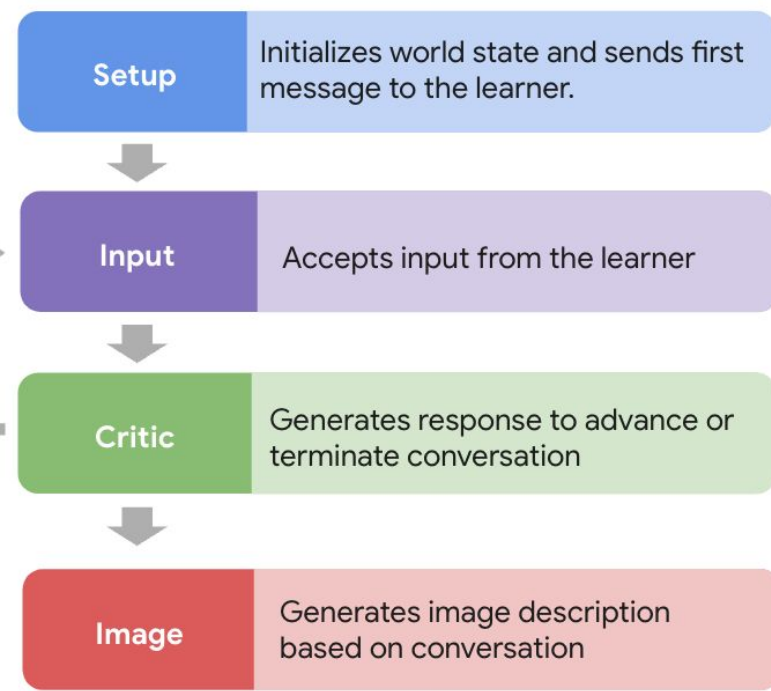




WordPlay: An Agent Framework for Language Learning Games

Suma Bailis, Lara McConnaughey, Jane Friedhoff, Feiyang Chen, Chase Adams, Jacob Moon

WordPlay Framework



- **WordPlay Framework** generates engaging, adaptive mini-games using LLMs and text-to-image models to address the challenge of balancing engaging and effective language practice.

WordPlay Games

Sample transcript

Tutor: Let's practice description words by inventing an animal! I'll try to draw it at the end. I'll go first: it should have big floppy ears. What else?

User: Soft fur

What color should the fur be?

Rainbow

What should its tail be like?

Spiky

What kind of eyes should it have?

Kind

Would it be cute if it had a little horn?

Yes

Generated image prompt: An animal with big floppy ears, soft fur that is also rainbow, a spiky tail, kind eyes, and a little horn.

Generated image:

Invent an Animal puzzle encourages learners to conceptualize a new animal in collaboration with the LLM tutor

Prompts

1. Setup

I need help crossing the road [...]

```

worldstate {
  status: "NOT VALID",
  transcript: string[],
  user_input: string,
}
  
```

2. Critic

CONTEXT: You are the game engine in which a player is trying to help a chicken cross the road. Your job is to evaluate if their suggestion would be **valid in a cartoon physics environment**. I will provide you some examples and then you must evaluate the player input.

EXAMPLES:

INPUT: Use a rocketship
 status: VALID
 critique: NONE

INPUT: Hey, how's it going?
 status: NOT VALID
 critique: This is a standard greeting, not a valid suggestion for how a chicken can cross the road.

INPUT: {{user_input}}

Respond using the following **JSON format, matching the TypeScript interface.**

```

{
  "status": string // NOT VALID | VALID,
  "critique": string // one sentence explanation if the suggestion is not valid
}
  
```

3. Image

CONTEXT: You are the game engine in which a player is trying to help a cartoon chicken cross the road. The player suggested: {{user_input}}

Respond using the following JSON format, matching the TypeScript interface:

```

{
  "solution": string // Summarize the solution using only the key words
  "image_description": string // An image prompt that describes a white 2-D cartoon chicken crossing the road using the solution.
}
  
```

Evaluation

To assess our puzzles' alignment to CEFR standards, we conducted experimental sessions with native Hindi-speaking individuals in India learning English.

Speaker	Utterance	CEFR
Tutor	Let's make a story! I will say a sentence to start, and then you will add a sentence. We will keep doing that until the story is done, and then I will draw it! OK? I will start: You walk into a coffee shop and see...	B2
User	there's no one there	B1
Tutor	You walk to the counter and see a note that says...	B1
User	welcome to the haunted Coffee House	A1
Tutor	You start to hear some noises coming from the kitchen.	B1
User	you ran out of the coffee house	B1
Tutor	You ran out of the coffee house and into the street, where you saw...	B1
User	a policeman	A1
Tutor	You told the policeman about the haunted coffee house and...	B1
User	he said it's just a prank.	B1
Tutor	You felt relieved and went home. What did you think of the story?	B2
User	it is good it's how all haunted movie should be.	B2
Tutor	That was a great story! I really liked the part where you ran out of the coffee house.	B1
Tutor	Congrats, you created an excellent story!	B1

• A1 • A2 • B1 • B2 • C1

Utterance CEFR level predictions from a playthrough of a Finish the Story.

