

COORDINATION AND COOPERATION BETWEEN MATHEMATICS AND SCIENCE

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**Abstract**

In this paper I summarized my understanding of an article which was named *Developing Computational Fluency With The Help Of Science: A Turkish Middle And High School Grades Study*. Additionally, I explained my ideas about absolutist and fallibilist views in *maths wars*. I expressed my learning of this study for my future teaching profession.

*Key Words:* computational fluency, coordination between mathematics and science, maths wars, absolutist view, fallibilist view.

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### Introduction

The purpose of this article was to express my understanding of an article about *developing computational fluency* whose authors are M. Sencer Çorlu, Robert M. Capraro and M. Ali Çorlu (2011). Additionally two sides of the *math wars* in the theoretical framework of this study were described by the authors. I explained my ideas on this issue as a graduate of applied mathematics at university and as a mathematics teacher candidate.

#### **A Different Window To Look Into Friendship Of Mathematics And Science**

There had been some misunderstanding in people's minds about mathematics conceptualization and computational fluency in recent past. However, they are not separate from each other; unlike influence each other in a positive way and this study was about developing computational fluency with the help of science. It was a quantitative method research whose driving question was "*to understand the relationship between science-contextualized problems, and computational fluency by testing an instructional method that was implemented as a non-traditional drill exercise — in the sense of a creative and interdisciplinary approach — to foster computational fluency*" (Corlu, M. S. , Capraro, R. M., & Corlu, M. A., 2011). In this research Turkish case was studied in middle and high school grades. While traditional drill exercise made the delta mean (the difference between means and standard deviations of pre-, post-test scores) 0.32; this non-traditional drill exercise made it 1.15 and it showed that students' computational fluencies were increased by using science-contextualized problems in both middle and high schools.

On the other hand, a philosophical debate on algorithms was mentioned in the theoretical framework of this study. At this point, if we look back, we face *math wars* with its absolutist and fallibilist views. Paul Ernest (1994) describes the "central problem of the philosophy of mathematics education" as "the issue of the relationship between philosophies of mathematics

and mathematics education” (p. 4). The absolutist view posits that mathematical knowledge is certain and unchallengeable while the fallibilist view is that mathematical knowledge is never beyond revision and correction (Davison, Mitchell, 2008, p. 143).

It could be hard to decide on a side for a mathematics teacher or a teacher candidate if his/her lessons include both absolutist and fallibilist views. In this way, it is also challenging to answer such a question: “Could it not be that this teacher may demonstrate an absolutist philosophy when teaching math skills, but a fallibilist philosophy when engaging the students in bona fide problem solving?” (Davison, Mitchell, 2008, p. 145).

However I feel closer with the fallibilist view as a learner first. During my education life I did lots of mistakes, sometimes I misunderstood many topics and learned from these experiences. I felt that making mistakes, observing real life situations and trying to adjust them to my understanding of mathematics adopt me to mathematics; I tried to build up my own approaches, rules, algorithms etc. and liked checking them if they worked or not in science lessons. I think mathematics teachers should give this opportunity to students in their lessons. Because the world is changing very fast and each day people face something new. So giving students a chance to make their own understanding and approaches in such a world makes mathematics education richer and more effective, I suppose.

By the way, I also agree those who have absolutist view and think mathematical knowledge is certain but in my opinion; it is true when we suppose conditions are idealistic. Fortunately the world is not such a place and permits us to be creative. So I agree A.N. Whitehead’s approach of education that is “...the acquisition of the art of the utilization of knowledge” (1929, p.4).

### **Conclusion**

The purpose of this article was to learn about developing computational fluency with the help of science and discuss its theoretical framework, and explain my ideas on this issue. I learned about maths wars, absolutist and fallibilist approaches. Additionally this study made me more eager to increase my science knowledge so I would have richer and more effective mathematics lessons with my students in my future teaching profession.

### References

- Corlu, M. S. , Capraro, R. M., & Corlu, M. A. (2011). Developing algorithmic computations with the help of science: A Turkish middle and high school grades study. *The Turkish Online Journal of Educational Technology*, 10(2), 72–81.
- Davison, D. M., & Mitchell, J. E. (2008). How is mathematics education philosophy reflected in the math wars? *The Montana Mathematics Enthusiast*, 5, 143-145.
- Ernest, P. (1994). Introduction. *Mathematics, education, and philosophy: An international perspective*. (pp. 1-8). P. Ernest (ed.) London: Falmer.
- Whitehead, A. N. (1929). *Aims of education & other essays*. New York: Macmillan.

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