

**Note:** this example gives a content overview as a document you are required to submit google slides presentation.

## Background

Authors: Mohammed, P.S., Coy, A., Skerrit, P., Lewis-Fokum, Y., Mohammed, A., Hosein, A. (2022).

Title: The Importance of Culturally-Situated Design on Children's Interaction with Speech-Enabled Features in an Online Spelling Tutor.

In: Rauterberg, M. (eds) Culture and Computing. HCII 2022. Lecture Notes in Computer Science, vol 13324.

Springer,  
Cham

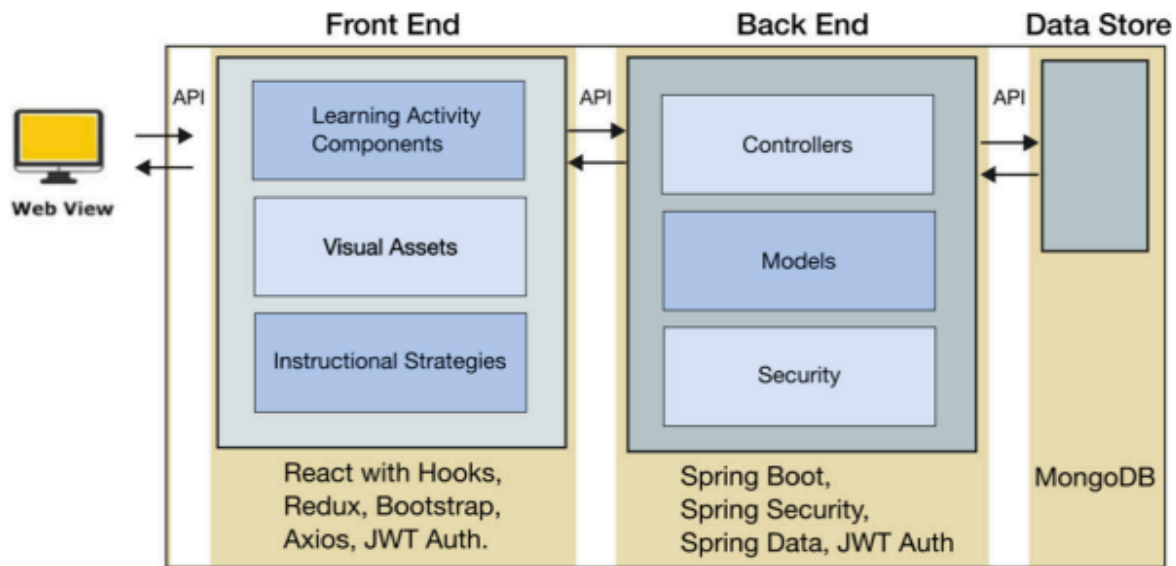
[https://doi.org/10.1007/978-3-031-05434-1\\_7](https://doi.org/10.1007/978-3-031-05434-1_7)

## Abstract

- Spelling is key for literary skills but there's limited recourse for struggling readers.
- A study of Ozzypi an online tutor is presented
- An Empirical analysis of a speech enabled intelligent tutoring system is provided
- Use of the system:
  - Resulted in Improved engagement and behavior
  - Highlighted the importance of culturally relevant speech features.

## Methodology

- Deployed Ozzypie as a React/Java Spring/MongoDB application
- Conducted usability studies of the speller feature\
- Performed interviews via (virtually) and written fo anonymized participation
- Data on usage was logged and collected over two months



**fig. 1.** The microservices architecture and technology stack of the Ozzpie spelling tutor

Ozzpie Home Spelling Lists Performance View Logs Feedback Converse student1 Logout

Spelling List - Week 1 (Sat May 15 2021)

No.	Attempt
1. <button>Play</button>	<input type="text" value="distance"/>
2. <button>Play</button>	<input type="text" value="contemporey"/>
3. <button>Play</button>	<input type="text" value="centureis"/>
4. <button>Play</button>	<input type="text" value="Unfortunately"/>
5. <button>Play</button>	<input type="text" value="certainly"/>

Submit Quit

## Results

### Interview

- 92.3% of all users felt that their spelling skills improved after using the tutor.
- 84.6% either preferred the tutor or had no preference
- The majority of the users (69.3%) enjoyed using the tutor.
- Almost a quarter had no strong feelings about it, while 7.7% strongly disliked using it

## Usage Statistics

**Table 1.** Summary of usage statistics for common student activities/actions in Ozzypie

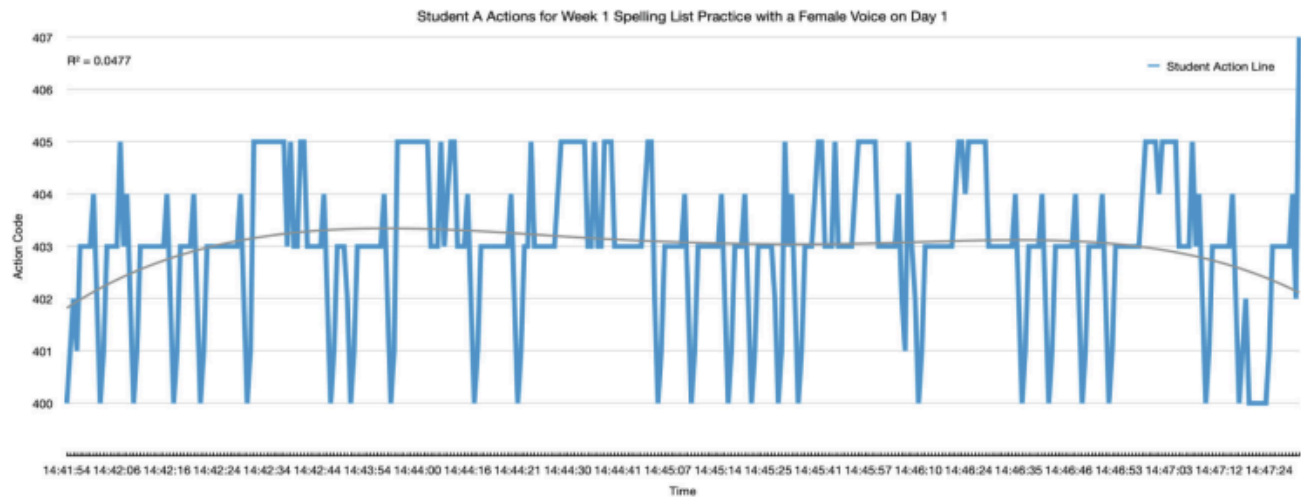
Student activity/Action	Average number	Std. Dev	Max. number	Min. number
Spelling exercise attempts	9	10.6	41	1
Spelling word attempts	110	126.3	446	5
Repeat pronunciations	40	51.9	201	1
Quit spelling activity	3	4.8	18	0

## Action Codes Ref

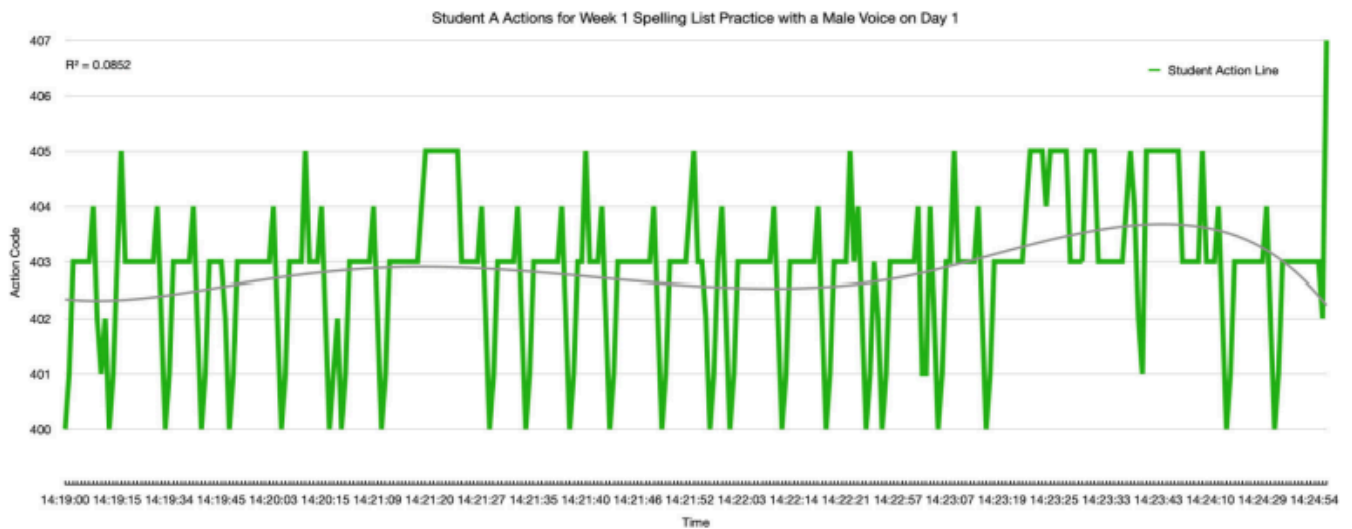
Action code	Student action	Interpretation(s) of action code as student behaviour	Task
400	Press play button	Listening to word pronunciation	V; P; Q
401	Click in text field	Intention to start or continue typing answer for a spelling word	P; Q
402	Click of out text field	Intention to stop typing answer for a spelling word	P; Q
		Intention to get corrective feedback on answer typed	P
403	Key press (letter)	Typing a letter in an answer for a spelling word	P; Q
404	Key press (space)	Typing an impactless character in a spelling word	P; Q
405	Key press (backspace)	Deleting a letter in an answer for a spelling word	P; Q
406	Press quit button	Intention to end session without getting a score	P; Q
		Disinterest in activity task	
407	Press submit button	Finished entering all answers. Intention to get a score	P; Q

405 Indicates errors

## Performance Variation with voice

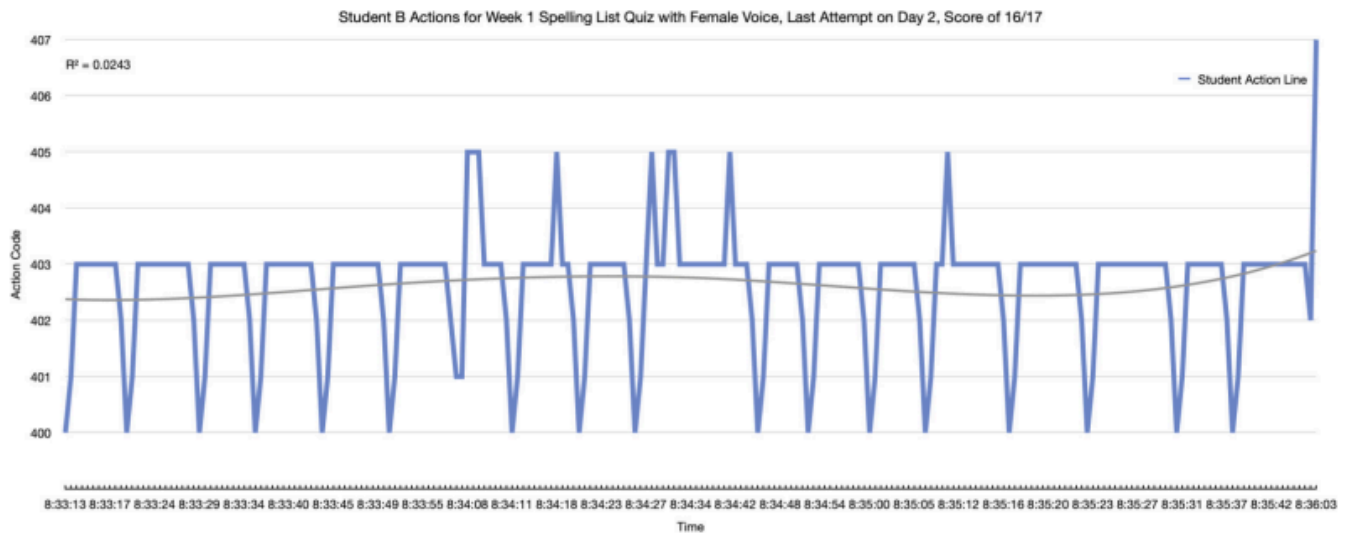


**Fig. 7.** Student A - actions for Week 1 spelling list practice with a female voice, Day 1

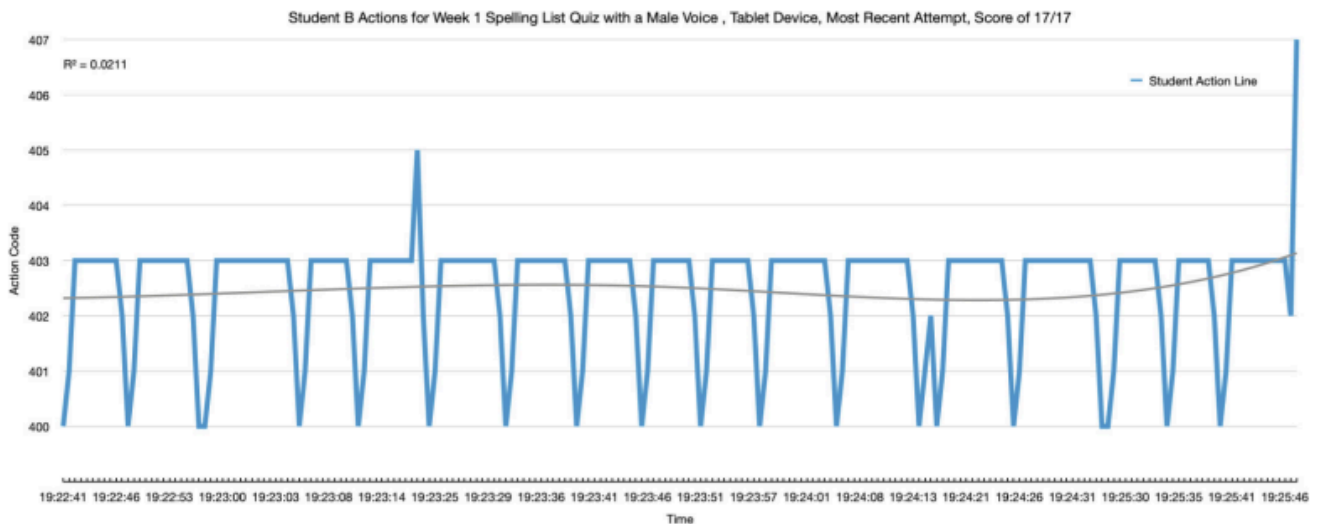


**Fig. 8.** Student A - actions for Week 1 spelling list practice with a male voice, Day 1

## Performance Improvement of student B



**Fig. 12.** Student B - actions for Week 1 spelling list quiz with female voice, last attempt on Day 2, score of 16/17



**Fig. 13.** Student B - actions for Week 1 spelling list quiz with male voice, tablet device, most recent attempt, score of 16/17

## Discussion

- The studies applies a mixed method approach to collect both qualitative and quantitative
- Applied a microservice pattern for the quick deployment and development
- Though microservice is presented only a single microservice seems to be deployed, though is may be a portion of a larger system
- The study showed how an online tutor can assist increased participation and engagement in developing spelling skills
- Type of voice feedback had in impact on the performance of the participant

# Conclusion

- By leveraging existing speech technologies and multi-modal interaction via text and voice, important requirements for a culturally-appropriate synthetic voice were clearly revealed.
- Analysis of interviews and log data learner behavior and on-task activities revealed broad learner engagement, while parents/guardians report value in the learning support provided and anecdotal evidence of test score improvement.
- Importantly, the need for a culturally-situated design emerged as students interacted with the speech-enabled feature.