

Open Worlds or Linear Paths: Exploring English-as-an-Additional-Language Oral Production Mediated by Minecraft



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OBJECTIVE

To explore what task features and design elements of digital gaming contribute to the quantity and quality of oral production in English-as-an-additional language learning.

Literature Review

- Reinhardt and Sykes (2012): At its core, **any good video game is a learning device**. Super Mario teaches you how to jump by **providing level appropriate scaffolding and immediate feedback**. Everything you could ask for in an instructor really.
- Blume (2020): Both **learners and instructors are generally receptive to digital games** in the classroom, **but there is a critical lack of knowledge, experience, and resources** that is holding back more widespread use.
- Meyer and Sørensen (2009): A 'serious' language learning game puts **learning as the core gameplay element**. Learning should be the **intrinsic motivator** to play the game, not a chore before the game
- Butler et al. (2014): Game design elements that enhance learning include *multiplayer, fantasy, control, sensory stimuli, action, and mystery*
- Haman et al. (2016): when playing educational games, **challenge can aid learning** both directly and indirectly **through increased engagement**

Research Question

How do learners' oral production differ when playing through **The Village** (an open world sandbox) versus **The Tower** (with linear levels)?



Figure 2. The Exterior of The Tower (Linear Section)



Figure 3. Players Building a House in the Village.

The Village

The 'open world' nature of The Village allowed it to also serve as a tutorial. Players were able to learn game controls and mechanics at their own pace and without risk.

The Tower

The Tower consisted of four linear tasks designed with the following principles in mind:

- Being popularly recognizable type of puzzle so that players can draw on their background knowledge
- Being as distinct from one another as possible to promote diverse communication

METHODS

Data Collection Instruments

- Survey
- Audio and video recording
- Observation of recordings

Data Collection Procedures

- Game design (150 hrs.)
- Field testing (Four rounds)
- Ethics approval
- Participant recruitment
- One 2.5 hour lesson (video and audio recorded)
 - Open building "The Village" (30 min.)
 - Pre-designed "The Tower" (2 hrs.)
- Survey completion

Data Analysis

- Auto-transcription from recorded session
- Verified transcription and analysis
- LexTutor VocabProfiler (total words spoken, lexical variety, lexical density, lexical levels)
- Preliminary Qualitative analysis (language related episodes)

'Open world' design revolves around self-driven behaviour such as exploring, goal-setting, and player choice

In linear design the sequence of events and goals are set up for the player by the designer

From the Survey:

- Both players...
 - Found **The Village** to be more fun
 - Felt that **The Tower** was better for language learning
 - Perceptions about the best language learning activities differed.

GAME DESIGN



Figure 4. The Tower Entrance

The entrance itself functioned as a discreet pre-task.

- The sole point of interest is the lever on the floor, which naturally guides players to interact with it.
- Through this, players learn the most basic gameplay mechanic: interacting with objects to open doors.

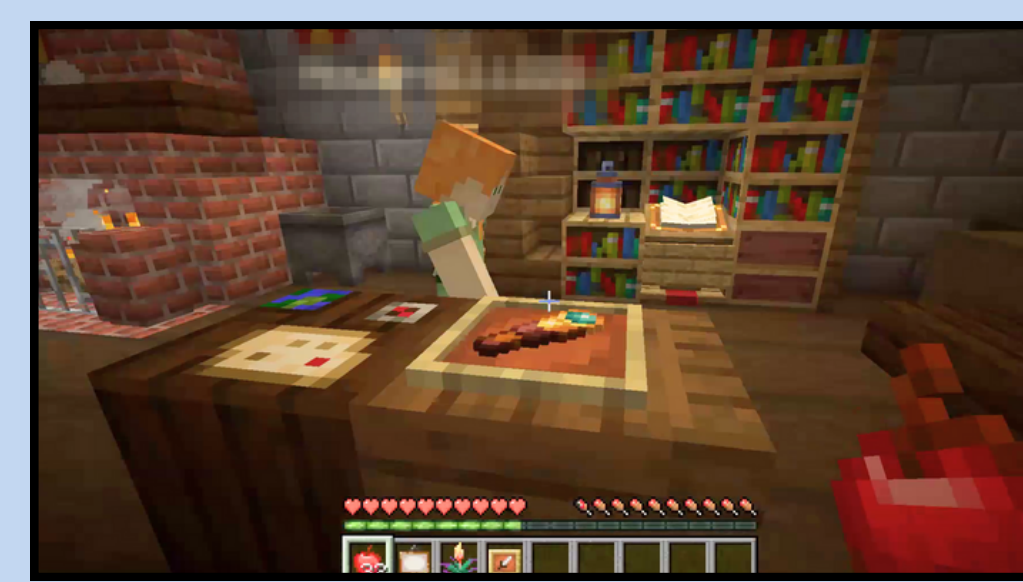


Figure 5. The Search of a Room

The **Search** task was designed to ease players into communication.

- Two of the buttons could be found individually.
- The third button needed clues from many different parts of the room, and so players had to talk to each other about the clues they found.



Figure 6. The First Half of the Maze

The **Maze** task focused on giving and following directions.

- The first player giving directions could do so from their perspective.
- However the second player had to give mirrored directions.
- This added challenge was put into place to build up from the experience gained from the first half of the maze.

RESULTS & DISCUSSION

Excerpt 1:
A: Straight ahead, Steve, and turn straight, and-
S: Straight?
A: No, no, no... eh turn left!
S: Left...
A: And-

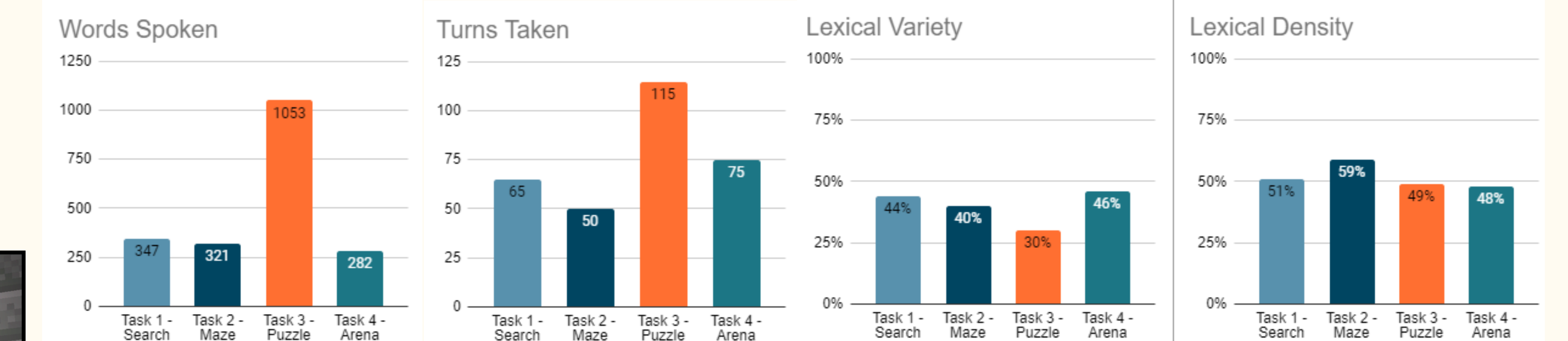
The linear section may have generated more lexical variety because they explicitly present a diverse set of communicative contexts. The 'open world' section had the capacity to involve equally diverse contexts, but did not necessitate the players to encounter them.



Excerpt 2:
S: Down... Um, um. Uh, Is there a redstone under the hay?
A: Yeah.
S: Under, straight under the hay?
A: There's a top-on the top on the... upside down, right and left.
S: Oh so it's like- it's like a- upside down "T". Right?



Analysis of Learners' Oral Production: Comparing Linear Tasks



The **puzzle** generated the **most overall communication** between learners seeing that it ranked **highest in both total words spoken and turn-taking**.

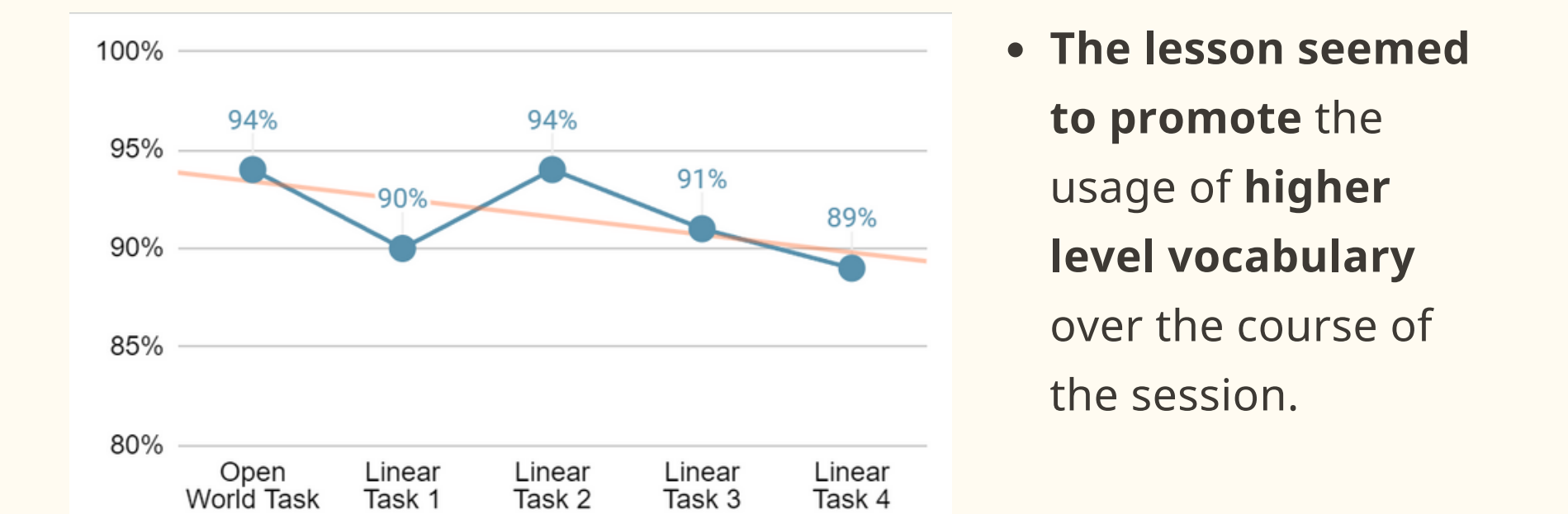
The **puzzle** also generated the **least lexical variety**, which suggests that **learners were recycling vocabulary**. However, less lexical variety may also be a natural result of continued discussion on a single topic.

The **Arena** generated the **most lexical variety**, which may have been due to its open-ended design relative to the other linear tasks.

The **maze** generated the **most lexical density** and the **least turn-taking**. This may have been because the task mainly consisted of giving commands, which do not necessarily require a response.

Since the 'open world' section and the arena generated the highest and the second highest lexical variety respectively, it seems that non-linear design promotes lexical diversity.

Analysis of Learners' Oral Production: K-1 Level Word Usage Over Time



The **lesson** seemed to **promote the usage of higher level vocabulary** over the course of the session.

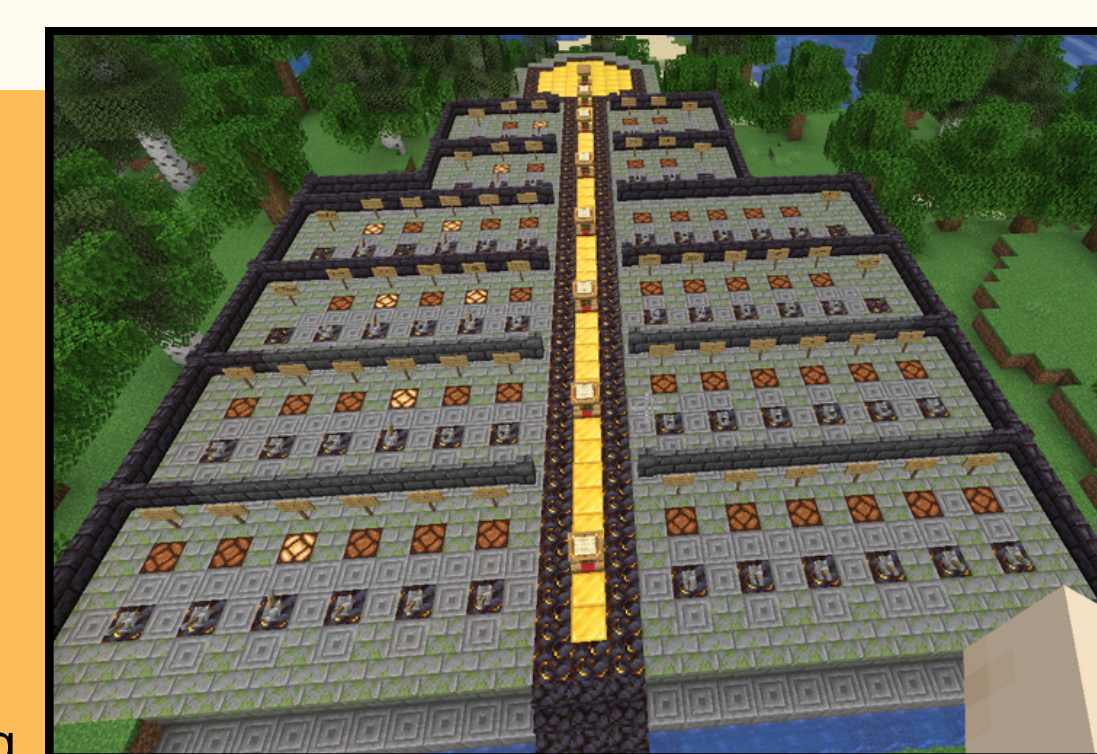


Figure 10. The In-Game Survey

The Survey was built in-game in order to maintain engagement during the post-task

The **Puzzle** task was a hybrid escape room and information-gap puzzle that focused on descriptive language as well as colour vocabulary.



Figure 7. The Two Puzzle Rooms



Figure 8. Players Fighting Monsters in the Arena

The **Arena** task presented a 'boss battle' challenge

- Boss Battles can have the same pedagogical function as a formative assessment.
- Player development is evaluated by both the game and the player themselves to see whether a required competency level has been achieved.
- Boss Battles also typically aim to create a height to engagement, by allowing players to show off their development and by using a high-stakes/high-reward scenario.

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Recommendations

Game Design

- Design asymmetric tasks so that learners with different language proficiency and computer experience can both fully engage with the task.
- In the event that both learner pairs are higher proficiency, they can still benefit from observing each other.

Pedagogy

- Open world tasks, like The Village, may be beneficial for building fluency since they seem to promote communication exchanges.
- Information-gap tasks like The Puzzle may promote higher quantities of oral production and vocabulary recycling.

FUTURE RESEARCH

- Involve longer time frame to measure learner vocabulary development
- Involve more participants of differing language proficiency levels and computer experience
- Investigate the effects of technological unfamiliarity vis-à-vis oral production
- Evaluate vocabulary before and after a study
- Conduct systematic qualitative analysis (identify language related episodes)
- Measure dynamic learner engagement and learning outcome