

Not as easy as It Looks: Korean Elementary Classroom Teacher Perceptions of Mathematics Curriculum

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This article examines the Korean classroom teachers' perceptions about the 7th national mathematics curriculum for elementary schools. Elementary classroom teachers were surveyed using the researcher-made questionnaire (Teacher Perception about Mathematics Curriculum) and 143 teachers completed the questionnaire. The data collected was analyzed by a descriptive analysis. The results revealed that about 67% teachers considered the curriculum was well developed in scope and sequence. However, 43% teachers reported that the teacher's manual should provide clearer explanation instructional strategies to teach the math topics to children. 38(26%) teachers claimed the curriculum contains too much content to teach. 34(24%) of the teachers indicated some contents were developmentally too difficult for their students to understand. The most serious difficulties for the teachers in teaching mathematics was to accommodate individual student's different mathematics abilities, especially accelerated by private lessons at the after school programs.

I. Introduction

The most important factors in mathematics education are to provide the students with a curriculum and an instructional methodology that emphasizes opportunities for understanding "sense-making" and meaningful learning, rather than just memorizing procedures and facts. This movement is reflected in the history of Korean mathematics curriculum development. The 7th Korean mathematics curriculum was developed in 2000 (Paik, 2004) and implemented the idea of "differentiated curriculum" in order to accommodate students' different abilities and

aptitudes in the classroom (Paik, 2004, p. 13). This curriculum encouraged classroom teachers to aim at their students' learning gap and interests. This was the beginning of "learner centered curriculum" that used more concrete examples and real life applications in the classroom. Korean elementary schools use one national curriculum developed by a committee consisting of educational leaders among classroom teachers in different grade levels, mathematics educators, and researchers from academic institutes under the authorization of the Ministry of Education and Human Resources Development (MEHRD).

Instructional strategies and methods of mathe-

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matics education are directly affected by the curriculum since it provides classroom teachers with a blueprint for content coverage and an instructional sequence for teaching mathematics (Li, 2000). Especially in Korean elementary schools, the national curriculum has influenced the reform movement in teaching mathematics in that Korean teachers adhere very closely to the textbook and the teacher's manual while teaching mathematics in their classrooms (Pang, 2004). These textbooks and teachers' manuals are developed by the committee appointed by the MEHRD.

Current international comparative studies in student achievement scores in mathematics, such as the Third International Mathematics and Science Studies (TIMMS, 1999 & 2003) and the Program for International Student Assessment (PISA, 2003), reported that Asian students achieved high scores in the subject of mathematics. Korea was one of the countries whose students continuously improved and attained high achievement scores. With these results, mathematics education and curricula in high achieving Asian countries and the USA have been studied by many researchers to investigate curricular issues and critical differences in order to improve students' learning and achievement scores in mathematics (e.g., Hiebert & Stigler, 2000; Seng, 2000; Watanabe, 2001; Yong, 2005). While this scholarly attention grows among international mathematics educators and researchers, this article attempts to study the 7th Korean national curriculum through the eyes of classroom teachers who are directly related to teaching mathematics.

II. Purpose

This quantitative and qualitative study was conducted to investigate the Korean classroom teachers' perceptions about the 7th Korean mathematics curriculum for elementary schools. There were three main purposes in this research. The first purpose examines how classroom teachers feel about teaching mathematics. The second one looks at how classroom teachers perceive the curriculum in terms of its scope and sequence. The third purpose explores their concerns and opinions while practicing instructional methods and strategies suggested in the curriculum.

III. Method

1. Participants

Two hundred questionnaires were distributed, one per teacher, to those teaching in the elementary classrooms (grade 1 to 6) in the suburban area of the southwestern region in Korea. Completed questionnaires were collected by the researcher from 143 teachers (71.5% response rate). There were 103 female and 40 male teachers from 21 elementary schools within Jeolla-buk-do provincial school district in Korea. There were twenty 1st grade (14%), twenty two second grade (15%), twenty one 3rd grade (15%), eighteen 4th grade (13%), thirty one 5th grade (22%), and thirty 6th grade (21%) classroom teachers. Teaching experience of these teachers ranged from 0 year to 38 years with the mean of 13.35 years. The mean class

size was 33 students and mean teacher's age was 36.62. One hundred thirteen (79%) classroom teachers held bachelor's degrees, twenty three (16%) held master's degrees, and seven teachers (5%) were in a graduate program working toward a master's degree in education.

2. Instrument

A researcher-made 3 part questionnaire "Teacher Perception about Mathematics Curriculum (TPMC)" was used to survey teachers. Part I consisted of 11 short answer questions regarding the participants' demographic information, i.e., gender, age, classroom teacher experiences, grade level, and number of students in her/his classroom, etc. Part II consisted of 18 likert scale questions asking about participants' math grades (outstanding, good, average, low, very low), confidence level in teaching math (I feel confident, in-between, I don't feel confident), and opinion about the curriculum and curricular materials (agree, not sure, disagree), etc. Part III included 3 open-ended questions pertaining to perceived difficulties in teaching math using the 7th national mathematics curriculum and overall opinion and concerns about the curriculum. The questionnaire was developed in English and reviewed by a mathematics educator who retired from a teacher education program at a university in Maryland in the USA. After consultation, it was translated into Korean by the researcher and reviewed by two classroom teachers and an elementary school associate principal in Korea prior to distribution to the participants.

3. Procedure and Data Analysis

The questionnaire, accompanied by a letter explaining the objectives of the study and a participant consent form, was distributed during the spring semester of 2005 to 24 elementary schools in Jeolla-buk-do area with the assistance of the principals and associate principals. The participating teachers anonymously and individually completed the questionnaire and returned it sealed in an envelope to the principal/ associate principal's office. The completed questionnaires were collected during the summer of 2005.

IV. Results

Using SPSS 14.0 software to analyze the data obtained, forty-one (29%) of the elementary teachers responded that math was their favorite subject in school while twenty four teachers (17%) reported their favorite subjects were Korean and twenty one teachers (15%) said social studies (see <Table IV-1>).

When asked the subject in which they achieved their highest grade during school days, forty one teachers (29%) responded math, thirty five (24%) Korean, and eighteen (13%) said social studies (see <Table IV-2>).

Regarding the subject that they felt the most confident to teach in the elementary classroom, fifty teachers (35%) responded mathematics was the subject about which they felt most confident. Thirty four (24%) teachers reported Korean and twenty teachers (14%) said social studies (see <Table IV-3>).

<Table IV-1> What was your favorite subject while attending school?

| Subject | Male | Female | Total | Subject | Male | Female | Total |
|----------------|------|--------|----------|--------------|------------------|--------|----------|
| Math | 11 | 30 | 41 (29%) | Arts | 2 | 6 | 8 (5.5%) |
| Korean | 4 | 20 | 24 (17%) | Physical Ed. | 4 | 0 | 4 (3%) |
| Social Studies | 9 | 12 | 21 (15%) | Biology | 0 | 3 | 3 (2%) |
| Science | 5 | 7 | 12 (8%) | Ethics | 0 | 1 | 1 (1%) |
| English | 2 | 8 | 10 (7%) | Chemistry | 0 | 1 | 1 (1%) |
| Music | 1 | 8 | 9 (6%) | Special Ed. | 0 | 1 | 1 (1%) |
| History | 2 | 6 | 8 (5.5%) | Total | 143 participants | | |

* If there were more than one subject provided, the first choice was considered as the most favorite subject.

<Table IV-2> What was the subject in which you had highest score while attending school?

| Subject | Male | Female | Total | Subject | Male | Female | Total |
|----------------|------|--------|----------|----------------|------------------|--------|--------|
| Math | 12 | 29 | 41 (29%) | Biology | 0 | 3 | 3 (2%) |
| Korean | 8 | 27 | 35 (24%) | Home Economics | 0 | 2 | 2 (1%) |
| Social Studies | 9 | 9 | 18 (13%) | ethics | 0 | 1 | 1 |
| English | 3 | 8 | 11 (8%) | Geography | 0 | 1 | 1 |
| History | 1 | 8 | 9 (6%) | Literature | 0 | 1 | 1 |
| Science | 4 | 3 | 7 (5%) | Physical Ed. | 1 | 0 | 1 |
| Music | 1 | 6 | 7 (5%) | No response | 0 | 1 | 1 |
| Arts | 1 | 4 | 5 (3%) | Total | 143 Participants | | |

* If there were more than one subject provided, the first choice was considered as the most favorite subject.

<Table IV-3> What subject do you feel most confident to teach in elementary classroom?

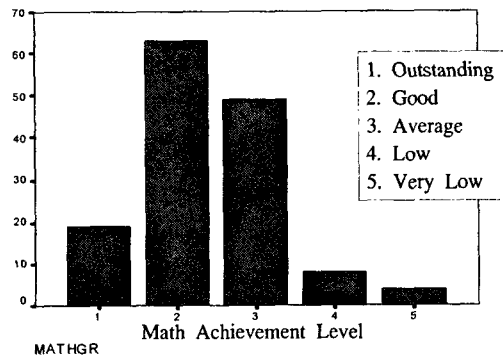
| Subject | Male | Female | Total | Subject | Male | Female | Total |
|----------------|------|--------|----------|--------------|------------------|--------|----------|
| Math | 17 | 33 | 50 (35%) | Physical Ed. | 3 | 0 | 3 (2%) |
| Korean | 7 | 27 | 34 (24%) | Ethics | 2 | 0 | 2 (1%) |
| Social Studies | 2 | 18 | 20 (14%) | History | 0 | 1 | 1 (1%) |
| Science | 6 | 5 | 11 (8%) | No response | 2 | 5 | 7 (4.5%) |
| Music | 1 | 7 | 8 (6%) | | | | |
| English | 0 | 7 | 7 (4.5%) | Total | 143 Participants | | |

* If there were more than one subject provided, the first choice was considered as the most favorite subject.

Sixty three teachers (44%) reported their mathematics academic achievement and performance in school days as "Good," while forty nine (34%) as "Average," nineteen (13%) as "Outstanding,," eight (5%) as "Low," and 4 teachers as "Very low" (see <Table IV-4> & [Figure IV-1]).

<Table IV-4> How well did you do in math while attending school?

| | Category | Male | Female | Total (Percent) |
|--------------|-------------|-----------|------------|-----------------|
| 1 | Outstanding | 6 | 13 | 19 (13%) |
| 2 | Good | 20 | 43 | 63 (44%) |
| 3 | Average | 10 | 39 | 49 (34%) |
| 4 | Low | 2 | 6 | 8 (5%) |
| 5 | Very Low | 2 | 2 | 4 (3%) |
| Total | | 40 | 103 | 143 |

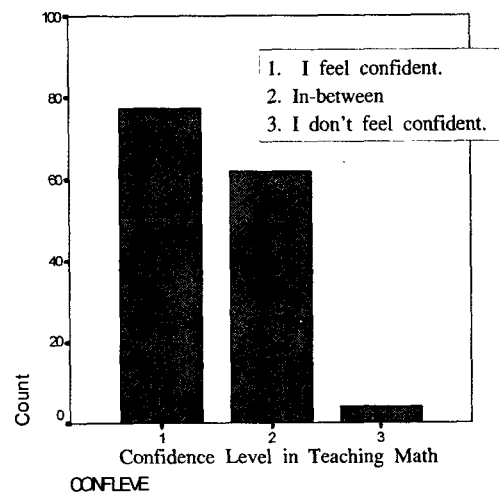


[Figure IV-1] How well did you do in math while attending school?

Seventy seven teachers (54%) answered that they felt confident in teaching mathematics. Sixty two (43%) teachers felt they are neither confident nor unconfident (in-between) and four (3%) did not feel confident (see <Table IV-5> & [Figure IV-2]).

<Table IV-5> Do you have confidence in teaching math?

| | Category | Male | Female | Total (Percent) |
|--------------|-------------------------|-----------|------------|-----------------|
| 1 | I feel confident. | 25 | 52 | 77 (54%) |
| 2 | In-between | 15 | 47 | 62 (43%) |
| 3 | I don't feel confident. | 0 | 4 | 4 (3%) |
| Total | | 40 | 103 | 143 |

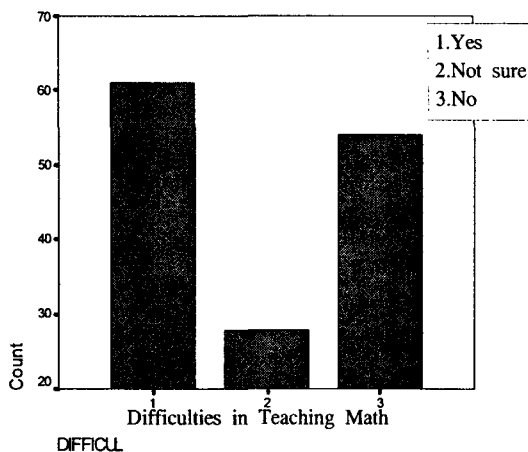


[Figure IV-2] Are you confident in teaching math?

Sixty one (43%) teachers responded that they have some difficulties in teaching mathematics to students using the national curriculum. Fifty three (37%) teachers did not have difficulties. Twenty eight (20%) replied they were not sure if they had difficulty or not (see <Table IV-6> & [Figure IV-3]).

Of sixty one teachers who had difficulty teaching mathematics, twelve teachers had difficulty they believed due to students' wide range and different level of mathematics abilities and large class size, especially when s/he had to

assist students who are slow learners and to accommodate individual student's needs in mathematics. Nine of the teachers said that explaining mathematics concepts was difficult. Seven of them mentioned they did not have enough instructional manipulative and find that they had a hard time explaining mathematics principles (see <Table IV-7>).



<Table IV-6> Do you have any difficulties in teaching math?

| | Category | Male | Female | Total (Percent) |
|--------------|----------|-----------|------------|-----------------|
| 1 | Yes | 14 | 47 | 61 (43%) |
| 2 | Not sure | 7 | 21 | 28 (20%) |
| 3 | No | 19 | 35 | 53 (37%) |
| Total | | 40 | 103 | 143 |

[Figure IV-3] What kinds of difficulties do you have in teaching math?

In consideration of the national curriculum and its materials, teachers' responses to 5 likert scale

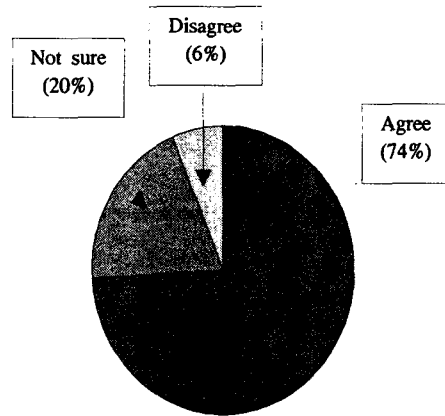
<Table IV-7> What kinds of difficulties do you have in teaching students math?

| | Difficulties | Male | Female | Total |
|----|--|------|--------|-------|
| 1 | Wide range of students' ability levels | 3 | 9 | 12 |
| 2 | Explaining math concepts | 1 | 8 | 9 |
| 3 | Lacking concrete instructional manipulative | 2 | 5 | 7 |
| 4 | Explaining math principles | 0 | 7 | 7 |
| 5 | Finding appropriate learning activities | 0 | 4 | 4 |
| 6 | Helping students understand word problems | 0 | 4 | 4 |
| 7 | Using concrete materials to illustrate concepts | 3 | 1 | 4 |
| 8 | Teaching far advanced students compared to their peers due to private lessons at the after school programs | 2 | 1 | 3 |
| 9 | Lacking time to cover all contents | 1 | 2 | 3 |
| 10 | Students' poor math concepts | 2 | 1 | 3 |
| 11 | Students' poor basic math skills | 1 | 2 | 3 |
| 12 | Helping students connect concept to abstract level | 0 | 2 | 2 |
| 13 | Helping students apply concepts | 1 | 0 | 1 |
| 14 | Teaching what I know to students | 0 | 1 | 1 |
| 15 | Students' low motivation level | 0 | 1 | 1 |
| 16 | Confused students with too many concrete materials | 0 | 1 | 1 |
| | No response | 24 | 60 | 84 |

questions revealed that one hundred six (74%) teachers reported that the Korean national curriculum was consistent in sequence and was well connected between grades in terms of scope. Sixty two (43%) teachers said the teacher's manual clearly explained the goals and objectives of the curriculum. Sixty one (43%) teachers thought the teacher's manual did not explain very well about how to teach different mathematics topics to their students. Ninety two (64%) teachers responded that the textbook covered the scope of the mathematics topic very well. Eighty nine (62%) teachers responded that the student workbook helped students master mathematics principles and algorithms after they taught the lesson (see <Table IV-8>).

Almost three fourths (74%) of the classroom teachers surveyed perceived the curriculum as well developed in terms of sequence and connection between grades. One fifth (20%) of the teachers were not sure if the curriculum was well developed and less than one-tenth (6%) of the teachers did not think the curriculum was

grade appropriately developed (see [Figure IV-4]).

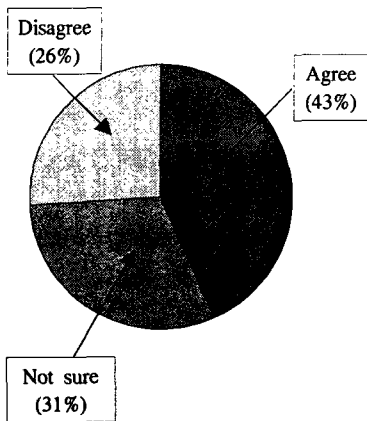


[Figure IV-4] Curriculum is consistent in sequence and grade appropriately developed.

A little more than two fifths (43%) of the teachers stated that the teacher's manual explained the curriculum goals and objectives clearly and that they understood it very well. Approximately one third (31%) of the teachers were not sure and about one fourth of them felt the teacher's manual did not deliver its goals and objectives very well (see [Figure IV-5]).

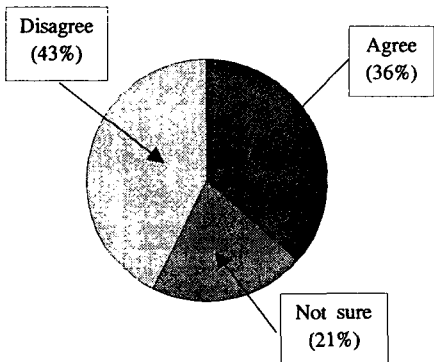
<Table IV-8> Opinion about the Mathematics Curriculum

| Questionnaire Items | Agree | Not Sure | Disagree |
|--|-----------|----------|----------|
| Curriculum is consistent in sequence and grade appropriately developed. | 106 (74%) | 28 (20%) | 9 (6%) |
| Teacher's manual is very clear in explaining the math contents and its goals. | 62 (43%) | 44 (31%) | 37 (26%) |
| Teacher's manual clearly explains how to teach math topics to children. | 52 (36%) | 30 (21%) | 61 (43%) |
| Math textbook covers the scope of the math topic very well. | 92 (64%) | 33 (23%) | 18 (13%) |
| Student workbook assists students to master principles and algorithms in math. | 89 (62%) | 39 (27%) | 15 (11%) |



[Figure IV-5] Teacher's manual is very clear in explaining the math curriculum and its goals.

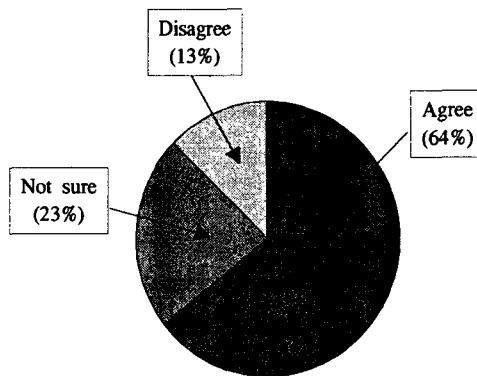
Forty three percent of the teachers did not think the teacher's manual illustrated how to teach students mathematics. Thirty six percent agreed that the manual demonstrated instructional methods and explained how to use materials well. Twenty one percent of teachers were not sure about the manual's clarity (see [Figure IV-6]).



[Figure IV-6] Teacher's manual clearly explains how to teach math topics to children.

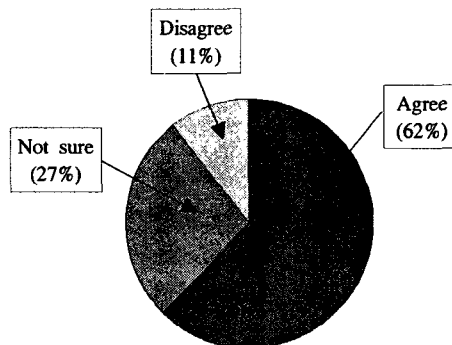
Sixty four percent of teachers agreed the mathematics textbook addressed the scope of the mathematics content very well. Twenty three percent of teachers were not sure. Thirteen

percent of teachers stated the mathematics textbook did not cover the scope of the mathematics content for elementary school students (see [Figure IV-7]).



[Figure IV-7] Math textbook covers the scope of the math topics very well.

Sixty two percent of teachers responded that the student workbook allowed students to master principles and memorize algorithms to solve mathematics problems. Twenty seven percent of the teachers were not sure and eleven replied that the student workbook did not help students master principles and algorithms (see [Figure IV-8]).



[Figure IV-8] Student's workbook assists students to master principles and algorithms in math.

One of the concerns brought up by 49 teachers (9 male, 40 female) related to teaching more advanced students, compared to other students in the same classroom. The advanced students took private mathematics lessons after school so that they already mastered skills of higher grade materials. Thirty four teachers (14 male, 20 female) admitted teaching mathematical concepts and principles was difficult because many students came to class having mastered algorithms from private lessons. These students interrupted the class continuously by blurting out the correct answers even before teachers explained how to solve the problem. Twenty three teachers described that they were not provided enough concrete instructional materials to teach concepts and show procedures. There were concerns about lack of class time (9 teachers), student poor problem solving skills (8 teachers),

difficulties in illustrating concepts using concrete materials (8 teachers), large numbers of students in class (6 teachers), and students' poor prerequisite skills (6 teachers). Issues raised by few teachers (1 to 5 teachers) were: students' focus on practice and drill to master computation skills, their low interest level in mathematics, poor basic skills, math anxiety, lack of instructional workshops for teachers, minimal real life connection of the math subject, and lack of instructional resources (see <Table IV-9>).

An open-ended question inquired about how the teachers use the national curriculum in their teaching. Forty six teachers (17 male, 29 female) thought that overall, the curriculum was grade and age appropriately developed. Thirty eight (8 male, 30 female) teachers stated that there were too many topics to cover during the class time allocated. Thirty five (13 male, 22

<Table IV-9> Overall, what are your most serious concerns in teaching math?

| | Concerns | Male | Female | Total |
|----|--|------|--------|-------|
| 1 | Teaching far advanced students compared to their peers due to private lessons at the after school programs | 9 | 40 | 49 |
| 2 | Teaching math concepts and principles | 14 | 20 | 34 |
| 3 | Lacking concrete instructional manipulative | 10 | 13 | 23 |
| 4 | Not enough time to cover all contents | 4 | 5 | 9 |
| 5 | Students' poor problem solving skills | 3 | 5 | 8 |
| 6 | Difficulties in illustrating concepts using manipulative | 0 | 8 | 8 |
| 7 | Big sized class | 2 | 4 | 6 |
| 8 | Students' poor prerequisite skills | 2 | 4 | 6 |
| 9 | Students'heavy focus on computation skills | 2 | 3 | 5 |
| 10 | Students' low interest in math | 2 | 2 | 4 |
| 11 | Students' poor basic skills | 1 | 3 | 4 |
| 12 | Students'math anxiety | 3 | 0 | 3 |
| 13 | Lacking instructional workshops | 1 | 1 | 2 |
| 14 | Difficulties in relating math to real life | 0 | 2 | 2 |
| 15 | Lacking instructional resources | 0 | 1 | 1 |
| | No response | 0 | 11 | 11 |

female) teachers perceived the curriculum contained content that was too high for the grade level. Especially, between 3rd grade and 4th grade, the content became too difficult for the students to understand the topic. Some teachers raised issues such as: The curriculum was not practical to use in their classroom; it should include more real life problems in the textbook; Instructional methods explained in the teacher's manual were too abstract to understand; it still over emphasized computation skills; the tasks were too structured thus decreasing student's interest; and more workshops for the teachers should be provided (see <Table IV-10>).

V. Discussions and Conclusions

The highest percent of teachers favored mathematics as the subject they liked during their

school years and felt confident in teaching students mathematics. The majority of teachers (91%) obtained a higher than average mathematics grade when they were students. This affirms that Korean teachers have high competence in mathematics (Leung & Park, 2002). Also, this may be a factor contributing to Korean students' high achievement in mathematics, as suggested by Park's report (2004). However, 43 percent (61 teachers) of these teachers who had high competence reported that they still found difficulties in teaching students with a wide range of mathematics ability levels. They also expressed that explaining concepts and principles was not as simple as they expected. This implies that teachers are not well equipped to use differentiated instruction in spite of their strong content knowledge. This means that they need more information, resources, and training in effective instructional strategies to deal with the

<Table IV-10> Overall, what do you think about the math curriculum in elementary school?

| | Opinions Regarding the Curriculum | Male | Female | Total |
|----|--|------|--------|-------|
| 1 | Appropriately developed | 17 | 29 | 46 |
| 2 | Too much contents to teach | 8 | 30 | 38 |
| 3 | Difficult contents for students | 13 | 22 | 35 |
| 4 | Not practical to use in class | 5 | 1 | 6 |
| 5 | Needs more connection to real life | 4 | 1 | 5 |
| 6 | Instructional methods are still abstract | 2 | 2 | 4 |
| 7 | Still focuses on memorization and computation skills | 1 | 3 | 4 |
| 8 | Too detailed & structured to increase students' interest | 1 | 1 | 2 |
| 9 | Needs more in-service training for the curriculum | 0 | 2 | 2 |
| 10 | Include more problem solving activities | 0 | 1 | 1 |
| 11 | Helps students understand process | 1 | 0 | 1 |
| 12 | Easier to utilize instructional manipulative | 0 | 1 | 1 |
| | No response | 1 | 15 | 16 |

individual student at his/her level, as well as the whole class. Especially, when teachers have a large number of students per class, it becomes more difficult to use concrete materials to teach mathematical concepts. Korea was reported as the highest student-to-teacher ratio in the elementary classroom among the 40 countries in the Trends in International Mathematics and Science Study (2003).

In terms of the national curriculum, overall most teachers agreed it was age and grade appropriately developed and scope and sequence were systematically well structured. However, the teacher's manual should be revised to meet teachers' suggestions and concerns. The responses regarding the teacher's manual were divided into almost three equivalent groups. For example, regarding the clarity of curriculum goals and objectives explanation in the manual, forty three percent of teachers agreed the explanation was clear, thirty one percent felt not sure, and twenty one percent of teachers disagreed. This implies that the curriculum goals and objectives should be more clearly discussed in the manual. Forty three percent of teachers claimed that the manual did not provide a sufficient variety of instructional methods to teach different topics. The Korean teacher's manual was considered very structured and systematic in illustrating the instructional sequence so the teacher can follow the lesson plan exactly and basic skills can be covered for each grade level, even if teachers were not very well trained (Chung, 2005). This highly structured and sequenced format provided no room for teachers to be flexible and creative in implementing lessons and adjusting them for

slow or gifted learners. Also, the manual should include various and specific instructional strategies and examples so that teachers can utilize them in their teaching. Thirty eight (26%) teachers claimed that the curriculum contains too much content to teach within the class hours allocated per semester. The 7th curriculum committee intended to reduce 30% of previous edition, but, Paik (2004) claims it resulted in reducing 10% of content (Paik, 2004). However, classroom teachers still believe the 7th curriculum should be adjusted to contain less content. Thirty five (24%) teachers expressed that the content was difficult for their students. According to a comparative mathematics curriculum study between Korea and the USA conducted by Chung (2005), the Korean mathematics curriculum contains a similar scope and sequence of mathematics content comparing to one of the U.S. curricula, *Everyday Mathematics Curriculum* (2001). These findings are different from Li's study (2000) that claimed Asian curricula contained more difficult and advanced topics than the U.S. curriculum.

The 7th national curriculum was characterized as a "differentiated curriculum" and a "learner-centered curriculum" (Paik, 2004, p.13). However, this study showed teachers had difficulties in teaching mathematics to students who had a wide range of mathematics abilities. Considering the class size (mean 33), it would be very difficult for a teacher to accommodate individual students as the only adult in the classroom. This implies that the curriculum is not teacher-friendly for adjusting mathematics content and difficulty to the level of the individual student, as intended in

the 7th curriculum development.

VI. Suggestions for further research

The following studies should be conducted to extend this study:

1. A comparative study to contrast teachers' perceptions about their mathematics curriculum and mathematics education between Korea and other countries.
2. A comparative study to contrast teacher education curricula between Korea and other countries.

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보기보다 쉽지 않다: 초등 수학교육과정에 대한 수학교사의 인식

정인숙 (미국샌메리대학교)

류희찬 (한국교원대학교)

본 연구는 제7차 수학교육과정에 대한 한국 초등 수학 교사들의 인식을 조사하였다. 본 연구자들이 고안한 설문지를 사용한 결과 모두 143명이 설문에 응하였다. 데이터는 기술적 방법에 의거 분석되었다. 응답자의 67%가 교육 과정이 범위와 계열에 있어 만족스럽다고 보고 있으나 43%는 가르칠 내용의 교수학적 전략이 교사용 지도서에 보다 자세히 명기될 필요

성을 지적하고 있다. 38명(26%)는 너무 많은 내용이 지도되고 있다고 지적하고 있으며 35명(24%)는 가르칠 내용이 학생들의 인지 발달 수준에 비해 너무 어렵다고 지적하고 있다. 응답자들은 수학을 지도하는 데 있어서 가장 어려운 점으로 과외 활동으로 인해 관계로 능력이 매우 다른 학생들을 대상으로 수업을 개별화하는 것임을 지적하고 있다.

* key word : national mathematics curriculum for elementary schools(초등수학교육과정), teachers' perceptions(교사인식)

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