

## Israel's Innovation Series



### Description

Ji Israel Bytes provides an interactive online encounter with contemporary Israel's most relevant issues for students living outside of Israel. Students will engage in thematic series addressing Israel's cultural and civic realities and contributions to the world. Israel Bytes puts students in control of their learning, amplifying their active engagement and sparking their excitement to explore the living story of contemporary Israel and how Israel's story is relevant within their lives. Israel Bytes integrates Jewish values, Israeli history, economy and culture, social studies, and STEAM in an interdisciplinary fashion.

See the [Teacher's Manual](#) for more information on the Ji Israel Bytes learning interface, and the different modules for learning: Watch, Quiz, Discover, Create and Share.

Jewish Interactive partnered with the [Center for Israel Education](#) to develop the curriculum and content for Israel's Innovation series according these features of effective Israel education:

1. It is relevant to students' lives
2. It answers their burning questions
3. It is multidisciplinary
4. It balances content and affective learning
5. It is apolitical and unbiased while exploring political and controversial issues
6. It relies on primary sources
7. It provides a strong framework that fosters lifelong connections and deep explorations
8. It is year-round, not only for holidays or memorials

## Key Understandings

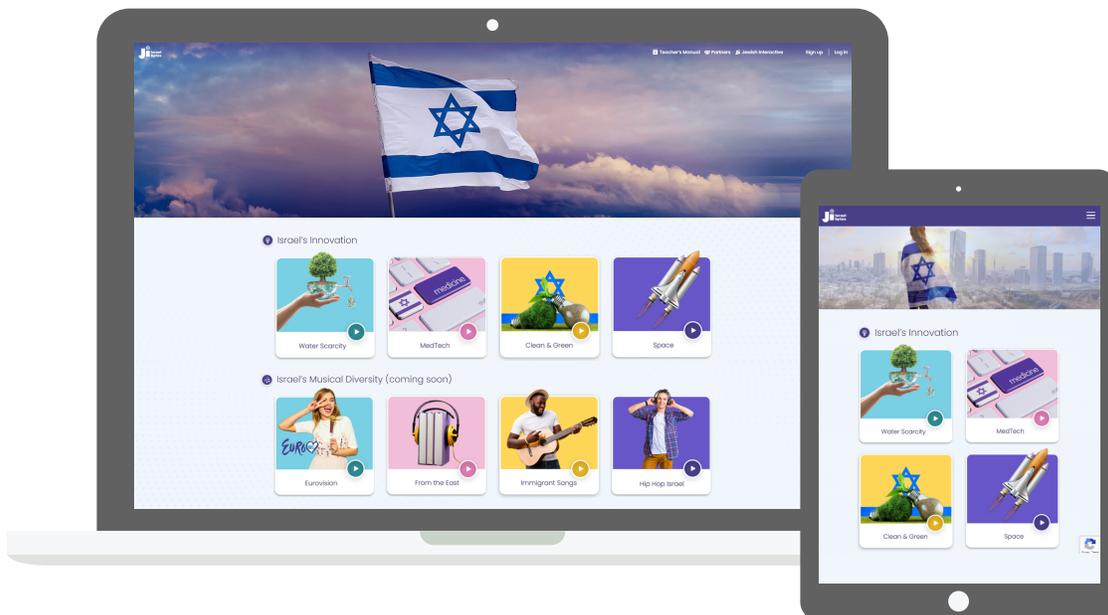
1. Israel is known around the world as “The Start-Up Nation” due to its many successes in innovation, which have impacted its security, economy, transportation, environment.
2. The State of Israel and the Startup Nation address the short-term and long-term needs of the Jewish people and the world beyond.
3. Israel's scarcity of resources has fostered an Israeli culture of innovation and adaptation, making it able not only to survive but to thrive and share its successes with the world.

## Essential Questions

1. Why is Israel successful in innovation?
2. What are the impacts of Israel's innovation?

## Suggested Topics for Grade Levels To Start With:

1. Grade 6 and Under=Space or Medtech
2. Grade 7=Clean and Green
3. Grade 8 and Over=Water Scarcity





## Topic Summary

As Israel faces limited water resources, it turns to innovative solutions to maximize and distribute its natural sources of water and make fresh water out of non-potable water such as saltwater, polluted water and waste. Israel utilizes its innovations, including drip irrigation, atmospheric water generation, desalination, water reclamation and water reuse to serve its citizens and the entire world.



## Essential Questions

1. How does a scarcity of resources drive innovation?
2. What factors limit innovation?
3. How do innovative solutions to one problem help solve other problems?



## Standards

### Next Generation Science Standards (NGSS)

1. [Ecosystems Interactions with Energy Dynamics](#)
  - See how design solutions for water purification and recycling are used to maintain biodiversity and support ecosystems
  - Learn about major global challenges today and how they can be addressed through engineering
2. [Earth's Systems](#)
  - Engage with exhibits demonstrating the water cycle
3. [Earth and Human Activity](#)
  - Watch videos explaining the importance of water an irreplaceable natural resource
  - Interact with exhibits to learn how to use less water and reduce waste
4. [Engineering Design\\*](#)

### National Curriculum Standards for Social Studies (NCSS)

- II: Time, Continuity, and Change
- III: People, Place, and Environment
- VII: Production, Distribution, and Consumption
- VIII: Science, Technology, and Society
- IX: Global Connections

## Integration Opportunities

The **Watch, Quiz, and Discover** modules offer students the opportunity to explore new ideas, facts, vocabulary, questions, problems, innovative solutions and real world applications. There are many unique points of integration between multiple disciplines and subject areas to be explored beyond the scope of the topic by a teacher or through independent research and exploration.

### 1. STEAM

- Physical Science
- Hydrology
- Ecology
- Environmental Science
- Ecosystems
- Engineering
- Technology

### 2. Social Science

- Geography

### 3. Jewish Studies

- History of Israel
- Bible



## Create Project

The Water Scarcity topic's **Create** project asks students to create an advertisement for a new JCC pool and splash, and to address *what Israeli innovations would you use to reduce, reuse or recycle water to solve the problem?*

This project addresses the Jewish Value of Water as Source of Life and can be explored in the following texts.

1. For they have forsaken the LORD, The Fount of living waters. ([Jeremiah 17:13](#))
2. [You are] a garden spring, A well of fresh water, A rill of Lebanon. ([Song of Songs 4:15](#))

The handout for the Water Scarcity's Create project can be [downloaded here](#).



## Student Sharing

To complete the **Create** project, students will create a link of their work in Canva. You can have your student send a direct link to you. Additionally, your students will have the opportunity to share in a [community Padlet](#) in the **Share** module, which you can view and comment on.

*\*Please note that these are third party online tools, and you should address privacy settings and sharing protocols with your students.*



## Classroom Learning Activities

[Israel and Water Poster](#) (Center for Israel Education)

Water Desalination Experiment (Center for Israel Education)

### Need:

- Bowls—big and small (each student can have one or have them work in pairs)
- Water, food coloring, saran wrap.

### Instructions:

- How to Purify Water Video: [www.youtube.com/watch?v=exVEJt-NAHw](http://www.youtube.com/watch?v=exVEJt-NAHw)
- [www.education.com/science-fair/article/fresh-water-salt-water/](http://www.education.com/science-fair/article/fresh-water-salt-water/)

This experiment is one that you should have a space to leave it overnight/ until next class. Set up a display for the week.

- If you need to see results right away, you can try the following experiments:
- [www.education.com/science-fair/article/salt-water-distillation/](http://www.education.com/science-fair/article/salt-water-distillation/)

### Conclusion:

- What do you think will happen to the experiment by next week?

Animated video show the process of desalination:

- [www.youtube.com/watch?v=mZ7bgkFgqJQ](http://www.youtube.com/watch?v=mZ7bgkFgqJQ)

Reclaiming Water (Center for Israel Education) Introduction:

- Talk about reclaimed or recycled water (also called wastewater reuse or water reclamation). What does this idea make you feel/think?
- How do you think Israel is reclaiming its water and what they are using this water for?
- Water Recycling Technologies in Israel: [www.youtube.com/watch?v=twTe6J3IT4](http://www.youtube.com/watch?v=twTe6J3IT4)

Practice and Production Activity

- Need: wadding (pillow filling), absorbent carbon
- Watch How to Make a Water Filter Video: [www.youtube.com/watch?v=qjwzVezFLDg](http://www.youtube.com/watch?v=qjwzVezFLDg)
- Conduct the science experiment together

### Conclusion

- Share ways that water ties to Jewish tradition

[Water, Water, Everywhere](#) (Penn State)



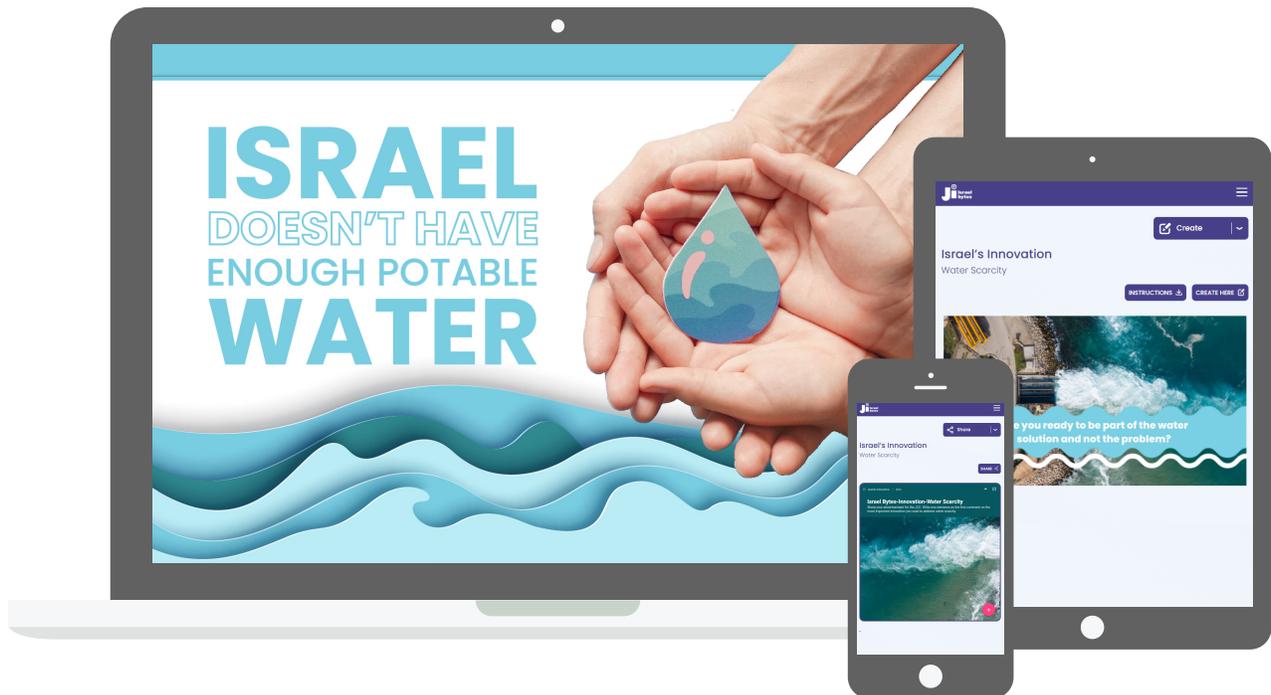
## For Parents to Discuss with their Children

### Topic Summary

As Israel faces limited water resources, it turns to innovative solutions to maximize and distribute its natural sources of water and make fresh water out of non-potable water such as saltwater, polluted water and waste. Israel utilizes its innovations, including drip irrigation, atmospheric water generation, desalination, water reclamation and water reuse to serve its citizens and the entire world.

### Questions to ask children at the “dinner table”

- What is an Israeli Innovation that helps recycle water?
- Why was it important to Israel to establish the National Water Carrier?
- How do natural disasters experienced worldwide affect access to water, and how can Israel's innovations help?





## Topic Summary

In order to care for all its citizens, Israel centralized healthcare. Even with a centralized system, Israelis needed individualized care. Innovators make use of government investment in infrastructure and an accessible population to test new innovations. Around the world, medical institutions save lives using Israeli innovation in medical technology.



## Essential Questions

1. How does centralization drive innovation?
2. What factors limit innovation?
3. How do innovative solutions to one problem help solve other problems?



## Standards

### Next Generation Science Standards (NGSS)

1. [Ecosystems Interactions with Energy Dynamics](#)
2. [From Molecules to Organisms: Structures and Processes](#)
3. [Engineering Design\\*](#)

### National Curriculum Standards for Social Studies (NCSS)

- V: Individuals, Groups, and Institutions
- VI: Power, Authority, and Governance
- VII: Production, Distribution, and Consumption
- VIII: Science, Technology and Society
- IX: Global Connections





## Integration Opportunities

The **Watch, Quiz, and Discover** modules offer students the opportunity to explore new ideas, facts, vocabulary, questions, problems, innovative solutions and real world applications. There are many unique points of integration between multiple disciplines and subject areas to be explored beyond the scope of the topic by a teacher or through independent research and exploration.

1. STEAM
  - Engineering
  - Biology
  - Technology
  - Medicine
2. Social Studies
  - Health
  - Government
  - Civics
3. Jewish Studies
  - Jewish Law



## Create Project

The Medtech topic's **Create** project asks students to create an image, illustration or diagram to represent an Israeli Medtech product(s) to combine, adapt or modify to aid rescue workers who are searching for people or providing medical care?

This project addresses the Jewish Value of Saving a life and can be explored in the following texts:

1. "You shall keep My laws and My rules, by the pursuit of which man shall live." ([Vayikra 18:5](#))
  - The talmudic sage, Rabbi Akiva, comments that the verse says "by the pursuit of which man shall live" – not "shall die." In every commandment, with a few exceptions, human life takes priority. For example, the commandment, "Keep the Sabbath", you have to violate its laws to perform life-saving surgery or get someone to the hospital.
2. Community Responsibility
  - Maimonides listed healthcare first on his list of the 10 most important communal services that a city must offer its residents ([Mishneh Torah, Hilchot De'ot IV: 23](#)).

The handout for the Medtech's Create project can be [downloaded here](#).



## Student Sharing

To complete the **Create** project, students will create a link of their work in [Google Drawing](#). You can have your student send a direct link to you. Additionally, your students will have the opportunity to share in a [community Padlet](#) in the Share module, which you can view and comment on.

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## Classroom Learning Activities

- [How innovations help people with disabilities and injuries?](#) (PBS)
- [The Value of Life](#) (Magen David Adom)



## For Parents to Discuss with their Children

### Topic Summary

In order to care for all its citizens, Israel centralized healthcare. Even with a centralized system, Israelis needed individualized care. Innovators make use of government investment in infrastructure and an accessible population to test new innovations. Around the world, medical institutions save lives using Israeli innovation in medical technology.

### Questions to ask children at the “dinner table”

- What is Israel's coolest medical technology innovation?
- Why did Israel make it a requirement for residents to belong to an insurance fund with the National Health Insurance Law?
- In what area do you think that the government should support new innovations?



## Topic Summary

Lacking its own access to natural resources and limited access to resources of its geographic neighbor, Israel seeks ways to be more energy efficient. Israel's energy innovations enable it to reduce its carbon footprint, become less energy dependent and generate financial opportunities by selling its innovations around the world.



## Essential Questions

1. How does a willingness to fail drive innovation?
2. What factors limit innovation?
3. How does innovation inspire innovation?



## Standards

### Next Generation Science Standards (NGSS)

1. [Ecosystems Interactions with Energy Dynamics](#)
2. [Earth's Systems](#)
3. [Earth and Human Activity](#)
4. [Engineering Design](#)
5. [Energy](#)

### National Curriculum Standards for Social Studies (NCSS)

- II: Time, Continuity, and Change
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### 1. STEAM

- Physical Science
- Hydrology
- Ecology
- Environmental Science
- Ecosystems
- Engineering
- Technology

### 2. Social Studies

- Economics
- Politics
- Environmental Studies

### 3. Jewish Studies

- History of Israel
- Bible
- Jewish Ethics





## Create Project

The Clean and Green topic's **Create** project asks students to create a presentation of what they would like their green campus to look like that addresses *the Israeli innovations they would use to address the needs of making your campus more clean and green.*

*This project addresses the following Jewish Values that can be explored in the following texts:*

1. *Be a steward of the Earth*
  - *The heavens are the Lord's heavens, but the earth God has given to humanity.* ([Psalms 115:16](#))
2. *Do not waste*
  - *Even one who destructively breaks vessels or rips up clothing or tears down a building or seals up a spring or wastes food violates the Negative Commandment of "Do not destroy".* ([Mishneh Torah, Laws of Kings 6:10](#))
3. *Do not deplete our natural resources*
  - *It is forbidden to live in a town which has no garden or greenery.* (*Jerusalem Talmud, Kiddushin 4:12*)

*The handout for the Clean and Green's Create project can be [downloaded here](#).*



## Student Sharing

To complete the **Create** project, students will create a link of their work in [Google Slides](#) or PowerPoint. You can have your student send a direct link to you. Additionally, your students will have the opportunity to share in a [community Padlet](#) in the Share module, which you can view and comment on.

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## Classroom Learning Activities

- [Judaism and Waste: a Text Source Sheet](#) (Hazon)
- [Introduction to Sustainability for Middle School Students](#) (EcoRise)
- [Solar Powered Heating](#) (JPL/NASA)



## For Parents to Discuss with their Children

### Topic Summary

Lacking its own access to natural resources and limited access to resources of its geographic neighbor, Israel seeks ways to be more energy efficient. Israel's energy innovations enable it to reduce its carbon footprint, become less energy dependent and generate financial opportunities by selling its innovations around the world.

### Questions to ask children at the "dinner table"

- What are different ways Israeli innovation tries to be more energy efficient?
- How can Israel help countries without reliable electricity?
- Which Israeli innovations would help your household be more sustainable?

### Waste & Recycling

Engineers are developing new biodegradable materials that would decompose naturally.

In our plastic-addicted society, single-use plastic products are everywhere. With only 9% of plastic recycled, most of it ends up in landfills, rivers, and the ocean.

Organic waste can be converted into clean electricity, thanks to sophisticated transformation processes.

**THESE WASTE MANAGEMENT COMPANIES INNOVATE WAYS TO REDUCE, REUSE, AND RECYCLE**

**TIPA**  
Produces compostable bio-plastic packaging that's as durable and impermeable as conventional plastic.

**UBQ MATERIALS**  
Transforms household waste — mixed plastics, dirty diapers, food scraps, paper and cardboard, to name just a few — into a sustainable, recyclable, bio-based material that replaces conventional plastics in the manufacturing of everyday products.

**WASTELESS**  
Develops a promising machine learning-based technology that discounts produce that would typically be discarded as its expiration date gets closer.



## Topic Summary

Pioneering has always been central to Israeli identity and spirit. In order to inspire a new generation of Israelis to see themselves as pioneers and seek to be innovators, Israel invested in developing its own space program. As a partnership between the government and the private sector, Israel endeavored to go to the moon, and used it as an opportunity to develop new innovations that can transform space travel and the world.



## Essential Questions

1. How does a culture of risk-taking and learning from failures drive innovation?
2. What factors limit innovation?



## Standards

### Next Generation Science Standards (NGSS)

1. [Earth's Place in the Universe](#)
2. [Earth's Systems](#)
3. [Engineering Design\\*](#)

### National Curriculum Standards for Social Studies (NCSS)

- II: Time Continuity and Change
- IV: Individual development and Identity
- VII: Production, Distribution, and Consumption
- VIII: Science, Technology and Society
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## Integration Opportunities

The **Watch, Quiz, and Discover** modules offer students the opportunity to explore new ideas, facts, vocabulary, questions, problems, innovative solutions and real world applications. There are many unique points of integration between multiple disciplines and subject areas to be explored beyond the scope of the topic by a teacher or through independent research and exploration.

1. STEAM
  - Space
  - Technology
  - Engineering
  - Physics
2. Social Studies
  - History
3. Jewish Studies
  - Jewish Law
  - Jewish History
  - Bible



## Create Project

The Space topic's **Create** project asks students to create a photo collage of images of each item that would represent them as pioneers heading into space and the meaning of this journey.

*This project addresses the following Jewish Values that can be explored in the following texts:*

1. *To be a light unto others*
  - *I the LORD, in My grace, have summoned you, And I have grasped you by the hand. I created you, and appointed you A covenant people, a light of nations-* ([Isaiah 42:6](#))
2. *To escape the Earth*
  - *The Lord will make them wings like eagles, and they will fly above the water, as it is written, 'Therefore we will not fear when the earth will be removed and the mountains be carried into the midst of the sea.' [Psalms 44:3.]* ([Sanhedrin 92b](#))

The handout for the Space topic's Create project can be [downloaded here](#).



## Student Sharing

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## Classroom Learning Activities

- [Israel In Space](#) (iCenter)
- [Take Israel to the Moon](#) (iCenter)
- [Planetary Poetry](#) (JPL/NASA)



## For Parents to Discuss with their Children

### Topic Summary

Pioneering has always been central to Israeli identity and spirit. In order to inspire a new generation of Israelis to see themselves as pioneers and seek to be innovators, Israel invested in developing its own space program. As a partnership between the government and the private sector, Israel endeavored to go to the moon, and used it as an opportunity to develop new innovations that can transform space travel and the world

### Questions to ask children at the “dinner table”

- From what biblical source did Israel choose the name of its moon- bound spacecraft?
- Why would such a small country like Israel want to compete with much larger and richer countries in space travel?
- How does Ilan Ramon’s achievement and sacrifice inspire you to achieve your dreams?