

# From Greenfoot to Java

## study of students' object-oriented design ability and Java programming skills

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### Introduction

- Students having difficulty learning objected-oriented programming in Java.
- Greenfoot is a programming environment suitable for learning object-oriented programming concepts.
- Possible some advantage in teaching object-oriented programming concepts in Greenfoot prior to teaching Java programming.

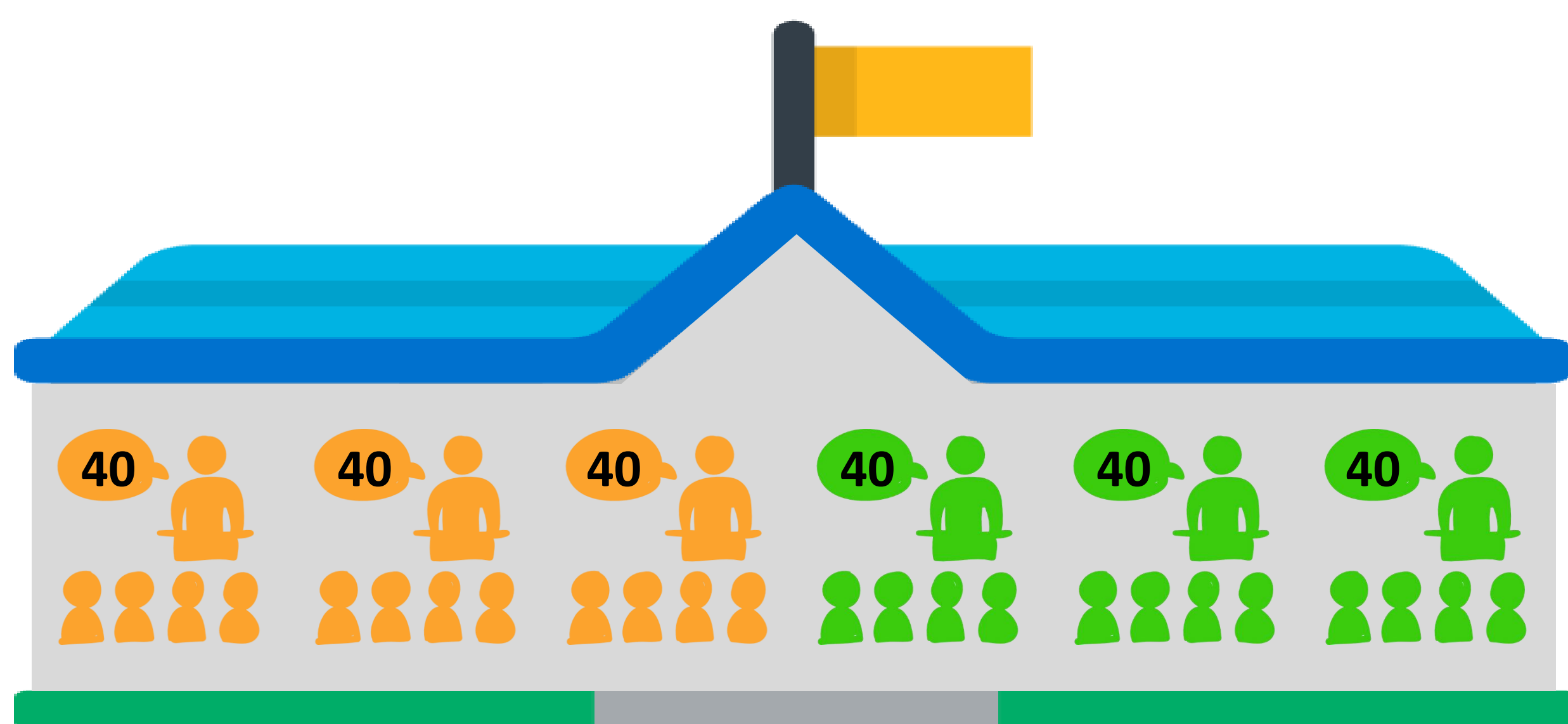
### Research Questions

- For high learning achievement students, will they benefit from introducing object-oriented programming concepts before Java.



Figure 1. Students in programming class.

### Experimental Setup



- School: all girl school. Learning achievement in the top 5% of all students in Taiwan
- Control group: 120 10<sup>th</sup> graders in 3 classes
- Experimental group : 120 10<sup>th</sup> graders in 3 classes

8 weeks @ 1hr/wk. 8 weeks @ 1hr/wk. →  
Exam Exam

#### The Control Group

Java	Java
Java Programming	Object-oriented Programming

#### The Experimental Group

Greenfoot	Java
Object-oriented Programming	Object-oriented Programming

### Results

- Overall, experimental group shows slightly better learning achievement, but not significantly better.

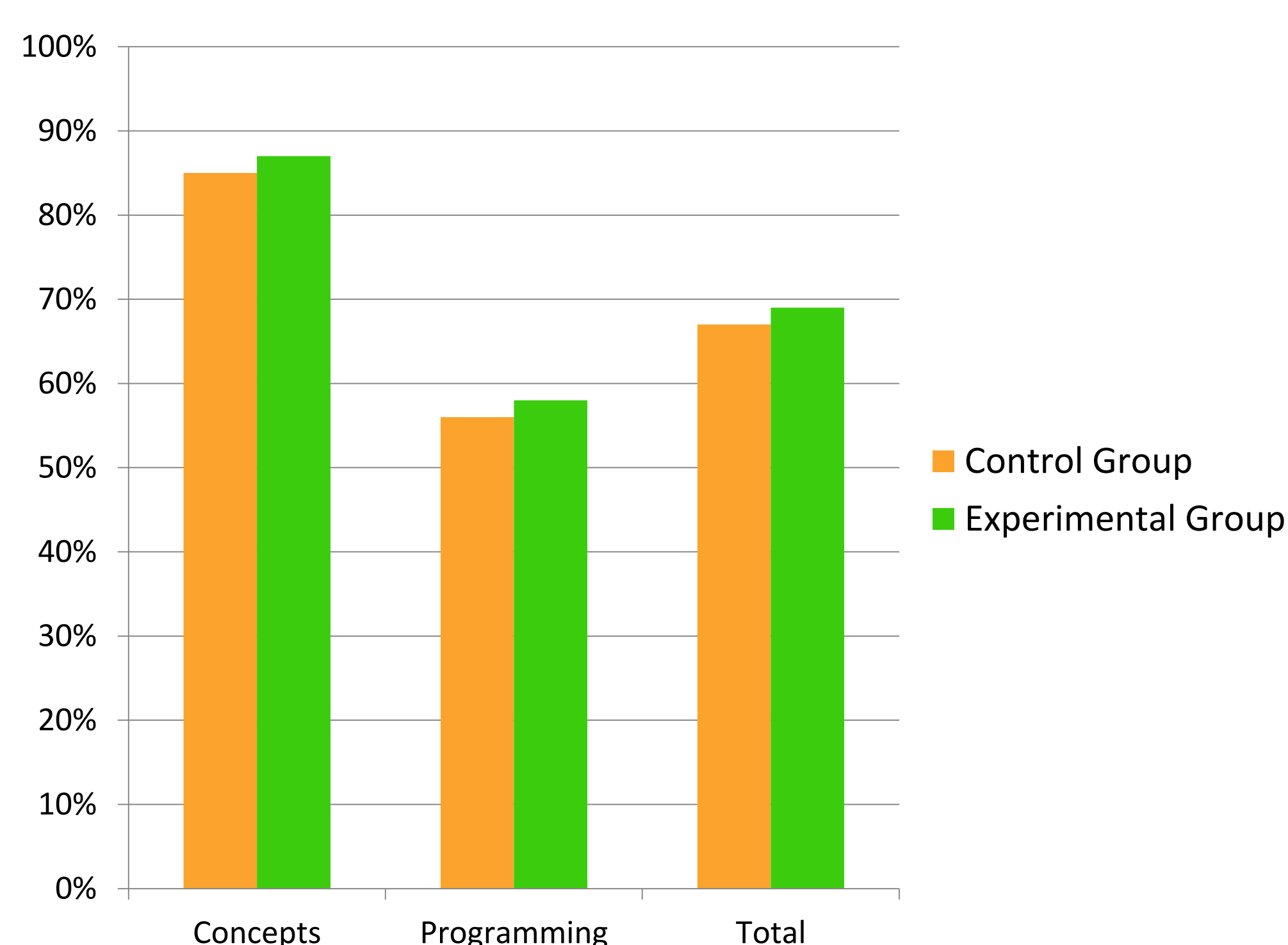


Fig. 1 Learning achievement in final exam.

### Discussion

- For high learning achievement students, either model of learning to program in Java is comparably suitable.
- The experimental group has only learned to program in Java for 8 weeks. If the learning time was longer, the difference may be more significant.

### References

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- Kolling, M.: The Greenfoot Programming Environment In: ACM Transactions on Computing Education (TOCE), 10(4), New York, USA, Nov. 2010

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