Luo Ziqian

EDUC 437 (163453) FA25

November 30th , 2025

MTLT article summary 5

Designing a Gingerbread House Community, authored by Cross Francis, Sevinc, Eker Karakaya, and Tan, is an activity for the class on measurement and shapes. Students are divided into groups and are required to create a small gingerbread community and trolley tour to be accommodated in the resort ballroom. Twenty-six Algebra 1 students analyze different trolley routes, look for visibility and turning issues, and later analyze closed polygon routes. They apply insights about angles of regular polygons, scales and area computation, and computer software such as Desmos and Geoboards. They later choose the way in which the area will be utilized for better visibility and trolley routes. The final trolley route of one of the groups is depicted in Figure 5(Cross Francis et al., 2024, p. 19).

Speaking particularly about the case of this article, the core action described in it revolves around the process of the model cycle in the presence of measurements. Beginning students are required to pick variables and bounds from the tasks given in the task sheet, and then perform calculations and computer-aided construction based on that and verify designs when the size of the ballroom varies. In the authors' explanation, the case of unexpected variation makes the problem genuine and forces students to re-think, revise, and continue. This aligns very well with the concept of Common Core in the aspect of practicing modeling or the process in CCSSM in the aspect of interpretive action in answering questions and problems identified in the CCSSM process of modeling, in which students are asked to pick variables, discuss relationships, interpret findings, and verify conclusions.

In terms of content standards, the problem-solving task involves Measurement and Geometry, but also touches on Number and Operations, Algebra, and Data analysis. Students employ the formula for the interior angles of regular polygons, cognizant of the need for scale factors in mapping the ballroom to create their model of 1 inch = 50 feet, and apply algebraic thinking when checking their path lengths and turning angles. In addition, students gather and compare estimates of area and employ the use of technology to demonstrate their designs. All five content areas are addressed as modeling connects Measurement and Geometry to Algebra, Numbers, and Data.

From the pedagogical perspective, the task is very important. It supports problem-based learning in that it enables students to develop their reasoning and justifying statements and obtained results. Individual class discussions reveal students evaluating statements and supporting them with the details of the problem in math. It also provides varying points of access for differentiated instruction. Students can utilize geoboards, graph paper, or computers based on proficiency level, and the teacher can assist students in calculation-related tasks, whereas challenging them in spatial visualization for better-performing students. Third, the task is assessment-ready.

In the classroom, several considerations need to be kept in mind for use in teaching. Ideally, students must be provided clear directions in relation to the calculation of measurement and scales. Time needs to be allotted for students to test and work on problems and arrive at revisions. Suggestions are given in the chapter for this process. In conclusion, the task of "Designing a Gingerbread House Community" is one that clearly models Measurement and Geometry standards and incorporates the use of numbers, algebra, and data reasoning. It aligns well within the CCSSM standards of modeling and encompasses many of the NCTM process

standards such as problem solving, reasoning and proof, communication, and representation. In the words of the authors of this task, it underscored the need for repeated revision and decision making, and repeated opportunities for learning(Cross Francis et al., 2024, p. 22), which are important for math learning.

References

Cross Francis, D., Sevinc, S., Eker Karakaya, A., & Tan, V. (2024). Designing a gingerbread house community. Mathematics Teacher: Learning and Teaching PK–12, 117(1), 17 23.

Common Core State Standards Initiative. (2010). Common core state standards for mathematics. *National Governors Association Center for Best Practices and Council of Chief State School Officers*.