

# Advancing Children's Science Learning through Community Co-Design of AI-Enhanced Bilingual E-Books

Aria Gastón-Panthaki & Viviana M. Vélez Negrón

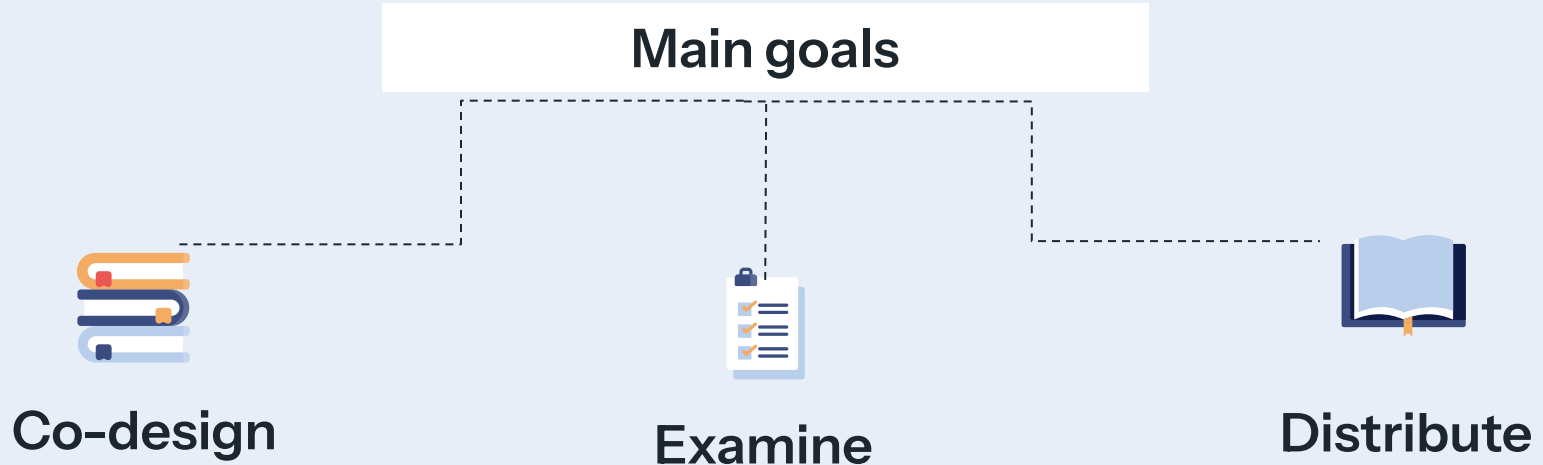


This research is based upon work supported by the National Science Foundation under **Grant No. 2415882.**



# 1 Goals

# ACCESS Goals



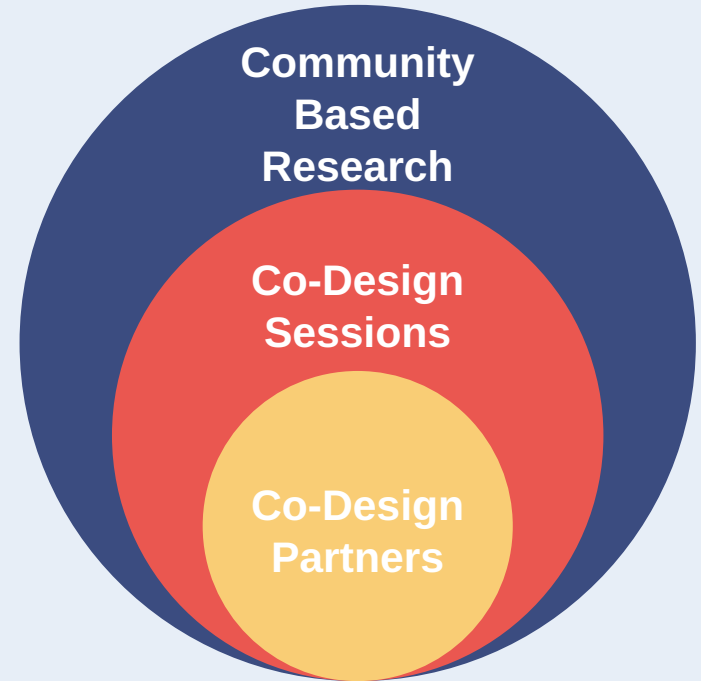


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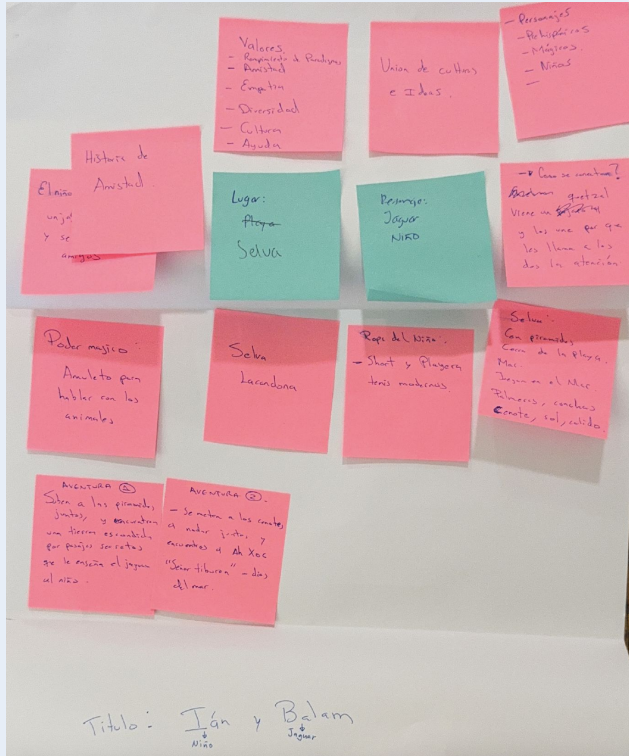
# Research Process



# Research Process



# Co-Creating Stories Together

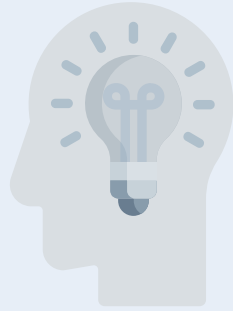


# Concept Art and Storytelling Activity



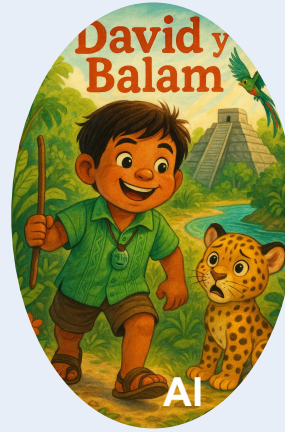
## Writing

Creating and writing a prompt together to design their own world and character!



## Visualizing

Visualizing the world and character they have in their mind before AI does!



## Evaluation

Evaluating AI's performance. What do they like about it? What do they not like about it?



## Revise

Changing the prompt to reflect the changes that they want!

# 3 Creating eBooks



# The Amulet

## Community Values

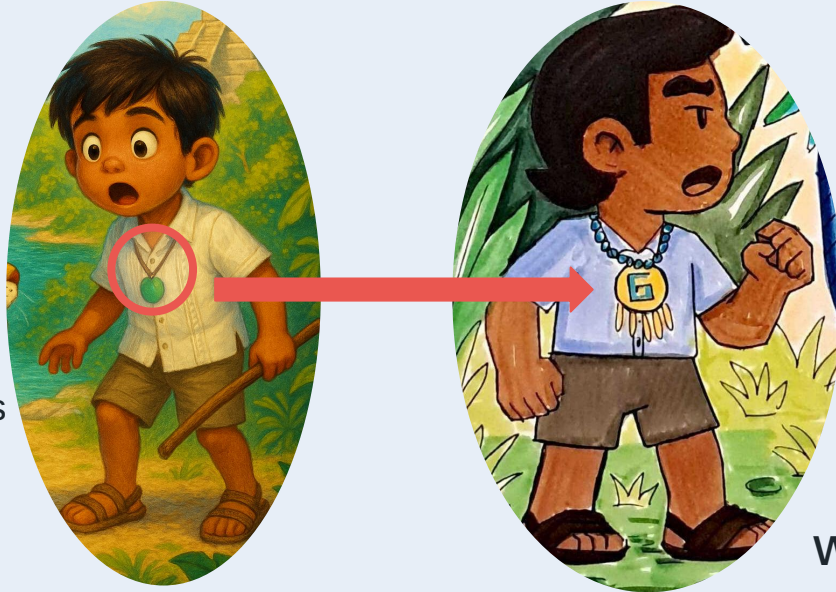
Connection, team work, protecting others.

## Culturally Sustaining

Wanting children to understand where their roots both current and ancient.

## Protecting Nature

Many stories regarding looking after, protecting, and nurturing nature.



## Design

Designed after Ancient Mayan jewelry including jade beads.

## Nature Guardians Amulet

Creating a plotline around the amulet.

## Working with Artist

Using AI images and family feedback to ensure the families' visions are honored.



4

Platform

# Creating Interactive eBooks



## Dialogic Questions

Questions throughout the books to teach STEM and vocabulary.



## Training AI

Going through questions with the AI and training it on different responses.

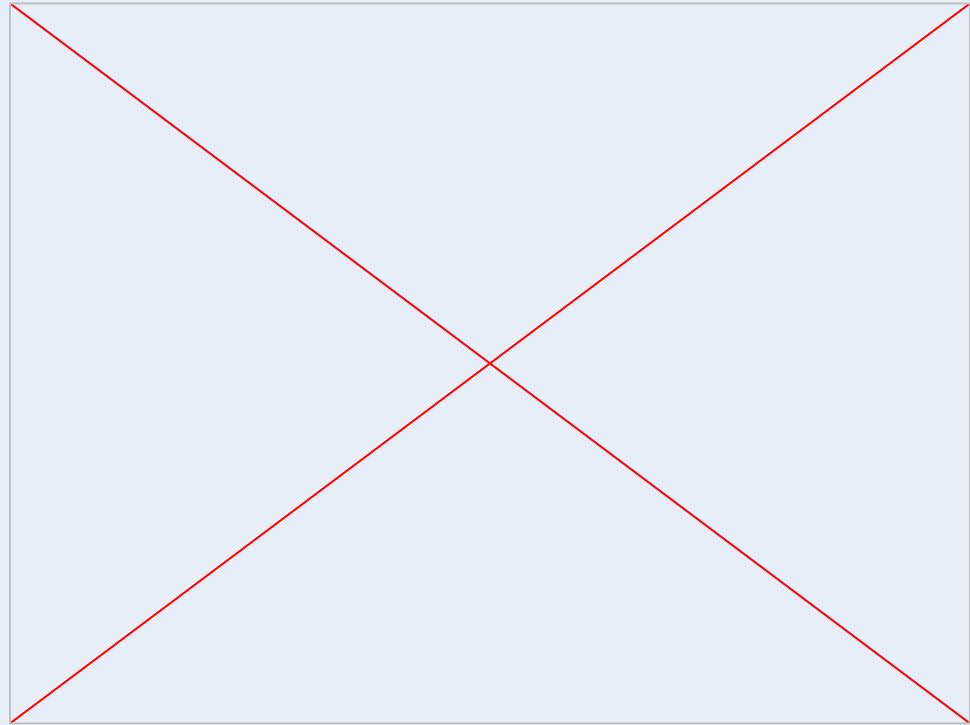


## User Testing

Work with families to do user testing of the books on the platform.



# Family Reactions





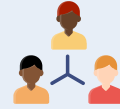
**You Can  
Read it  
Now!**



<https://tinyurl.com/panchobalam>

# Group Discussion

What did you like most about this ebook? Why?



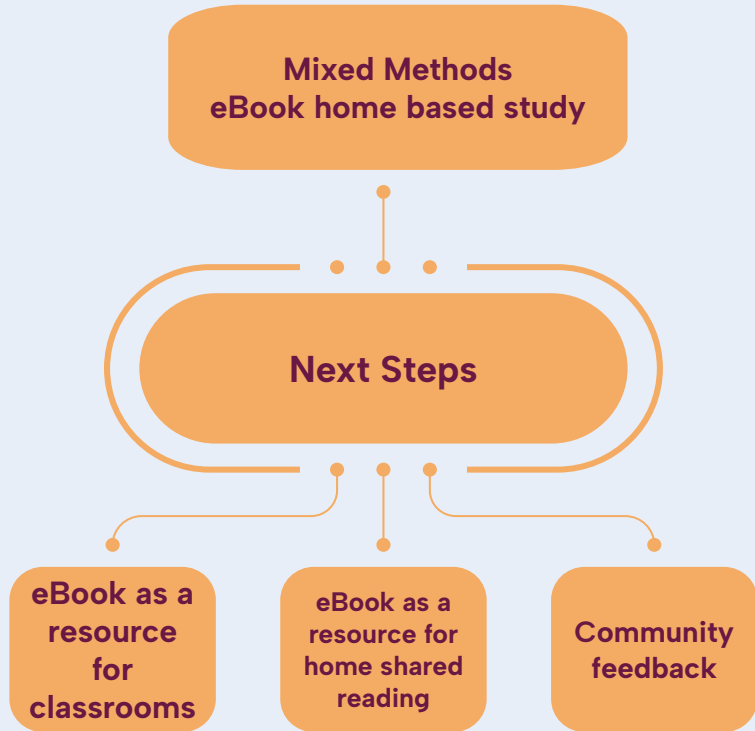
What did you not like about the ebook? Why?

How could this ebook be improved in the future?



What is the impact of storytelling on children when they read a story that is culturally responsive?

# Future Directions



# Thank You!

Let's Connect!

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[vvelezn@umich.edu](mailto:vvelezn@umich.edu)





# Tips for learning a foreign language

## Language-learning goals

Neptune is the fourth-largest planet in the Solar System

## Use flashcards

Saturn is the second-largest planet in the Solar System

## Study smart

Jupiter is a gas giant and the biggest planet in the Solar System

## Target language

Venus has a beautiful name, but also high temperatures

## Use the language

Earth is the third planet from the Sun and the only one that harbors life

## Comprehensible input

Despite being red, Mars is actually a very cold place

“This is a quote, words full of wisdom that someone important said and can make the reader get inspired”

—Someone Famous





**A picture is worth a thousand words**

# Let's use some percentages

31%



**Mercury**

Mercury is the closest planet to the Sun and the smallest of them all

57%



**Jupiter**

Jupiter is a gas giant and the fourth-brightest object in the night sky

78%



**Mars**

Mars is full of iron oxide dust, which gives the planet its reddish cast

# Learn more about media literacy

You can replace the image on the screen with your own work. Just right-click on it and select “Replace image”

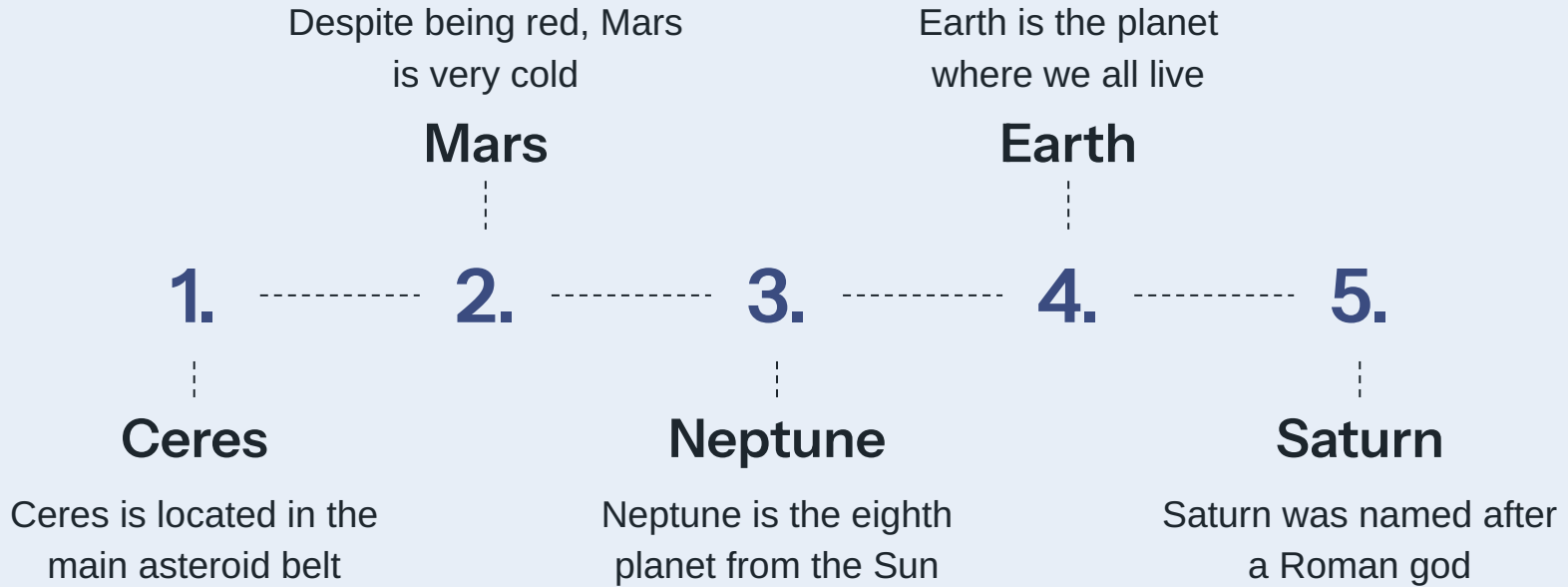




## Continue learning with the mobile app

You can replace the image on the screen with your own work. Just right-click on it and select “Replace image”

# Critical thinking in steps



# Conceptualizing media competence

	Description	Objectives
Approach	Neptune is the fourth-largest planet in the Solar System	<ul style="list-style-type: none"><li>• Saturn is the ringed planet</li><li>• Neptune is an ice giant</li></ul>
Perspective	Jupiter is a gas giant and the biggest planet in the Solar System	<ul style="list-style-type: none"><li>• Mars is full of iron oxide dust</li><li>• Earth is the planet with life</li></ul>
Prioritizing	Mercury is the closest planet to the Sun and the smallest one	<ul style="list-style-type: none"><li>• Venus is a hot planet</li><li>• Ceres is in the asteroid belt</li></ul>

# Our great team



**Sofia Hill**

You can speak a bit about  
this person here



**Jordan Lee**

You can speak a bit about  
this person here



**Helen Bones**

You can speak a bit about  
this person here

# Critical thinking rubric

	<b>Need improvement</b>	<b>Fair</b>	<b>Strong</b>	<b>Excellent</b>
<b>Clear claims</b>	Pluto is considered a dwarf planet	Mars is a red planet	Mars is made of basalt	Saturn is a gas giant and has rings
<b>Explanation</b>	Ceres is in the main asteroid belt	We all live on Earth	Venus is a very hot planet	Mars was named after a god
<b>Grammar</b>	Neptune is very far away from us	Mars is a cold planet	Neptune is an ice giant	Jupiter doesn't have a solid surface
<b>Tone &amp; style</b>	Earth is the third planet from Sun	Mercury is a small planet	Jupiter is a gas giant	Saturn was named after a Roman god

# Multiple choice questions

Critical thinking is the act of accumulating knowledge

A. True

B. False

Critical thinking is not being argumentative or critical of other people

A. True

B. False

One of the goals of critical reasoning is

A.

to discover at least a premise

B.

to discover at least a conclusion

C.

to discover at least two premises and a conclusion

# Short answer questions

Read the following questions carefully and answer them:

<b>Questions...</b>	<b>Answers...</b>
<b>What is an argument?</b>	You can write your answer here
<b>An assertion is what is used to state an opinion or belief?</b>	You can write your answer here
<b>Are all opinions subjective?</b>	You can write your answer here
<b>Is it possible to reason correctly if one does not think critically?</b>	You can write your answer here

# Group discussion

<b>Topic</b>	<b>Importance of critical thinking today</b>
<b>Groups</b>	Divide the class into groups where it is easy for everyone to participate
<b>Skills judged</b>	<ul style="list-style-type: none"><li>• How good you are at communicating in other language</li><li>• Social attitude and confidence</li><li>• Your analytical abilities</li><li>• Problem solving &amp; critical thinking skills</li><li>• Time management skills</li><li>• Your skills at putting forth your ideas in an unbiased manner</li><li>• Your leadership skills</li></ul>
<b>Time</b>	45'-50' depending on the number of participants



# Thanks!

Do you have any questions?

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[yourwebsite.com](#)



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# Practical application

Choose a media literacy text and answer the following questions:

**How credible is this and how do I know?**

You can write your argument here

**Can I trust this source to tell me the truth about this topic?**

You can write your argument here

**How might different people understand this message differently?**

You can write your argument here



# Critical thinking essay

Read the following sentence and argue your answer:

**Critical thinking improves language and presentations skills**

Write your answer here...



# The basics of critical thinking

## 1. Beliefs

Neptune is the fourth-largest planet in the Solar System

## 2. Claims

Saturn is the second-largest planet in the Solar System

## 3. Facts

Jupiter is a gas giant and has around eighty moons

## 4. Conclusions

Earth is the third planet from the Sun and the only one that harbors life

# Resources

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## Vectors

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- [Landing page new message concept](#)
- [Landing page co-workers concept](#)
- [Landing page connecting teams concept](#)

## Photos

- [Young students learning together during a group study](#)
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# Storyset

Create your Story with our illustrated concepts. Choose the style you like the most, edit its colors, pick the background and layers you want to show and bring them to life with the animator panel! It will boost your presentation. Check out [how it works](#).



Pana



Amico



Bro



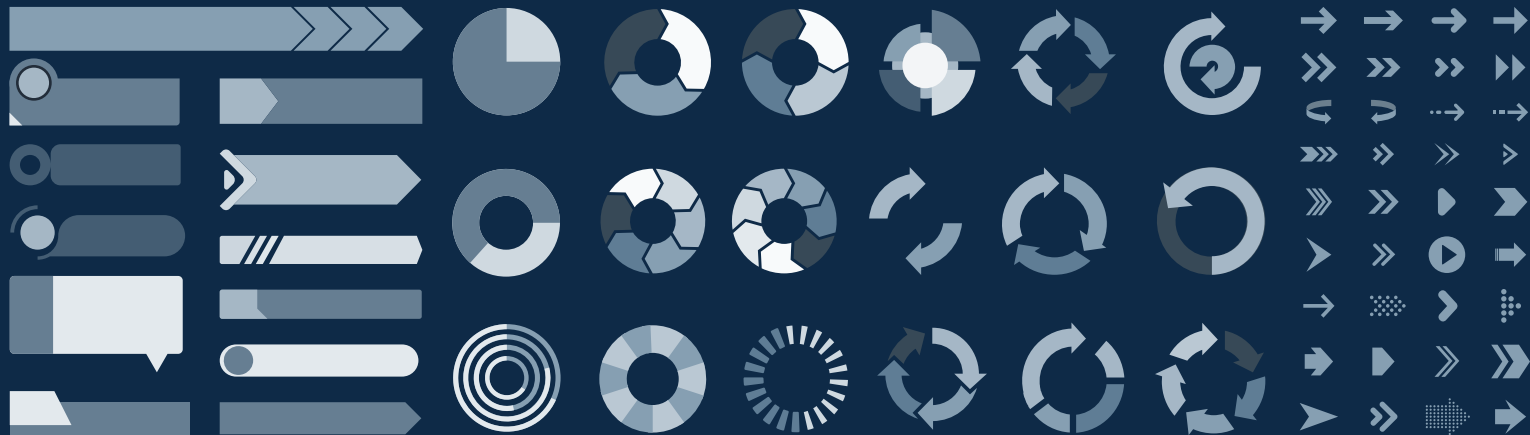
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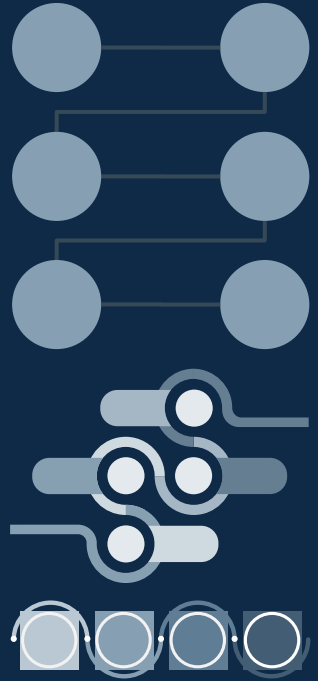
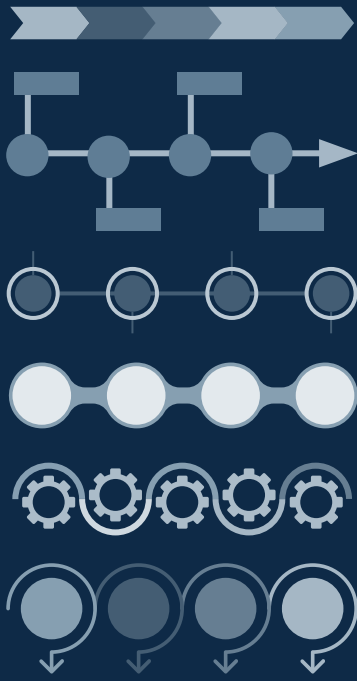
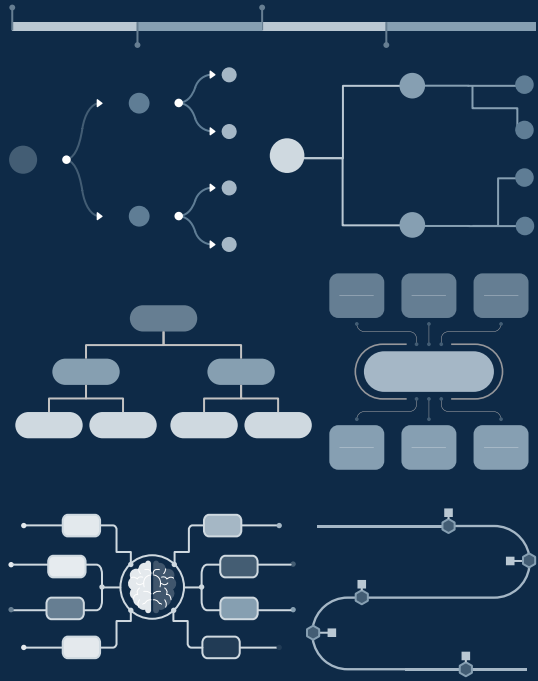
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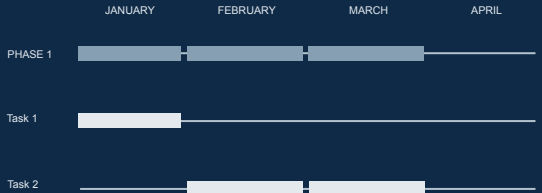
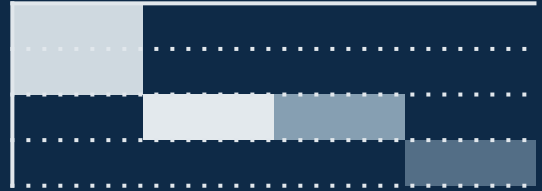
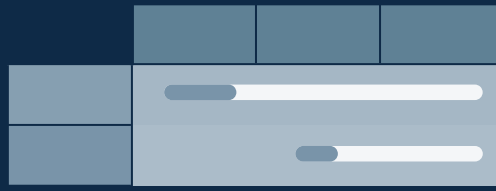
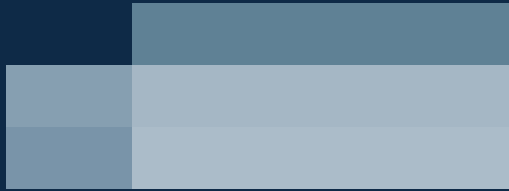
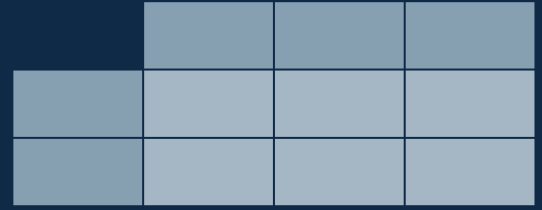
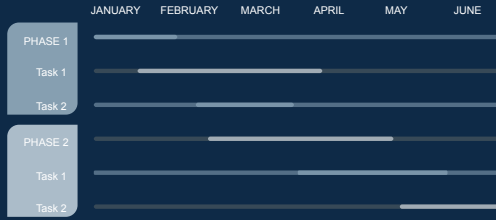
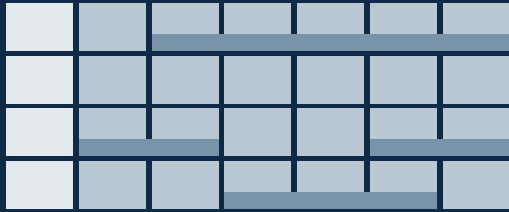
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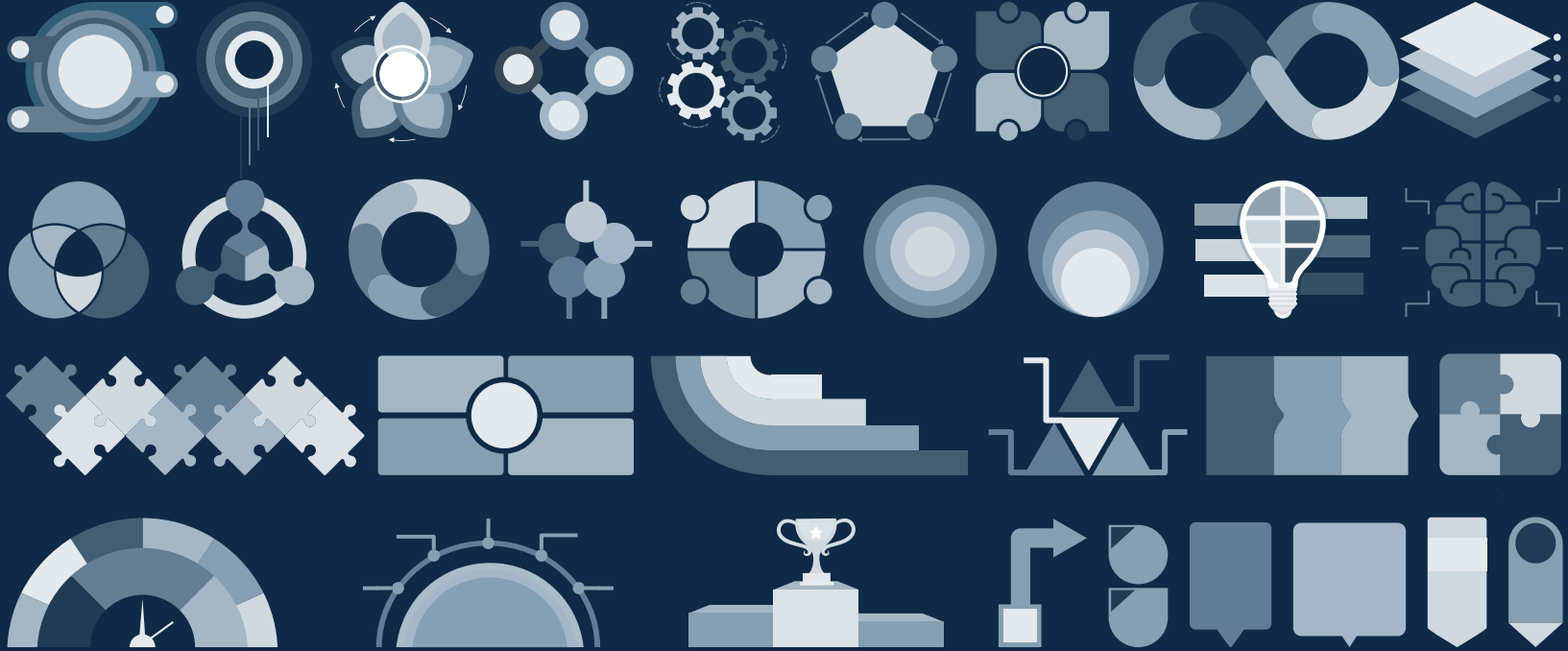
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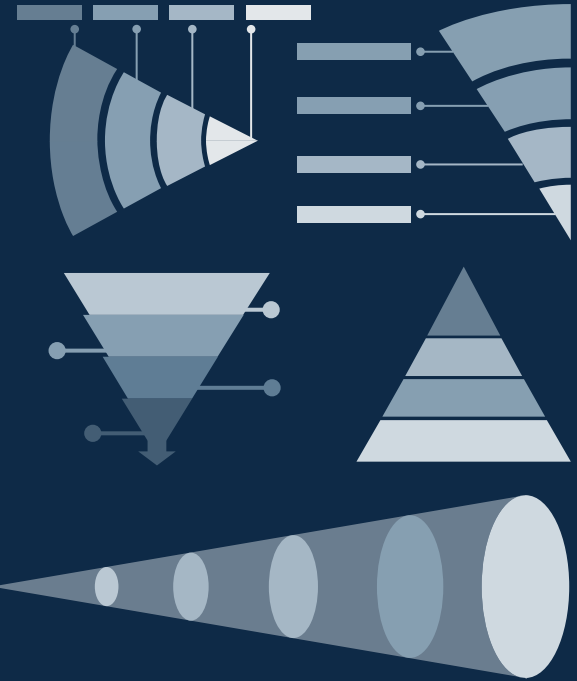
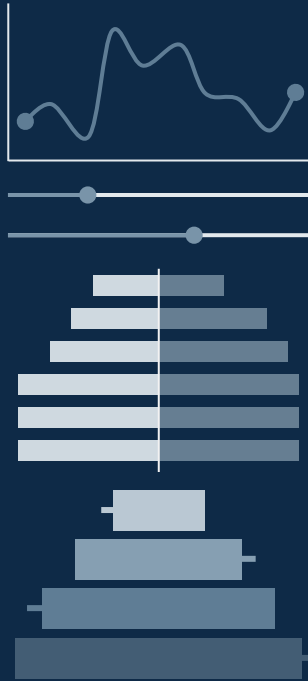
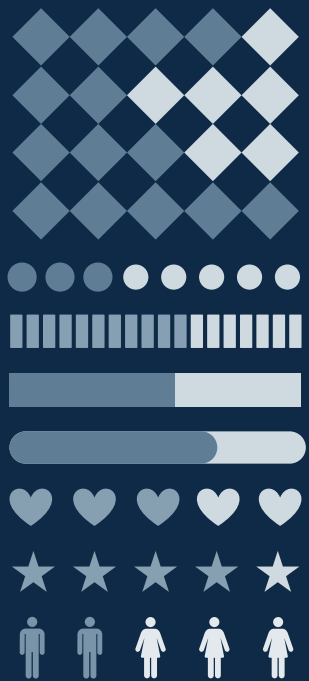
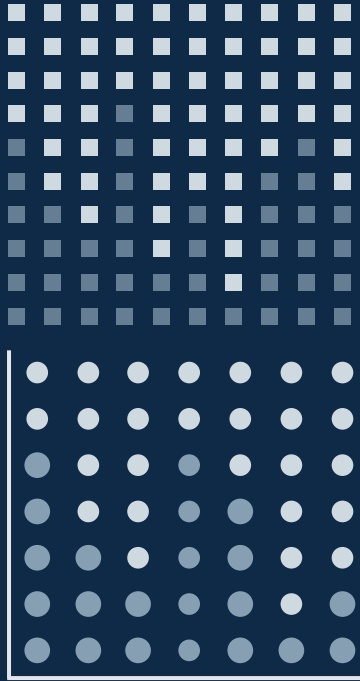












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