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Efficacy of an interactive apparatus as environmental enrichment for common bottlenose dolphins (*Tursiops truncatus*)

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Abstract

*Environmental enrichment is a key component in improving the psychological and physiological well-being of animals under professional care. Environmental enrichment involves the addition of stimuli, including objects and cognitive challenges, into the environment in order to increase species-specific behaviour and provide opportunities for choice and control. The effectiveness of enrichment should be evaluated on a case-by-case basis to determine if the desired result has been achieved. Environmental enrichment devices (EEDs) can be utilised to present novel problems to animals under professional care. Here, a submerged interactive cognitive apparatus was presented to eight bottlenose dolphins (*Tursiops truncatus*) five days a week for 18 weeks and behavioural indicators of animal welfare assessed. As a group, dolphins spent more time in social swims compared to solitary swims and more time at the bottom of the habitat than the middle or top throughout the day, even when the apparatus was not immediately available. Individuals' differences were apparent in the type and amount of engagement with the apparatus. Three dolphins engaged with the apparatus by solving it or consuming the reward. Two dolphins, D4 and D8, engaged simultaneously with the apparatus and participated in more social swimming with each other. D4 solved the interactive apparatus and engaged in more social active and solitary active behaviours. D1 and D4 increased their use of the bottom of the habitat. This study is the first report of underwater enrichment increasing dolphins time at depth throughout the day even when the enrichment device is not available. The interactive apparatus was an effective form of enrichment for dolphins participating in successful trials.*

Keywords: animal welfare, bottlenose dolphin, enrichment, environmental enrichment device, habitat use, social enrichment