

Middle School Science Assessments Comparison: Three Grading Methods

Conrad Proficiency-Based, Standards-Based and Traditional Percentage

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Research Questions

Main Question: How does using three different assessment scoring techniques, standards-based scale, proficiency scale scoring and traditional percentage grades, affect middle school science grades?

Sub Questions

- What are students' perceptions and experiences with proficiency-based grading?
- How does using proficiency-based scoring improve student motivation and confidence in science learning?
- How does using proficiency-based scoring impact me as a teacher in methods and grading?

Background

- ❖ Sample 8th Grade Science Students in rural Montana public school with a 7-12 population of 320 students.
- ❖ Conrad Middle and High School have been making the move towards proficiency and standards-based grading over the last four years.



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Methodology

- Students will complete these steps during five science units;
 1. Pre-Assessment
 2. Discussion of Learning Targets and Self-Navigation tool
 3. Formative Assignments, including hands-on laboratories, inquiry projects, class discussion, science sense making, mini assessments and reading on topic
 4. Unit Summative Post-Assessment
- Student assessments will be graded using Standard-Based Grading Rubric 0-4 point scale, Proficiency-Based Grading Rubric 0, 5-10 point scale and Traditional Percentage Grade
- Students will be surveyed three times on their perceptions, motivation and confidence about grading along with student group and individual interviews.

Survey Results

Strongly Agree/Agree Results (Pre (N=31), Post (N=30))

- Students want letter grades 74.2% (23) 40.0% (12)
- Assessment grade matches learning 80.7% (25), 63.3% (19)
- Science teacher makes clear what learning in class 90.4% (28), 83.4% (25)
- Learning targets help with clarifying learning 67.8% (21) 36.6% (11)
- Ability to retest is important 93.3% (29) 93.4% (28)
- Studying builds confidence 64.6% (20) 60.0% (18)
- Reviewing learning targets before test builds confidence 64.5% (20), 73.4% (22)
- Getting a good score on test builds confidence 80.6% (25), 83.4% (25)

Data Analysis

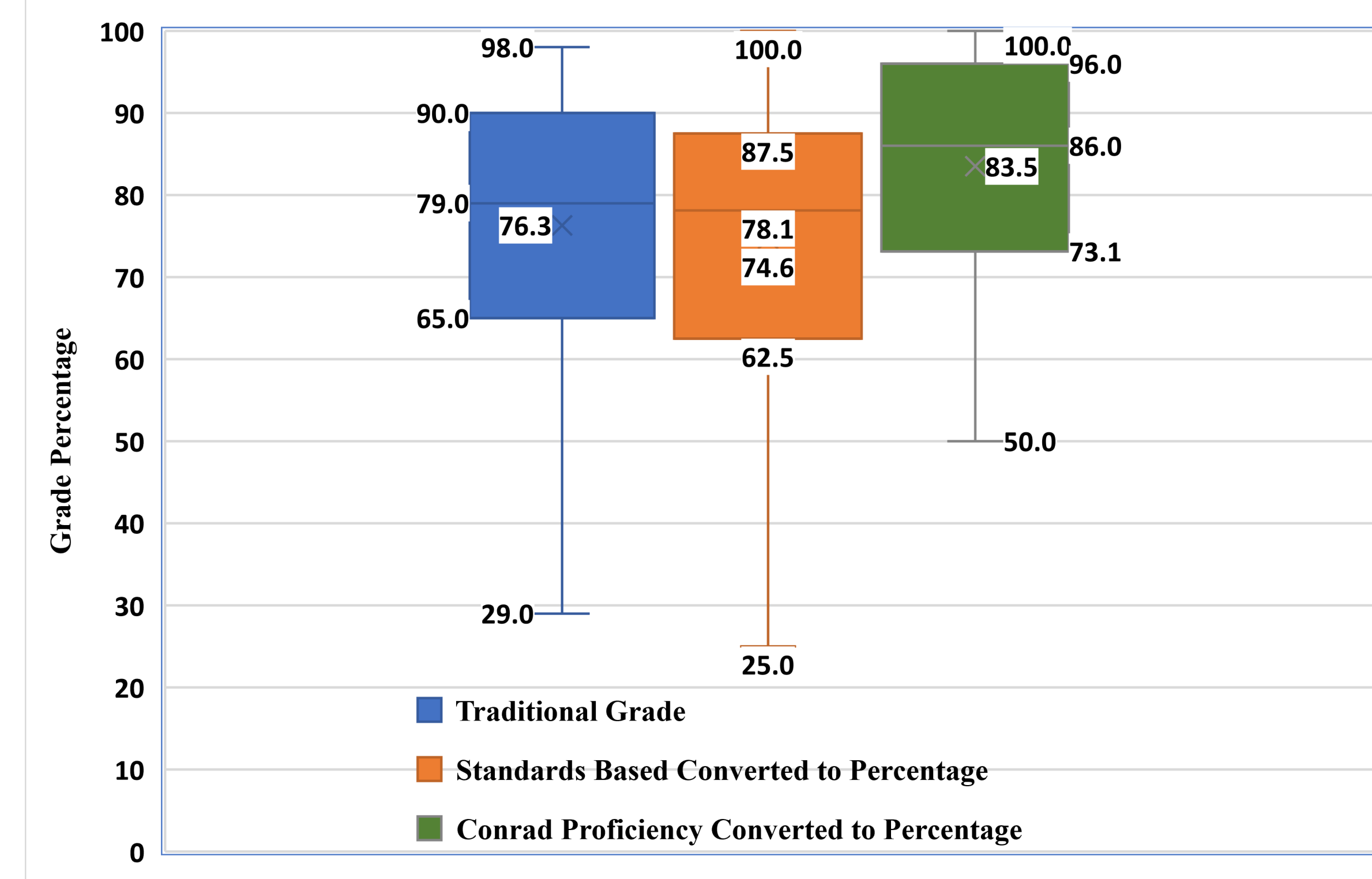


Figure 1. Five assessment units scored using three grading methods, (N=31).

Conclusion

The three test method scores means were very close to each other. Yet statistical analysis showed that the Conrad proficiency-based scoring was significantly different than the other two methods. By comparison, the mean percentage grades for the six assessments would be Traditional (76.3%) C, and Proficiency Based B (83.5%) and Standards Based a C+ (78.1%).

Teacher Impact

Teacher impact determined that the grading method doesn't matter instead what is more important to student learning are;

- how the material is presented
- making clear the learning targets
- students ability to learn using a variety of curricular methods
- allowing retesting to increase student achievement
- clarity of what the student actually achieved and missed on summative assessments