One stone, three birds? Effects of joint play of digital versus non-digital number board games on young children, parents and their relationship

Parent-child joint play of number board games has been found to promote numeracy competence and interest in young children. However, it is uncertain whether those benefits exist when the games are played in a virtual format. In addition, most previous studies have neglected to study competence in numeracy guidance of parents and the relationship between parents and their children as a result of the home numeracy activities. In view of the above, the proposed project aims to compare the effects of parent-child joint play of traditional (non-digital) and digital number board games on children, parents and the parent-child relationship.

To achieve these aims, 320 parent-child dyads will be randomly assigned into one of the four conditions for a six-week period: playing with traditional number board games, playing with digital number board games, playing with dough and clay (serving as active control), and business-as-usual (serving as passive control). Pre-tests and immediate post-tests will be administered to assess the numeracy outcomes of children (including numeracy competence and interest), competence in numeracy guidance of parents, and the parent-child relationship. The score changes of these variables over time across the four conditions will be compared. A three-month delayed post-test on numeracy outcomes of children will also be conducted, and the effects of different games on the later numeracy outcomes of children, as well as the relationships between competence in numeracy guidance of parents, parent-child relationship, and the later numeracy outcomes of children will be evaluated.

Findings of the proposed project will not only enhance our understanding of the benefits of traditional and digital number board games, but also provide parents with insights on how to create a more stimulating home learning environment. As a result, short-term and long-term mathematical achievement of children can be enhanced.