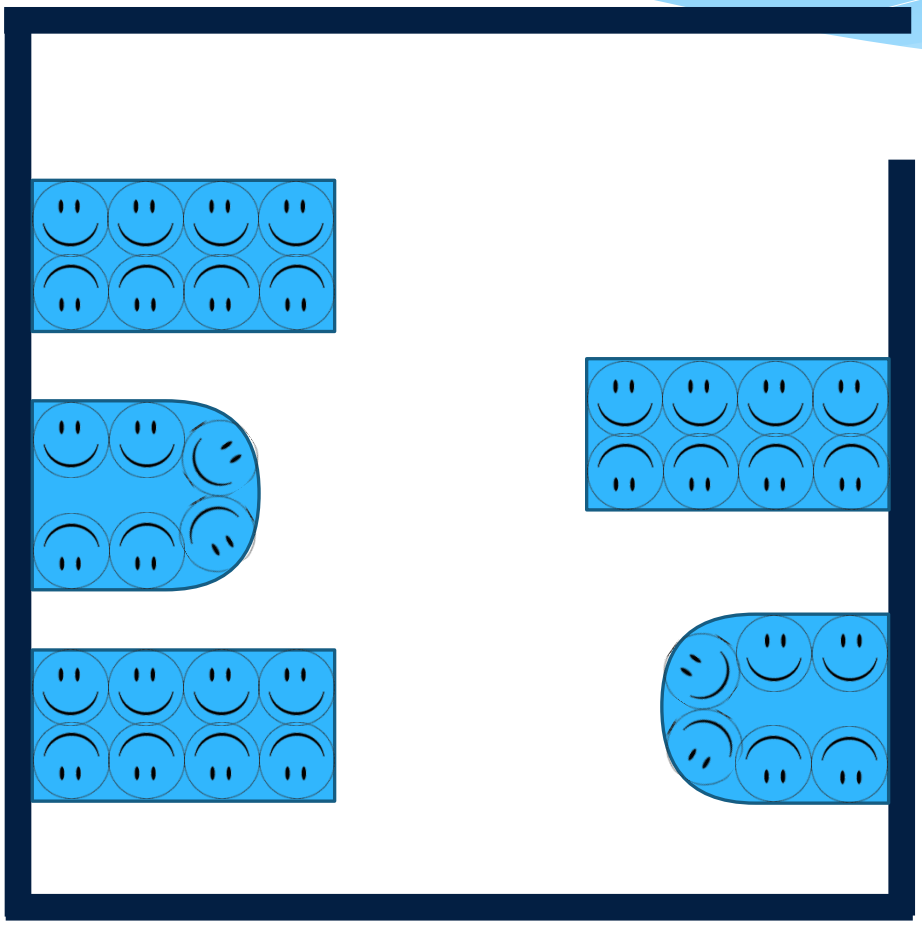
Wired classroom: Architecture 2 (in use)



Wired classroom: Architecture 3
Desks fixed to floor
(in use)



Wired classroom: Architecture 4



Recommendations

- **Information** to: teachers, children, parents
- A school **Treaty**
- Radiation risks **program** implementation
- **Blended learning** for minimal exposure
- **Prevention**: 1:1 Meetings with schools principles
- Use **wired** internet

Suggestions

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Suitable Equipment for young children

Implications:

- Children's health & safety
- Purchase by municipality:
  - maintenance
  - renewal
- Legal implications:
  - parents financial participation
  - equality or inequality?

- ✓ Desktop
- ✓ Laptop
- ✓ Netbook
- ? Tablet
- ? Smart Phone

HAIFANET

Single Sign On

Portal 3

Schooly

Yomanim

Portal GoogleSITES

Portal SharePoint

School management system

BUS: Connection Interface

Ministry of Education

HAIFANET

Data & messages to school management sys

Service & support to Edu sys

Routine & Emergency messages

Could Services

Learning & Com services

Content providers

Apps