UNIVERSITI TEKNOLOGI MARA

GLYPH-BASED VISUAL DESIGN OF MALAY PHONEME PRONUNCIATION AND INTONATION FOR *PANTUN* VISUALISATION

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of the requirements for the degree of
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AUTHOR'S DECLARATION

I declare that the work in this thesis was carried out in accordance with the regulations of Universiti Teknologi MARA. It is original and is the results of my own work, unless otherwise indicated or acknowledged as referenced work. This thesis has not been submitted to any other academic institution or non-academic institution for any degree or qualification.

I, hereby, acknowledge that I have been supplied with the Academic Rules and Regulations for Postgraduate, Universiti Teknologi MARA, regulating the conduct of my study and research.

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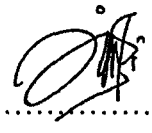
Signature of Student	:	 .....
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ABSTRACT

The digitalisation of information has become more prevalent in cultural heritage. This method is vital in preserving the abundance of cultural heritage information while maintaining the artistic and scientific values. Similarly, the Malay *pantun* is one of Malaysia's textual cultural heritages, where the values should be preserved from deteriorating through time. Furthermore, it is the oldest Malay artwork with a copyright of the Malay race. However, the research on Malay poetry that highlighted the ability to preserve Malay poetry's unique structure and reveal the details of the text features was scarce. Besides, only a few studies focused on the pronunciation and intonation of Malay *pantun*. The current research on Malay *pantun* highlighted the superficial information (*distant reading*) about the texts and their influence on society. Also lacking is the use of glyph-based techniques in literary studies, particularly in the design of pronunciation. This research explored Malay *pantun* and focused on phonetic learning, which consisted of Malay phoneme and Malay *pantun* intonation (*close reading*). Five phases were performed to guide the process of development Malay *pantun* visualisation. In the first phase, the research identified the domain problem characterisation of the Malay language and *pantun*. Following that, data abstraction in phase two was where the data was collected based on the requirements for domain problem characterisation. Phase three developed a visual design for Malay phoneme based on human speech structure and intonation design, which followed the waveform from the *pantun* text read by the poet. The development of this visual design was based on a technique known as a glyph, which contributed to the visual model for learning Malay word pronunciation and *pantun* text intonation. In phase four, the demonstration process mapped the visual model, which was the visual glyph-based design for Malay phoneme that synchronised with the text position of the Malay *pantun* text using iterative-based visual mapping. The visualisation highlighted the unique structure of Malay *pantun* features. Finally, phase five evaluated the visual design and visualisation system through a questionnaire between two groups of students with different phonetic knowledge levels. Three factors were considered in the usability testing technique for evaluation: usefulness, learnability, and satisfaction of the visual design and visualisation system. The researcher used the parametric method t-Test to investigate the significant difference in the evaluation level in terms of usefulness, learnability, and satisfaction of glyph design and visualisation system. The study confirmed that two groups of students obtained different evaluation levels (p-value = 0.00) due to their different pieces of knowledge in the phonetic field. Moreover, the mean of APB students was higher than SAKURA students. The evaluation results from the Malay *pantun* visualisation system indicated that the students accepted Malay *pantun* visualisation as a learning tool to learn Malay word pronunciation and *pantun*. This research also recorded that Malay *pantun* intonation improved the students' reading of the Malay *pantun* despite the Malay language being a non-tonal language. In conclusion, the Malay *pantun* visualisation system could be used as a learning tool about the Malay language and *pantun*. This study is noteworthy because it will help literary academics from Malaysia and other countries learn Malaysian literature by facilitating Malay pantun texts with detailed textual features. Notably, the visualisation capability was higher than the computer technology due to its ability to preserve the values of the Malay language and Malay *pantun*.

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