Mentors Formative Lesson Observation Resource (M-FLOR)

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Name of Mentor: Mr. Hatem	**Cycle: 3**
School: Al QUDRA	**Class: 10 ADV**
Period: 5	**Date: 29/01/2026**

Brief description of the lesson topic, learning objectives, and planned activities

Lesson Topic: Mass and the Mole

Learning Objectives:

- Define molar mass as the mass in grams of one mole of any pure substance.
- Calculate the molar mass of a specific element using the periodic table g/mol.

Interactive Formative Assessment (5 mins): Use of a digital response tool (e.g., Nearpod or Quizizz) to allow students to calculate molar masses for different elements (e.g., Iron, Gold, Sodium) in real-time.

Differentiated Exit Ticket (5 mins): A tiered formative assessment where students select a task based on their confidence level:

Level 1: Single-element calculation (e.g., Oxygen).

Level 2: Multi-step calculation involving scientific notation.

Level 3: Applying molar mass to real-world context (e.g., mass of a specific sample).

As per the M-FLOR guidance, we have selected two specific categories for this observation:

- Differentiating teaching strategies to support the needs of different students.
- Use of technology.

Abdulrahman will be teaching the last 10 minutes.

DURING THE LESSON

STEP 2: Lesson Observation

Conduct the lesson observation. Based on the categories you selected, describe what you observe, record questions, and note comments using the grid below.

Observation Category 1 Use of technology: appropriate use and integration of ICT, digital tools, and other teaching resources and equipment	
What is happening during the lesson? You transitions to the final 10 minutes by launching an interactive Quizizz activity. Saeed and Hamad immediately join using their tablets, you displays a live leaderboard on the front screen to maintain momentum. The technology is used to provide instant feedback; when Khalid incorrectly identifies the molar mass of Neon, you uses the digital prompt to guide him back to the periodic table.	**Areas of strength:** Seamless integration of digital tools that maximizes student involvement during a typically low-energy part of the lesson. Effective use of ICT to collect real-time data on student progress. **Areas needing further development:** Consider having a "low-tech" backup for students like Zayed if they face connectivity issues to ensure no instructional time is lost.

Observation Category 2 Differentiating teaching strategies to support the needs of different students: using differentiation strategies to cater to the needs of different individuals and groups in the class (content, process, product)	
What is happening during the lesson? You distributes the "Tiered Exit Ticket." Abdullah and Faisal are directed to the "Expert" task involving multi-step conversions, while Mansour works on "Level 1" identifying molar mass for single elements. You moves between desks, providing scaffolded support to Sultan while allowing the advanced group to work independently.	**Areas of strength:** Excellent use of product differentiation; the tasks are clearly linked to the learning objectives but vary in complexity to suit the ADV learner profile. Providing choice in the exit ticket empowers students like Rashid to take ownership of their learning. **Areas needing further development:** Refine the "Expert" tier to include a real-world UAE context (e.g., calculating the mass of a specific amount of Aluminum produced at EGA) to further engage the high-achievers.

AFTER THE LESSON

STEP 3: Post-Lesson Observation Interview

Suggested questions <u>**to ask your Intern**</u> after the lesson observation:

1. What were some of the things **you** did in the lesson that you were pleased with?
2. Can you tell me **your thinking** behind that? (e.g., putting them into groups then ... asking that group or that pupil to give a demonstration)
3. I really liked how the group work went. How did **you** make it go so smoothly? What was your thinking?
4. Can you give me more detail?
5. Can you give me one or two examples of that?
6. What do you mean by...?
7. Do you mean .... Have I understood you right?
8. What else did **you** do that you were pleased with?

General comments and questions:

Mr. Hatem: To start our discussion, what were some of the things you did in the lesson that you were pleased with?

Me: I was particularly pleased with the high level of engagement during the final 10 minutes. Using the digital tool allowed Saeed and Hamad to compete in a healthy way while I tracked their molar mass calculations in real-time. I also felt the transition to the differentiated exit tickets was smooth and kept the momentum of the class high.

Can you tell me your thinking behind using that specific digital tool for the review?

My thinking was to use technology to gather immediate formative assessment data. By seeing the live results, I could quickly identify that Khalid was struggling to find the atomic mass of Neon on the periodic table and provide him with instant feedback before he moved to the independent task.

I really liked how the activity with the tiered exit tickets went. How did you make it go so smoothly? What was your thinking?

I wanted to ensure that every student, regardless of their current math level, could achieve the learning objective of calculating molar mass. By preparing three distinct levels of difficulty beforehand, I could direct students to the challenge that best suited their needs without pausing the whole class.

Can you give me more detail on how you structured those different levels?

The levels were designed to differentiate by 'Product'. Level 1 focused on the basic definition:
1 mole=atomic mass in grams. Level 2 required students to calculate mass for multiple moles. Level 3 was an 'Expert' challenge requiring a multi-step conversion.

Can you give me one or two examples of the specific questions you gave to the students?

For Mansour, I gave a Level 1 task: 'Calculate the mass of 1.0 mole of Oxygen (O)'. For Abdullah and Faisal, I gave a Level 3 task: 'If a sample of Iron (Fe) has a mass of 111.7 grams, how many moles are present?

What else did you do that you were pleased with during this observation?

I was pleased with my classroom presence and use of 'waiting time'. When Zayed was calculating a result, I resisted the urge to jump in too quickly, giving him the space to find the answer independently. This helped maintain a respectful and inclusive environment.

Signed: Hatem **Date:** 30.01.26

(Mentor)

Signed: .... **Date:** 30.1.26

(Intern)

STEP 4: Intern's Reflection on the Experience

Describe

The lesson observation focused on the final 10 minutes of a Grade 10 Advanced Chemistry class on "Mass and the Mole." The primary learning objective was for students to define molar mass and calculate it using the periodic table g/mol. To achieve this, I implemented two key strategies: Differentiating teaching strategies and Use of technology.

I began the segment with a rapid-fire interactive review using Quizizz, where students like Saeed and Hamad competed to identify the molar mass of elements such as Magnesium. This digital tool provided immediate visualization of student understanding. Following this, I transitioned to a Tiered Exit Ticket activity. This differentiated task offered three levels of difficulty: Level 1 (basic identification for students like Mansour), Level 2 (standard calculations), and Level 3 (multi-step "Expert" conversions for high-achievers like Abdullah and Faisal). Throughout the activity, I circulated the room, offering scaffolded support to students such as Khalid, who initially struggled with the periodic table, while allowing advanced students to work independently.

Evaluation

A particular success was the high level of student engagement and the seamless integration of formative assessment. The use of technology (Quizizz) essentially "gamified" the review process, which motivated students to participate actively during a typically low-energy time (the end of the lesson). Furthermore, the differentiated exit tickets successfully allowed every student to access the learning objective at their own readiness level; no student was left idle or overwhelmed.

A challenge I identified was ensuring the "Expert" level task was sufficiently contextualized. While Abdullah and Faisal completed the calculations correctly, the task remained abstract (pure numbers) rather than connecting to a real-world application, which might have deepened their engagement further. Additionally, while the technology worked well, I realized I did not have a robust "low-tech" backup plan immediately available had the internet connection failed for students like Zayed.

Analysis

I believe the success of the differentiation strategy is supported by Fisher et al. (2018), who argue that effective science teaching requires moving students from "surface learning" (acquiring vocabulary and facts) to "deep learning" (relating and extending ideas). By using the tiered exit tickets, I allowed students who were still consolidating surface knowledge (Level 1) to build confidence, while pushing others toward deeper conceptual understanding (Level 3). The use of Quizizz also aligns with the principle of "Know Thy Impact" discussed in Visible Learning; it provided me with instant feedback on student learning, allowing me to intervene immediately with Khalid.

However, the lack of real-world context in the "Expert" task highlights a gap in relevance. Stuckey et al. (2013) propose a model of relevance that includes individual, societal, and vocational dimensions. My lesson focused heavily on "academic relevance" (preparing for the next test) but missed an opportunity for "societal relevance"—for example, connecting molar mass calculations to the UAE's aluminum or oil industries. Eilks and Hofstein (2017) emphasize that connecting chemistry to societal issues is crucial for developing scientific literacy and motivation. Had I included a problem about the mass of carbon emissions, I could have bridged this gap.

Plan for the Future

Considering this reflection, I plan to grow into a better teacher by:

I will consciously design "Expert" tasks that connect to the societal and vocational dimensions of relevance described by Stuckey et al. (2013), specifically linking chemistry concepts to UAE industries or sustainability goals.

I will continue to use technology for immediate feedback but will ensure I have analog backups to maintain momentum if technology fails.

I aim to use more metacognitive questioning (asking "How did you know to use that number?") to help students transfer their learning to new contexts, moving them further along the surface-to-deep-to-transfer continuum outlined by Fisher et al. (2018).

References

Eilks, I., & Hofstein, A. (2017). Curriculum Development in Science Education.

Fisher, D., Frey, N., & Hattie, J. (2018). Visible Learning for Science, Grades K-12: What Works Best to Optimize Student Learning. Corwin.

Stuckey, M., Hofstein, A., Mamlok-Naaman, R., & Eilks, I. (2013). The meaning of 'relevance' in science education and its implications for the science curriculum. Studies in Science Education, 49(1), 1–34.