UX: Web Touch Component for Self-Learners of Japanese Katakana Script

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The problem and motivation

- Katakana is challenging for learners from phonemic alphabet background due to limited practice opportunities² and visually similar characters³.
- The **touch component** addresses this by promoting regular practice, enhancing recognition, and maintaining learner motivation.



Applied solution

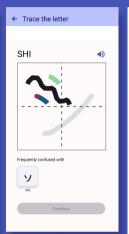
- Handwriting-based learning improves memory and recognition through active motor engagement.
- Stroke accuracy is verified by calculating the Fréchet Distance (FD) and Shape Context (SC) between user strokes and template strokes.
- Support features include difficulty levels, letter and pronunciation recognition.



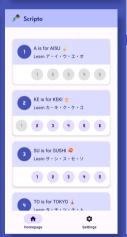
Evaluation methods satisfaction

Parameter	FD method	SC method
User satisfaction	56.6%	72%
Reported difficulties	77%	58%
Mismatch with perception	Yes, frequent	None reported
Demotivation	Reported	None reported
Overall suitability	Lower	Higher











🙎 User testing feedback

- Users expressed a need for additional challenge beyond writing, noting monotony after 16 letters per digital and pen-and-paper exercises.
- Strong **satisfaction** was reported for interactive exercises using selection, comparison, and audio inputs.
- High interest was shown in stroke mistake summaries and an onboarding lesson.
- The evaluation threshold of 25 px for writing precision using **FD** was perceived as **strict**.
- SC disparity tolerance of 0.15 was considered reasonable, with similarity perceived as adequate.



Results and application

- Developed a modular component supporting script learning through writing and recognition.
- Achieved a SUS score of 83/100.
- Flexible design supports diverse teaching methodologies.
- Currently focused on **Katakana**, but extendable to other scripts.



References

- [1] N. Yiitolu and M. Reichelt, "L2 writing beyond English".
- [2] B. S. Handini, "Teacher's difficulties in teaching japanese writing system (sakubun)".
- [3] O. Udeshika, "A study on use of katakana letters by learners of japanese as a foreign language".