1. Describe in detail what type(s) of information is (are) received from problem analysis and how the instructional designer applies the information to guide solution design.

The information used in problem analysis refers to the following components–

1. **Task analysis** – The problem is analysed on the basis of its smaller components to appreciate the requirements for performing the task.
2. Basis task analysis, **performance gaps** are determined that highlight the difference between actual performance and desired performance.
3. After the performance gap analysis, **learner characteristics** are also analysed to enable the instructional designer to understand the individual learner’s quantitative and qualitative data. Moreover, the learner’s preferences for instructional delivery and prior knowledge along with motivation are also analyzed.
4. The **importance of learning** to the performance problem along with **skill and knowledge deficiencies are** understood. Any **previous experiences of managing the issue or any challenges faced earlier** while performing the task are also examined. The **frequency of performing the task** is also an important factor to consider in the problem analysis. Basis these aspects, the instructional designer analyses the problem and then designs the solution.
5. **Contexts and learning environments** also need to be assessed. The resources and motivational states of the learners need to be incorporated to design meaningful solutions. The utility of the solution is of utmost importance to help the instructional designer manage the solution design.

2. Think about one performance problem and describe it. How can you analyze the performance problem to design a solution using the problem analysis flowchart?

A new mobile app, LiterAR has been launched. The app uses Augmented Reality (AR) to enable readers (students of elementary schools of Hillsborough County, grades 1-5) to comprehend metaphors and other forms of figurative language as per their reading assessments. The metaphors are based on children’s literature, that is books suitable to their reading level.

**Importance**

Metaphors are difficult literary concepts that children take time to understand. They are part of vocabulary, but unlike simple words, metaphors are more complex. The comparisons to different objects or ideas make students confused. They find it easy to understand, “the moon is a silver coin in the sky.” However, when abstract concepts are compared such as, “time is money”, they struggle with understanding such metaphors.

ELA teachers are able to help readers understand these using an AR app, LiterAR.

1. The teacher downloads the app from Play Store and logs in with the student’s credentials.
2. The teacher assesses the reading level of the student (based on a prior written test) and gives them a book to read as recommended by the app.
3. The book has QR codes at suitable places, where metaphors are located. After scanning the code using the app, an AR interactive image appears.
4. The teacher has to help the reader interact with the AR image by touching it with their finger.
5. A question is asked from the app and the reader answers the question verbally.
6. The teacher views the response in the app and gives them the next book, as recommended by the app.
7. This way, the reader (student) is able to improve their understanding of metaphors using LiterAR.

Interactive learning immerses the readers in the world of literature and the app visually translates the metaphors for enhanced comprehension and significant language acquisition.

**Skill Deficiency?**

No, the ELA teachers know how to use mobile apps, as they are using the same for other aspects of learning.

**Knowledge Deficiency?**

Yes, the ELA teachers lack updated knowledge of using AR for metaphor comprehension.

**Used to Know It?**

No, the ELA teachers did not use AR apps before for helping students interact with literature.

To address this, the ELA teachers should be provided with information to help them use the app successfully. They already know how to use apps, just using this specific app, needs to be explained to the teachers. Hence, instead of a full training session, a job aid would be more suitable in this scenario. Using a job aid in the form of a process chart will enable the teachers to use the app, LiterAR for better understanding of figurative language by readers.

3. Think about a specific problem that you have in mind for a possible job aid (IMA1). Using the flowchart, analyze if a job aid is appropriate and how the job aid can be designed (layout, structure, etc.)

The specific problem I have in mind for a possible job aid (IMA1) is **a process chart to help the ELA teachers at Hillsborough County use the app, LiterAR to help readers of elementary school enhance metaphor comprehension.**

The performance problem: The ELA teachers at Hillsborough County are unable to use the app, LiterAR for helping readers understand metaphors.

Importance – It is an essential and critical part of the learning process for students of elementary schools. Metaphor comprehension enables critical thinking and problem-solving. Most AR apps have been used for simple vocabulary acquisition, but not for complex concepts such as metaphors.

**Skill Deficiency?**

No, the ELA teachers know how to use mobile apps, as they are using the same for other aspects of learning.

**Knowledge Deficiency?**

Yes, the ELA teachers lack updated knowledge of using AR for metaphor comprehension.

**Used to Know It?**

No, the ELA teachers did not use AR apps before for helping students interact with literature.

As per the considerations –

a) A job aid directly supports work, performance, and task completion. **Helping readers comprehend and appreciate metaphors is a critical task** that is supported by the job aid that would be designed.

b) **The job aid will help the ELA teacher guide the readers to perform frequently**.

c) As metaphor comprehension is complex, **the performance gaps of the readers’ reading skills necessitate the creation of a job aid.**

d) The cost of inability of readers to understand metaphors is high. They will not be able to move ahead in their language skills if they do not understand metaphors. **A job aid will help in reducing the cost of making this error.**

f) A job aid should be used when there are insufficient resources or needs for full-scale training. – Since there are not many resources to conduct full-scale training to help learners, **a job aid would help the ELA teachers repetitively comprehend the importance of the task.**

g) A job aid should NOT be used when credibility could be damaged. In this case, **credibility will improve and not be damaged with the help of the job aid**.

h) A job aid should NOT be used when masterful performance is required.

i) A job aid should NOT be used when employees are not in the habit of using reference materials. – In this case, the school coordinator will ensure that the ELA teachers are **in the habit of using the job aid**. The job aid will be placed at a location where everyone will refer it.

j) A job aid should NOT be used when employees are unmotivated. ELA teachers of Hillsborough County are motivated to do better as **they want to help readers understand complex concepts with the help of interactive visual tools such as AR**.

**Layout and structure of the job aid** –

I plan to create a process chart in Adobe Photoshop to help the ELA teacher use the app, LiterAR. The process chart will highlight the steps of completing the task of using the app to record the responses of the reader on interacting with the AR. The process steps will be numbered and written in text boxes. I will use arrows to highlight the direction of the use of the app. I will use simple colors based on the logo of the app. I will make the instructions simple and easy to read.