

Case Study on Diagnosis and Intervention of Mathematics Learning Difficulties in Early Childhood

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AIMS

This research aimed to identify 5-year-old children who had mathematics learning difficulties (MLD), followed by an intervention program according to each child's specific learning condition in order to improve their mathematics abilities.

METHODS

This research was a case study. There was one child selected from the intervention group of children with MLD. To pick the children with MLD, some tests were used, including:

- ✓ WPPSI IQ test,
- ✓ Test of Early Mathematics Ability (TEMA)
- ✓ Cognitive tests of working memory and executive functioning

The intervention contents for the case consisted of both mathematics education contents and cognition strategies. They had been carried out twice a week, each time lasting about 30 minutes. There were 30 intervention activities altogether. The interventions were on the basis of the case's mathematics learning performance and could be adjusted promptly based on the actual situation of each activity. Specific intervention strategies are as following:

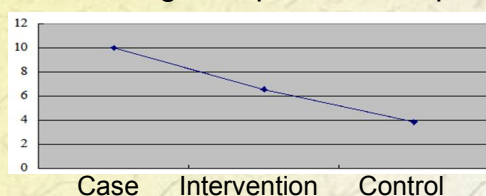
- ❖ Playing the games been interested in by the child
- ❖ Focusing on the child's strengths extended to the weaknesses
- ❖ Using the available materials around been familiar with by the child
- ❖ Creating the various different playing ways of one material

RESULTS-1

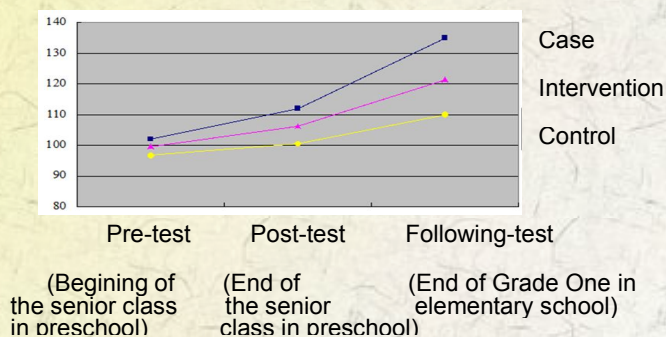
The scores of pre-test and post-test of TEMA:

| GOURP | N | Pre-test | | Post-test | |
|--------------|----|----------|------|-----------|-------|
| | | M | SD | M | SD |
| The case | 1 | 102 | | 112 | |
| Intervention | 16 | 99.63 | 9.15 | 106.19 | 8.80 |
| Control | 16 | 96.69 | 8.07 | 100.56 | 10.32 |

The increase ranges of pre-test and post-test:



The TEMA scores of three tests:



RESULTS-2

The post TEMA test score of the individual case showed a significant increase, from 102 to 112. The magnitude of the increase had been more than that of the intervention group (children with MLD) and that of the comparison group. The case kept the advantage of the improvement even after one year when he was at the end of the grade one in the elementary school.

CONCLUSIONS

The intervention could improve the mathematics abilities of the individual case, a boy aged 5-year-old, effectively. Three significant factors emerge from the method and the process of the implementation of the intervention.

Firstly, good interactive relationship between the individual case and the intervention teacher could form secure attachment that served as a motivator for the case to try his best to perform in completing the intervention tasks.

Secondly, the hobbies of and the changes in emotion of the case were taken into account during the process of intervention, which could be the foundation of the intervention's positive impact on the child.

Thirdly, stress was given to elicit the cooperation of the parents with the intervention teacher, which helped in extending the effect of the intervention activities. ☆

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