

**Pre-service Teachers' Perceptions of  
Departmentalization of Elementary Schools**

**Fuchang Liu  
Wichita State University**

**Abstract**

This paper discusses the advantages and disadvantages of departmentalization of elementary schools, with an emphasis on teaching mathematics, as perceived by preservice teachers who shared their opinions through online discussion. Advantages include teachers' enthusiasm about and focused attention on the specialized area and students' easier transition to junior high school. Disadvantages include not knowing students on a more personal level, loss of integration and connection across different subjects, added stress on young children when they have to move from classroom to classroom, and time wasted during such moves. Some middle ground, such as team teaching, was offered as a compromise between departmentalizing and not departmentalizing.

## Preservice Teachers' Perceptions of Departmentalization of Elementary Schools

U. S. students are consistently outperformed by students from other industrialized nations, and more noticeably by students from East Asian countries, in mathematics and science (see Leinwand & Ginsburg, 2007; L. Ma, 1999; Wang & Lin, 2005). Discussion on reforming the American educational system has always been going on. Many recent efforts have been devoted to new ways of reforming American education, such as school choice (including vouchers, charter schools, and privatization), school accountability, and the No Child Left Behind Act signed into law in 2001. However, most large-scale reforms are dependent upon federal and state legislation for necessary support. Furthermore, implementation often takes time, and yet their success has not been convincingly documented (Roselli, 2005). In examining some hotly debated issues centering around American education reform, Friedman (2004) presented quotations that describe the mediocrity of American public education for the past century, such as "Our standard for high school graduation has slipped badly. Fifty years ago a high-school diploma meant something" and "Whether we like it or not, we're beginning to see that we're pitted against the world in a gigantic battle of brains and skills" (p. 3). Unfortunately, the author claimed that such quotations, made 50 or 100 years ago, would be entirely plausible for today's situation.

In this process, however, some reform efforts, small-scale but with potentials to have a long-lasting effect on the whole educational system, are sometimes overlooked. Departmentalization of elementary schools may be one of such reform efforts that has not been receiving adequate research attention. A brief look at the history of American educational organization will provide a general idea of how this idea has fared in the past.

American educational organization was initially built on "one-room" schools in which the highest level of education considered as necessary in society was an eighth-grade education (Guttek, 1992). The majority of early elementary schools were rural schools built in agricultural communities. With the rise of industries farm communities gave way to the development of cities and the creation of high schools in those cities. Since the early part of the 20th century, it was recognized that high schools required specialized treatment of each of several different areas of study due to the expansion of knowledge in them, and high schools have since been departmentalized. Elementary schools during this period, referred to as grade schools, included grades 1 through 8. But this "8-4" school system (8 years of elementary school and 4 years of high school) was a source of discontent among advocates of industrial education, who contended that the eight-year elementary school still reflected rural, 19th-century America (Guttek, 1992). Subsequently, junior high schools started to emerge. It took only two decades for educators to realize the importance of subject matter specialization and grades 7 and 8 became departmentalized. Nevertheless, the lower, elementary grades in the traditional one-room school model were virtually unaffected where one teacher taught all the grades and subjects within a single facility (Spring, 2001).

Concerning teacher preparations, normal schools had been established throughout the country and were regarded as the standard institution for preparing elementary school teachers (Guttek, 1992). Later, normal schools developed into teachers' colleges to meet the growing need of preparing large numbers of elementary school teachers. The model most of the teachers' colleges assumed was based on the one-room schoolhouse. It is the model still used by today's colleges of education across the country for preparing elementary teachers.

Although some elementary school administrators experimented with departmentalizing elementary schools around the middle of the 20th century, and some discussion on this issue followed (see American Association of School Administrators, 1965; Findley, 1966), the idea

was not readily accepted, and the dominating model of elementary school organization has remained the traditional self-contained classroom where a teacher teaches all subjects throughout the day.

However, the idea of departmentalizing elementary schools has never died out. Instead, it found manifestation in some other courses of action. A close look at today's elementary schools reveals that music, art and physical education have evolved into departmentalized subjects. That is, a regular classroom teacher does not have to teach any of these subjects. Instead, they are typically handled by teachers who have had specialized training in these subjects. Furthermore, some school districts and classroom teachers have been experimenting with departmentalization by applying the principle of "team teaching." For example, two fourth-grade teachers, instead of teaching their individual classes all day, may form a team where the one better at mathematics will teach mathematics to both classes and the other, who may be better at language arts, will teach language arts to both classes.

As the new millennium approached and education in the United States came to face new challenges, however, there was a renewed interest in the issue of departmentalizing elementary schools (Mac Iver & Epstein, 1993; McPartland, 1987). What can be found in the literature seems to be in favor of this idea.

The National Commission on Excellence in Education (1983) reported that teacher preparation curriculum is weighted heavily with courses in educational methods at the expense of courses in the subjects to be taught. Friedman (2004) claimed that teachers who have been trained in the subjects they teach perform better than teachers who lack subject-matter preparation. Education Committee of the States (2001) reported that eighth-grade students whose teachers majored in either mathematics or mathematics education had higher average scores in mathematics than did students whose teachers did not major in these subjects. L. Ma (1999) made a convincing case that American elementary teachers lack the so-called "profound understanding of fundamental mathematics" required to teach elementary mathematics well.

Thus, it is probably no coincidence that there have been calls for departmentalizing elementary schools. Chan and Jarman (2004) listed the following advantages for elementary school departmentalization: 1) teachers are specialized in particular disciplines, 2) students are exposed to the instructional wisdom of more than one teacher, 3) teacher retention is higher due to more focused workload and greater job satisfaction, 4) students are better prepared for transition to middle school, and 5) students are able to move between grade levels according to ability (i.e., allowed to move faster or slower in a subject than other students).

These advantages, nevertheless, are mostly from an administrative and organizational point of view. Little is known about how teachers think about this issue from an academic perspective, thus providing a rationale for the present study on preservice elementary teachers' perceptions of the potential advantages and disadvantages of departmentalization of elementary schools. Perceptions from such individuals are essential in understanding this issue in that these are the very people who will be teaching elementary school children on a daily basis.

### **Methodology**

This study used a qualitative case study method to describe preservice elementary teachers' perceptions of departmentalization of elementary schools. The participants were 62 preservice teachers taking a mathematics methods course. The majority were female, Caucasian, and in their early 20s. All were in their senior year, right before student teaching. The study

covered two consecutive semesters, with 27 participants enrolled in one and 35 in the other, and there were two sections of the same course in each semester.

The institution where this study was conducted was a large, four-year state university situated in a U.S. Midwest metropolitan area. Its College of Education is a major provider of classroom teachers for the local school district and those in surrounding areas. Students in this college usually take two years of general education courses before they start their teacher education program, in which they spend an increasing amount of time fulfilling their field experience requirement each semester until their full-time student teaching semester.

The author of this article was also the instructor of the course which the participants took as one of the required courses in their program. The author had supervised preservice teachers' field experience and worked with inservice teachers on a regular basis. Prior to this current position on elementary mathematics education, he had taught high school mathematics for eight years and college-level English for ten years.

To solicit participants' perceptions of departmentalization of elementary schools, online discussion was used, where a prompt was posted on Blackboard, an online system for faculty and students' academic use. The prompt read,

*Do you want to teach in a departmentalized school?*

*Most, if not all, American elementary schools are not departmentalized. That is to say, an elementary teacher is a Jill of all trades and is expected to be equally strong in all subject areas. But we know that very few people are multitalented, and some researchers have proposed that elementary schools be departmentalized, like junior high or high schools are, and a teacher just teach in one subject area.*

*Here are some ideas to talk about. If you had a choice (to teach in a departmentalized school vs. a nondepartmentalized school), which one would you prefer to teach at? Why? If it were the former type, which subject area would you choose to teach? With regards to teaching mathematics, do you think departmentalization is a good idea? What are the advantages and disadvantages? What about its feasibility? (These questions are only intended to start the discussion. You are encouraged to talk about this issue from all different perspectives you can think of.)*

The participants engaged themselves in the discussion and shared their opinions. Each participant was supposed to post a minimum of two posts within the week. It was specified that short responses to other participants' posts, such as "I agree," would not count (The discussion of this and six other topics was at the same time used as a control condition for another study. For details not reported here, see Liu, 2008).

All posts were aggregated into one Word file, which was probed using NVivo, a software for analyzing qualitative data. First, a word frequency chart was generated, from highest to lowest. Next, notional words, notably nouns, verbs, and adjectives such as *choice*, *integrate*, and *specialized*, were highlighted, with functional words skipped. These highlighted notional words then were clustered into several themes: enthusiasm, subject specialization, transition to junior high school, knowledge of students, integration of subjects, added stress, waste of time, and team teaching. These themes are to be presented as advantages, disadvantages, and middle ground in the next section.

## Results

Most participants discussed this issue based on what they observed in a school setting or directly from their own experiences. All the participants had pre-student teaching experience.

About half of them had prior part-time teaching experience, either as a substitute or para-educator. A few had their own school-age children. Quite a few participants also recalled the time when they were going to elementary school themselves.

### **Advantages**

Some participants were quick to point out the potential advantages of departmentalization of elementary schools, with teachers' enthusiasm about the subject, their focused attention on the specialized area, and easier transition to junior high school for the student being the most often mentioned. In describing her own children's school, which was departmentalized, one of the participants said that both the students and teachers liked departmentalization. "The kids seem to like the change and the teachers seem to like to teach the subject they are most passionate about." Another participant argued that although teachers should be well educated in all subjects, that does not necessarily mean that they will *like* all of them. "A person's preference for a subject will show through in how it is taught and therefore teachers should be focusing on a subject they actually enjoy and understand." Still another participant said that departmentalization "allows the students to have a teacher who is enthusiastic and very knowledgeable about their specific subject. We could teach our strengths."

Some participants argued that teaching the subject area they like means that teachers can avoid having to teach some other areas they are not good at. One participant said, "I'm not good at English, and learning how to [teach it], I have struggled." Another participant commented that not all teachers like all four subjects (namely, mathematics, English, science, and social studies). "What happens when a teacher is not as proficient as she should be in a subject area?" Another participant agreed. "[Mathematics and English] are my strengths. Science and social studies are not and I would have a hard time being enthusiastic (and making it REAL to the students) about these subjects."

The benefits of departmentalization of elementary schools were also demonstrated through the belief of teacher specialization. "Just like medical specialties, we could become a 'specialist' in our field, and our students would benefit from that," a participant said. A following post mentioned that teachers "would be more specialized and would be able to be more creative and imaginative because they would only have that subject to teach." Another participant said that "teachers can focus on one or two subject areas and become more expert on the subjects they are teaching."

On the learning side, teacher specialization means that students would get the best teaching for all the subjects. One participant said that she would not teach English because "I am not as good at English, don't enjoy it, and I can't teach it as well as other subjects." Instead, she said she would teach mathematics. "My students would get great math instruction and also great English instruction from a teacher who is good at that subject."

Related to this teacher specialization is the conviction that teachers would be able to better prepare their lessons, plan for more in-depth activities, and reach students "deeper." All this, in turn, would lead to better student learning. "[Departmentalization] would make planning easier because teachers would only have to plan for one or two subjects," said one participant. Another participant talked about her own elementary school, which was departmentalized. "The teachers loved the subject areas that they taught, and departmentalizing gave them more planning time because they didn't have to plan for every subject area, every day."

As is the current case, the point between nondepartmentalization and departmentalization is usually between elementary school and middle/junior high school. Thus, some participants

viewed departmentalization of elementary schools, especially on the upper grade level, as a way to ease this transition. "Sixth graders can be intimidated by a new school and a new form of classes. However, if they are introduced to the new form of classes [while still at elementary school], this could help ease their minds." Another participant said, "When students get into 4th or 5th grade, there should be some departmentalizing because you have to get the students used to going to different classrooms with different teachers." Still another participant said that departmentalization would prepare elementary school students for middle or high school and then it "won't be so scary when they start middle school and high school." She continued,

...when I was in elementary we had a pod in 5th grade where there were three different teachers and we all rotated so we went to three different classrooms during the day. I feel that it was very helpful and wasn't so stressful when I went to middle school because we had already experienced a similar situation.

In addition to these advantages, participants also mentioned some other benefits of a departmentalized elementary school. One participant took a financial perspective and said that teachers at a departmentalized school could save money on instructional aids as they would just need to prepare for one subject area instead of all subject areas. Another participant commented that "sometimes science and social studies are put on the back burner because reading and math need to be worked on." Departmentalization would ensure that each subject had a designated time and teacher so that no subject would be slighted.

During a previous class meeting, the topic of high level of mathematics anxiety among elementary school teachers was discussed (Liu, 2008), and that prompted some participants to make a connection between this and the departmentalization of elementary schools, or the lack of it. One participant claimed that "most teachers have the fear in teaching math. So as an upcoming teacher myself I wouldn't mind if another teacher who's [*sic*] only focus was math taught math." Another participant said, "It seems that some people consider themselves to be 'math people' and others just don't." An advantage to "departmentalizing math" would be to have those teachers with a true love of mathematics teach it. "Maybe there would be less math anxiety if that love were fostered at an early age." And another participant showed preference for departmentalization by saying, "In class we discussed how math anxiety is often passed down to students because their teachers have math anxiety. This would no longer be a problem because those teachers would not teach math." Still another participant talked about her personal communication with teachers on this:

...I have spoken to teachers that prefer one subject over another. Letting an elementary teacher only teach what they love could give the student a chance to develop the same admiration for the subject. If a teacher doesn't like teaching a particular subject, it may, and probably does, come across in their teaching.

One participant spoke from her own experience:

As far as mathematics is concerned, I believe departmentalization is extremely important. Take my case for example, I have had math anxiety from a bad experience with my freshman geometry teacher. I struggled with math and it has even continued into college. Although I have had some great college math instructors, I still have anxiety!

### **Disadvantages**

Despite the advantages mentioned above, disadvantages of departmentalization of elementary schools were obvious to many participants. The common ones include not knowing students on a more personal level, loss of integration and connection across different subjects,

added stress on young children when they have to move from classroom to classroom, and the time wasted during such moves.

First of all, many participants indicated that if they had a choice, they would rather keep one group of students for the whole day than seeing several groups of students for a much shorter time and thus not knowing them very well. As one participant put it, "I like the traditional style because I like the idea of having one group of students all day, everyday. I like being able to invest in one group deeply rather than several [groups of] students on a more shallow level." Another participant listed some student characteristics that teachers should know: "If the teacher only sees a student for 45 – 60 minutes a day, they don't know the student that well. They don't know their personalities, likes, dislikes, interests, struggles, etc." Another participant provided the rationale for the need to know every student well: "Different aspects of a student's life affect their ability to learn. Being able to apply what you know personally about the students to how you direct your lesson can implement the best learning environment for the students."

According to some participants, being able to know students on a more personal level will foster a strong teacher-student relationship, which, in turn, will lead to students' better academic achievement. As one participant commented, "It is good for students and teachers to have a personal relationship. This will make the students feel more comfortable and therefore more excited to learn and investigate." This was echoed in another participant who said departmentalization was not appropriate for grades kindergarten through two. "At this age they need to bond with a single teacher and their classmates," she said. "They need to feel comfortable and secure in order to have the best learning environment."

The next common problem with departmentalization is the loss of integration across different subjects. One participant said, "As an elementary teacher, we are supposed to integrate much of our lessons together so that students will see connections across content areas. This is important. My memory of high school is that nothing was really connected." Another participant observed, "Teaching all subjects at the elementary level gives the teacher flexibility and creativity to integrate all subjects when teaching. The integration of the curriculum allows for deeper understanding/comprehension of the subject matter being taught." And she went on with an example. "For example, the students in my class last year got so excited when they realized they were doing math in science." Still another participant claimed that she was speaking from her own experiences in schools and of her own three children. She said, "Connections, through integration, are so invaluable when teaching children. When these connections can be made you, as a teacher, have helped to facilitate deeper understanding of the subject matter being taught." Another participant shared with her classmates an example in her classroom:

Right now, in my classroom we are studying apples. We are reading stories about apples, experimenting with apples, counting/graphing/patterning with apples and having fun with art related apple activities. The more time we spend on this subject in many areas/activities, the more the students are connecting it in some way to their personal experiences.

Some participants went further and suggested that integration and connection among different subjects will require proper communication among teachers, as one participant said, "To be a successful departmentalized elementary school, there would need to be TONS of communication... Communication seems to be a problem at any job I have been at (working with kids). It's there, but it's NEVER enough!"

One participant brought up an interesting case involving communication among teachers. She recalled,



I observed a 3rd-grade classroom [in another state] a few years ago and the teacher I observed would have her students change classes for math and language arts. It worked out well for her because the other teacher was her husband so they were easily able to communicate information.

Many participants expressed their concerns about whether elementary school children are able to handle the switching of teachers and classrooms. One participant mentioned, "They are still very concrete thinkers and having to move around and change teachers would make school even more confusing to them." This was echoed by a similar response, "I think having a whole bunch of different teachers would just stress elementary students out." Another participant commented, "...younger students need simplicity and predictability in their lives...They need to have the stability of one teacher they can get to know very well and depend on to be there for them all throughout the school day."

One comment was from a participant who was once a counselor:

I have seen too many students lose interest in school when they hit middle school and have five different teachers for five different subjects everyday [*sic*]. When I worked in the counselors' office at the middle school level, I tried to talk to the students about why that happens. They almost unanimously felt that with that much shuffling around, no one really cared if they did their work or not, and no one really cared if they understood it or not.

One participant compared how she felt when she had to rotate and how she felt when she did not have to:

Growing up, I always struggled to adjust to a different room when we traded. I remember going to one teacher's room for Science [*sic*] and the other for Social Studies. I don't think I really learned that much because I was distracted by the new environment and the different teaching style. I think it is important for students to have one teacher, one group of classmates, that is how you become a close class. There was one year while I was in school and we did not rotate for Science, Social Studies, and Health and that was my favorite. I became so close to my teacher and my classmates.

Another perceived problem in connection with departmentalization is the time wasted when students have to rotate from classroom to classroom and the classroom management issue as a result of the rotation. A participant talked about the time during her fifth grade:

I was in an elementary school that departmentalized fifth grade to get us ready for the change in middle school, which I think was a good idea. But the bad thing about that was that we lost a lot of time changing classes. I would guess at least 10 – 15 minutes each time we switched.

Another participant agreed and said, "Changing classrooms does take a lot of time especially at the lower grades. Schools today already do not have enough time to teach what needs to be taught." Still another participant brought up the classroom management issue:

...by making students change classes and teachers it is more difficult to build class unity. This could also cause problems with classroom management. Children do need structure in the classroom and by having them change rooms and teachers, that structure is lost.

### **Middle Ground**

It is interesting to note that as disadvantages of departmentalization of elementary schools were suggested and discussed, some solutions were offered as a way to address those

disadvantages. For example, among the suggested disadvantages of departmentalization were loss of instructional time, difficulty with classroom management, and possible stress incurred on the students when they had to rotate from classroom to classroom. One participant asked, "What if the teachers were the ones that moved from room to room? That may be part of a solution to [those problems]."

Also, after both the advantages and disadvantages of departmentalization of elementary schools were presented, some participants put forth the idea of team teaching as a compromise between departmentalizing and not departmentalizing. The participants restricted team teaching to the upper grade level, with teams composed of only two members. Indeed, benefits of departmentalization may be most obviously realized at the upper elementary school level when the subject matter taught is at a more advanced level while at the same time students at the lower level, when kept intact, will not experience the disadvantages of departmentalization. Most participants spoke from their own experience. One participant said,

I agree with [the other participants] about team teaching certain subjects. Especially in the upper elementary grades, switching specific subjects with teachers could be beneficial for students. The reasons being: students would have the opportunity to work with another teacher as well as having a teacher's interest in a specific subject would be transferred to the students who would gain insight into that particular subject.

Another participant said:

Team teaching would be great for me, because I am not all that confident in science, where as [*sic*] I am very confident in social studies. If I could find a team teacher and work with them, like [the author of the previous post] said her son's teachers do, I can see how that could be beneficial to my students; I would still be with them the majority of the day.

Most participants who proposed team teaching mentioned its advantages and also the possible avoidance of some disadvantages. One participant commented, "Teachers would be able to focus their efforts more, while still having enough exposure to the same students to get to know them well. This would require collaboration with only one other individual." Another participant said, "I think that with two teachers assigned to one group of students, they can put their heads together to come up with lessons. It would also be much easier to integrate subjects than if it were completely departmentalized."

A participant described her own observation:

I have been in schools that have used team teaching and I enjoyed it. I think that the students gained value from going to teachers other than their "homerom" teacher to learn different subjects. One school that I saw this happening in had a teacher for science and it was taught as a special component. Another teacher stayed with the class for both 4th and 5th grade and another had a combo class of 4th- and 5th-grade students. The school that I am in now has used the team approach to a small extent by splitting the students up for math intervention. They have a group that learns basic computation, graphing, fractions, etc. and they rotate after a week...I know that the kids are getting more out of it by learning from different teachers and teaching styles.

Another participant who was at the same school agreed:

I have been to the school that [the participant mentioned above] is talking about and I loved it. The teachers work in teams of two for each grade level and do a great job at it. I was helping in the fifth-grade classroom in which one teacher did science while the other did social studies. The students seemed to enjoy the fact that they got to move around and

spend some time with a different teacher. This minimal departmentalization benefits the students in that they will be better prepared when they go on to middle school and high school.

Still another participant followed up with this story:

I really like the idea of team teaching. I see this working well in my son's first-grade classroom. He is in an open classroom with two teachers (each having their own areas and homeroom students). They plan their day together and teach the same things at the same time. They have their own students for reading, math, and language arts then one of them teaches science and the other teaches social studies to the whole group. So they departmentalize with science and social studies. In the upper grades they become even more departmentalized. The communication between the teachers in this school makes this possible. These students are not leaving their own classroom but they do get what I consider to be the best of both teachers...Beyond primary years I think that limited departmentalization would be nice, the teacher would be able to become more of an expert on the subjects they were responsible for and the planning would be easier with less subjects.

Overall, more participants seemed to favor departmentalization over self-contained classrooms. Despite that, participants on each side were adamant about what they believed in and were not easily swayed by opinions from the other side. This is probably why some compromises between the two sides as the middle ground, most notably team teaching, were viewed favorably by many participants.

### **Discussion**

There may be a link between the "Jill of all trades and master of none" situation that many elementary teachers find themselves in and their anxiety associated with some of the subjects they have to teach, with mathematics anxiety being the most often noticed and studied (X. Ma, 1999). Recent research revealed a high level of mathematics anxiety in elementary teachers (Austin, Wadlington, & Bitner, 2001). It has also been recognized that many preservice elementary teachers begin their college studies with anxiety towards mathematics (Harper & Daane, 1998). What the participants in this study expressed lends support to this recognition.

As some participants in this study suggested, departmentalization may be a way to fight mathematics anxiety experienced by many elementary school teachers, because teachers then will be able to focus on the one subject they select to teach. This focused attention actually starts when future teachers are still in high school. When secondary students choose what to major in in college, interest will play a decided role, since few will choose something they do not like. The subject these high school students are interested in is usually their favorite subject, the subject they typically have a profound understanding of and are strong at. During their teacher preparation programs, preservice teachers can cut down on the number of subject areas they have to be prepared in, and instead take in-depth courses in a specialty area. These in-depth courses will provide them with a deeper and better understanding of the subject they will teach. Naturally, teachers with a preference for and a deeper understanding of the subject are less likely to develop anxiety towards it. As one teacher in Natoli's (1998, p. 28) study said, "I feel I can teach what I like and do a better job."

In reading the participants' posts, the author noticed an optimistic tone among those disfavoring departmentalization concerning one teacher having to teach several subjects at the same time. This is exemplified in one participant who said, "...it's not like the subjects are all

that difficult. We all passed 5th grade so it is not like we don't know the information." This idea is similarly expressed by another participant who said, "Even though it is true that we all have our strengths and weaknesses in subject areas, elementary knowledge of these subjects is basic enough that we should all be able to be experts at teaching all subjects..." Another participant said, "I think that we are...perfectly able to teach every subject."

Research, on the contrary, has indicated that elementary school subjects require much more rigid, specialized training than many people believe. In talking about subtraction, a very early elementary mathematics topic, L. Ma (1999) gave only one answer, "Yes," to all the three questions posed:

- Is a profound understanding of mathematics necessary in order to teach subtraction?
- Does such a simple topic even involve a profound understanding of mathematics?
- Would teachers' subject matter knowledge make any difference in their teaching and eventually contribute to students' learning? (p. 2)

Why is there such a disparity between what research suggests and what some preservice elementary teachers believe? One reason may be that the content of elementary school subjects is believed to be something that "everybody can do." But being able to do something, such as subtraction, and being able to teach it are different things. For example, just because a person can speak English fluently does not necessarily mean that that person can teach English to elementary school students without formal, specialized training.

As is obvious from the perceptions presented above, both advantages and disadvantages of departmentalization of elementary schools are shared and supported by and can find support in many preservice elementary teachers. It would be unfortunate, then, to jump to conclusions as to whether departmentalizing or not departmentalizing elementary schools is better. Further studies on this issue are thus suggested.

### **Limitations**

There were several limitations with regards to the conduction of this research. The first one was that some participants, having been educated in a self-contained classroom, had no prior exposure to any type of departmentalization. To engage everyone in the online discussion of this issue, a brief introduction was deemed as necessary, and the first paragraph of the prompt was intended for this purpose. Because of the "unheatedness" of the discussion of some earlier topics (the current topic was one of a series of discussion topics), the prompt was composed in a way as to instigate as much discussion as possible. Although it was not the intention of this author to take sides on this issue, the prompt might sound leading to people who were not taking part in the discussion.

Another limitation is the author's own personal preference of the school setup. Although he had been educated in both a departmentalized and nondepartmentalized setting and tried as much as possible to be neutral in the process of conducting this research, his personal preference might have inadvertently influenced the presentation and interpretation of the results of this study.

### References

- American Association of School Administrators. (1965). *Departmentalization of elementary schools*. Retrieved from <http://www.eric.ed.gov/PDFS/ED017329.pdf>
- Austin, S., Wadlington, E., & Bitner, J. (2001). Effect of beliefs about mathematics on math anxiety and math self-concept in elementary teachers. *Education, 112*, 390-396.
- Chan, T. C., & Jarman, D. (2004). Departmentalize elementary schools. *Principal, 84*, 70.
- Education Committee of the States. (2001). *The nation's report card: Mathematics 2000*. Washington, D.C.: National Center for Education Statistics.
- Findley, W. G. (1966). *Departmentalization vs graded classroom organization in the elementary school (grades 1-7), abstracts of research pertaining to*. Athens: Georgia University, Research and Development Center in Educational Stimulation. (ERIC Document Reproduction Service No. ED017050)
- Friedman, I. C. (2004). *Education reform*. New York: Facts On File.
- Guttek, G. L. (1992). *Education and schooling in America* (3rd ed.). Boston, MA: Allyn and Bacon.
- Harper, N. W., & Daane, C. J. (1998). Causes and reduction of math anxiety in preservice elementary teachers. *Action in Teacher Education, 19*, 29-38.
- Leinwand, S., & Ginsburg, A. L. (2007). Learning from Singapore math. *Educational Leadership, 65*(3), 32-36.
- Liu, F. (2008). Impact of online discussions on elementary teacher candidates' anxiety towards teaching mathematics. *Education, 128*, 614-629.
- Ma, L. (1999). *Knowing and teaching elementary mathematics: Teachers' understanding of fundamental mathematics in China and the United States*. Mahwah, N.J.: Lawrence Erlbaum Associates.
- Ma, X. (1999). A meta-analysis of the relationship between anxiety toward mathematics and achievement in mathematics. *Journal for Research in Mathematics Education, 30*, 520-540.
- Mac Iver, D. J. & Epstein, J. L. (1993). Middle grades research: Not yet mature, but no longer a child. *Elementary School Journal, 93*, 519-533.
- McPartland, J. M. (1990). *Balancing high quality subject-matter instruction with positive teacher-student relations in the middle grades: Effects of departmentalization, tracking and block scheduling on learning environments*. Baltimore, MD: Johns Hopkins University, Center for Research on Elementary and Middle Schools. (ERIC Document Reproduction Service No. ED291704)
- National Commission on Excellence in Education. (1983). *A nation at risk : the imperative for educational reform : A report to the Nation and the Secretary of Education, United States Department of Education*. Retrieved from <http://www.ed.gov/pubs/NatAtRisk/index.html>
- Natoli, M. (1998). Issues concerning departmentalization on the elementary school level: Grades 3-6 (Master's thesis, Caldwell College. UMI No. 1415636).
- Roselli, A. M. (2005). *Dos & don'ts of education reform*. New York: Peter Lang.
- Spring, J. (2001). *The American school: 1642-2000* (5th ed.). Boston, MA: McGraw-Hill.
- Wang, J., & Lin, E. (2005). Comparative studies on U.S. and Chinese mathematics learning and the implications for standards-based mathematics teaching reform. *Educational Researcher, 34*(5), 3-13.