Mentors Formative Lesson Observation Resource (M-FLOR)

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Name of Mentor: Mr. Hatem	**Cycle: 3**
School: Al QUDRA	**Class: 11 ADV**
Period: 5	**Date: 19/02/2026**

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

Lesson Topic: Introduction to Acids and Bases

Learning Objectives:

- Identify and describe acids and bases using the Arrhenius, Brønsted-Lowry, and Lewis definitions.
- Explain why some acids are stronger than others (degree of dissociation).

Prior Knowledge Activation (3 mins): Displaying visual examples of common household items (e.g., citrus fruits, cleaning supplies) alongside their chemical formulas. A quick questioning sequence to elicit what students already know about their properties.

Direct Instruction & Modeling the Definitions (5 mins): Clear, structured presentation introducing the three models using chemical equations on the board:

- **Arrhenius:** Releasing H^+ or $OH^-_{(aq)}$ in aqueous solutions.
- **Brønsted-Lowry:** Proton (H^+) donors and acceptors.
- **Lewis:** Electron-pair acceptors and donors.

Mini-Whiteboard Quick Task (2 mins): Displaying a simple chemical equation on the board and asking students to identify the Brønsted-Lowry acid and base on their personal whiteboards to check for immediate understanding.

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

- Subject-specific pedagogy.
- Activities and Tasks.

Abdulrahman will be teaching the first 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.

<table>
<tr><td colspan="2">Observation Category 1
Subject-specific pedagogy: using pedagogical skills related to the subject area, ability to motivate and engage students in the subject; explaining subject related concepts and ideas clearly; answering students' questions about the subject clearly and knowledgeably</td></tr>
<tr><td rowspan="2">**What is happening during the lesson?**

You begin by showing images of lemons and household ammonia, prompting Majid and Saif to share what they know about their properties.

You seamlessly transition into direct instruction, defining the Arrhenius and Brønsted-Lowry models.

When Omar asks why we need more than one definition, you knowledgeably explain that the Arrhenius model is limited to aqueous solutions, whereas the Brønsted-Lowry model is broader, focusing on proton H^+ transfer.

You introduce the Lewis model, correctly defining it as electron-pair donation and acceptance.</td><td>**Areas of strength:**

Excellent and accurate use of subject-specific terminology (e.g., proton donor, electron-pair acceptor).

You answered Omar's question clearly, demonstrating strong subject knowledge and addressing a common student misconception early on.</td></tr>
<tr><td>**Areas needing further development:**

When briefly mentioning acid "strength," ensure the distinction between "strong" (complete dissociation) and "concentrated" (amount of solute) is explicitly clarified, as Advanced students often confuse these terms.</td></tr>
</table>

<table>
<tr><td colspan="2">Observation Category 2
Activities and Tasks: including a variety of activities and tasks which are designed with explicit links to the learning objectives and support students apply new knowledge and skills and make progress towards specific learning objectives</td></tr>
<tr><td rowspan="2">**What is happening during the lesson?**

You utilize a visual "hook" task in the first three minutes to activate prior knowledge.

Following the explanation of the definitions, you initiate a "Mini-Whiteboard Quick Task" at the 7-minute mark.

You writes the equation:

$$NH_3 + H_2O \rightleftharpoons NH_4^+ + OH^-$$

on the board and asks the class to identify the Brønsted-Lowry acid and base.

Tariq, Khalifa, and Zayed hold up their whiteboards. You scan the room to quickly assess which students have successfully grasped the new definitions before moving forward.</td><td>**Areas of strength:**

The transition between the visual hook and the whiteboard activity was highly efficient, maintaining a brisk pace for the start of the lesson.

The mini-whiteboard task provided an explicit link to the learning objective of identifying acids and bases, allowing students to immediately apply the new knowledge.</td></tr>
<tr><td>**Areas needing further development:**

To further stretch the Grade 11 ADV students during the whiteboard task, prompt them to also identify the "conjugate acid" and "conjugate base" pairs, rather than just the reactants.</td></tr>
</table>

AFTER THE LESSON

STEP 3: Post-Lesson Observation Interview

Suggested questions **to ask your Intern** 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: What were some of the things you did in the lesson that you were pleased with?

Me: I was very pleased with the first three minutes. Using the images of lemons and household ammonia as a visual hook grabbed their attention immediately. I was also happy with how quickly we transitioned from the direct instruction of the theories into the mini-whiteboard activity to check their understanding of the Brønsted-Lowry model.

Can you tell me your thinking behind that?

My thinking behind using the mini-whiteboards immediately after introducing the models was to ensure every single student was actively processing the new subject-specific terminology. Instead of me just asking one student and assuming the rest understood, the whiteboards forced everyone—like Tariq and Khalifa—to commit to an answer. It allowed me to instantly gauge the whole class's comprehension before moving on to the more complex Lewis theory.

I really liked how the group work went. How did you make it go so smoothly? What was your thinking?

Thank you. I structured that whiteboard task as a quick 'think-pair-share.' My thinking was that for Grade 11 Advanced students, grappling with three different models (Arrhenius, Brønsted-Lowry, and Lewis) at the same time can be confusing. By having them quickly collaborate with their elbow partner to identify the conjugate acid and base first, they could clarify their thinking with a peer before holding up their final board.

Can you give me more detail?

Sure. When I put the equation

$$NH_3 + H_2O \rightleftharpoons NH_4^+ + OH^-$$

on the board, I didn't just want them to write the words 'acid' or 'base.' I explicitly asked them to draw arrows showing the proton transfer. This gave the pairs a highly specific, actionable task to complete together, linking the theoretical concept directly to the visual representation.

What do you mean by 'cognitive overload'? You mentioned earlier you were trying to avoid it.

Oh, by cognitive overload, I mean presenting too much new, abstract chemical information at once so that their working memory gets overwhelmed. Because the Lewis definition involving electron-pair acceptors is conceptually harder than the Arrhenius one, I wanted to break the 10 minutes into distinct, manageable chunks rather than lecturing non-stop for the whole opening.

What else did you do that you were pleased with?

I was really pleased with how I handled Omar's question about why we need multiple definitions. I felt confident in my subject-specific pedagogy there. I explained clearly that while Arrhenius is great for aqueous solutions, Brønsted-Lowry and Lewis allow us to understand chemical reactions in a much broader range of environments, like gases or non-aqueous solvents. It felt like a strong moment of clarifying a complex idea for the Advanced level.

Signed: ...hatem... **Date:** ...20.02.26...

(Mentor)

Signed: .... **Date:** ...20.02.26...

(Intern)

STEP 4: Intern's Reflection on the Experience

Describe

The observation focused on the opening ten minutes of a Grade 11 Advanced Chemistry lesson at Al Qudra Government School, where I introduced the theories of acids and bases.

The segment began with a visual hook displaying everyday items, such as lemons and household ammonia, to activate students' prior knowledge. I then transitioned into direct instruction, defining the Arrhenius and Brønsted-Lowry models. When a student, Omar, asked why multiple definitions were necessary, I explained the limitations of the Arrhenius model in non-aqueous environments to introduce the broader Brønsted-Lowry and Lewis models. Following this, I facilitated a "think-pair-share" activity using mini-whiteboards. I presented the equation $NH_3 + H_2O \rightleftharpoons NH_4^+ + OH^-$ and asked student pairs, such as Zayed and Majid, to draw arrows demonstrating the proton transfer and to identify the conjugate acid-base pairs.

Evaluation

A major success of this lesson segment was the high level of active participation achieved through the paired mini-whiteboard task. It served as a highly effective formative assessment tool that allowed me to gauge the entire class's understanding simultaneously. Furthermore, addressing Omar's question effectively demonstrated strong subject-specific pedagogy, clarifying potential misconceptions early on. The primary challenge, however, was managing the cognitive load of the students. While they grasped the Brønsted-Lowry concept well, introducing three distinct abstract models (Arrhenius, Brønsted-Lowry, and Lewis) within a short timeframe risked overwhelming them, making the pacing of the transition to the Lewis theory critical.

Analysis

The success of the mini-whiteboard activity can be attributed to its role in supporting "surface learning," which is the necessary first step where students acquire initial concepts and vocabulary. By explicitly asking students to draw the proton transfer arrows, they were actively processing the new terminology rather than passively receiving it. As discussed with Mr. Hatem, this activity strategically acted as an active processing pause, preventing cognitive overload before introducing the more complex Lewis theory. This aligns with the progression toward "deep learning," where students begin to relate and organize concepts.

Furthermore, the initial hook using everyday items, combined with the explanation of why scientific models evolve (in response to Omar), helped establish relevance. Connecting the curriculum to students' everyday lives and illustrating the nature of scientific inquiry touches upon both the individual and societal dimensions of relevance, which is crucial for motivating students in science education. Making these connections helps transition students from merely memorizing facts to understanding the broader scientific narrative.

Plan for the Future

In light of this reflection, I want to make the following notes for myself about becoming a good teacher:

- A good teacher "knows thy impact". I will continue to utilize low-stakes, high-visibility tools like mini-whiteboards to ensure I am constantly assessing student understanding in real-time.
- When introducing complex, multi-layered topics (like three competing chemical theories), I must consciously chunk the information and provide "mental breaks" for active processing to facilitate the move from surface to deep learning.
- I will strive to anchor abstract chemical concepts into broader "big ideas" or socio-scientific issues to continuously enhance the relevance of the subject matter for my Advanced students.

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.*

Mitchell, I. (n.d.). *Using big ideas to enhance teaching and student learning.*

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.