

Enhanced Assessment Immersive Learning

Evaluation report

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Executive summary

Project aims and overview

The main aim of the Enhanced Assessment Immersive Learning (EAIL) project was to explore whether Artificial Intelligence (AI) could enhance virtual scenario-based training and formative assessment, addressing some of the challenges identified in the research literature.

A proof-of-concept virtual scenario was developed for further education learners studying healthcare and nursing. The proof-of-concept included adaptive algorithms, an AI-powered chat function, and voice interaction. The overall aim was to explore whether these features could support a more personalised and learner-centred experience within the scenario context.

The project was conducted between November 2024 and July 2025, with the initial months devoted to investigation and development of the proof-of-concept, and the latter period used to prepare and execute the trial and evaluation. The project was completed by a small team from Metaverse Learning including a Project Manager, Technical Director, Developer and Tester. The project was funded by NCFE and Ufi VocTech Trust through the Assessment Innovation Fund.

The project aimed to engage 50-100 participants across 2-3 partner institutions. This sample size was considered appropriate for identifying usability issues and capturing learner feedback. Due to limited availability during the summer term, the final trial cohort comprised 30 participants, including a mix of learners and educators. This small sample size means that while user testing took place and some valuable insights were generated, further research is required to validate findings.

Project findings

Evaluation question	Findings
By effectively establishing learner start points, are we able to better measure the learning that has taken place for each learner?	Initial findings indicate that establishing learner start points may support more accurate measurement of learning gains. For example, only 4% of participants felt very confident in clinical reasoning pre-trial, compared to around 60% post-trial.
By understanding individual barriers to learning, are we able to address these barriers and provide a more effective learning environment for each learner?	The approach was to provide learners with a range of accessibility features including voice control, subtitles and adjustable settings to support diverse learner needs. Additionally, learners had the option to explore the content at their own pace. 60% of learners reported that the adaptive scenario and adaptive learning helped reinforce their knowledge and improve their clinical decision-making skills.
By incorporating adaptive formative assessments, are we able to effectively conduct formative assessments in line with each learner's ability?	The scenario adapted question difficulty based on learner response time, accuracy and confidence levels. Initial findings suggest that this approach was effective in personalising assessment. 100% of participants agreed that adaptive learning environments should be implemented more widely.

In addition to these findings, the project highlighted several technical and pedagogical considerations:

- the AI-powered chat assistant was valued for subject-specific support but lacked contextual awareness of the scenario, limiting its effectiveness in guiding learners through tasks
- the speech recognition feature offered an alternative interaction method but was affected by environmental and hardware variables, impacting reliability for some users

- learners expressed a preference for more intuitive and engaging interfaces, such as avatar-based interaction, which may enhance immersion and accessibility
- in the context of the education sector, it is important to guard-rail the AI to ensure that the information provided is limited to the subject matter only and doesn't allow the learner to head off in other directions and get distracted from the main activity.

These insights suggest that adaptive technologies have the potential to personalise learning, increase learner agency and support differentiated progression. However, further testing is required to strengthen the evidence base, particularly through controlled comparisons, objective performance data and longer-term follow-up.

Introduction

Background

This proof-of-concept project, funded by NCFE and Ufi VocTech Trust's Assessment Innovation Fund and delivered by Metaverse Learning, aimed to explore the application of Artificial Intelligence (AI) to enhance virtual scenario-based training. Specifically, the project investigated whether adaptive features could support more personalised and learner-centred experiences by tailoring content to individual knowledge levels.

The project was designed to address challenges identified in the literature review and the impact on learner engagement and achievement, particularly in vocational education settings.

The key challenges identified in the research literature are outlined below.

Evidence of limitations with current scenario-based training	“Summative and fixed simulation approaches can increase learner anxiety, limit flexibility of formative assessment, and reduce opportunities for tailored remediation.” O. Arrogante et al., Comparing formative and summative simulation-based assessments (2021). https://pmc.ncbi.nlm.nih.gov/articles/PMC8186200/
Evidence that virtual simulation is effective but can be improved	“Virtual reality and simulation-based education improve knowledge and performance in nursing and healthcare education, but cognitive load, scenario fidelity and limited adaptive feedback remain challenges.” K. Liu et al., Effectiveness of virtual reality in nursing education, BMC Medical Education 2023. https://bmcmmededuc.biomedcentral.com/articles/10.1186/s12909-023-04662-x https://pmc.ncbi.nlm.nih.gov/articles/PMC10729454/
Evidence that AI and adaptive systems can address limitations	“AI-driven simulations can provide real-time feedback, monitor learner progress and dynamically adjust scenario difficulty - enabling scaffolded, mastery-based and personalised learning.”

	C. Elendu et al., The impact of simulation-based training in medical education (2024 review) https://pmc.ncbi.nlm.nih.gov/articles/PMC11224887/ https://educators.sketchy.com/posts/enhancing-medical-education-with-ai-powered-simulations-leveraging-scaffolded-learning-and-adaptive-technology
Evidence of policy and professional guidance supporting innovation and quality assured simulation	“Health Education England’s National Framework for Simulation-Based Education sets a national expectation for high-quality, equitable SBE and supports innovation to improve learner outcomes.” Health Education England, National Framework for Simulation-Based Education. “ASPiH’s Standards Framework for Simulation-Based Education calls for coherent design and evaluation of SBE and endorses practices that improve fidelity, safety and education value.” Association for Simulation Practice in Healthcare (ASPiH), Standards Framework for SBE https://aspih.org.uk/wp-content/uploads/2017/07/standards-framework.pdf

The healthcare and nursing subject area was identified as a good focus for the proof-of-concept due to the vocational nature of the discipline and relevance of scenario-based learning in clinical education. While other subject areas such as maths, construction and electrical engineering were considered, nursing and healthcare was prioritised based on engagement levels from partner institutions and the suitability of the subject matter for immersive and adaptive learning approaches. The immersive format used in the project was designed to support learners engaging in contextualised environments - including objects, avatars and equipment - to achieve practical learning outcomes, which are more representative of healthcare and other vocational disciplines.

The proof-of-concept was designed to explore the potential of AI-enabled adaptive learning to support more personalised and inclusive learner experiences. A solution was created to:

- tailor question difficulty to individual learner understanding
- provide contextualised and personalised support for learners requiring additional guidance
- provide accessibility for learners who may face barriers with traditional virtual scenario-based training.

The solution aimed to demonstrate how adaptive technologies could provide more responsive and learner-centred pathways, supporting differentiated progression and improved engagement.

Project team

The project team included a Project Manager, a Technical Director, Technical Developers and Quality Assurance colleagues.

The Project Manager was responsible for day-to-day delivery, ensuring progress against milestones and resolving operational issues.

The Technical Director provided strategic oversight and technical guidance, supported institutional engagement during the trial phase, and contributed to reporting and supporting technical documentation.

The Technical Developers led the investigation and evaluation of technologies, identifying possibilities and limitations, and were responsible for developing and testing the proof-of-concept.

Quality Assurance colleagues reviewed and tested the prototype to ensure functionality and usability, with an appropriate scope to suit the proof-of-concept rather than a final releasable product.

Evaluation

The project took place between November 2025 and July 2026 with phases of desk-based research, development and evaluation.

Evaluation activity was conducted primarily by the Technical Developers, supported by the Technical Director. The team brought several years of experience in developing immersive learning scenarios across sectors, with academic backgrounds in computer science, games design and programming. The project's Principal Developer also holds a Master's degree in Artificial Intelligence.

In terms of the actual evaluation conducted, there were two strands associated with the proof-of-concept project: development evaluation and trial feedback.

Development evaluation

This focused on evaluating a range of technologies and techniques to support the proof-of-concept in the intended delivery environment. Key areas of investigation included:

- the feasibility and viability of deploying a local Large Language Model (LLM) on learner devices to support both audio and chat functionality
- comparative analysis of text and speech LLMs, considering fidelity, stability, file size, cost and guard-railing requirements
- multi-threading approaches to ensure AI processes and visual rendering could operate independently without compromising performance
- development of an adaptive algorithm to determine appropriate question difficulty based on learner interaction, including response time, accuracy and confidence.

This strand of evaluation was designed to ensure the technical infrastructure could support a personalised and responsive learning experience, while remaining scalable and accessible across vocational settings.

Trial feedback

The learner trial was designed to evaluate the usability and perceived impact of the proof-of-concept. Participants completed a pre-trial questionnaire to establish their baseline experience with adaptive learning and AI supported scenarios, followed by a post-trial questionnaire to evaluate their engagement, perceived learning benefit and feature effectiveness.

The trial was delivered in collaboration with organisations from Metaverse Learning's superuser network. This included engagement with Milton Keynes College (MKC), chosen for their proximity and strong ongoing working relationship, New College Swindon, Eastern Education Group and BPP. The organisations were provided with an overview and demonstration of the proof-of-concept, which they saw the value of and expressed interest in supporting from a trial perspective.

Participants

The intended participant demographics included nursing and healthcare learners undertaking Level 4, Level 5 and Level 6 vocational qualifications in England and Wales, reflecting the intended learner population for the adaptive scenario-based training. While the anticipated age range was 18-30 years, age data was not captured during the trial. Similarly, demographic characteristics such as gender, ethnicity, and socio-economic background were not captured, although future iterations should consider this to reflect inclusivity and avoid bias.

Participants included a mix of learners with and without prior exposure to simulation-based training, enabling a range of perspectives. A small number of educators and simulation facilitators were expected to contribute expert insight, although this was not formally recorded.

The project aimed to engage 50-100 participants across 2-3 partner institutions. This sample size was considered appropriate for identifying usability issues, capturing learner feedback and generating exploratory insights into the three evaluation questions.

Following the initial identification of potential partner organisations, the project encountered several challenges in securing participation. Due to limited availability during the summer term, the final trial cohort comprised of 30 participants, including a mix of learners and educators. Demographic characteristics such as age, gender or other information were not collected, in line with the project's data minimisation approach and ethical considerations. While this limits the ability to analyse subgroup differences, the trial generated valuable feedback on usability, accessibility and learner engagement.

Despite these constraints and with perseverance, two organisations engaged: MKC and BPP. However, prior to trial delivery, additional due-diligence queries were raised by participating institutions regarding the use of AI technologies (*see Appendix C*). Although the proof-of-concept was not fully developed, the team provided all the necessary information and assurances. This enabled the trial to proceed with BPP.

Ethical considerations

The trial was designed in line with ethical best practice, including:

- informed consent: participants must be given clear written and verbal information sheets explaining the voluntary nature of the study, use of data and the right to withdraw without penalty
- anonymity and confidentiality: questionnaires should be anonymised, with no personally identifying data collected and using aggregated results only
- data protection: compliance with UK GDPR (2018) and institutional ethics frameworks, with data stored securely on encrypted systems
- equity of access: ensure trial participation does not disadvantage learners (for example orientation should be provided for those unfamiliar with virtual simulation)
- wellbeing: provide clear withdrawal mechanisms and support as some learners may experience discomfort (virtual environment sickness or cognitive overload)
- bias mitigation: make it clear that learner participation will not impact academic grading or progression.

Questionnaires and ethical framing

Two questionnaires were developed to support the evaluation.

1. The pre-trial questionnaire (*Appendix A*) captured participants' baseline awareness and experience of virtual scenarios, adaptive learning and confidence in clinical decision-making.
2. The post-trial questionnaire (*Appendix B*) explored participants' experience of the proof-of-concept including engagement with the AI features, perceived learning benefits and suggestions for improvements.

The questionnaires were provided as online forms and were designed to be concise while capturing meaningful insights. They were validated by colleagues at BPP and NCFE, drawing on prior experience with similar projects. Ethical considerations were embedded throughout, including informed consent, anonymity and data protection.

Results overview

The following section summarises the key findings from the pre- and post-trial questionnaires completed by participants. These findings reflect learner perceptions of the adaptive scenario and associated AI features, and provides early insights into confidence, engagement and usability.

Pre-trial questionnaire findings

	None	Limited	Moderate	Extensive
How much experience do you have with virtual scenario-based learning and assessment?	42%	54%	4%	0%
How much experience do you have with adaptive learning scenarios?	21%	58%	21%	0%

	Not challenging	Mildly challenging	Averagely	Moderately challenging	Very challenging
In a real-world nursing scenario, how challenging would you find it to adapt your knowledge and apply it to varying situations?	13%	54%	0%	33%	0%

	Yes	No	Not sure
Are you familiar with the term 'adaptive learning'?	67%	33%	0%
Have you attempted a nursing based virtual scenario before?	21%	79%	0%

Do you think traditional non-adaptive simulations help in improving clinical decision-making skills?	25%	8%	67%
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	Not at all	Mildly	Averagely	Moderately	Very
How comfortable are you with technology-assisted learning?	0%	17%	42%	17%	24%
How confident do you feel in clinical reasoning and decision-making based on observations and responses?	0%	8%	25%	63%	4%
How confident are you in responding to real-time patient interactions?	0%	0%	34%	58%	8%
How confident are you in responding to applied knowledge questions?	0%	4%	38%	45%	13%

Participants reported limited prior experience with virtual scenario-based learning and adaptive technologies:

- 96% of participants had none or limited experience with virtual scenarios
- 79% of participants had never attempted a nursing-based scenario
- 67% of participants were familiar with the term 'adaptive learning', though most had not experienced it directly.

Confidence levels varied across domains:

- 63% felt confident in clinical reasoning and decision-making
- 87% said they would find it challenging to adapt their knowledge to real-world scenarios
- 66% felt confident about responding to real-time patient interactions
- 58% felt confident about responding to applied knowledge questions.

Comfort with technology-assisted learning was generally positive, with 41% reporting high levels of comfort.

Post-trial questionnaire findings

	Not at all	Mildly	Averagely	Moderately	Very
How engaging did you find the adaptive 3D virtual scenario compared to standard training methods?	0%	0%	40%	20%	40%
To what extent did you find the adaptive difficulty (questions getting harder or easier) beneficial?	0%	40%	0%	20%	40%
To what extent did you find the AI-powered chat interface helped improve your understanding of subject matter-specific questions?	0%	0%	10%	60%	30%
To what extent did you find the voice-driven interaction improved the experience?	50%	0%	0%	0%	50%
How confident do you feel now in assessing a patient's condition based on observations and responses?	0%	0%	40%	0%	60%
To what extent did you find the adaptive 3D scenario effective in improving your clinical decision-making skills compared to traditional non-adaptive methods	0%	0%	40%	40%	20%

To what extent do you feel that adaptive learning (adjusting the difficulty of questions) helped reinforce your knowledge of clinical protocols?	0%	20%	20%	20%	40%
How easy did you find the scenario to use?	0%	20%	40%	20%	20%
How did you find the instructions and training given to you on how to use the features?	0%	0%	20%	40%	40%

	Yes	No	Not sure
Did you use the AI-powered chat Interface?	60%	40%	0%
Did you use the voice-driven interaction?	40%	60%	0%
Do you think an adaptive learning environment like this should be implemented more widely in nursing education?	100%	0%	0%

Following engagement with the adaptive scenario:

- 60% found the experience engaging compared to standard training methods
- 60% reported that adaptive question difficulty was beneficial
- 60% used the AI-powered chat interface; of these, 100% found it helped improve their understanding
- 40% used the voice-driven interaction; of these, 50% found that it improved the experience
- 60% felt confident in assessing a patient's condition post-trial
- 60% reported improved clinical decision-making skills compared to traditional methods
- 60% felt that the adaptive learning helped reinforce their knowledge of clinical protocols compared to traditional methods
- 80% of participants identified 'adaptive questions' and 'AI-powered chat assistance' as the most useful features in the scenario. The main reasons for

the usefulness of the features were the ability to ask the chat assistant questions around terminology and delve further to learn more, and the complex way in which the question difficulty appeared to be modified (for example not just because a couple of questions were answered correctly or incorrectly)

- 100% of participants thought that an adaptive learning environment should be implemented more widely. The main reason for this was the applicability of the scenario to multiple learners at different stages of their learning, providing a suitable level of challenge to match the background knowledge of the individual learner.
- 40% of participants found the scenarios easy to use. For those who didn't, the main challenges or difficulties faced while using the scenario included the speech tool not working effectively despite using a headset and a good microphone, and the fact that while the AI chat assistant had knowledge of the technical subject matter (in this case health related), it had no knowledge of the scenario so couldn't provide any guidance on it.

Analysis

The project generated encouraging data on the feasibility and perceived value of adaptive learning within immersive scenario-based environments. Across the three core evaluation questions, we can surmise the following:

- **Establishing learner start points** may support more accurate measurement of progress. Confidence in clinical reasoning increased from 4% pre-trial to 60% post-trial, indicating potential for adaptive pathways to scaffold learning effectively. The ability for a learner to consult and question an AI-powered facility that is knowledgeable on the subject matter is a benefit to the learning as it allows the learner to follow their own learning path within the construct of the scenario.
- **Addressing individual barriers to learning** through accessible design features (for example voice control, subtitles and contrast settings) was positively received. 60% of participants reported that the adaptive scenario helped reinforce knowledge and improve clinical decision-making.
- **Incorporating adaptive formative assessments** was viewed favourably, with 100% of participants agreeing that adaptive environments should be implemented more widely. The scenario's ability to adjust question difficulty based on learner input was seen as beneficial, though further evaluation is required to assess alignment with curriculum standards and assessment validity.

In addition to these findings, the project highlighted several technical and pedagogical considerations:

- the AI-powered chat assistant was valued for subject-specific support but lacked contextual awareness of the scenario, limiting its effectiveness in guiding learners through tasks
- the speech recognition feature offered an alternative interaction method but was affected by environmental and hardware variables, impacting reliability for some users
- learners expressed a preference for more intuitive and engaging interfaces, such as avatar-based interaction, which may enhance immersion and accessibility
- in the context of the education sector, it is important to guard-rail the AI to ensure that the information provided is limited to the subject matter only and doesn't allow the learner to head off in other directions and get distracted from the main activity.

These insights suggest that adaptive technologies have the potential to personalise learning, increase learner agency and support differentiated progression. However,

further testing is required to strengthen the evidence base, particularly through controlled comparisons, objective performance data and longer-term follow-up.

Conclusion

The project demonstrates valuable early insights into the potential of AI-enabled adaptive simulation to personalise learning and enhance learner agency within vocational education. Participants reported increased confidence in clinical reasoning and decision-making and valued the ability to engage with scenario content in a way that reflected their individual knowledge and needs.

Technical findings

From a technical perspective, the project confirmed the feasibility of integrating adaptive algorithms, AI-powered chat support and voice interaction into immersive learning environments.

The project confirmed that online flagship systems like OpenAI GPT-4.0 mini provide overall good fidelity in terms of response to prompts, stability and guard-railing, making them viable for future applications across disciplines. In contrast, local LLMs were found to be limited in capability due to file size and deployment constraints, particularly when operating within SCORM packages or on lower-spec hardware.

Using a combination of parameters including question response times, confidence levels, correctness of answers and number of consecutive correct answers, a suitable question difficulty level at each stage of the scenario can be identified. This is the key underlying ingredient to the adaptive learning approach and is the foundation on which the learners personalised user journey is based.

Trial findings

Feedback from the trial cohort indicated that the adaptive scenario was effective in supporting personalised learning. Learners valued the ability to ask subject-specific questions via the AI chatbot and appreciated the dynamic adjustment of question difficulty.

However, limitations were noted in the speech recognition feature and the AI assistant's lack of scenario-specific context. These technical constraints affected the overall experience for some users.

The project suggests that adaptive learning environments can enhance learner agency, engagement and confidence. There is also potential to strengthen assessment validity through personalised pathways. However, this will depend on continued improvements to technical reliability and alignment with curriculum standards.

Recommended next steps

The project has demonstrated early promise in using AI-enabled adaptive simulation to support more personalised, accessible and engaging learning experiences. To build on this foundation, the following next steps are recommended.

- Future research should focus on validating assessment outcomes, improving technical reliability, and expanding trials across diverse cohorts (ranging from varying digital literacy levels to language backgrounds and accessibility needs). Findings suggest the importance of understanding how teacher facilitation shifts when AI provides in-scenario feedback raising questions about best practice for debriefing, scaffolding and oversight.
- Scalable implementation will require alignment with curriculum standards (ensuring validity across multiple cohorts), staff development (so educators can interpret AI-driven feedback, facilitate reflective discussion and evaluate outcomes), cross-disciplines (extending to other vocational and technical domains where scenario-based training is useful), and robust governance to ensure equity and trust.
- Further testing should encompass control and comparison groups, objective performance data to strengthen the validity of self-reported questionnaires, longer-term follow-up to validate retention of knowledge and sustained learner engagement, and more robust testing of developed features to ensure greater reliability during the trial.

From a technical perspective, the next steps will be:

- to develop a 3D avatar equivalent of the AI chat window, allowing learners to communicate directly with an avatar in the scene who serves as the subject matter expert and can answer questions that the learner asks based on the subject matter
- to apply an AI-powered 3D avatar into the environment as an actor in the scene (for example, a patient in the case of a healthcare scenario), who the learner can freely speak with to ascertain and help diagnose conditions and ailments
- improve and add to the metrics used to gauge learner performance to provide a more appropriate level estimation (for example, instead of just checking whether the learner was confident about their answer or not, we could include an element of partial confidence)
- to review the UI/UX design associated with the AI elements, including how and when the learners interact with the features in terms of the learning experience and how to visualise the metrics
- to consider the feedback and results in the context of an LMS and how the information regarding the learner progress on each question including their level of confidence and speed of response can be retained for subsequent review by a teacher or supervisor.



References

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Association for Simulation Practice in Healthcare (ASPiH), Standards Framework for SBE. <https://aspih.org.uk/wp-content/uploads/2017/07/standards-framework.pdf>

Health Education England, National Framework for Simulation-Based Education.

Appendices

Appendix A - Pre-trial questionnaire

Thank you for taking the time to participate in this evaluation. This questionnaire is part of a study designed to assess the effectiveness of an **adaptive 3D virtual nursing scenario** compared to traditional non-adaptive training methods.

Please note:

- You are **not required** to provide any personally identifiable information (e.g. your name, email address, or learner number).
- All responses will be anonymous and will be used only for the purpose of improving educational tools for education.
- Participation is **voluntary**, and you may withdraw at any time without any consequences.
- The information you provide will be kept **confidential** and reported **only in aggregated form** (no individual responses will be identified).

By continuing to complete this questionnaire, you are giving your consent to participate in this study.

Your honest feedback is extremely valuable in helping us improve future training experiences.

Thank you again for your participation!

Background Information

1. What **college / organisation** are you associated with?
2. What is your **current level** of nursing education?
 - Vocational Qualifications Level 4 (England & Wales) / Level 8 (Scotland)
 - Vocational Qualifications Level 5 (England & Wales) / Level 9 (Scotland)
 - Vocational Qualifications Level 6 (England & Wales) / Level 10 (Scotland)
 - Vocational Qualifications Level 7 (England & Wales) / Level 11 (Scotland)
 - Other (Please Specify)
3. How much experience do you have with **virtual scenario-based learning** and assessment?

- None
 - Limited
 - Moderate
 - Extensive
4. Have you attempted a nursing based virtual scenario before?
- Yes
 - No
5. How comfortable are you with **technology-assisted learning**? (1 = Not Comfortable, 5 = Very Comfortable)
6. Please explain the reason for your answer to question 5?
7. Are you familiar with the term “**adaptive learning**”?
- Yes
 - No
8. If you answered “yes” to question 4, how much experience do you have with adaptive learning scenarios?
- None
 - Limited
 - Moderate
 - Extensive

Knowledge & Confidence

9. How confident do you feel in clinical reasoning and decision-making based on observations and responses? (1 = Not Confident, 5 = Very Confident)
10. In a real-world nursing scenario, how challenging would you find it to **adapt your knowledge** and apply it to varying situations?
- Very challenging
 - Moderately challenging
 - Mildly challenging

- Not challenging at all

11. Do you think **traditional non-adaptive** simulations help in improving clinical decision-making skills?

- Yes
- No
- Not sure

12. How confident are you in responding to **real-time patient interactions**? (1 = Not Confident, 5 = Very Confident)

13. How confident are you in responding to **applied knowledge** questions? (1 = Not Confident, 5 = Very Confident)

Appendix B - Post-trial questionnaire

Thank you for taking the time to participate in this evaluation. This questionnaire is part of a study designed to assess the effectiveness of an **adaptive 3D virtual nursing scenario** compared to traditional non-adaptive training methods.

Please note:

- You are **not required** to provide any personally identifiable information (e.g. your name, email address, or learner number).
- All responses will be anonymous and will be used only for the purpose of improving educational tools for education.
- Participation is **voluntary**, and you may withdraw at any time without any consequences.
- The information you provide will be kept **confidential** and reported **only in aggregated form** (no individual responses will be identified).

By continuing to complete this questionnaire, you are giving your consent to participate in this study.

Your honest feedback is extremely valuable in helping us improve future training experiences.

Thank you again for your participation!

Learning & Engagement

1. What college / organisation are you associated with?
2. How engaging did you find the **adaptive 3D virtual scenario** compared to standard training methods? (1 = Not Engaging, 5 = Very Engaging)
3. To what extent did you find the **adaptive difficulty** (questions getting harder/easier) beneficial? (1 = Not at All, 5 = Significantly)
4. Did you use the AI-Powered Chat Interface?
 - Yes
 - No [If no, go to question 6]
5. To what extent did you find the **AI-powered chat interface** helped improve your understanding of subject matter-specific questions? (1 = Not at All, 5 = Significantly)

6. Did you use the voice-driven interaction?
 - Yes
 - No [If no, go to question 8]
7. To what extent did you find the **voice-driven interaction** improved the experience? (1 = Not at All, 5 = Significantly)

Knowledge & Confidence After Trial

8. How confident do you feel now in assessing a patient's condition based on observations and responses? (1 = Not Confident, 5 = Very Confident)
9. To what extent did you find the **adaptive 3D scenario** effective in improving your clinical decision-making skills compared to traditional non-adaptive methods? (1 = Not Effective, 5 = Very Effective)
10. To what extent do you feel that adaptive learning (adjusting the difficulty of questions) helped improve your knowledge of clinical protocols? (1 = Not at All, 5 = Significantly)

Overall Experience & Suggestions

11. What were the **most useful features** to you of the adaptive 3D virtual scenario? (Select all that apply)
 - Adaptive questions
 - AI powered chat assistance
 - Voice driven interaction
12. Why did you find the selected features above useful?
13. Do you think an adaptive learning environment like this should be implemented more widely in nursing education?
14. Please explain the reason for your answer above?
15. How easy did you find the scenario to use? (1 = Not Easy at all, 5 = Very Easy)
16. What challenges or difficulties did you face while using the adaptive 3D virtual scenario?



17. How did you find the instructions and training given to you on how to use the features? (1 = Not good at all, 5 = Very good)
18. What do you think could have improved the learning experience for you?
19. Do you have any other overall feedback you'd like to share with us?

Appendix C - AI due diligence questions

These questions would typically be asked of any new supplier who has AI embedded in or connects to AI as part of the product(s) being offered, or for any existing supplier introducing AI into their product portfolio.

For all suppliers

1. Which LLM(s) are you using to power your AI?
2. How are you connecting to the LLM?
3. Is the LLM cloud-based or hosted?
4. What data processing agreements do you have with the LLM provider?
5. What data handling agreements are in place to ensure that our data remains in the EU?
6. Does any user input train the LLM in any way? How?
7. What user or customer data is retained by the company in relation to AI use?
8. How do you ensure that any personal information is not retained by using the AI?

Additional for existing suppliers

9. Is the use of AI explicitly covered under your existing T&Cs or are there new agreements that need to be reviewed by our legal team?
10. How have you researched into preventing potentially harmful outputs from the models reaching customers?

Additional considerations

11. What details will the participants need to provide to enable access to the item(s) being used?
12. How will their personal data be stored and accessed during the course of the project?
13. How will their personal data be stored and accessed beyond the course of the project?
14. Will there be any additional gathering of sensitive data from the participants? If yes, what data will be gathered?
15. What is the purpose of gathering that sensitive data (if applicable)?
16. How will anonymity be preserved in the evaluation of user experience feedback?
17. Who will manage responding to any technical/ technology queries from participants during the project?
18. How will this be managed? Does it require permissions to directly engage with those experiencing technology issues/ queries?

