

*"I have a gut feeling about this"*  
Adult Engagement with SSI in Daily Life  
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# Background: What is Non-Ionizing Radiation? And how is it related to Wi-Fi?



- Radiation from Wi-Fi routers is a type of radiofrequency electromagnetic (RF EMF) radiation that is essentially a transfer of energy by radio waves
- In Israel and elsewhere, the proliferation of RF EMF radiation emitting devices has generated some public controversy and a lot of disturbing public images.
- The current scientific consensus about risk from RF radiation (including Wi-Fi routers and cell phones) is that there are inadequate findings to assert definite risk. Despite this scientific consensus, there is some public concern as to whether we are underestimating these risks, a concern often magnified by the media.



# Socio-Scientific Issues and Science Literacy

- When exploring decision making in the context of SSIs researchers cite different skills needed for nonscientists.
- These include argumentation skills and understanding the social and economic context of the issue.
- Radiation from Wi-Fi routers and its potential risks can be characterized as both a public and private social concern – as we encounter multiple sources of radiation in our daily lives.
- In this study we look at decision making processes and the role of science literacy as adults engage with a relevant SSI – how parents make decisions in the issue of Wi-Fi deployment in their children's school.

*"...people selectively integrate scientific ideas with other sources of meaning, connecting those ideas with their lived experience to draw conclusions and make decisions that are personally and socially meaningful"* (Feinstein 2011, p. 180).

**Feinstein, 2011; Sadler & Donnelly, 2006; Weeth Feinstein, Allen & Jenkins, 2013; Zeidler & Nichols, 2009).**

- High income country with highly educated adult population (50.92% with tertiary education).
- 80.6% of population (16-74) are internet users.
- Mobile phone subscribers (per 100): 127
- National ICT program in schools since 2011 despite objections.

1. Socio-demographic questions
2. Standard Science knowledge measure –  
(National Science Board, 2016). 14 questions
3. Presentation of relevant dilemma
4. Semi-structured interview

## 2. Methodology – Standard Science Knowledge Measure

Battery of true/false questions that include:

- The center of the Earth is very hot
- All radioactivity is man-made
- Antibiotics kill viruses as well as bacteria

1. Socio-demographic questions
2. Standard Science literacy measure –  
(National Science Board, 2016) 14 questions.
3. **Presentation of relevant dilemma**
4. Semi-structured interview

## 3. Methodology - Dilemma

*The school board at your child's school is holding a special meeting next week. In this meeting a decision needs to be made about setting up a school wide Wi-Fi so that students will be able to connect when using laptops and tablets in their classrooms. Prior to this meeting, parent representatives from each homeroom class need to come up with a class consensus regarding this issue. You are about to walk into a class meeting where you will be asked to cast your vote whether to allow the school to be connected to Wi-Fi or not. You have about half an hour to decide how to vote. In order to search for information and making a decision, you have your cell phone and a laptop. When you'll find that you have sufficient information for the decision, we would like to ask you some further questions*





# Let's Meet our Participants

- 35 Parents with at least one child in primary school from a variety of geographical locations in Israel.
- 57% female
- 85% **with** tertiary education in a variety of occupations
- 62% **without** tertiary education in science
- Only 13 conducted a search. Average time: 10 min.



# Findings - 2 related themes

1

*Justification of Decisions – How do participants conceptualize their Wi-Fi decision.*

2

*Science Literacy , Science Knowledge and Decision Making – How do participants conceptualize their need for knowledge*

# 1 – Justification of Decision

<b>In favor of Wi-Fi at the school – n=22</b>	<b>Against Wi-Fi at the school n=11</b>
There are many more benefits associated with the use of Wi-Fi in schools than costs or risks.	Pedagogical factors- no need for Wi-Fi for meaningful learning.
The issue is a “lost cause”.	Social factors – Children need to interact with each other without screens.
	Need for Mitigation of Radiation Risk.

# 1 – Justification of Decision

## In favor of Wi-Fi at the school n=22

**23:** “Based on the information we have today, if you do benefit vs. risk, a reaction of risk assessment will be that the risk looks very very low in this context”.

**3:** “Obviously all teachers have a cell phone on at school around them all the time. So there are many sources of radiation and this [Wi-Fi at school] won’t make a difference”.

## Against Wi-Fi at the school n=11

**33:** “Truth is I don’t see any relevance in bringing Tablets into schools... I think we can increase their knowledge and level in other ways [without screens]”

**1:** “The first thing that can happen from free Wi-Fi at schools is that it can cause kids to get lost in social media during school days and this is not a good thing”

**31:** “I know that the kids are exposed to this radiation a lot so it’s better that they are not exposed at school where they spend most of their hours.”

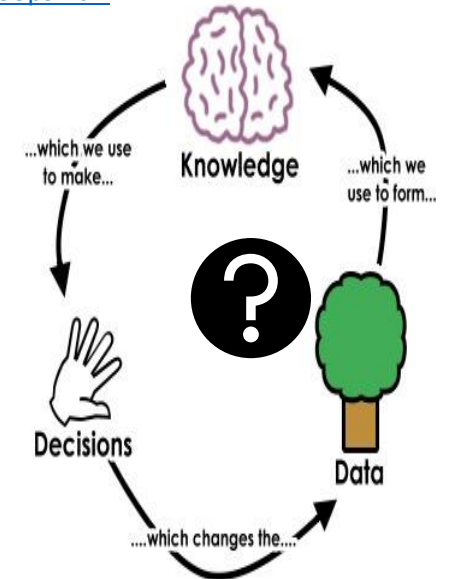
## 2 – Science Literacy , Science Knowledge and Decision Making

27: *"It is not about knowledge; it is about what's good to do in life"... I read things [online] and examine whether they confirm my existing knowledge".*

*(a male police officer with high school science)*

- Our interviewees generally admitted to partial knowledge (if any) about RF radiation but for the most part did not express concern about their lack of knowledge.
- In many cases the participants' process of decision making (in our Wi-Fi scenario and when confronted with an SSI) included some knowledge gathering but tended not to be centered around scientific information.
- A couple of Interviewees were even more adamant when saying that they make these decisions based on a "gut feeling".

<http://www.infogineering.net/decision-loops.htm>



# Discussion and Implications

- Our study demonstrates how non scientists engage with socio-scientific issues following the National Academies of Science (2016) discussion of “science literacy in action” ( p. 111).
- When engaging with socio-scientific issues in their daily lives, non scientists often rely on personal values and social circles rather than scientific knowledge. Our study illustrated this process. (Weeth Feinstein, Allen & Jenkins, 2013)
- When designing science curriculum for future nonscientists we need to think about the skills and literacies that would be helpful for them in engaging with SSIs.



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**THANK YOU!**

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