Optimization of Classroom Seating Arrangement Based on Social Relationships

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Abstract
The purpose of this paper is to present an optimization approach which is based on the social relationships to assign students to seats in a classroom. Previous studies show that seating arrangement can induce substantial effect on the activity participation, learning motivation, and even learning performance of students in a class. If a teacher can arrange seats in the classroom based on social relationships of students, some positive effects may be taken into and then have a positive influence on the class management. To find optimized solutions to seating arrangement, students’ relationships in the classroom are measured using the sociometry choice method in which a preassigned maximum number is given and students are asked to identify others with whom they wish to or not wish to sit around themselves in a classroom. An optimization model is formulated and a genetic algorithm (GA) is developed to find the optimized solutions. Based on a variety of experiments, concluding remarks will be drawn and some suggestions about the future work will also be given.

Key Words: class management, social relationship, sociometric choice, seat location, seat assignment, seating arrangement, assignment problem