Mentors Formative Lesson Observation Resource (M-FLOR)

Name of Intern: Abdulrahman Albabakri	ID: 025302
Name of Mentor: Mr. Hatem	Cycle: 3
School: Al QUDRA	Class: 11 General
Period: 2	Date: 16/04/2026

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

Lesson Topic: Classifying Chemical Reactions - synthesis reaction

Learning Objectives:

- Identify a synthesis reaction from a given set of chemical equations.
- Predict the single product formed from two or more reactants.
- Write a balanced chemical equation representing the reaction.

Introduction & Hook (10 mins): he will begin with a brief visual demonstration of a synthesis reaction (e.g., magnesium and oxygen) to introduce the concept. He will use questioning to draw out students' prior knowledge and help them formulate the definition of a synthesis reaction.

Main Collaborative Task (25 mins): Students will work in small groups on an inquiry-based problem set. They will be provided with various pairs of reactants and will be tasked with predicting the resulting single product. Following this, they will practice writing out the fully balanced chemical equations. He will circulate the room to provide targeted guidance and check for understanding.

Plenary & Assessment (10 mins): The lesson will conclude with an "Assessment for Learning" exit ticket where students independently classify, predict, and balance one final synthesis reaction to evaluate their progress against our learning objectives.

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

- Activities and Tasks.
- Subject-specific pedagogy.

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 **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	
What is happening during the lesson? You introduced the lesson with a highly engaging visual demonstration (burning magnesium), which successfully captured the attention of the entire class. Following this, you transitioned the students into small groups to work on an inquiry-based problem set to predict the products of various synthesis reactions. I observed Saeed and Khalid successfully collaborating to identify the reactants from the given equations. Tariq needed some additional scaffolding to predict the product of Sodium and Chlorine, which you provided effectively when circulating the room. The exit ticket activity at the end was completed silently by all students.	**Areas of strength:** You included a variety of activities and tasks designed with explicit links to the learning objectives. The progression from the visual hook directly supported students in applying new knowledge and making progress toward the specific learning objective of predicting single products. The group work was purposeful and kept the majority of the students on task. **Areas needing further development:** Consider preparing brief extension tasks for groups that grasp the concept quickly. For example, Omar and Zayed's group finished their prediction tasks several minutes before the others and began to lose focus while waiting for the next instruction.

Observation Category 2 **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	
What is happening during the lesson? You explained the general formula for synthesis reactions ($A + B \rightarrow AB$) clearly on the board. During the main task, Mohammed asked an excellent question regarding why oxygen is written as O_2 instead of just O when reacting with a metal. You paused the class to address this and provided a knowledgeable explanation about diatomic elements using the periodic table as a reference. You consistently used the correct terminology (reactants, products, yields, subscripts)	**Areas of strength:** You demonstrated a strong ability to motivate and engage students in the subject. By explaining subject-related concepts and ideas clearly, and by answering Mohammed's spontaneous question knowledgeably, you reinforced their understanding of chemical bonding principles **Areas needing further development:** While you modeled the correct academic language beautifully, ensure you are holding the students to the same standard during their peer discussions. While circulating, I heard Majid and Sultan using phrases like "turns into" or "makes" instead of mathematically reading the equation using the term "yields." Gently correcting this during group work will strengthen their subject-specific fluency.

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 initial level of engagement during the introduction. The visual demonstration of burning the magnesium ribbon really captured their attention. I was also happy with how the students handled the transition into their collaborative groups to work on predicting the products. Finally, I was glad I could address Mohammed's spontaneous question about diatomic oxygen confidently.

Can you tell me your thinking behind that? starting with a visual demonstration before writing the formula on the board.

My thinking is rooted in Inquiry-Based Learning. Chemistry can feel very abstract, so I wanted them to observe a physical synthesis reaction happening in real-time before introducing the general formula $A+B \rightarrow AB$. I wanted them to see two distinct substances combining to form one new substance, so they could logically deduce the definition of "synthesis" themselves rather than me just dictating it to them

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

Thank you. My thinking there was to be very intentional about the pairings. I know the dynamics of this Grade 11 class well, so I paired students who naturally collaborate well but have complementary academic strengths—like putting Saeed and Khalid together. I also established very clear instructions on the board before they moved desks, so they knew exactly what the deliverable was for the 25-minute block.

Can you give me more detail?

Sure. For example, during the group work, I didn't just stay at the front of the room; I circulated continuously. My goal was to act as a facilitator. When I noticed that some students were stuck on the mechanics of writing the products, I used a scaffolding approach rather than just giving them the answer. I wanted to guide them to use their periodic tables to figure out the ionic charges first.

Can you give me one or two examples of that?

A good example was with Tariq. He was struggling to predict the product of Sodium and Chlorine. Instead of just telling him the product is (NaCl), I asked him to locate Sodium on the periodic table and tell me its group number, and then do the same for Chlorine. By breaking it down, he realized one gives an electron and one takes an electron, which led him to correctly build the compound himself.

What do you mean by a "scaffolding approach" in this context?

I mean providing temporary, targeted support to a student who is struggling with a concept, and then gradually removing that support as their competence increases. So, with Tariq, the "scaffold" was prompting him to look at the group numbers and valency charges first, rather than looking at the whole equation at once.

Do you mean breaking down the complex task of predicting the entire chemical equation into smaller, manageable steps like identifying the ionic charges first? Have I understood you right?

Yes, exactly. By breaking it down into those smaller steps, it reduces their cognitive load and builds their confidence. Once he had the individual charges, writing the balanced equation $2Na+Cl2 \rightarrow 2NaCl$ became much less intimidating.

What else did you do that you were pleased with?

I was very pleased with the implementation of the "Assessment for Learning" exit ticket at the end of the lesson. While the group work was great for collaborative problem-solving, I needed to ensure individual accountability. The exit ticket gave me a clear, immediate snapshot of whether each student actually met the learning objective of predicting and balancing a synthesis reaction on their own. It also highlighted a few areas I need to review, like ensuring students like Majid and Sultan use the correct subject-specific terminology when reading equations aloud.

Signed: ...Hatem... **Date:** ...16-4-26...

(Mentor)

Signed: .... **Date:** ...16/4/26...

(Intern)

STEP 4: Intern's Reflection on the Experience

Describe

The lesson, conducted for Grade 11 General Chemistry students at Al Qudra Government School, focused on classifying and predicting the products of synthesis reactions. The 45-minute session began with a visual demonstration of burning magnesium ribbon to introduce the concept of two reactants forming a single product. Students then transitioned into small, carefully paired collaborative groups to solve an inquiry-based problem set, where they predicted products and balanced equations using their periodic tables. The lesson concluded with an independent exit ticket designed to assess individual attainment of the three primary learning objectives.

Evaluation

A significant success of the lesson was the high level of student engagement during the initial demonstration and the subsequent collaborative tasks. Students like Saeed and Khalid worked productively to deduce the products, and the scaffolding provided to students who struggled, such as Tariq, effectively guided them toward the correct answers. However, a notable challenge was pacing and differentiation; groups that finished early, like Omar and Zayed, began to lose focus due to a lack of planned extension tasks. Additionally, during peer discussions, several students (such as Majid and Sultan) defaulted to colloquial language (e.g., "turns into" or "makes") rather than utilizing the expected subject-specific terminology ("yields").

Analysis

The effectiveness of the visual hook can be attributed to the implementation of "minds-on" practical work. Abrahams (2017) emphasizes that effective science education must move beyond mere "hands-on" observation to actively engage students' cognitive processes. By asking the students to deduce the definition of a synthesis reaction directly from the physical burning of the magnesium, rather than passively receiving a dictated definition, the activity bridged the gap between observable phenomena and abstract chemical concepts.

Furthermore, the successful scaffolding utilized with Tariq aligns closely with principles of formative assessment and visible learning frameworks. Hattie and Clarke (2018) highlight the critical importance of providing feedback that actively moves learning forward. By breaking down the complex task of predicting the entire chemical equation into smaller, manageable steps—specifically, identifying individual ionic charges first—the cognitive load was reduced, enabling the student to meet the explicit success criteria.

Conversely, the challenges observed highlight areas for pedagogical growth. The lack of subject-specific vocabulary during group work, a point effectively raised by Mr. Hatem during the post-lesson observation discussion, indicates a need for more explicit modeling of scientific discourse. The Education Endowment Foundation (2018) notes that promoting metacognitive talk is crucial for self-regulated learning; students must be explicitly taught how to structure and monitor their scientific dialogue. Additionally, the pacing issue with early finishers underscores the necessity of anticipating varied cognitive speeds when utilizing inquiry-based science education (IBSE) models (Harrison, 2014).

Plan for the Future

Moving forward, I will make two specific adjustments to my teaching practice to become a more effective educator. First, I must proactively design tiered extension tasks for fast finishers to maintain their cognitive engagement and prevent off-task behavior. Second, I need to explicitly model and enforce academic language during collaborative tasks. I plan to provide physical scaffolding, such as sentence starters or vocabulary word banks on their desks, to encourage metacognitive talk (EEF, 2018; Tanner, 2012) and ensure students practice speaking like chemists as well as writing like them.

References

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