

The Development Research of the Chinese Remedial Curriculum For Junior High School Students with Special Education Needs

Presenter: Su-Jan Lin

According to the Special Education Law of R.O.C, the curriculum and instruction should be based on the unique needs of students with special education. In another word, the appropriate curriculum and instruction for handicapped children play the critical role for the success of special education. Language curriculum, such as listening, speech, reading and writing, is the basic and crucial subject for the learner in school. Especially the reading ability will affect the other subjects learning in the school for the students.

In Taiwan, there are many studies focus on the Chinese language instruction for the students with special education needs, but few of them relative to the curriculum development or adaptation curriculum. This study addresses on the experimental research of developing the Chinese language curriculum for the mild disabilities students. The main structure of this experimental curriculum refers to the Direct Instruction curriculum. The curriculum of Direct Instruction publishes by the Science Research Associates (SRA) in the Unite States, which is a research-based curriculum design with significantly successful results for the mild handicapped children and low achievers. This study with experimental curriculum was specifically adaptation to one of the reading program of Corrective Reading within the Direct Instruction curriculum. The Corrective Reading was designed for the third to twelve graders with limited reading ability. This reading program consists with decoding and reading comprehension two strands. Decoding and Reading Comprehension could separate or combine to use for the students, which depends on the needs of individuals. Each part also divides to A, B1, B2 and C levels to consist from easy to difficult content of language learning. The different levels also can help teachers to decide where to start teaching based on the student's present level.

The current study will adapt the objective structure of Corrective Reading curriculum, but content will be based on the feature of Chinese language. Therefore, the first purpose of this study is to examine the effect of this remedial curriculum of Chinese language for junior high school SPED students. The second purpose is to modify this experimental curriculum based on the research findings.

Methodology

Participants

The 16 students from seventh to ninth grade with mild disability joined to this study. Their category included 13 students with reading disability, two students mild hearing impaired and one autism student. Their IQ spreads from 50 score to the 96 score. This experimental curriculum designed to use the students' reading comprehension level as appropriate instructional determination and placement. The theological assumption was the reading comprehension acted critical and effective influenced toward the reading achievement for the students in the junior high school.

Therefore, this study adopted reading comprehension achievement beyond the fourth grade as the selective standard all of the 16 participants whose reading comprehension were all below the fourth grade. Eleven participants have second grade level. One participant has third grade level. Four participants have fourth grade level. The decoding level is not the requirement for select the participants. However, seven participants have decoding level in the first grader. Others decoding level are spread from second grader to the eighth grader.

Research design

This study used non-equivalent experimental groups design and pre-post test analysis to conduct this study. The experimental group received the instruction based on the remedial curriculum of Chinese language. The control group only provided the same curriculum materials without the instruction. Each group had the same size with 8 participants. The experimental group came from two different schools with 4 participants in each school. This group size design was on purpose to match one of the teaching principles with Direct Instruction. Direct Instruction addresses that the instructional group size with 6 to 8 students could catch the best instructional effect. In fact, this experimental curriculum also includes this suggestion with teaching group size in the teacher's guide.

The procedure of this study was total 10 weeks with 2 to 3 instructions each week. Each instruction took 45 minutes. The total was 16 instructional times in this study. The control group did not have the instructional lesson each week but they had the same instructional materials as the same as the experimental group. Both groups received the same tests in the end of each lesson. The dependent variations in this study were the results of participants from the decoding and reading comprehension, basic comprehension sub-skill and reasoning sub-skill tests and total achievement test.

The data analysis included the t-test, ANACOVA and effect size to examine all test scores between two groups. The pretest of the reading comprehension tests acted as covariate to balance the equal ability between two groups.

Experimental curriculum

The curriculum structure consisted two with decoding and reading comprehension. Reading comprehension was divided to different six sub-skills: vocabulary skills, information skills, sentence skills, basic comprehension skills and reasoning skills

This curriculum included 12 lessons. The teaching time is 45 minutes for lesson one to lesson eight. Lesson nine to twelve needs 90 minutes to complete the instruction. The shortest lesson had 50 Chinese characters. The longest lesson had 300 Chinese characters. The organization of each lesson included new Chinese characters, new phrases, background knowledge, content, group practice, individual practice and lesson test.

Results

The findings of this study presented with the comparison of Chinese language assessment results between experimental and control groups, and feedbacks toward the curriculum design from the involved teachers and participants' learning outcome.

Pretest Analysis

The pretest results of Chinese language assessment indicated that the control groups and the experimental groups did not differ significantly on total scores (control group: $M=28.13$, $SD=5.94$, experimental group: $M=27.00$, $SD=9.86$), $t=2.181$, $p>.05$, and word recognition scores (control group: $M=9.75$, $SD=5.37$, experimental group: $M=14.83$, $SD=6.99$), $t=1.485$, $p>.05$. The reading comprehension pretest scores were significantly different between the two groups (control group: $M=8.38$, $SD=1.30$, experimental group: $M=12.63$, $SD=3.42$), $t=3.285$, $p<.01$. Two sub-skill pretest scores under reading comprehension, basic comprehension (control group: $M=2.25$, $SD=.89$, experimental group: $M=4.00$, $SD=.93$), $t=3.862$, $p<.01$ and reasoning (control group: $M=.88$, $SD=.83$, experimental group: $M=2.25$, $SD=1.16$), $t=2.714$, $p<.05$, were also significantly different between the two groups. Thus, t tests were applied to analyze the total scores, word recognition, recording, recognition, vocabulary, sentence, and background knowledge scores in posttest, whereas ANCOVA was conducted in posttest for reading comprehension, basic comprehension, and reasoning scores.

Posttest Analysis

According to Table 1, the Chinese language assessment posttest showed that the experimental group and control group differed significantly on Total score ($T=3.395$, $p<.01$), $d=1.70$, and word recognition ($T=3.018$, $p<.01$), $d=1.18$. These results indicated that the remedial curriculum of Chinese language for junior high school SPED students were effective in improving students' overall Chinese language achievement and word recognition skills.

Table 1 Posttest Analysis of Chinese Language Assessment

Section (score)	Group	M	SD	t	p
Total Score (48)	Experiment	37.75	9.16	3.395	.004**
	Control	22.25	9.10		
Word Recognition (24)	Experiment	19.88	5.54	2.496	.026*
	Control	12.50	6.26		
Recording (12)	Experiment	10.13	2.42	3.018	.009**
	Control	5.38	3.74		
Recognition (12)	Experiment	9.75	3.20	1.747	.102
	Control	7.13	2.80		
Reading					
Comprehension (24)					
Vocabulary (4)	Experiment	2.88	1.36	2.947	.011*
	Control	1.13	.99		
Sentence (4)	Experiment	2.38	1.30	1.400	.183
	Control	1.50	1.20		
Background	Experiment	3.38	.74	3.319	.007**

Knowledge (4)	Control	1.50	1.41
---------------	---------	------	------

*p<.05 **p<.01

Table 2 Effect Size of Chinese Language Assessment

Section	<i>P</i>	<i>D</i>	effect
Total Score	.004**	1.70**	Highly effective
Word Recognition	.026*	1.18**	Highly effective
Recording	.009*	1.27**	Highly effective
Recognition	.102	.94**	Effective
Reading Comprehension			
Vocabulary	.011**	1.77**	Highly effective
Sentence	.183	.73*	Effective
Background Knowledge	.007**	1.33**	Highly effective

Note: (a) * p<.05 ** p<.01

(b) effect size (d): * moderate effect .5< d <.8 **highly effect d >.8

(c) effect: highly effective= both *p* value and *d* value were statistically significant
 effective= *p* value or *d* value was statistically significant

Table 1 also showed that the two groups differed significantly on Recording ($t=3.018$, $p<.01$, $d=1.27$), Vocabulary ($t=2.947$, $p<.05$, $d=1.77$), and Background knowledge ($t=3.319$, $p<.01$, $d=1.33$), which supported that this remedial curriculum had positive effect on student's recording skills, vocabulary, and background knowledge. According to Table 2, although there was no statistical significance between the two groups on recognition ($t=1.747$, $p>.05$) and sentence scores ($t=1.400$, $p>.05$), the effect size ($d=.94$ and $.73$) showed that the curriculum were effective in improving participants' recognition skills and sentence knowledge.

Table 3 showed that the ANCOVA results indicated that there was no statistical difference between experimental and control groups on reading comprehension skills ($F=3.326$, $p>.05$) and basic comprehension skills ($F=2.189$, $p>.05$). However, the effect size ($d=1.95$ and 1.19) highly supported that this remedial curriculum had positive influence on participants' overall reading comprehension and basic comprehension skills.

Table 3 Chinese Assessment Posttest Analysis: ANCOVA

Section	Score	Source	SS	d.f.	MS	F	<i>p</i>
Reading Comprehension	24	Between	44.454	1	44.454	3.326	.091
		Error	173.142	13	13.365		

Basic Comprehension	8	Between	1.958	1	1.958	2.189	.449
		Error	41.832	13	3.218		
Reasoning	4	Between	5.906	1	5.906	5.380	.037*
		Error	14.271	13	1.098		

Table 4 Effect Size of Chinese Assessment: Reading Comprehension

Section	<i>p</i>	<i>d</i>	effect
Reading Comprehension	.091	1.95**	Effective
Basic Comprehension	.449	1.19**	Effective
Reasoning	.037*	1.00**	Highly effective

Note: (a) * $p < .05$ ** $p < .01$

(b) effect size (*d*): * moderate effect: $.5 < d < .8$ **high effect: $d > .8$

(c) effect: highly effective= both *p* value and *d* value were statistically significant
effective= *p* value or *d* value was statistically significant

Table 3 and Table 4 showed that the experimental instruction had positive effect on participants' reasoning skills ($F=5.380$, $p < .05$), $d=1.00$. The results indicated that the remedial curriculum could significantly improve participants' reasoning skills.

Difficulty Level Analysis of Remedial Chinese Language Curriculum

The difficulty level of each lesson in the "Chinese Language Remedial Curriculum for Junior High School Students in Resource Rooms" was evaluated to justify whether this curriculum was appropriate for junior high school students. The evaluation was conducted based on participants' assessment results after each lesson was taught. The difficulty levels of the lessons were judged based on the mean accuracy of each participant across all six Chinese assessments. If students responded accurately to one Chinese assessment over 90%, students were considered to achieve mastery level and the lesson was thought to be appropriate for junior high school students in resource rooms. If students' assessment responses had less than 90% accuracy, students were considered not to master the lesson and the difficulty level of that lesson was thought to be too high.

Word Recognition Difficulty Level Analysis

Table 5 presented the participants' responding accuracy on word recognition assessment. Each unit assessment included the content from two lessons. According to Table 5, the pretest accuracy of word recognition in the Chinese assessment was lower than 60%, which indicated that the participants were not mastered in the curriculum. After the experimental instruction, the posttest accuracy of the experimental group was improved to 83%, which showed that the word recognition content of this remedial curriculum was appropriate for the students.

Based on the assessment results of each lesson, participants in the experimental groups responded over 80% accurately to word recognition questions. Students' performances were close to mastery level. Thus, after the experimental instruction conducted in resource rooms, junior high school students' word recognition abilities were improved close to mastery level.

Table 5 Participants' Responding Accuracy on Word Recognition Assessment

Group Accuracy Assessment	<u>Experimental Group</u>		<u>Control Group</u>	
	M	SD	M	SD
Pretest	60	29	41	22
Unit 1 assessment	89	17	56	30
Unit 2 assessment	84	22	55	24
Unit 3 assessment	83	17	65	26
Unit 4 assessment	84	19	49	38
Unit 5 assessment	84	22	48	32
Unit 6 assessment	86	18	59	27
Posttest	83	23	52	26
Lesson level range	83-89	17-22	48-65	24-38
Lesson level change	6	5	17	14
Lesson average	85	19	55	30

Reading Comprehension Difficulty Level Analysis

According to Table 6, both groups' average reading comprehension accuracy in pretest was only 53%. After experimental instruction, the experimental group achieved 75% accuracy in posttest. The posttest accuracy wasn't high enough to reach mastery level, which indicated that the participants needed further instruction and the overall reading comprehension content was too difficult for junior high school students in the resource rooms. In addition, students in the experimental group scored lower in **unit 3 and unit 4**, which showed that the difficulty level of reading comprehension in these two lessons were too high and needed to be modified.

Table 6 Participants' Responding Accuracy on Reading Comprehension Assessment

Group Accuracy Assessment	<u>Experimental Group</u>		<u>Control Group</u>	
	M	SD	M	SD
Pretest	53	14	35	5
Unit 1 assessment	77	19	53	15
Unit 2 assessment	78	12	53	17
Unit 3 assessment	58	19	38	7

Unit 4 assessment	67	12	46	16
Unit 5 assessment	78	23	59	27
Unit 6 assessment	81	13	48	21
Posttest	75	17	41	17
Lesson level range	58-81	12-23	38-59	7-27
Lesson level change	23	11	21	20
Lesson average	73	16	50	17

Social Validity Check: Instructors of Experimental Groups

The instructors in the experimental groups highly confirmed the structure, instruction design, readability, and print design of the “Chinese Language Direct Instruction for Junior High School Students in Resource Rooms.” However, the instructors also reported that the appropriateness of the content, the comprehensibility of the key concepts, the length of the lesson, and the difficulty level of the vocabulary need to be modified based on students’ Chinese language level.

The instructors also suggested that this remedial curriculum was more appropriate for students whose Chinese Language level were better than the fourth grade students. For students whose Chinese Language level was lower than the fourth grade students, the lessons were too long and the hypothesized instruction time needed to be modified. In addition, students had most difficulties in learning how to infer and reasoning, and were challenged in completing the reasoning practices, especially conflict and analogy questions.

Discussion

Based on the finding of this study, there were three discussions as following. First, this research proved this remedial curriculum of Chinese language created an effective result for the SPED students in junior high school level. This finding was resulted from the highly structured organization of lessons in this curriculum. This characteristic also approved by the teachers who participated in this experimental research. However, the reading comprehension skill did not have as positive outcome as word recognition. The reason is the comprehension is higher level reading skill than the word recognition. The learners need more learning opportunity to acquire this ability. It seems that total 10 weeks with 2-3 instructional times per week are not intensive enough to increase the progress for participants’ ability of reading comprehension. The future research could conduct the longer study to prove the improvement of reading comprehension for the learner. Secondly, this research finding is compatible to the original curriculum of Corrective Reading. It shows a well organized language curriculum could benefit the learner with cross language difference. Third, the small sample size is a disadvantage factor in this study. Although this study tried to use double examination approach, t-test, ANCOVE and effect size to analyze the data. The small size still limited the inference of this study. The future research should enlarge the sample size to overcome this research design weakness.