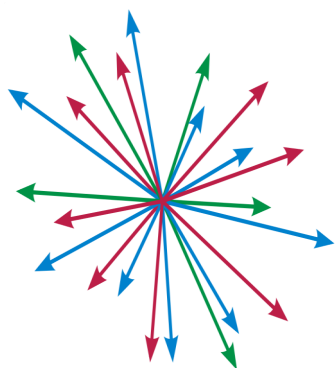


# An investigation of how flipped classroom help students to learn vector

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## BACKGROUND AND INTRODUCTION

Many students cannot get a fair exam result in the topic of vectors because they ignore the background information of vector. Hohenwarter, Jarvis & Lavicza (2009) claimed that technology can foster visualization and exploration of mathematical concepts. Flipped classroom is thus introduced in vector teaching. It allows students to assess the content before class through video recorded materials. According to Person Examiner Report (2016), successful solutions in topic, *vectors*, almost always followed a good diagram. Therefore a free software “Vector Addition” may be helpful in facilitating students’ learning in because it provides the opportunity for students to draw vectors.

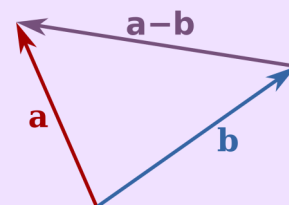


## METHODS

The study was conducted at a public high school in Mainland China. The number of students was 18. This study employed a quasi-experimental approach by comparing the pre-test and post-test result of Grade 10 students. Students were asked to do a pre-test (20 minutes) on Friday. Then, websites of two short videos was given to students. They were asked to watch the videos during weekend. When they came to school on next Monday, they were assigned to have a lesson in a computer room. Worksheet was distributed to them. They were asked to use “Vector Addition” to revise their learning by drawing vectors and then answer questions on the worksheet. On the next day after the lesson, students were asked to do a post-test (20 minutes). 4 interviews with 4 students were conducted. Interviews took place in an empty classroom at convenient time for students and were conducted in Mandarin (mother language of students).

## RESULTS & CONCLUSION

A paired-samples t-test was conducted. Result showed that flipped classroom could significantly improved students’ academic performance with  $t(17) = 5.818$ ,  $p < .001$ . It suggested that flipped classroom is effective in teaching and learning process in terms of students’ academic performance. From the interviews, two students remarked that they had a better understanding of the concept of vector because of simulation.



## References

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