**Math Work Station Project (52 Points)**

Math work stations is another way that elementary teachers engage students in independent mathematical thinking and learning. Effective math work stations develop conceptual understanding and fluency, while also encouraging the use of math vocabulary in student conversations about their math thinking.

For this assignment, you will create a math work station to implement in your field placement classroom. Similar to how a teacher monitors student learning, you will document what you are noticing by taking photographs to capture students’ mathematical thinking and work. You will submit the work station along with a binder/folder that contains a description of the work station and analysis of the student thinking.

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| --- | --- |
| **Assignment Tasks** | **Timeline/Due Dates** |
| Math work station readings (5 total) | August, September, October |
| Prepare math work station | Week of October 10 |
| Implement math work station | Field placement week (10/16-10/20) |
| Submit station & binder/folder | November 21 in class |
| Share your station with peers | November 21 in class |

**Task 1: Math work station readings**

Part of your homework in August, September, and October will include reading and responding to chapters from Debbie Diller’s book, *Math Work Stations: Independent Learning You Can Count On, K-2*.

These readings are meant to familiarize you with math work stations and begin to help you brainstorm ideas for a math workstation that you would like to create for your field placement students.

**Task 2: Prepare a math work station**

Next you will need to create an interactive math work station for students. The station you create should not be busy work, but meaningfully engage students in mathematical thinking. This means your station needs to be aligned to a content standard and students should be engaged in some of the Standards of Mathematical Practice when they are engaged in the station work.

Debbie Diller recommends that math work stations be stored in a plastic box that has a lid. The box should contain:

* Instructions (Tells the student what to do at the station)
* Material list (This helps students put the station away or know if an item is missing)
* All of the materials to do the station (Students should not need to get anything)
* Talk cards (Cue cards that help students use math language and discuss their math thinking with peers)

After you have prepared the math work station, you should complete the first part of your binder/folder that describes the station. This section needs to include:

Math Work Station Description

1. Name of station
2. Grade level/content standards/standards for mathematical practice
3. Directions
4. List of manipulatives/materials
5. Assessment
6. Keep an electronic copy of each station. You will also need to upload these to Canvas for me to score.

Building the math work station and explaining the components above is 31 points.

**Task 3: Implement math work station**

Collaborate with your cooperating teacher to find a time when you could watch some students (at least six) engage with your math work station. Remember, students are suppose to work with a partner at a math work station and should be able to do the work independently of the teacher.

As the students work, you will take photographs that capture the students’ mathematical thinking. These could be pictures of the manipulatives, drawings, or even their hands. Essentially you are “zooming in” on the math in these photographs, so these photos should NOT include the face of students. You may also decide you want to audio record the speech students are using, so that you can transcribe or quote students later for your project.

**Task 4: Analyze students’ mathematical thinking and engagement**

**A. Three Photographs with 2 Paragraph Captions**

After observing, select three photographs that demonstrate the various ways that students engaged and thought about the mathematics. These pictures may also highlight misconceptions or developing understandings. For each photograph, write a paragraph caption describing why you selected this photograph. Be sure to include the mathematical understanding that is being demonstrated by the student. What is the student demonstrating they can do or understand? What student understanding do you wish you had evidence of? If it is helpful, you might also include a quote from the student.

As a teacher, you will need to observe students’ mathematical thinking and make decisions about how to differentiate instruction particularly for that student. Based on your analysis of the mathematical thinking, write a second paragraph that describes what the next step would be for this child. You might draw from the OGAP progressions and other course readings for this section of your project.

**B. Standards of Mathematical Practice Paragraph**

Write a paragraph describing what Standards of Mathematical Practice students were engaged in during your math work station. What evidence do you have to support this?

**C. Mathematics Language Paragraph**

Write a paragraph describing how students used language specific to mathematics during your work station. How did your station support students’ use of mathematical language? Was there language they used inaccurately? What changes would you make next time to the station to support even more student-to-student discourse?

**D. Future Math Work Stations**

Write a reflective paragraph sharing what you have learned from this project that you plan to apply to future math work stations.

**Task 5: Submit station and binder/folder**

Bring your work station and binder/folder to class to share with peers.

**Rubric for the Math Work Station (31 Points)
*(Use this when you are building your station)***

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **4** | **3** | **2** | **1** |
| **Content Standard** | The game/activity specifically meets the content standard. | The game/activity generally connects to ideas in the content standard. | A content standard is included but it does not connect to the game/activity. | There is no content standard listed. |
| **Standard of Mathematical Practice** | There is a strong connection between the game/activity and the SMP students are engaged in. | The SMP connects weakly to the game/activity. There are other SMPs that students are more engaged in. | The SMP is included but a student would not be engaged in it during the game/activity. | There is no SMP listed. |
| **Engaging for Grade Level** | Students would really enjoy this station and be successful at the game/activity. | Students could be successful at the game/activity, but they also might be bored. | Students might struggle to be stay engaged and/or be successful at this station. | There was no activity to be engaged in. |
| **Directions** | The directions were clear and easy for at a student in this grade level to follow. | The directions were clear and easy to follow, but may not have been grade level appropriate. | The directions were confusing, but I was able to still figure them out. | I didn’t know what to do at the station. |
| **List of manipulatives/ materials** | The manipulatives/ materials make the mathematics in the activity/game accessible. | There is a list of manipulatives/ materials included and they are used at the station. | There is a list of manipulatives/ materials but they were not really utilized to do the activity/game. | There was no list of materials. |
| **Assessment** | The assessment is aligned to the content standard and would provide documentation of learning. | The assessment is somewhat aligned to the content standard OR that does not provide documentation of learning. | The assessment does not assess the content standard. | There was no assessment identified. |
| **Mathematical Thinking** | The focus of the station is clearly on the math and rigorous mathematical thinking. | The focus of the station is on the math and procedural mathematical thinking. Students could just be following a pattern/ procedure to do the activity. | The focus of the station is mostly just on doing something “fun.” There really is not much math. | There was nothing to do at the station. |
| **Station Materials** |  | The station contained all of the materials, station name, & student names. | The station contains most of the materials, but some things were missing. | No station was built. |

**Rubric for the Project Binder/Folder (21 Points)
*(Use this when you are planning your station and also preparing your final project binder/folder)***

|  |
| --- |
| **Name:**  |
| **Photographs & Captions** | **Photograph 1** | **Photograph 2** | **Photograph 3** |
| - Included | 1 0 | 1 0 | 1 0 |
| - Description | 2 1 0 | 2 1 0 | 2 1 0 |
| - Instructional Decision | 2 1 0 | 2 1 0 | 2 1 0 |
|  |
| **Standards of Mathematical Practice** | 2 | 1 | 0 |
|  |
| **Mathematics Language** | 2 | 1 | 0 |
|  |
| **Future Math Work Stations** | 2 | 1 | 0 |
|  |
|  | **Total Points /21** |

**Each Photograph with Captions 7 points each x3 = 21 points)**

**Included**1 Point A photograph is included.
0 Points A photograph is not included.

**Description**2 Points The description is detailed, focused on the mathematics, and highlights

specifics parts of the picture.

1 Point The description may lack some aspect.
0 Points There is no description caption.

**Instructional Decision**2 Points Instructional decisions are specific to the student work and demonstrate

knowledge of learning progressions.

1 Point Instructional decisions are vague or general. They could be for any

student.

0 Points There is no instructional decision paragraph.

**Standards of Mathematical Practice**2 Points The paragraph unpacks at least two Standards of Mathematical Practice

(title, description, example). The author specifically makes it clear why what the student did (example) can be classified as this Standard of Mathematical Practice.

1 Point The paragraph discusses at least two Standards of Mathematical Practice

(title, description, example) but may lack justification or has inaccuracies.

0 Points The photograph lacks a description.

**Mathematics Language**2 Points The paragraph unpacks the mathematical language students were using at

the math work station and has a strong focus on supporting student discourse.

1 Point The paragraph summarizes the mathematical language students were

using, but may not analyze discourse for patterns or consider how to support student discourse in the future.

0 Points There is no paragraph about mathematics language.

**Future Math Work Stations**2 Points The paragraphs includes specific details and examples of what the teachers

plans to do next time, and bases these decisions on evidence from this experience.

1 Point The paragraphs includes some lessons learned or may lack details.
0 Points There is no paragraph about future teaching practice using math work

stations.