Chocolate Chip Cookie Rubric

Day #1:

Present orally to students:

My husband Kevin has been having Fig Newtons® in his lunch every single day for 3 years and frankly, is getting sick of it. He asked if I would pick up some chocolate chip cookies for him on my next trip to the grocery store. Last night I was at the grocery store looking in the cookie aisle and saw that there are many different brands of chocolate chip cookies. I had no idea which type was best, so I bought them all. I need your help today in determining which cookie is best. Let's brainstorm qualities by which we can judge these cookies.

(Students brainstorm qualities.)

Now let's pick the most important qualities from our brainstormed list. (Students will tend to choose 3 or 4 overall qualities which encompass many items on their list. This can be an excellent sorting and classifying activity).

Let's take one quality, size for instance and describe the best of all possible sizes a cookie could be (students brainstorm, "Bigger than the size of this bowl." pointing to a bowl on the shelf in the classroom. "No. Bigger. How about..." This conversation continues until the class reaches consensus).

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OK, if this is the best size of a cookie, how can we describe it? (Students arrive at finding the diameter or circumference of an object they have chosen.)

If this is the best, what is the least desirable size a cookie could be? (Students go through same process and then define levels in-between best and least desirable. This procedure is used for creating a scale for all categories the students choose).

Tonight I will type up your ideas on a spreadsheet and we will use this system you have created for assessing these chocolate chip cookies tomorrow.

Day 2:

Presented orally to students:

Here is the criteria you came up with to assess these chocolate chip cookies. This form has a special name called a "rubric". A rubric is a set of rules to give direction to the scoring of a task or activity. Today we are scoring the chocolate chip cookies using this rubric.

(Students are given the rubric and a form on which to record their cookie scores. Students are then asked to determine which cookie is best, based on the scores the cookies receive. Students are asked to write a letter to "Kevin" discussing their findings.)

Day 3:

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The teacher can then introduce the *Exemplars* rubric and show students how this rubric can be used to assess their mathematical problem-solving responses the way they used their cookie rubric to assess the chocolate chip cookies.

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Grade Levels 3 - 5

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Context

The purpose of the activity is to introduce the concept of using a rubric as a tool for assessment. This was a high interest activity undertaken during the second week of school, which provided students with experience participating in the development and use of an assessment form new to most of them.

What This Task Accomplishes

Since the cookie test rubric was developed by the students, most were able to internalize the process and actually utilize the rubric to evaluate several varieties of cookies. The universal appeal of chocolate chip cookies and the direct relation to the reality of student lives (and lunches) made the task accessible and enjoyable to all students. The development of the rubric helped students to quantify the quality of "good" which they often apply to their work and was a concrete introduction to the *Exemplars* rubric.

What the Student Will Do

As a whole group the class brainstormed the qualities of a good chocolate chip cookie, recording ideas on chart paper. They then decided which qualities were actually related (chocolate taste, yummy and sweet can all be combined into one category, taste). The two times I have done this activity with students resulted in the same four general categories; texture, taste, number of chocolate chips and cookie size. Other teachers who have done this activity have shared that their classes decided on similar categories. Once the criteria/categories were decided, we broke down each criteria into different levels starting at either the optimum level, or at the lower end of the range. The rubric my class developed had four levels for each criteria, but certainly a variety of levels could be appropriate.

I took the charts from our class discussions and transferred the criteria to a spreadsheet with boxes for each level of performance. The next day we used the rubric to taste test five brands of cookies and recorded the results.

Time Required for Task

Three or four, 30-minute periods

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One period each for developing criteria, taste testing and summarizing results.

Interdisciplinary Links

Students wrote letters to my husband Kevin discussing their findings. A lesson on marketing strategies and advertising could be an extension. Following this activity, students designed a rubric to assess a travel brochure they were doing as a geography project. Other mathematics task extensions may include determining the typical size or number of chocolate chips in a certain brand cookie. This would require students collect, organize and analyze data and draw conclusions.

Teaching Tips

Once the students have developed the rubric, provide several practice examples. "If I bite into the cookie and it crumbles, what level will it score for texture?" This is especially important for students who have had little experience with rubrics. A colleague who did this activity with her students developed a chart for students to record their findings as they conducted the test. Requiring students to design a record keeping method could also be an additional component to the problem. Results could also be compiled and analyzed in graph form.

Suggested Materials

- Chart paper
- Markers
- Napkins
- Variety of cookies to sample (in-store baked brands are nice to include)
- Rulers
- Scales
- Any other measuring devices

Possible Solutions

These will vary depending on the class.

Benchmark Descriptors

Novice
A Novice will not draw a conclusion, which is mathematically based. The student will neglect to use the data gathered to draw a conclusion, but will tend to exhibit an opinion. Little or no mathematical language or representations will be used to communicate and an approach and mathematical reasoning will be absent.

Apprentice
An Apprentice will attempt to communicate some aspect of an approach, but work will lack

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documentation of what the student did and the reasoning behind conclusions. Some mathematical language or representations may be used to communicate, but there will be severe gaps in documentation, so the reader is unsure what was done to obtain a solution.

Practitioner
A Practitioner will communicate an approach and draw a conclusion, which is mathematically based. Mathematical language or representations may be used to communicate, although it may not be precise or sophisticated. Evidence of correct mathematical reasoning is present.

Expert
An Expert will communicate an approach and will communicate that approach with rich and precise mathematical language and representations. The Expert will make mathematically relevant observations about the data and will have work to support effective mathematical reasoning.

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Chocolate Chip Cookie Assessment Record Sheet

Brand of Cookie	Size	Softness	# of Chips	Taste

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Chocolate Chip Cookie Assessment

Softness

1	2	3	4
hard and crunchy	tough	soft and moist	gooey and chewy

Number of Chocolate Chips

1	2	3	4
no chocolate chips in a bite	very few chocolate chips in a bite (1-3)	some chocolate chips in a bite (4-6 chips)	a lot more than 7 chocolate chips in a bite

Taste

1	2	3	4
yucky, couldn't be worse	okay-could be better, but could be worse	good	delicious and scrumptious

Size: Diameter of the Cookie

1	2	3	4
less than 1 inch	1-2 inches	2 1/2 - 3 1/2 inches	greater than 3 1/2 inches

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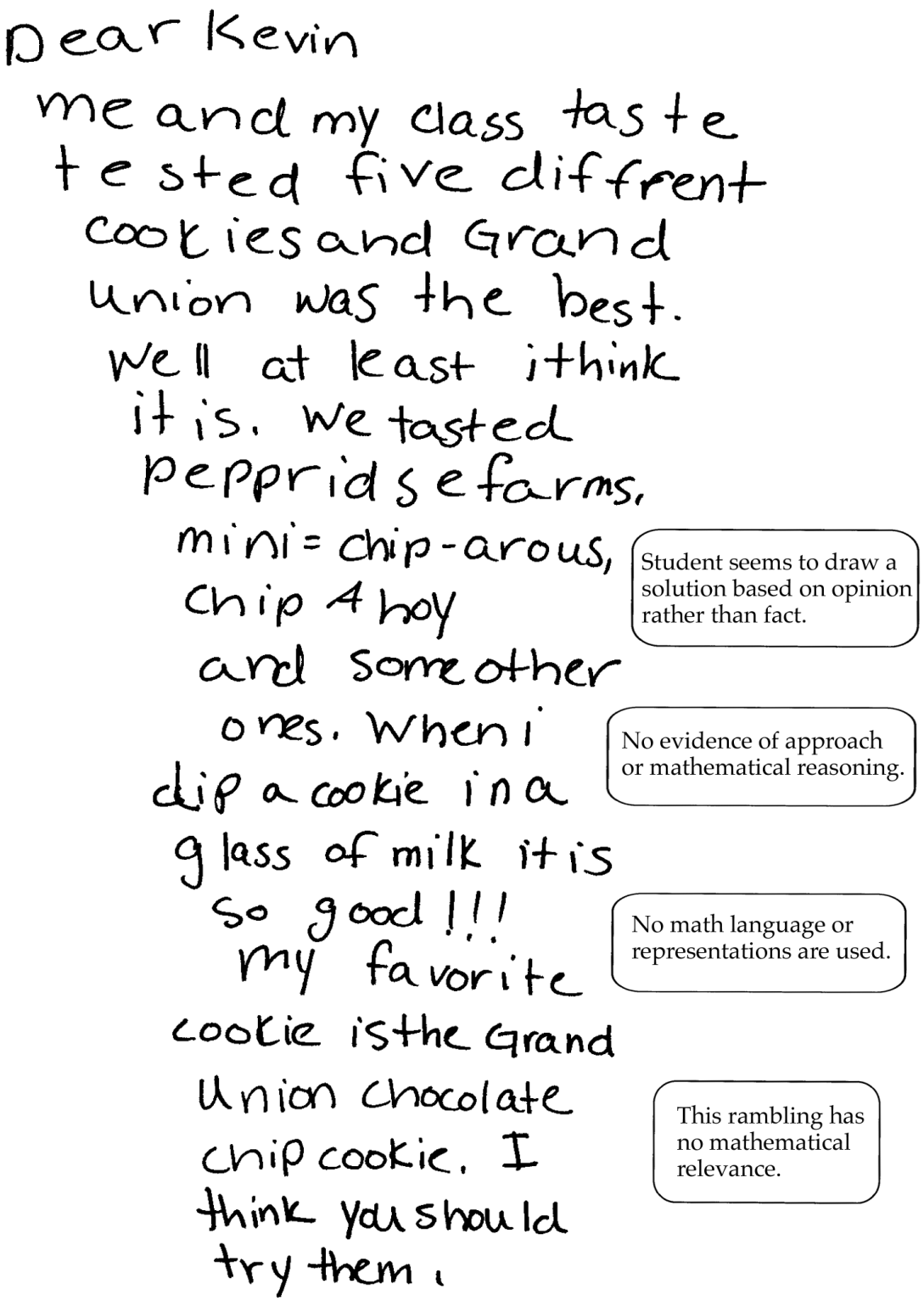
Novice



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Apprentice

I think Chips Ahoy is the best cookie. They are so good you should try them. I think Chips Ahoy is number one is cookies. Some of the cookies were big and some were small. Some were hard and some were soft. They are delicious kevin. You do not no what you are missing so why don't you try them. They are so good I can hear them calling, "Eat me kevin eat me.

Student uses little math language or representations to communicate.

Student draws a conclusion but we are unsure if it is supported mathematically.

Student hints at process, but the reader knows little of what was done to obtain a conclusion.

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Practitioner

Student draws a conclusion based on her results. Math language could be more precise.

The student does not include a mathematical representation to document her work.

We did a taste test because we were trying to figure out what was the best cookie.

We the taste test on step 12, 1996. on a Thursday.

We got to try 6 randumin the frienofers, Chip Ahoy, Chipsaroe and Pepperidge Farms.

The Frichofers are the best cookies, You bite in and you are in a notherworld.
The Frie hofers are soft and moist and probly have 6-7 chocklet chips in a bite it is good and probly is 1-2 inches across.

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Expert

The student makes mathematically relevant observations about the data.

The student makes an appropriate math representation. Student uses accurate and precise math language.

Student summarizes results and draws a conclusion.

Dear Kevin,

Mrs. McKegney told us that you are sick of eating fig Newton cookies and are wanting a new kind in your lunch. I don't blame you. I hate fig newtons. She asked us to help her pick which chocolate chip cookie she should buy. We made a way to score the different kinds of cookies using something called a rubric. We got to taste each cookie. We measured 11 and counted the number of chips. We had to figure out if it was soft or crunchy. I liked tasting it the best. We recorded our results. Here they are.

	Softness	# of Chips	Taste!	Size
Chiparoos	2	3	3	3
Grand Union	3	2	1	3
Chipsahoy	2	2	2	2
Freihofers	3	4	3	2
Pepperige Farms	3	2	2	3

You can see that most cookies were soft and chewey except for Chipsahoy. There was a big difference in the number of chips per cookie. Most tasted ok, except for Grand Union which was grose. Chips per cookie ranged from 2 to 6 chips. The size ranged from 3/4 inch to 4 inches. To measure the size , we measured the diameter, but we could have measured the circumference. I wonder if that would have made a difference? Everyone in the class hated Grand Union. Even though they are soft and have an ok size, they tasted really bad. Don't eat them even if Mrs. McKegney buys them for you. To help Mrs. Mckegney decide what was best, I decided to add up all of the scores to see which has the most points. Chiparoos had 11 points. Grand Union had 9 points. Chipsahoy had 8 points. Freihofers had 12. Pepperige Farms had 10. Freihofers had the most points, but they are the most expensive too. Maybe you should buy Chiparoos since they are only 1 point less and much cheaper.

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