

# Computerisation of Flash Cards in Early Childhood Education

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The Sri Lankan education sector faced some major conversions with online education due to the Covid-19 pandemic and the country's economic crisis. Early childhood education was undebated in the development stages of the online education concept. This study aims at computerizing flashcards for early childhood education by developing an application that helps to strengthen the foundation of education for Sri Lankan children under the age of eight, in all three native languages Sinhala, Tamil, and English. This system is modelled focusing on detecting an object in an image considering the specific categories (numbers, letters, animals, fruits, and vegetables) specialized for children under the age of 8 and giving the text as well as the audio output in all three languages used in the country. The categories were selected according to the NIE syllabus and their teaching methodologies. The detection process is done through a set of custom-trained models using TensorFlow and Keras. The models are built upon CNN and YOLO algorithms with the ability to get all three native languages are powered through the internal translators that will map the words with the languages. A mobile-based development through Kivy is chosen to ease the detection process, where the user can be given the ability of real-time detection. Each model was trained with 80+ classes that include 100+ images with an accuracy range from 70%-90%, which provides the user with vast diversity and high validity. The focus on developing this system is to introduce an online platform for the learning process of early childhood, which is lacking in the current Sri Lankan education system, and teaching young children all three languages used in means of communication inside the country while prioritizing early childhood education in online learning methodologies.

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