



Brandon Hall Group

EXCELLENCE AWARDS 2024

Bayer's Interactive Case Studies Sharpen Critical Drug Safety Skills

Infopro Learning and Bayer Pharmaceuticals

Best Competencies and Skill Development

November 2024



Company Background



Academy of Capability Development and Learning

| Company-at-a-Glance | |
|---|--|
| Headquarters | Leverkusen, Germany |
| Year Founded | 1863 |
| Revenue | €50.74 billion (2022) |
| Employees | 101,369 |
| Global Scale | Worldwide |
| Customers/Output, etc. (Key customers and services offered) | Prescription pharmaceuticals, diagnostic imaging therapeutics, over-the-counter drugs, pesticides, seeds, plant biotechnology. |
| Industry | Pharmaceuticals, Chemicals, Biotechnology, Healthcare |
| Website | https://www.bayer.com/en/ |



Company Background



| Company-at-a-Glance | |
|--|---|
| Headquarters | Infopro Learning, Inc. 103 Morgan Lane, Suite 102, Plainsboro, NJ 08536 |
| Year Founded | 1989 |
| Revenue | Private |
| Employees | 500 |
| Global Scale | North America, Europe, Asia, Africa, Australia, and South America |
| Customers/Output, etc. (Key customers and services offered) | Infopro Learning offers a comprehensive range of learning services to organizations, with 70% of its clients being Fortune 1000 companies or global firms headquartered outside of the USA. |
| Industry | Learning and Development |
| Website | www.infoprolearning.com |



Budget and Timeframe

| Budget and Timeframe | |
|---|---|
| Number of (HR, Learning, Talent) employees involved with the implementation? | 7 (1 L&D Manager from Bayer, 1 Learning Experience Architect, 1 Graphic Designer, 1 Art Director, 1 Learning Course Developer, 1 Senior Quality Analyst, and 1 Project Manager) |
| Number of Operations or Subject Matter Expert employees involved with the implementation? | 13 |
| Number of contractors involved with implementation | None |
| Timeframe to implement | 3 months (August to November 2023) |
| Start date of the program | August 7, 2023 |

Fit to the Needs

The Background:

As a renowned industry leader in Pharmaceuticals, Consumer Health, and Crop Science, Bayer is dedicated to tackling the world's most critical global issues and continuously innovating new solutions. With over 150 years of experience in the life sciences sector, Bayer is committed to advancing healthcare worldwide.

Within Bayer's Pharmacovigilance division, a critical observation was made over time regarding a knowledge gap in Hematology that poses potential risks to patient safety and product longevity. Specifically, there has been a lack of prompt identification of Drug-Induced Liver Injury (DILI) cases, a deficiency in systematic assessments, and an incomplete understanding of the implications involved.



Business Needs:

The aim was to equip the staff with the necessary skills to identify and assess cases of liver injury systematically and effectively. Upon reviewing the current microlearning materials, media assets, and resources available, Bayer's leadership recognized a significant gap in information regarding Drug-Induced Liver Injury (DILI), affecting both patient safety and product lifecycle.

Consequently, they explored the feasibility of developing a comprehensive training curriculum deployable across various modes of delivery.

The Plan of Action:

The Bayer Academy of Capability Development and Learning (ACDL) team subsequently engaged their training partner, Infopro Learning, to develop a targeted business solution. They requested a training program focusing on Drug-Induced Liver Injury (DILI) to facilitate the development of the necessary skills and competencies among their staff. To expand the outreach, it was decided to incorporate the following modes:

- **MyLearning** (LMS).
- **Viva Engage** (a Yammer-based SharePoint intranet site), and
- **DILI Knowledge Portal** (a SharePoint portal that was launched after the training creation).

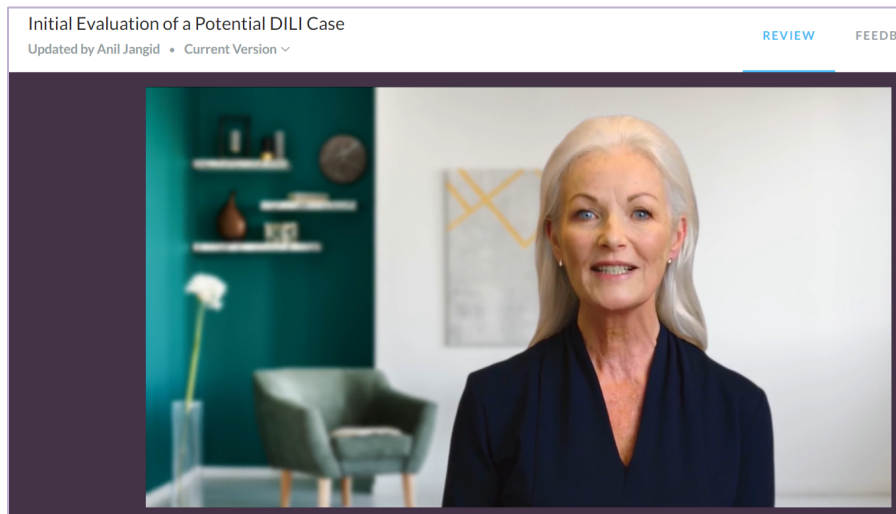
(*Note: Team Infopro has been working with Bayer ACDL as an extended team and has a dedicated team or a *Studio on Demand* for handling Bayer ACDL projects.*)

Recognizing the importance of a scenario-based approach to effectively convey the complexities of Drug-Induced Liver Injury (DILI), Bayer assembled a team of Subject Matter Experts (SMEs). This team was tasked with identifying relevant scenarios that would illustrate the challenges inherent in diagnosing DILI.



The Purpose:

A significant hematologic consideration is the diagnostic complexity of Drug-Induced Liver Injury (DILI), often necessitating the exclusion of various liver injury and illness types. One pivotal scenario in this domain is the initial assessment of a potential DILI case. The "**Initial Evaluation of a Potential DILI Case**" course is designed around a simulated scenario within this context.



Target Audience:

Internal Audience: SMEs and stakeholders

External Audience: Pharmaceutical Global Safety Leaders (GSLs) and colleagues from different areas, including medical affairs, R&D, safety, and PV, who typically need Hepatology training.

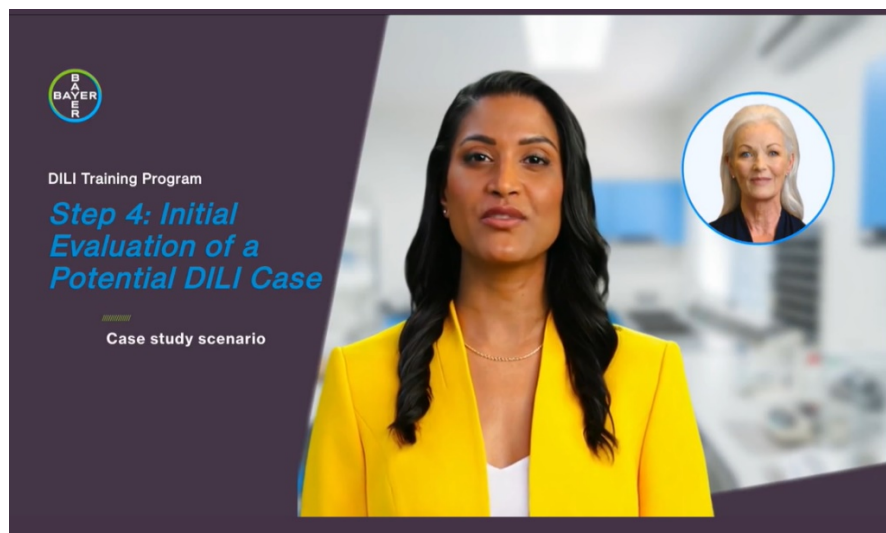


Overview

The Impact:

The "Initial Evaluation of a Potential DILI Case" course provides concise, targeted indications that serve as rapid references for medical practitioners and healthcare professionals. Through immersive simulations, participants learn to analyze and discern the likelihood of Drug-Induced Liver Injury (DILI) in the real-life cases they encounter. This interactive video simulation meticulously guides users through scenarios, empowering them to master the art of performing initial evaluations with precision and confidence.

The course immerses learners in a simulated case study, where a patient exhibits symptoms indicative of Drug-Induced Liver Injury (DILI) attributed to certain medications. Through an engaging interactive video simulation, users experience narrations from the patient alongside clinical examination details provided by medical professionals. This 15-minute interactive video primarily focuses on step 4 of the DILI methodology, which revolves around the initial assessment of potential DILI cases, offering a comprehensive exploration of this crucial aspect.





| Course Name/Link | Theme | Learning Goals |
|---|--|---|
| Case Scenario: Initial Evaluation of a Potential DILI Case 360 link | How to watch DILI based on some crucial signs? | <ul style="list-style-type: none">• How to analyze patterns in liver injury?• How do DILI symptoms differ from others? |

The Simulation:

Overview of the Case:

Learners meet Lilly, a 50-year-old woman undergoing menopause treatment. She arrives with complaints of upper abdominal pain and vomiting, concerned that her medication might be causing these issues. Notably, the presence of elevated liver enzymes stands as one of the primary indicators to be assessed in the evaluation of Drug-Induced Liver Injury (DILI).

The simulation interface displays a list of lab results on the left and a 3D model of a liver on the right. The lab results are:

- Total bilirubin 1.8 mg/dl (normal < 1 mg/dl)
- Alkaline phosphatase 292 U/L (normal 20-140 U/l)
- Alanine aminotransferase 315 U/l (normal 19-25 U/l)
- Aspartate aminotransferase 301 U/l (normal 10-24 U/l)

The 3D model of the liver is shown in red, highlighting its anatomical structure.



Case:

A 50-year-old woman:

- / Has upper abdominal pain and vomiting
- / Complains to her OB GYN doctor:
 - One month after starting the menopausal medication.




What Next: The primary care physician will need to confirm and then investigate the symptoms to determine the exact cause of the elevated liver enzymes to offer suitable treatment for the patient.

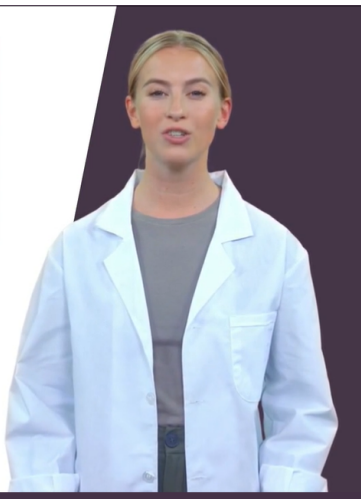
- / Total bilirubin 1.8 mg/dl (normal < 1 mg/dl)
- / Alkaline phosphatase 292 U/L (normal 20-140 U/l)
- / Alanine aminotransferase 315 U/l (normal 19-25 U/l)
- / Aspartate aminotransferase 301 U/l (normal 10-24 U/l)

Confirm if the results are correct.

- / Then investigate what are the reasons for the elevated liver enzymes.



- a. While elevated liver enzymes usually indicate DILI, it is important to understand Lilly's medical and surgical history, including some insights into her food habits and alcohol consumption preferences.



/ Total bilirubin 1.8 mg/dl (normal < 1 mg/dl)

/ Alkaline phosphatase 292 U/L (normal 20-140 U/l)


/ Alanine aminotransferase 315 U/l (normal 19-25 U/l)

/ Aspartate aminotransferase 301 U/l (normal 10-24 U/l)

/ The new medication may be a cause, but other alternatives must be ruled out, like:

- Other medication
- Use of supplement or herbs
- Any recent travel
- Alcohol consumption

b. One immediate decision to make is whether to discontinue menopause medication or continue with it.



/ Total bilirubin 1.8 mg/dl (normal < 1 mg/dl)

/ Alkaline phosphatase 292 U/L (normal 20-140 U/l)

/ Alanine aminotransferase 315 U/l (normal 19-25 U/l)

/ Aspartate aminotransferase 301 U/l (normal 10-24 U/l)

/ Start the investigation, yet consider to:

- Stop the medication that might be causing these symptoms.
- Closely monitor liver function.
- Keep an eye on symptoms.
- Give liver some time to recover.

What Next: The learner is asked a Check Your Understanding (CYU) on decision-making at this juncture. For instance, the learner has to decide if the injury is severe, drug-induced, cholestatic, or hepatocellular.



Check Your Understanding

Analyse this case, and select the correct response.

Select the correct option, and then select the **SUBMIT** button.

- A. The test results show that the liver injury pattern is cholestatic.
- B. The results show that the liver injury is severe.
- C. The results confirm that the liver injury is drug-induced.
- D. The results show that the liver injury pattern is hepatocellular.

SUBMIT



50 year-old female started taking a new medication to treat menopause symptoms. After one month, she complains of nausea and vomiting, and her liver tests show the following results:

Liver Test Results

- Total bilirubin 1.8 mg/dl (normal < 1 mg/dl)
- Alkaline phosphatase 292 U/L (normal 20-140 U/l)
- Alanine aminotransferase 315 U/l (normal 19-25 U/l)
- Aspartate aminotransferase 301 U/l (normal 10-24 U/l)

- a. The feedback describes why the liver injury can be considered *hepatocellular* and what the term indicates in medical terms.

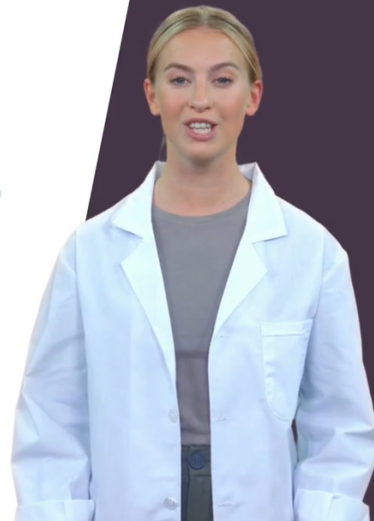
The correct answer is:

Option D the liver injury pattern is hepatocellular.

The liver test results provided indicate a hepatocellular pattern of liver injury.

The elevated levels of alanine aminotransferase (ALT) and aspartate aminotransferase (AST) are significantly higher than the upper limit of normal:

- While the alkaline phosphatase level is mildly elevated.



- b. The case subsequently elaborates on the significance of the R-value in Lilly's inpatient situation.



The calculation of the R value helps to determine the liver injury pattern.


How to calculate R value

$$R = \frac{(\text{measured ALT/ULN of ALT})}{(\text{measured ALP/ULN of ALP})}$$

| | | |
|-------------------------|--------------------|----------------------|
| R ≥ 5 Hepatocellular | 2 < R < 5 Mixed | R < 2 Cholestatic |
|-------------------------|--------------------|----------------------|

R = $\frac{(315/25)}{(292/140)}$ R = 6.05


R = $\frac{(12.6)}{(2.08)}$ R > 5
Hepatocellular



- c. Before drawing conclusions about DILI, the learner is directed to further relevant information.

Before calling this adverse event as DILI:

- Exclude other causes of increased ALT, AST and bilirubin.
- Besides repeating the exams, investigate the complete medical history, including concomitant medication, recent travel, use of herbs, and supplements.
- If you have doubt if a potential medication can cause liver injury, please consult the LiverTox® website: <https://www.ncbi.nlm.nih.gov/books/NBK547852/>



Conclusion:

In this instance, a more definitive DILI diagnosis is established.

Consequently, this case warrants escalation for potential DILI consideration.



Design of the Program

Interactive Case Presentation: The training program is designed as an interactive, scenario-based video mimicking a real-life situation and flow of events wherein:

- A patient arrives with a set of seemingly generic complaints.
- Some probing questions lead to the current medical history of the patient and any recent or ongoing medications.
- A healthcare professional or medical practitioner shares preliminary observations.
- Initial reactions and thoughts of the patient are collected.
- Further investigation is requested.
- Potential circumstances that can indicate DILI.

The Tone:

In the scenario, the dialogue is crafted to elucidate the technical aspects of Drug-Induced Liver Injury (DILI) in a simplified, conversational tone, equipping learners with the essential skills to manage such cases effectively.

Moreover, the video aids learners in distinguishing between the underlying conditions that may precipitate DILI. By the end of the case study, learners attain a clear understanding of whether the presented case qualifies as DILI or not.

Agile Development Process and Practice

The learning and design teams adhered to a rigorous development process, commencing course creation almost immediately alongside content gathering, given the urgent demand. While Subject Matter Experts (SMEs) continued to assess the scenario's implications, the team generated prototypes weekly, presenting draft versions for early feedback and approval from SMEs. These iterative interim review cycles effectively addressed complexities within the scenario, significantly streamlining the final review process.

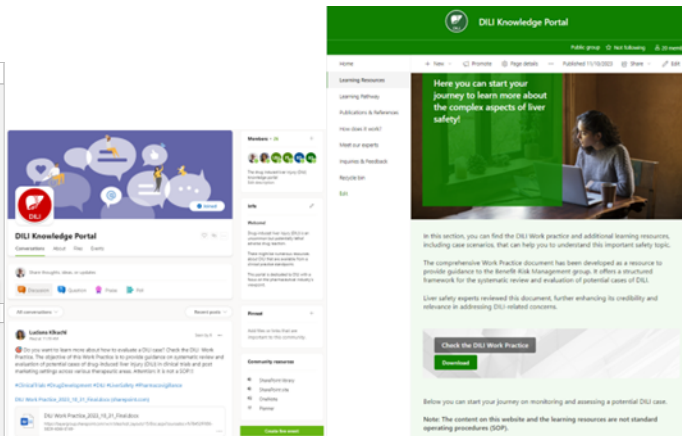


Delivery of the Program

Delivery mode: The simulation videos are done using the AI tool Synthesia, which is then integrated using Articulate Storyline.

Launch Forums: The course was launched in the Bayer learning ecosystem in three ways: via MyLearning (LMS), Viva Engage (a Yammer-based SharePoint intranet site), and DILI Knowledge Portal (a newly created SharePoint portal).

| Engage | Explore | Learn |
|--|--|---|
| Join our dedicated DILI community channel and keep up to date with any new developments and guidance on completing your DILI Learning Program. Drive the conversation and exchange information with your colleagues to improve our understanding of DILI and minimize the risk to our products and patients. Join Viva Engage DILI community | Looking for resources, links to relevant publications and references about DILI? Look no further than the DILI Knowledge Portal - it's got everything you need now and in the future! The DILI Knowledge Portal contains continuously updated and revised resources that serve as a comprehensive guide to all aspects of DILI. Visit our DILI Knowledge Portal | The Learning Resources section contains bespoke interactive microlearning lessons, videos and case study scenarios to improve your understanding and take proactive steps to mitigate the risk of DILI in our products. Pick any topic or case studies you like! Launch Learning & Resources |
| Evaluate | | |
| Don't have time to spare? Do you consider yourself an expert in DILI? No problem! If you want to explore only the most vital information needed to acquire the certificate – head to the Mandatory learning checklists . The condensed mandatory DILI online course will be assigned to you via MyLearning. Once you finish the course, you will need to pass the DILI assessment. However, we highly advise you to look through all of the additional learning resources on the DILI Knowledge Portal as it will help you pass the assessment, and you might even learn something new! | | |



AI Tool/Synthesia videos: The entire simulation is in the form of an interactive video consisting of short Synthesia video snippets, narrating a specific context within the case study, interspersed with practice questions. After completing the entire scenario, the learner should be able to make appropriate guided decisions on the disease condition—DILI, based on a severity assessment of liver injury.

CYUs for decision-making: After each video, one practice question is provided to facilitate the learner’s decision-making at that juncture. After providing appropriate feedback, the learner is taken to the next video narrating another episode within the case study.



Check Your Understanding

Analyse this case, and select the correct response.

Select the correct option, and then select the **SUBMIT** button.

- A. The test results show that the liver injury pattern is cholestatic.
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- C. The results confirm that the liver injury is drug-induced.
- D. The results show that the liver injury pattern is hepatocellular.

SUBMIT

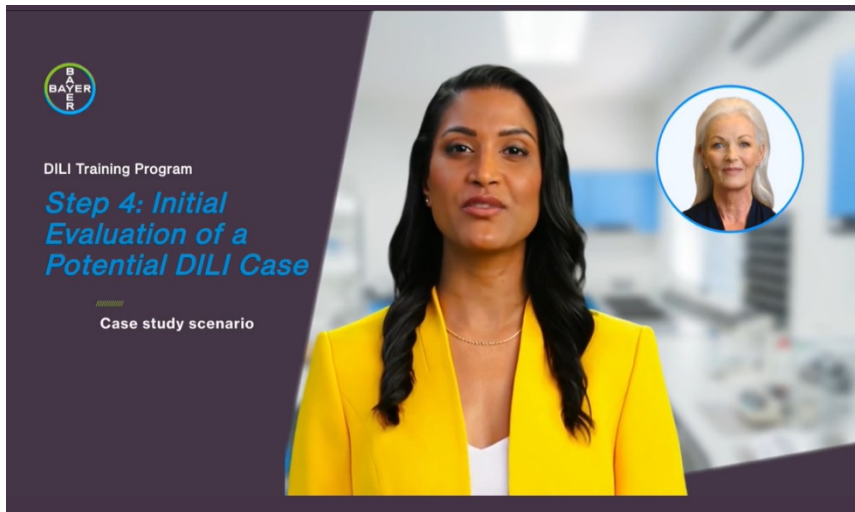
50 year-old female started taking a new medication to treat menopause symptoms. After one month, she complains of nausea and vomiting, and her liver tests show the following results:

Liver Test Results:

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Overview video: The scenario opens with an overview video explaining the relevance of this topic to create a knowledge foundation and prepare the learner for the topic.

The case study uses AI-generated images to match the profiles of the different characters in the video. AI-generated audio complements the personas created.



Animations: Attractive background animations are interspersed within each Synthesia video to complement the case study and to grab/retain the learners' attention.



Situational Analysis: The entire case study is divided into short snippets showing specific contexts of the case analysis. The learners are asked to analyze specific details within the simulated situation and respond appropriately to a Check Your Understanding (CYU).

The feedback is given in the form of another video wherein each option is further analysed and explained.


The correct answer is:

Option D the liver injury pattern is hepatocellular.

The liver test results provided indicate a hepatocellular pattern of liver injury.

The elevated levels of alanine aminotransferase (ALT) and aspartate aminotransferase (AST) are significantly higher than the upper limit of normal:

- While the alkaline phosphatase level is mildly elevated.





Measurable Benefits

As demonstrated, this activity offers an exceptional opportunity for learners to apply their knowledge gained from the case study to comparable real-world scenarios. Additionally, let's delve further into data illustrating the learner's resulting impact.

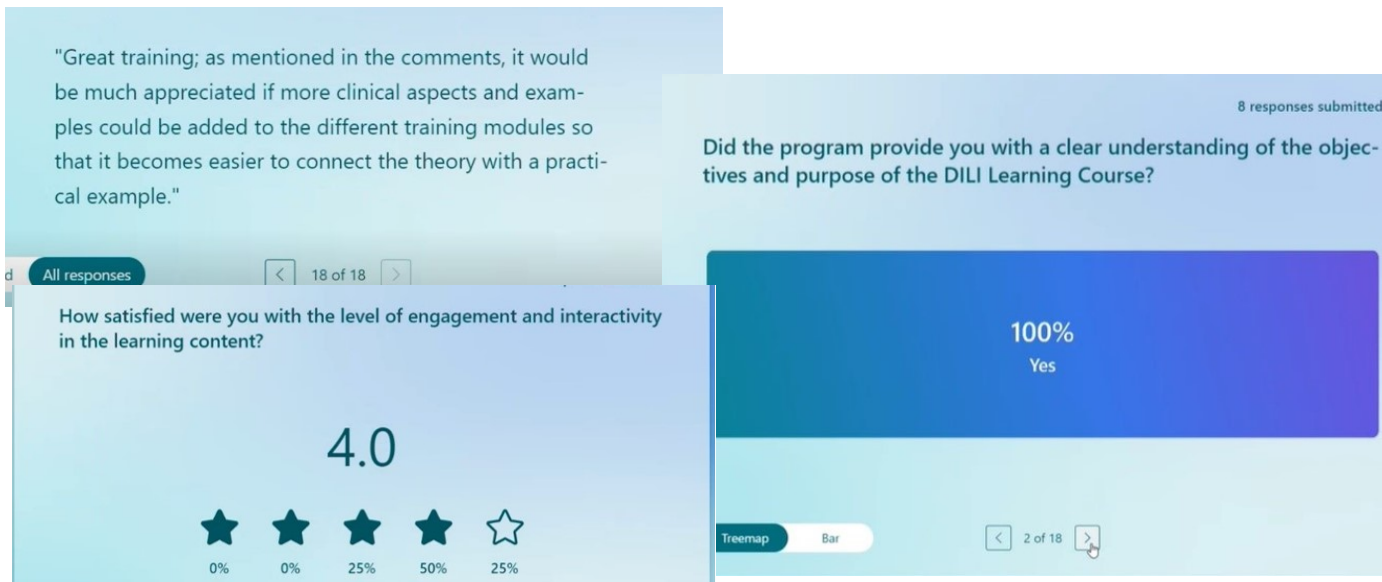
Reiterating the global target audience from Bayer:

Internal Audience: SMEs and stakeholders

External Audience: Pharmaceutical Global Safety Leaders (GSLs) and colleagues from different areas, including medical affairs, R&D, safety, and PV, who typically do not have training in Hepatology.

The Feedback:

Here is a glimpse of SME and stakeholder feedback:



And here is a glimpse of the feedback from all three forums MyLearning (LMS), Viva Engage (a Yammer-based SharePoint intranet site), and DILI Knowledge Portal (the newly created SharePoint portal).

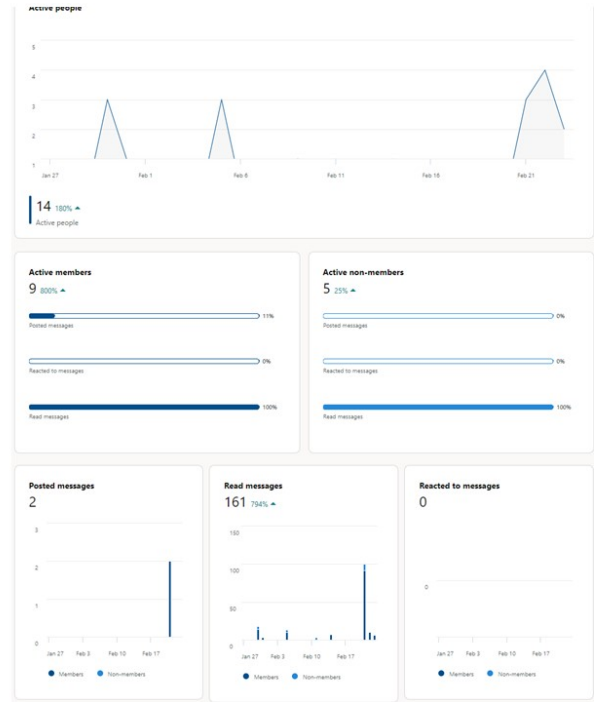
The charts clearly show a higher level of learner engagement and views.



DILI

Viva Engage uptake Nov 2023 – Feb 2024

Viva Engage: 22 members, little activity and posts



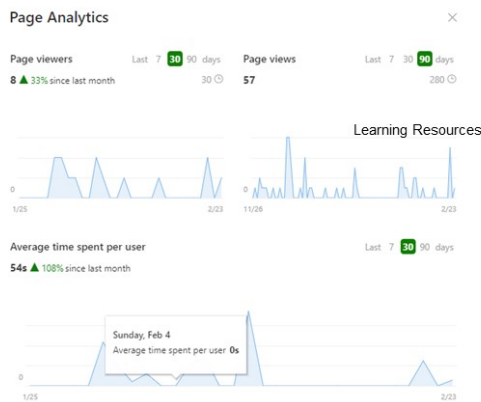
12



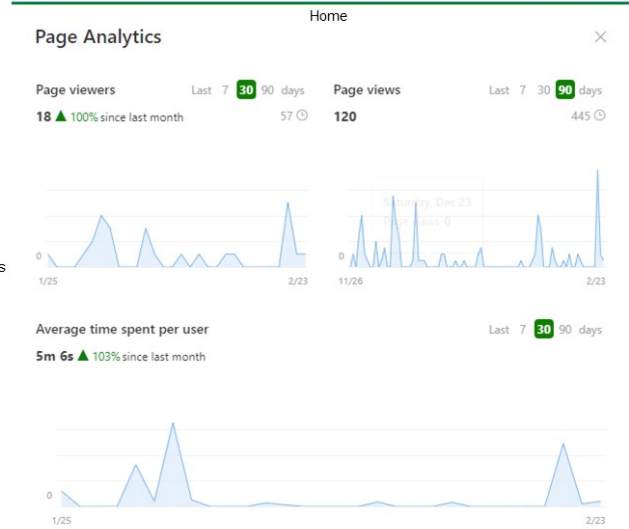
DILI

SharePoint uptake Nov 2023 – Feb 2024

SharePoint: 445 front page and 280 learning content views



11





Data Analysis:

As shown in the charts above, Bayer continues to witness extensive views from learners across the world.

As the target audience comprises time-deprived healthcare professionals, the learning is often staggered, especially for a non-mandatory course. Despite being non-mandatory, the reach of this and similar case studies (as demonstrated in the SharePoint views) is quite high.

Moreover, the SharePoint Portal (termed as DILI Knowledge *Portal*) is exclusively meant for DILI analysis. It indicates the learners are making great use of these trainings. Such data reveals the popularity of these courses and the business needs that they cater to.

Overall

Summary of Key Findings:

1. **Focus on learner-centric situations and prompt feedback:** The case study is about a real-time scenario that learners may face in their workplace on a day-to-day basis. Therefore, it helps to understand the impact of severe liver injury on patients' lives and to develop empathy and sensitivity towards their experiences—fostering a patient-centered approach to diagnosis and management.
2. **Cater to the target audience's expectations:** As the target audience is self-motivated to learn more about the case study, even the intricate details are essential to retain their attention. This aspect is essentially taken care of in this course as it includes detailed narration engagingly. The probing questions are designed to help identify the root cause or causality of liver injury, including the symptoms, details of any tests conducted, and findings.
3. **Acquire hands-on experience and develop proficiency:** The simulation-based scenario allows learners to practice clinical decision-making in a safe environment, fostering confidence and competence in managing DILI, wherein they do an initial evaluation of a case of potential DILI.
The learner will also develop proficiency in **ordering and interpreting relevant diagnostic tests** (for example, imaging studies and laboratory tests) to confirm or rule out the diagnosis of DILI in this case.



4. **Personalized learning experience:** The characters are completely immersed in the scenario and are no different from the patients and physicians that the learners meet in real time. For instance, the learner attempts a CYU for guided decision-making.
Ensuring utmost learning retention: The scenario is woven in such a way as to grab the learner's attention at each juncture and to make him/her curious about the further developments of the case. The CYUs provide apt guidance in the decision-making process. The immediate feedback video promotes greater learning retention among the target audience.
5. **Essentially engaging by nature:** The video focuses on healthcare professional-patient conversations, which mainly use probing questions to try and diagnose DILI with increased accuracy and efficiency. Using the video to present the patient history to aid DILI diagnosis in a conversational tone enhances learner engagement.

Lessons Learned:

- An impeccably structured content is pivotal in bolstering learner retention.
- Engagement and real-life applicability soar with dynamic examples, interactive activities, and scenario-based learning.
- Maximized learner engagement is achieved through the adept utilization of compelling case studies, immersive interactions, and captivating presentations.

Future Outlook:

This course stands as a testament to the power of innovative and impactful eLearning designs achieved through generative AI. It epitomizes the culmination of organization-wide efforts dedicated to exploring AI's potential for real-time business solutions. Moreover, with its mobile-friendly interface, learners are empowered to engage with the content at their convenience, accessing it seamlessly through the SharePoint portal, Yammer link, or the Learning Management System (LMS).



Brandon Hall Group

EXCELLENCE AWARDS 2024

About Brandon Hall Group™

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