VOICED CROSSWORDS

LT2216 Dialogue Systems Project

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The game

ACROSS
3. Things Santa leaves
5. Performed on stage
6. Oak or elm, for example
✔ 7. ____ and the Giant Peach
8. Garlic spread
9. Primate

DOWN
1. Goes for a walk in nature
2. [Hey over here!]
4. Large marsupial
8. Taj Mahal location

wiki**How** to Get Better at Crosswords
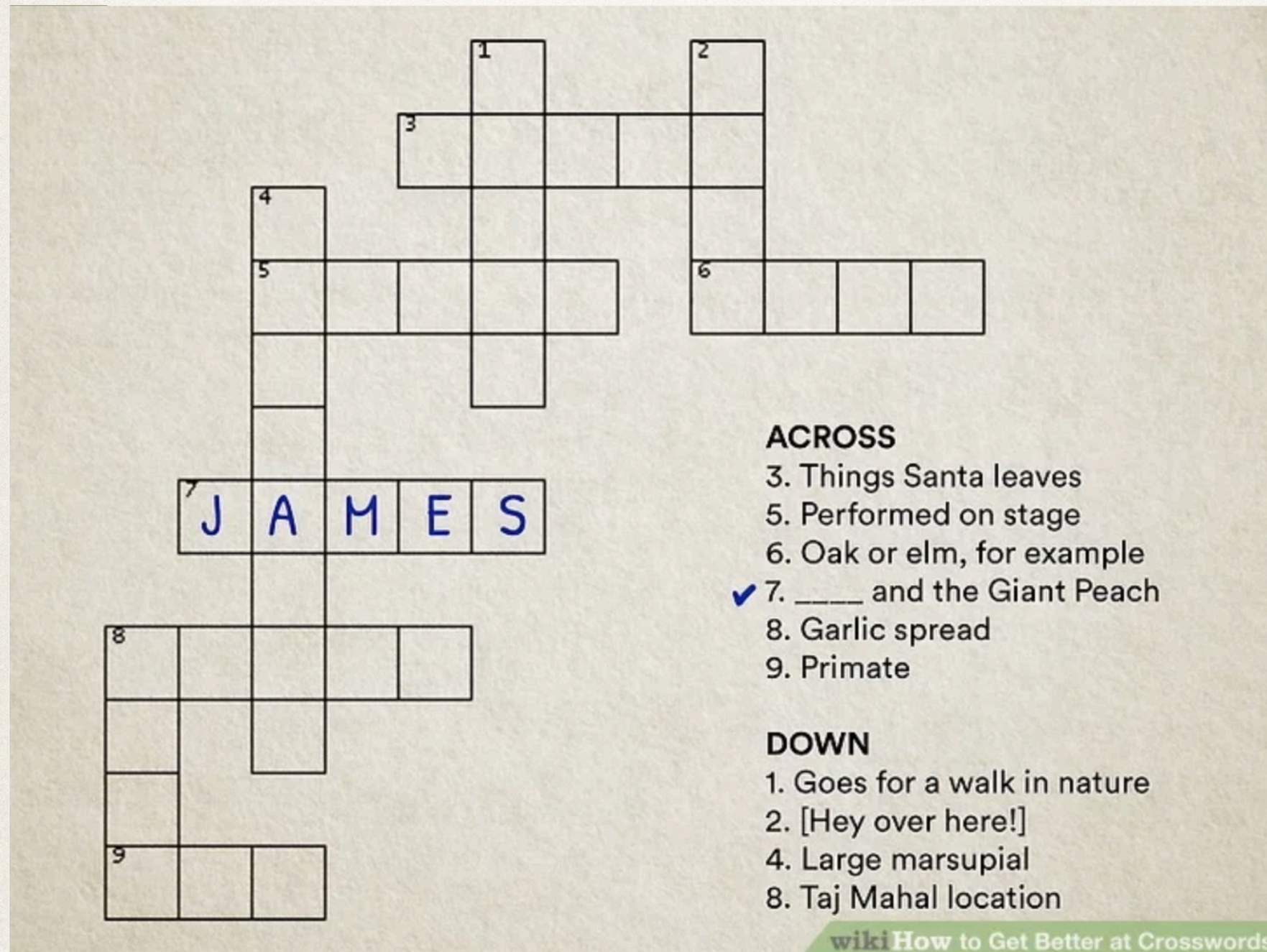
select a definition
↓
find the word
↓
get clues

Technicalities

* TypeScript / XState / SpeechState

* HTML / CSS

* SSML

* Azure CLU

Challenges

✤ Switching between languages / voices

- ✓ English voice globally
- ✓ French voice locally at SPEAK event level, but wasn't working
  - ➡ bug in SpeechState fixed by Vlad 👍

✤ Issues with ASR

- ✓ numbers transcribed as numerical values
- ✓ silent letters in French, intonation, homophones
  - ➡ function to force matching (e.g. '100'/'hundred', 'lettre'/'lettres')

✤ Front end

- ✓ no experience at all in HTML/CSS
- ✓ time consuming
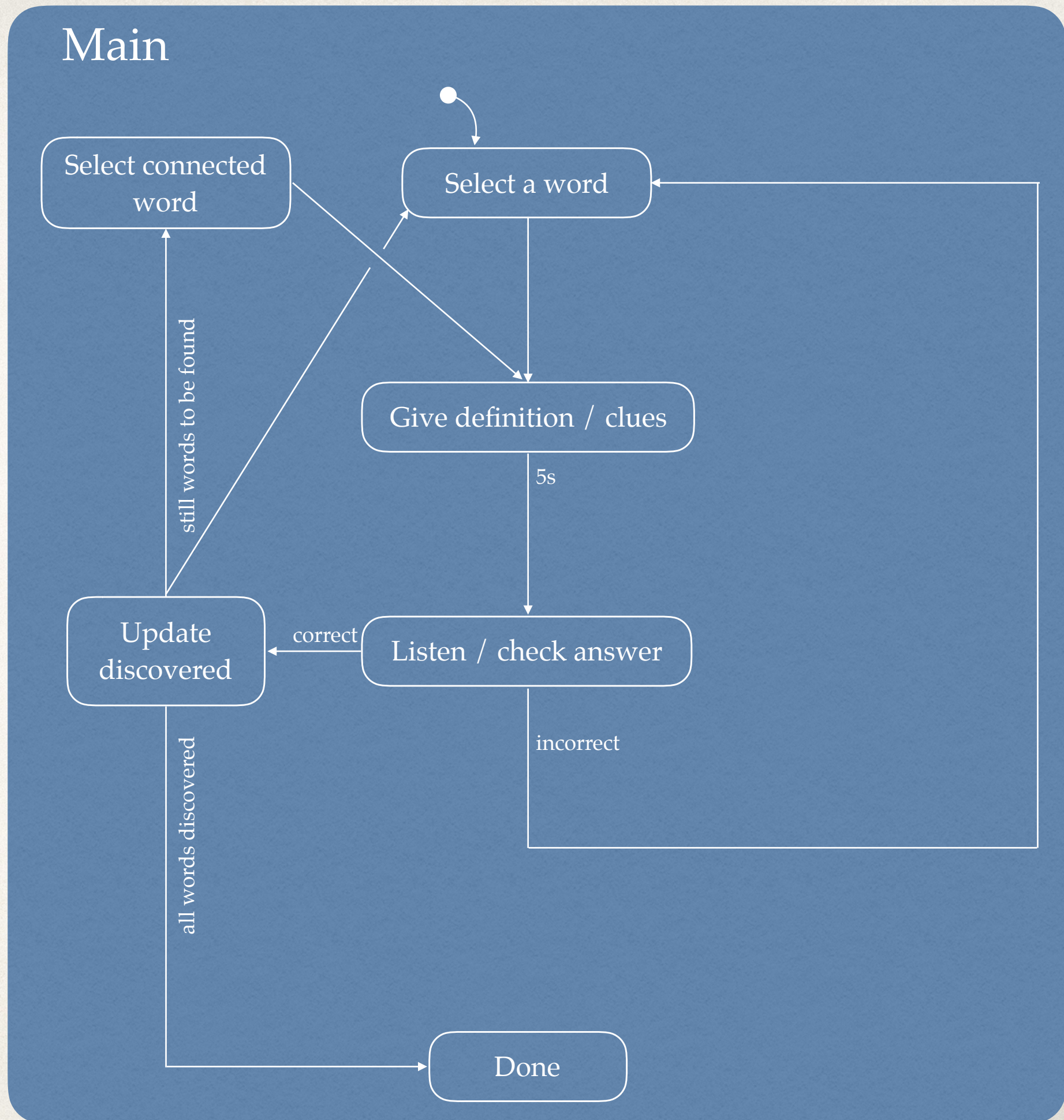 - ➡ adapted some demo code and automated the puzzle initialization with a function
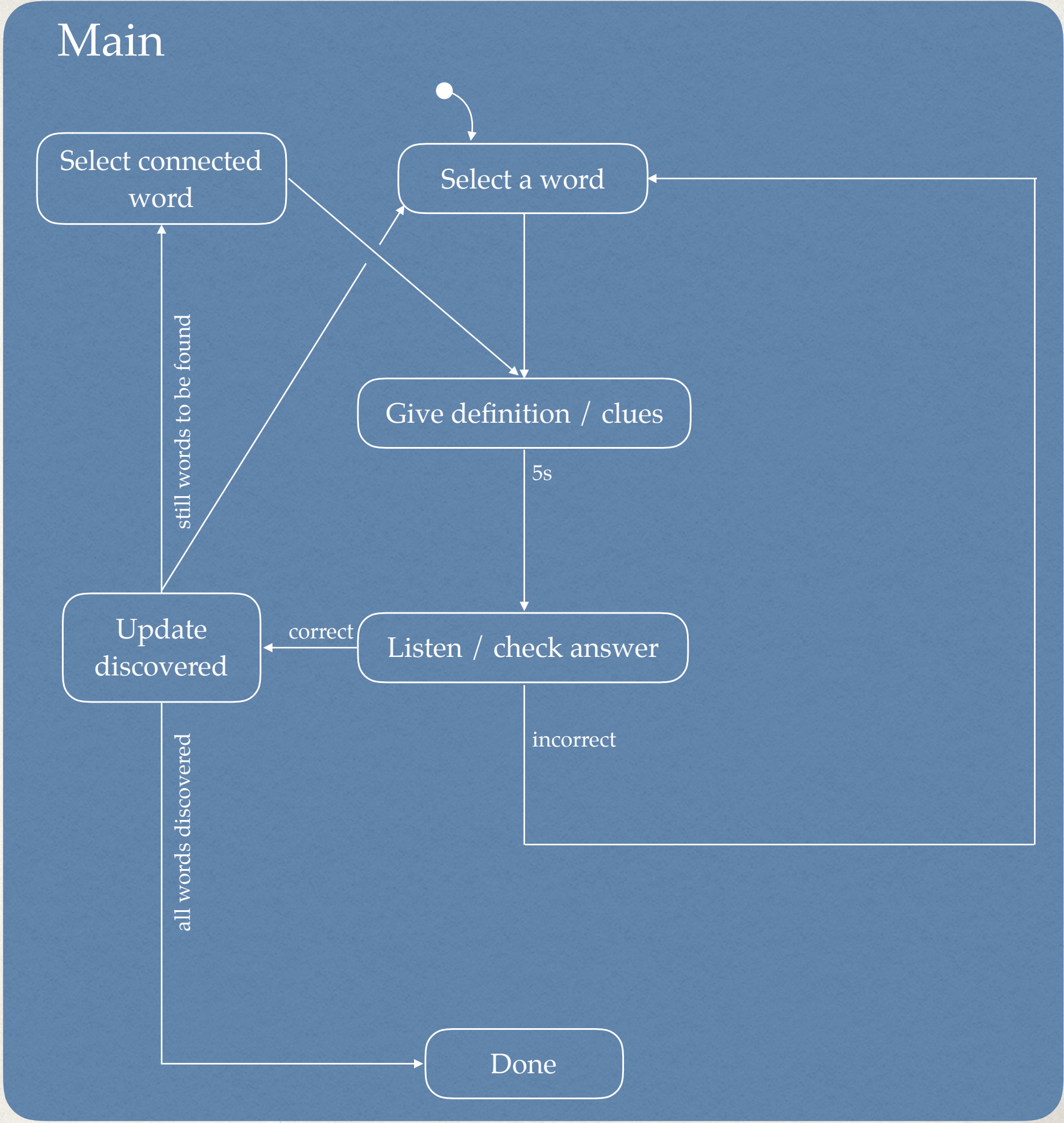
Development process

✤ **Stored out of the DM**

  ✓ 1 small puzzle

  ✓ Discovered

Visualization

- ✓ static empty puzzle
- ✓ highlight selected word
- ✓ display discovered word

Stored out of the DM

- ✓ 1 small puzzle
- ✓ Discovered

Main

Select connected word

Select a word

Give definition / clues

still words to be found

5s

Update discovered

correct

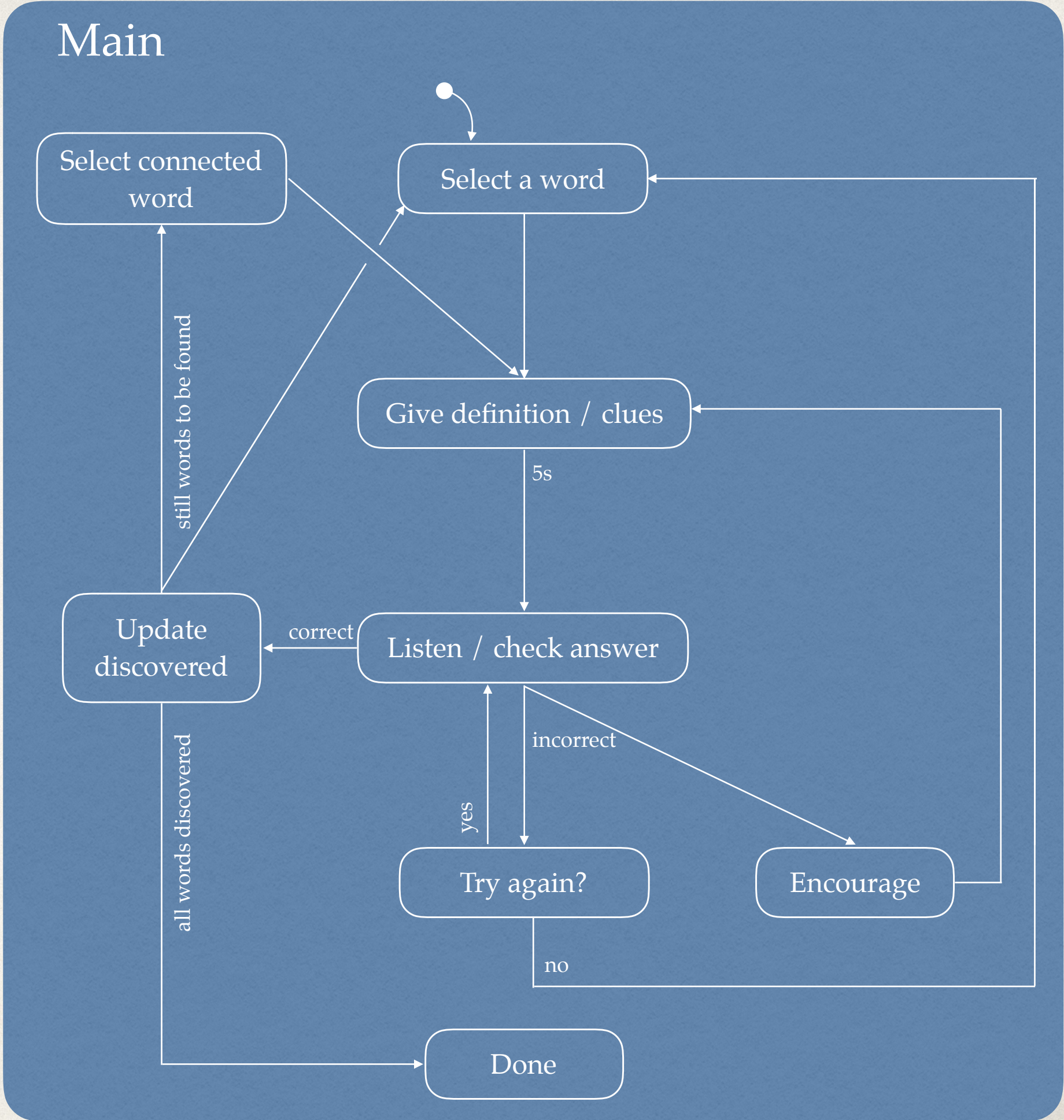Listen / check answer

all words discovered

incorrect

Done

Visualization

- ✓ static empty puzzle
- ✓ highlight selected word
- ✓ display discovered word

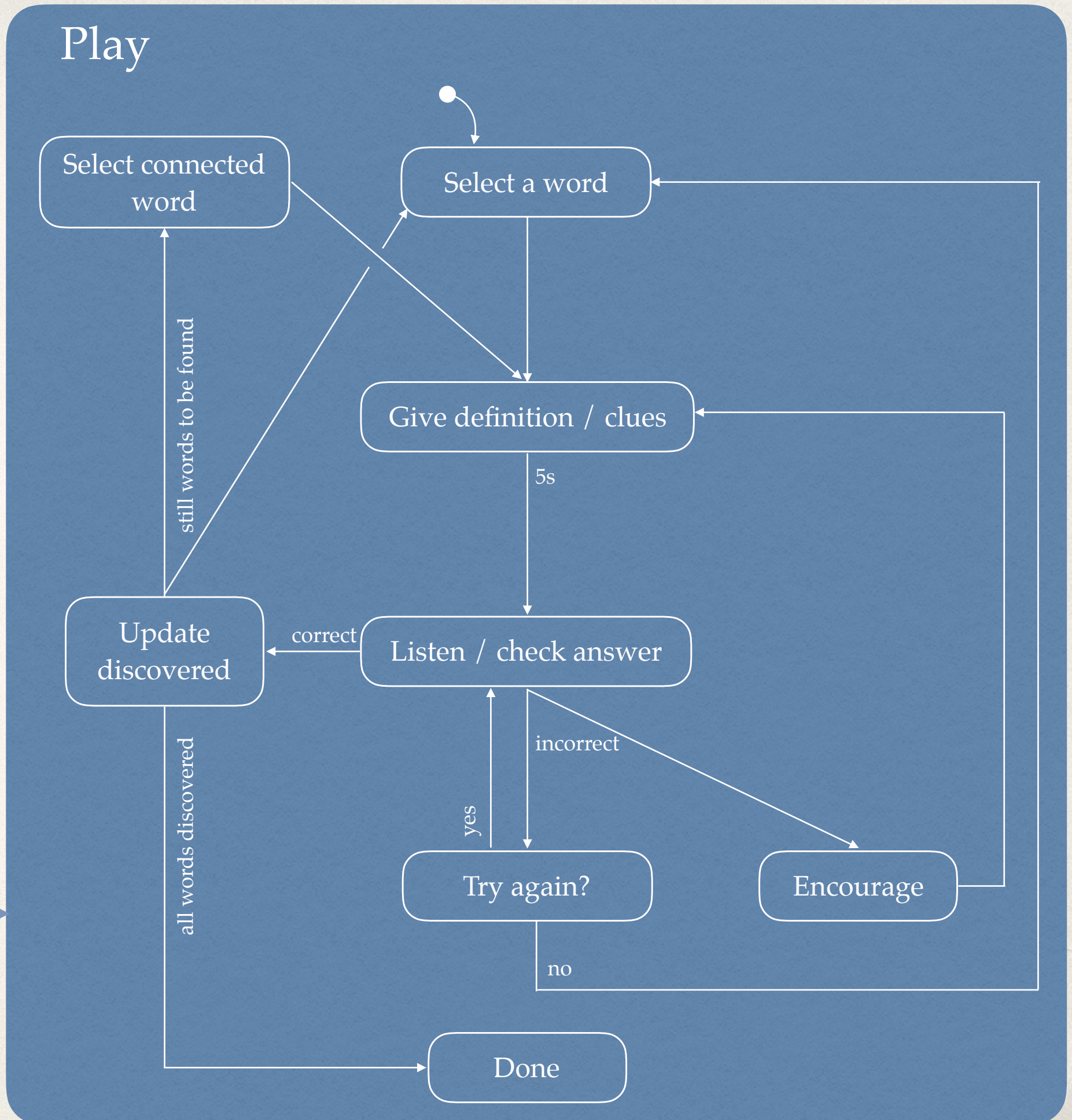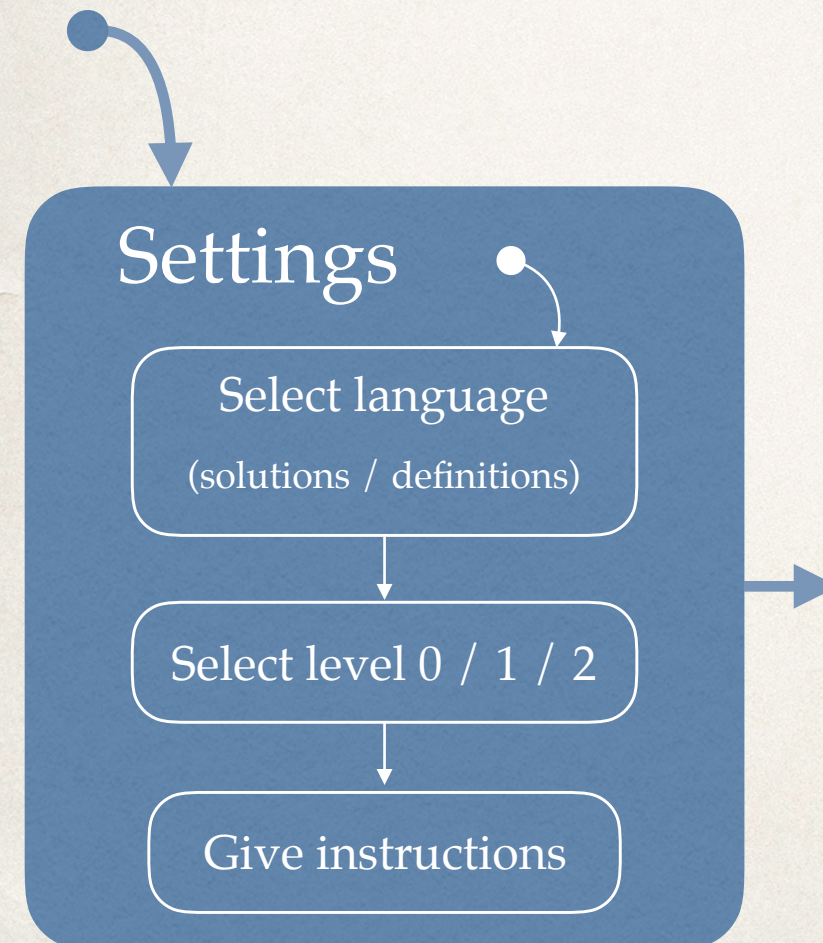## Stored out of the DM

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Stored out of the DM

- ✓ several puzzles
- ✓ Discovered

Play

Select connected word

Select a word

Give definition / clues

still words to be found

5s

Update discovered

correct

Listen / check answer

all words discovered

incorrect

yes

Try again?

Encourage

no

Done

Settings

Select language
(solutions / definitions)

Select level 0 / 1 / 2

Give instructions

NLU

Visualization

- ✓ dynamic empty puzzle
- ✓ highlight selected word
- ✓ display discovered word

Stored out of the DM

- ✓ several puzzles
- ✓ Discovered

Settings

Select language

(solutions / definitions)

↓

Select level 0 / 1 / 2

↓

Give instructions

Play

Select connected word

Select a word

Give definition / clues

5s

still words to be found

Update discovered ← correct ← Listen / check answer

incorrect

all words discovered

yes

Try again?

Encourage

no

Done

NLU
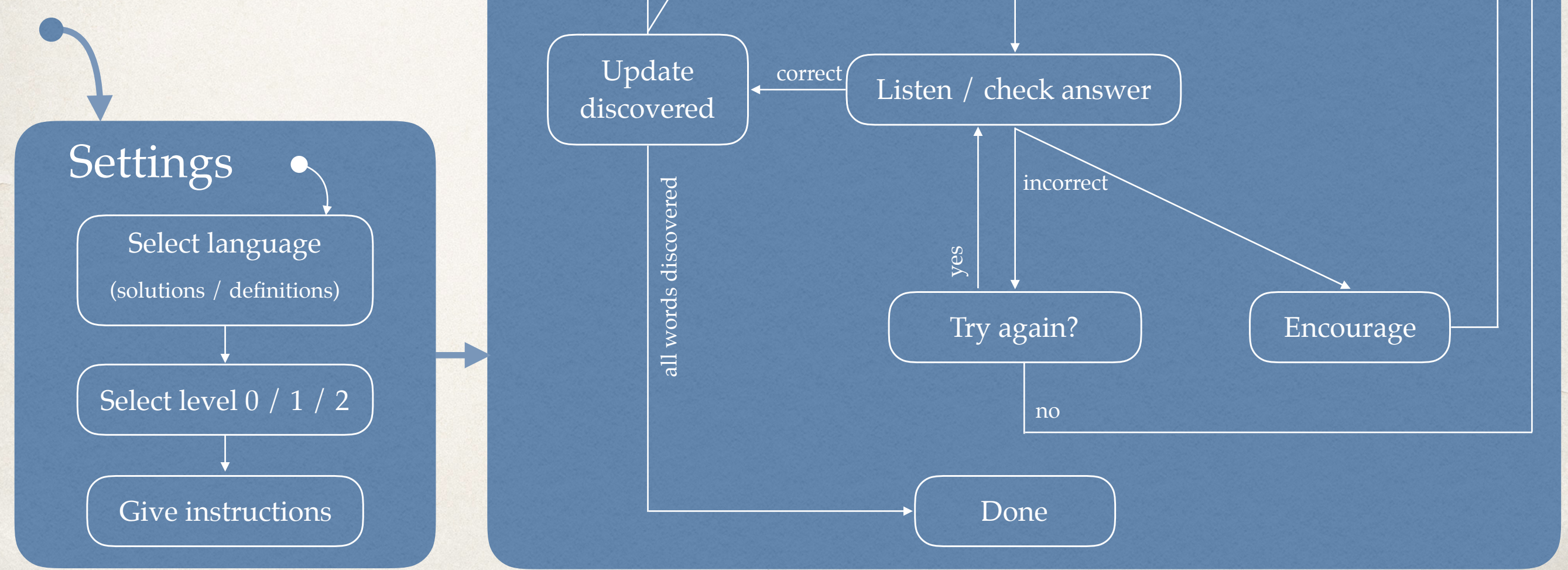
Visualization

- ✓ dynamic empty puzzle
- ✓ highlight selected word
- ✓ display discovered word
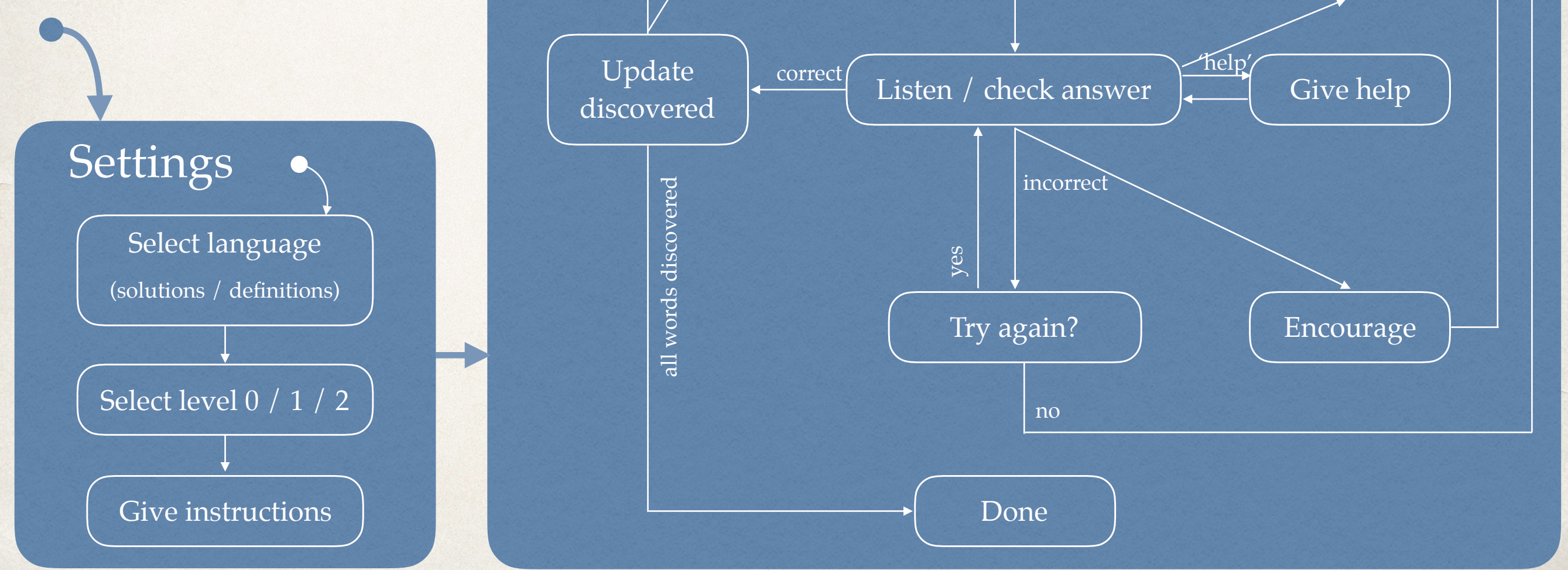
Stored out of the DM

- ✓ several puzzles
- ✓ Discovered

Settings

- Select language (solutions / definitions)
- Select level 0 / 1 / 2
- Give instructions

Play

- Select connected word
- Select a word
- Give definition / clues — 5s
- Refuse help
- Update discovered
- Listen / check answer — 'help' — Give help
- correct
- still words to be found
- all words discovered
- incorrect
- Try again? — yes / no
- Encourage
- Done

- ✤ NLU

- ✤ Visualization

  - ✓ dynamic empty puzzle

  - ✓ highlight selected word

  - ✓ display discovered word

- ✤ Stored out of the DM
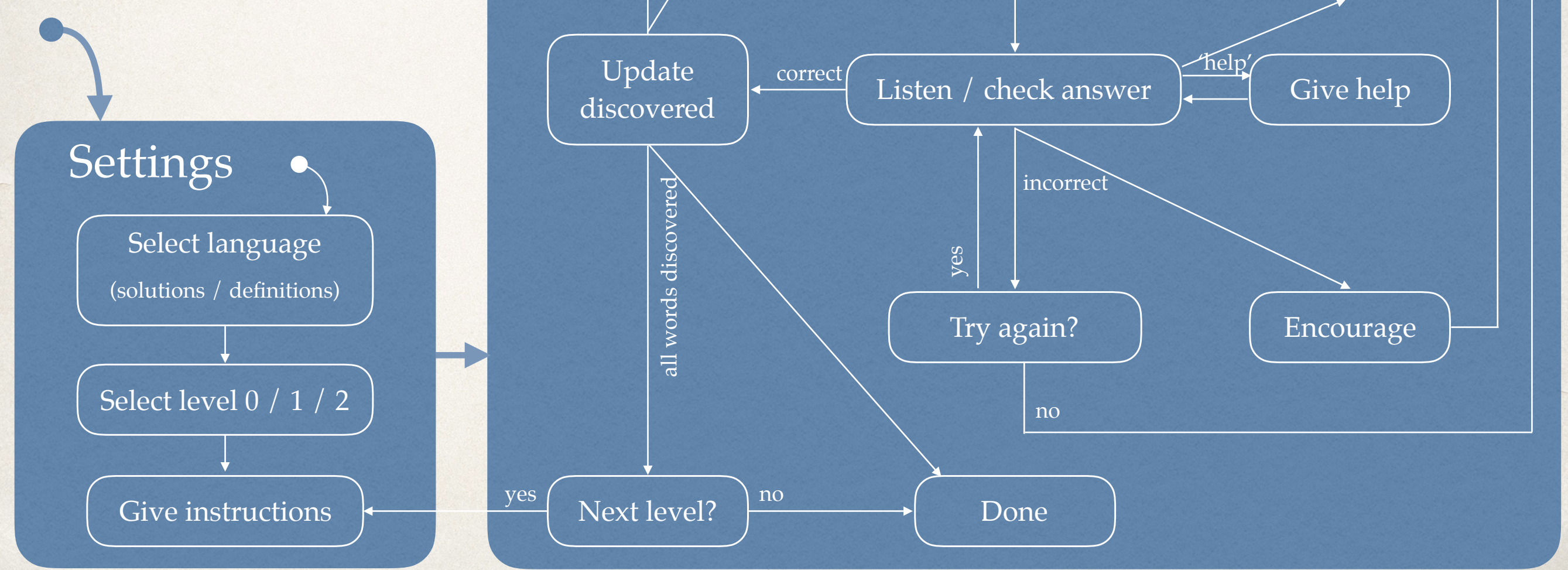
  - ✓ several puzzles

  - ✓ Discovered

Play

Select connected word

Select a word

Give definition / clues

still words to be found

Refuse help

Update discovered

correct

Listen / check answer

'help'

Give help

incorrect

yes

Try again?

Encourage

all words discovered

no

Settings

Select language

(solutions / definitions)

Select level 0 / 1 / 2

Give instructions

yes

Next level?

no

Done

5s

Way forward

✤ Limitation in hardcoding as a solution for misrecognition

  ✓ not universal, only includes encountered mistranscriptions

  ✓ improve ASR using Azure Custom Speech

  ✓ train a model to specifically recognize words in puzzles

✤ Stop the game if no input after some number of prompts

✤ Improve help functionality, adapt timer to level…

✤ Ethical concern

  ✓ puzzles found online / issues with authorization

  ✓ create own crossword puzzles