



Evaluation of an Online Screen-based Simulation Initiative in the Adult Child Midwifery Department

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Executive summary

In April 2020 the adult child midwifery (ACM) department at Middlesex University started using online screen-based simulation (OSBS) software sourced from Oxford Medical Simulation¹ (OMS). This OSBS initiative was not a response to the COVID-19 pandemic but was seen as way of managing some of the barriers to teaching clinical assessment skills which the pandemic created.

The evaluation of this OSBS initiative was commissioned by the ACM department in April 2020 and data collection was carried out between June and September 2020.

The OSBS initiative had the following learning objectives for 3rd Year (adult and children and young people) nursing students who were to go into practice earlier than anticipated (through an opt in 'extended placement') because of the increased need for staff as a result of the COVID-19 pandemic:

- develop knowledge and understanding of the physical assessment of an acutely unwell patient and reflect on their practice.
- develop the technical and non-technical skills required when assessing and intervening with the acutely unwell patient and reflect on their practice.
- To upskill current third year adult and children and young people nursing students to prepare them for being deployed as a result of the COVID-19 pandemic.

The OSBS initiative was also aimed at adult and children and young people third year nursing students who did not opt for the 'extended placement' (i.e. those continued with the 'normal' pattern of their course as far as the circumstances allowed) and with adult and children and young people second year students; mental health nursing students (2nd and 3rd year); nursing associates (2nd year); third year midwifery students and PG Dip 2nd year students. For these groups there were slightly different learning objectives:

- Enable healthcare students to develop knowledge and understanding of the physical assessment of the acutely unwell patient.
- Enable healthcare students to develop technical and non-technical skills required when assessing and intervening with the acutely unwell patient.

The evaluation objectives were to assess the extent to which these learning objectives are met as well as increase understanding of the experience of students in using the platform (e.g. perceived useability of the platform, satisfaction with the platform and support webinars which were provided for students, barriers to use, things which were most and least useful, things which were viewed as needing improvement or change) and the view and experiences of staff who are involved in teaching via the platform or supporting that teaching.

¹ See <http://oxfordmedicalsimulation.com>

Evaluation approach and methodology

A realistic evaluation approach was used which was carried out through a mixed methods research design which incorporated an online survey and online focus groups with students who had participated in the OSBS initiative as well as an online focus group with staff. Relevant secondary data (such as the number of times students participated in each scenario), which was available via the OMS system, was also analysed.

Online survey results

The response rate to the online survey was 25% (617 students invited, 154 wholly or partially completed questionnaires obtained). 13 students took part across two online focus groups. Seven members of staff took part in an online focus group and one took part in a one to one interview (as they had been unable to attend the focus group).

Sample profile

Just over half of respondents (51%) were adult nursing 2nd or 3rd year students, around one fifth (20.5%) were Trainee Nurse Associates; 13.6% were mental health students 2nd or 3rd year students and the same proportion were child and young people nursing 2nd or 3rd year students.

Participation in OSBS initiative

Students were requested to participate in five scenarios and the median number of scenarios participated in was five and only 20 students had participated in more than that. Respondents were asked which scenario they had last participated in. The scenarios most frequently cited were Melaine Anaphylaxis (27.4%), Melanie Acute Severe Asthma (22.6%); Maria, Acute Anxiety (14.5%) and James (Non-accidental Injury) and Wilfred, Urosepsis & Delirium (each on 9.7%). Users of these five scenarios accounted for nearly 84% of all responses.

Attitudes to OSBS scenarios

Respondents were very positive (mean ratings above four on a scale of 1 to 5) about the last scenario participated in, on a range of measures including realism, usefulness and overall satisfaction. Items with lower ratings related to access to peer and staff support but this is likely to be because many did not require such support (responses on other questions suggest high satisfaction with staff support). It is also possible that some students did not understand what is meant by 'peer support'. There were no statistically significant differences in attitudes to scenario by learning style, programme or year, nor between scenarios. 59% thought the scenario duration was 'about right' but a large minority (39.3%) thought it was too short. Less than 2% of respondents felt that the scenarios were too long.

Webinars and self-guided reflection

The OSBS initiative included regular webinars (post-scenario) where students could come together (online) to discuss their experiences of taking part in the initiative and receive support from staff and peer

learning/support. Take up off webinars was low (Just 14.5% of respondents said that they had accessed the webinar associated with the last scenario they participated in) but the fact that just under half of respondents (49.1%) were not sure/did not know if they had accessed the webinar suggests that many students were not sure what was being referred to by the term 'webinar'. There were very positive attitudes to webinars amongst those who did use them (n=16).

There was evidence of the use of the self-guided reflection (post-scenario) and some evidence that students found it useful. However it seemed clear that students would be much more likely to use, and benefit from, the self-guided reflection if it was more embedded in the programme (e.g. if there was an expectation that the self-guided reflection would be discussed with teaching staff and/or mentor).

Perceptions of skills gained

A very large majority of respondents felt that they had gained skills in making clinical decisions based on their observations and prior knowledge; escalating issues to senior members of staff and using time effectively across different activities.

Perceptions of learning objectives achieved

Most student respondents felt that they had achieved a range of learning objectives/outcomes including understanding of handover, physical assessment and interventions in the treatment of acutely unwell patients and clinical decision-making. There were no statistically significant differences by year of programme (although 3rd year students tended to get slightly higher mean scores on these questions than 2nd year students) and few differences by programme.

Barriers to participation in OSBS initiative

Most student respondents did not consider that they were experiencing major barriers to participation in the OSBS initiative. Most potential barriers listed in the questionnaire received a similar rating (between 2.31 and 2.83) indicating that they were between 'something of a barrier' or 'not a barrier at all' but it should be taken into account that students who had tried the scenarios only very briefly or had been put off trying them at all, for whatever reason, would be much less likely to take part in the survey so the data may underestimate the significance of some of these barriers. The items which were most likely to be considered a barrier were 'difficulty in installing the software or logging in' which was the biggest barrier (something of a barrier or significant barrier for 52.9%) followed by feeling stressed due to COVID-19 lockdown and not having enough time to do the scenarios.

There were no statistically significant differences in perceived barriers to participation by scenario, age, learning style, programme or year of programme, but men were statistically significantly more likely to experience 'having to compete with other members of the household for internet access or use of a device'

as a barrier than women (focus group data suggested that this was also a problem for women with school age children who had to share devices with those children so that they could do their homework).

Most and least useful aspects of scenarios and things to be improved

Student respondents were asked (in an open-ended survey question) to identify which aspects of the scenarios they had found most and least useful and things which could be improved. The aspects of the scenario (which students had last participated in) which respondents found most useful were improving clinical assessment skills; the realism of the scenario and learning about liaising with team members (especially delegating or escalating). The aspects of the scenario (which they last participated in) which respondents found least useful were the (perceived) short duration of the scenarios, technical problems (e.g. freezing/crashing) and aspects of usability around menu/mouse interaction with the scenarios.

Focus group findings

Three online focus groups were carried out – two with students and one with staff. The themes which were common to both staff and student focus groups were ‘feedback assessment and support for students’, ‘realism of the scenarios’ and ‘peer support/learning’. These are briefly described below.

Feedback, assessment and support for students

Staff drew attention to the fact that the marking criteria/algorithm of the OMS software was not transparent and in a small number of instances the learning activities in the scenario did not map onto competencies which are required for pre-registration nursing in the UK, making the software unsuitable for purposes of summative assessment, although an extremely useful supplement to more didactic teaching formats. Staff explained that students had support available for participating in the OSBS initiative from a number of sources - they could contact the skills team directly for technical support, participate in webinars after each scenario and had access to pastoral support via their personal and professional development tutor (PPDT) whose role was to ensure that they had completed the scenarios and give them pastoral support if needed or to refer them to other sources of clinical or technical support which they might need.

Students were generally satisfied with the automated feedback which they got within the scenario although there were a small number of instances where it was felt that the feedback was unclear. Students generally felt they had been able to get technical support from staff when needed but many seemed unaware of the support which they could access in the form of post-scenario webinars.

Realism

Generally speaking, staff considered the scenarios had a high degree of realism in terms of reflecting situations which nurses might have to deal with although some also felt that, while the scenarios did allow some multitasking, this was still rather linear in nature. Students felt that the scenarios were very realistic and had given them a real sense of what it was to be a nurse, particularly in terms of the professional

responsibilities and making decisions under pressure. However, many students felt that the scenarios were too short in duration, which might detract from the realism.

Peer support/learning

The platform does not have any built-in support for peer communication, learning or support. Staff were of course aware that OSBS creates limitations or challenges for students to support and learn from each other, as they might do in 'classroom' situations. It also limits what things staff can do to facilitate peer learning. There was some evidence that students were supporting each other informally, through various online channels (email, social media), with technical advice about downloading or installing the software or exchanging notes regarding aspects of scenarios which they found challenging. Students perhaps did not fully realise the value or potential of peer learning so might be unaware that it was hard to access this type of support while using the platform remotely.

Conclusion

The OSBS initiative project objectives were (in relation to 3rd year students who opted for 'extended placement'):

- develop knowledge and understanding of the physical assessment of an acutely unwell patient and reflect on their practice.
- develop their technical and non-technical skills required when assessing and intervening with the acutely unwell patient and reflect on their practice.

There is strong evidence of the OSBS initiative objectives having been met (in relation to 3rd year students in general) which comes from survey evidence regarding which skills students perceived they had gained which could be transferred into practice and learning outcomes or objectives they felt they had achieved, and this is supported by focus group evidence.

There was some evidence from student focus groups that the self-guided reflection tool which the skills team created, to be used by students after completing scenarios, was being used by some students but there was limited evidence regarding the use of self-reflection generally.

The OSBS initiative also aimed to achieve some specific learning objectives in relation to 3rd year students who did not opt in to extended placements and adult and children and young people second year students; mental health nursing students (2nd and 3rd year); nursing associates (2nd year); third year midwifery students and PG Dip 2nd year students. These were to:

- Enable health care students to develop knowledge and understanding of the physical assessment of the acutely unwell patient.
- Enable health care students to develop technical and non-technical skills required when assessing and intervening with the acutely unwell patient.

Again, survey and focus group evidence suggests that students felt they had achieved the learning objectives in these areas and furthermore on most survey items which were tested, there were no statistically significant differences by year which suggests that 2nd and 3rd years were experiencing these benefits from the OSBS initiative to a similar extent.

Recommendations

In this section some recommendations are made, based on the evidence gathered and the conclusions reached. It is recognised that the use of OSBS in the ACM department at Middlesex is still at a relatively early stage, and that there are limitations of the evaluation data. Therefore these recommendations are framed as ideas for consideration and to inform discussion.

- It may be useful to discuss with the platform developers what other scenarios are available, which ones may be in development, and whether there is any potential to commission or influence particular scenarios
- It may be useful for staff to review whether the duration of the scenarios is appropriate and if so, whether students need any particular preparation or support in relation to the stress which some may experience in the scenarios.
- It may be useful to have a plan to address barriers to student participation in the OSBS initiative. Overall, the top three barriers to student participation (based on survey evidence) were: difficulty in installing the software or logging in, feeling stressed because of living under lockdown (hopefully a temporary factor) and not feeling confident about using IT.
- Take up of the OSBS initiative should be monitored by programme, year and possibly demographic characteristics to make sure that no segments of the student population are being disadvantaged or inadvertently excluded.
- An assessment should be made of the suitability of existing Middlesex University laptops for use in OSBS initiatives in order to inform future procurement of laptops for students in the department (ACM) since it is likely that most will be using the current platform or some other simulation software in the future but that many laptops were apparently struggling to cope with the processor/memory demands of the current platform.
- Staff may wish to consider what training/support may be needed for staff who do not feel confident about using OSBS as part of their teaching. The evaluation was not able to directly obtain the views of staff who did not engage with OSBS so further research or consultation may be needed with staff about this.

- It might be useful to consider how student demand for OSBS (which seems strong) will be met and what resources that may be needed to achieve that (e.g. staff time, equipment, licenses). How OSBS is integrated into the curriculum is a closely related issue and it may be useful to consult with staff and students on the detail of this.
- Students may be losing important aspects of peer support when working remotely. Therefore, some consideration may be needed as to how peer support in relation to OSBS can be facilitated (other than in post-scenario webinars and noticeboards). Students might be encouraged to share and discuss their self-guided reflections with each other as a way of strengthening peer learning support around OSBS.
- It is important that teaching staff are explicit with students about intended learning outcomes (e.g. regarding their decision-making/clinical assessment and that they should view the simulation as part of a suite of related learning activities e.g. webinars and perhaps the self-reflective exercise). Awareness/take up of webinars associated with each scenario seemed to be low. The webinars (currently offered post-scenario) seem a very valuable way to consolidate learning and are also an opportunity for peer learning and support in relation to the OSBS initiative. Therefore it would seem important to increase awareness of the webinars and the benefits of participation.
- The system data which is available at the 'back end' of the OMS platform (i.e. that which is available to staff or system administrators) seems to be very limited in some important respects (e.g. it does not seem possible to generate reports/metrics at individual student level. This data could potentially be very useful for understanding individual student learning. Therefore, perhaps this is something that can be discussed with the developers of the platform in the context of a 'wish list' of improvements to inform future development.
- Finally, it may be useful for staff to consider how the OSBS initiative relates to other educational technology which the ACM department uses such as the anatomy and physiology mannequin and the Lucine and 'Super Tori' midwifery mannequins and whether it is possible or even desirable to have a single strategy that encompasses all simulation and virtual reality facilities, across all programmes in the ACM department.

1 Introduction

In April 2020 the Department of Adult Child and Midwifery (ACM) at Middlesex University started using online screen based simulation software (OSBS) provided by Oxford Medical Simulation² (OMS). Although this coincided closely with the suspension of face to face teaching in the department (March 2020) and the first national 'lockdown' in the UK due to the COVID-19 pandemic, teaching staff had sourced the OMS software prior to the pandemic. The OSBS initiative (i.e. OMS software and all the supporting teaching and learning structures) was not a response to the pandemic therefore but was subsequently seen as way of managing some of the barriers to teaching which the pandemic created. The evaluation of the OSBS initiative was commissioned by the ACM department in April 2020. Ethical permission was obtained from the Middlesex University Health and Social Care Ethics Sub-committee in June 2020 and data collection commenced in August 2020.

Participation in the OSBS initiative was a voluntary activity for all students (not a formal part of the curriculum) and naturally participation in the evaluation of the OSBS initiative was also optional. The OSBS initiative was aimed at all 2nd and 3rd year pre-registration students and Trainee Nurse Associates (TNAs).

1.1 OSBS initiative - learning objectives

The OSBS initiative had the following learning objectives for 3rd Year adult and children and young people (CYP) nursing students who were to go into practice earlier than anticipated (through an opt in 'extended placement') because of the COVID19 pandemic:

- To enable third year adult and CYP nursing students to develop knowledge and understanding of the physical assessment of an acutely unwell patient and reflect on their practice.
- To enable third year adult and CYP nursing students to develop the technical and non-technical skills required when assessing and intervening with the acutely unwell patient and reflect on their practice.
- To upskill current third year adult and CYP nursing students to prepare them for being deployed as a result of the COVID-19 pandemic.

Those students in extended placement were seen as being likely to have a greater need for support than students who were not on extended placement and provision has been made for that in the OSBS initiative. Personal and professional development tutors (PPDTs) were aware of the wellbeing services which the University offers and they were encouraged to signpost students to these services if required. The OSBS initiative included regular webinars where students could come together (online) to discuss their experiences of OMS and receive support from PPDTs. The OSBS initiative was also aimed at Adult and CYP third year nursing students who did not opt for the 'extended placement' (i.e. those who continued with the 'normal' pattern of their course as far as circumstances allowed) and 2nd year Adult and CYP students;

² See <http://oxfordmedicalsimulation.com>. Screenshots and a description of the OSMS 'user experience' can be found in Appendix 1

mental health nursing students (2nd and 3rd year); nursing associates (2nd year); 3rd year midwifery students and PG Dip 2nd year students. For these groups there were slightly different learning objectives:

- To enable health care students to develop knowledge and understanding of the physical assessment of the acutely unwell patient.
- To enable healthcare students to develop technical and non-technical skills required when assessing and intervening with the acutely unwell patient.

1.2 Evaluation objectives

The evaluation objectives were to assess the extent to which the learning objectives were met as well as increasing understanding of the student experience in using OMS (e.g. perceived useability, satisfaction with OMS and support webinars, barriers to use, things which are most and least useful, and aspects which are viewed as needing improvement or change) and the views and experiences of staff who are involved in teaching via the platform or supporting that teaching.

2 Research Design, methodology and data analysis

A realistic evaluation approach was used (Pawson and Tilley 1997) which was carried out through a mixed methods research design which incorporated an online survey and online focus groups with students who had participated in the OSBS initiative as well as an online focus group with staff. Relevant secondary data (the number of times students attempted each scenario) from the OMS platform was also used.

The response rate in the student online survey was 25% (617 students invited, 154 wholly or partially completed questionnaires obtained). However, it was estimated by teaching staff that at the time of the evaluation survey, around half of those invited had not engaged with the OSBS initiative (i.e. they had not downloaded the software) and therefore the effective sample might have been in the region of 300 and that would make the effective response rate approximately 50%.

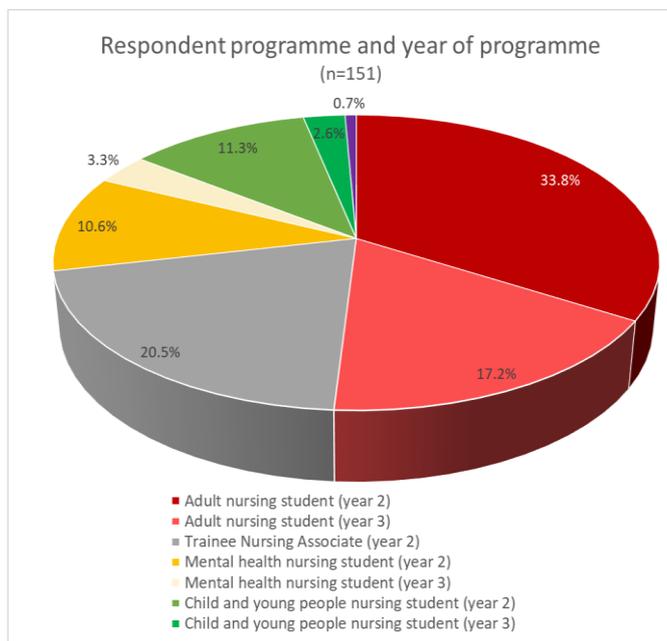
Sixty students, randomly selected from the survey distribution list, were invited to an online focus group in August 2020 (two dates were offered). Thirteen students took part across these two online focus groups. 13 members of staff (mostly from the 'skills team' or closely associated with the introduction of the OSBS initiative) were invited to an online focus group in September 2020 and seven members of staff took part. One member of staff who could not make the focus group took part in a one to one interview. £20 gift vouchers were given as incentives for participation, and to express gratitude for time given up to take part in the evaluation.

Quantitative survey data were analysed in SPSS v.26, producing a range of descriptive and inferential statistics. The interview and focus groups were transcribed verbatim and thematically analysed in NVIVO v12 . The responses to open-ended survey questions were also coded in NVIVO.

2.1 Sample characteristics

Just over half of survey respondents (51%) were adult nursing 2nd or 3rd year students, around one fifth (20.5%) were TNAs; 13.6% were mental health 2nd or 3rd year students and the same proportion were CYP nursing students, 2nd or 3rd year. There was also one PG Dip student (not shown on chart).

Figure 1: Respondents' programme and year



Just over half of respondents (52.1%) were aged 18-34; 44.6% were aged 35-54; 1.7% were aged 55-64% and 1% preferred not to say.

Figure 2: Age of respondents

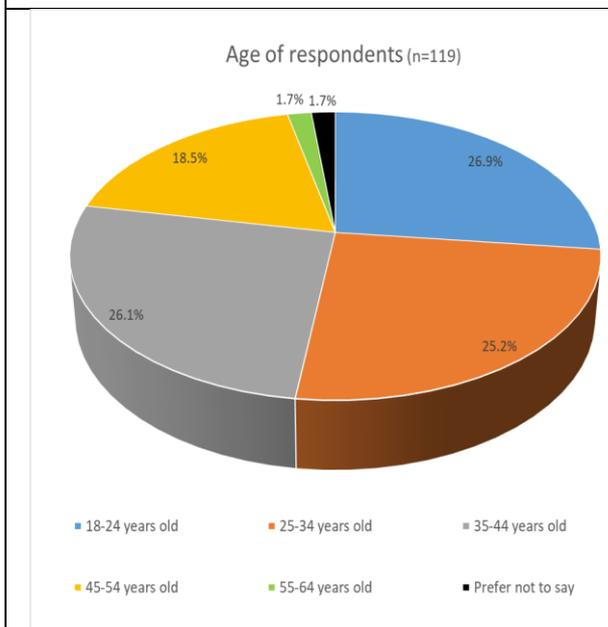
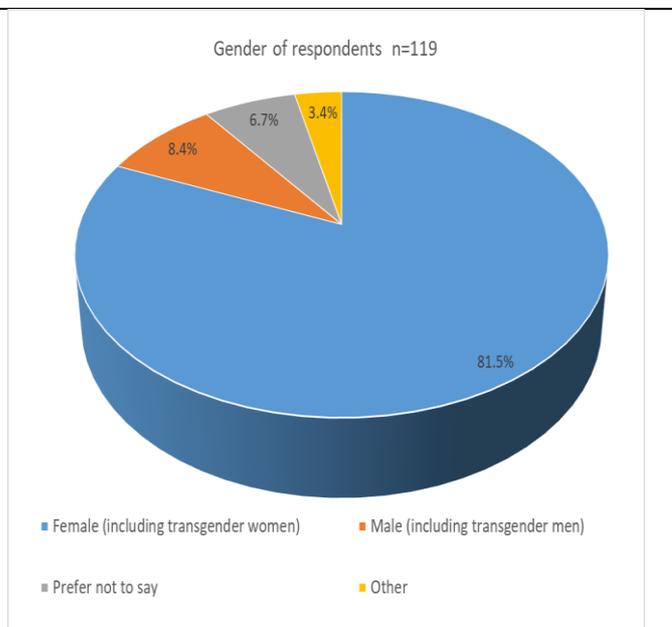


Figure 3: Gender of respondents



81.5% of respondents are female and 8.4% male; 6.7% preferred not to say and 3.4% chose 'other'.

A large minority of respondents (41.2%) identified their learning style as visual/spatial; 28.6% felt that their leaning style was kinaesthetic/tactile; 7.6 said that their learning style was 'reading/ writing' and 4.2% said that it was auditory. 22% of respondents chose 'other' or 'don't know'.

Table 1: Learning style of respondents (self-identified)

Learning Style	N	%
Visual/spatial (you learn more effectively through seeing and observing things, including pictures, diagrams, written directions and more. This is also referred to as the “spatial” learning style.)	49	41.2
Kinaesthetic/tactile (you learn more effectively through experiencing or doing things - acting out events or using your hands to touch and handle in order to understand concepts).	34	28.6
Reading/writing (you learn more effectively through written words and may be drawn to expression through writing, reading articles on the internet, writing in diaries, looking up words in the dictionary)	9	7.6
Auditory (you learn more effectively when the subject matter is reinforced by sound. You might prefer to listen to a lecture than to read written notes, and you may use your own voice to reinforce new concepts and ideas)	5	4.2
Other (please write in)	11	9.2
Don't know/not sure	11	9.2
Total	119	100

3 Survey Findings

The survey investigated aspects of the OSBS initiative such as the scenarios participated in, user experiences, satisfaction with scenarios, views on duration of the scenarios, support and feedback received and needed, barriers to participation, and learning outcomes/objectives which may have been achieved, and what students generally found most and least useful about the scenarios. The findings are presented below.

3.1 Scenario availability by year / programme

Table 2: Scenarios available by year / programme

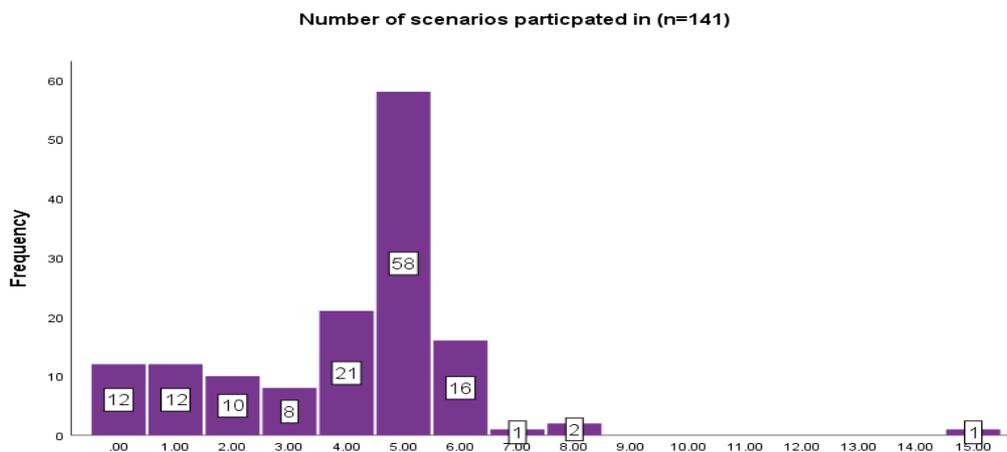
Cohort> Scenario	Adult nursing student (2 nd year)	Adult nursing student (3 rd year)	Trainee Nursing Associate (2 nd year)	Mental health nursing student (2 nd year)	Mental health nursing student (3 rd year)	C&YP nursing student (2 nd year)	C&YP nursing student (3 rd year)	PG Dip
Boris, Alcohol Dependence & Suicidal Ideation	0	0	0	0	1	0	0	1
Deepak, Upper Gastrointestinal Bleed	0	1	0	0	0	0	0	0
Emma, Chronic Pain & Drug-Seeking Behaviour	0	0	0	0	1	0	0	1
George, Bulimia Nervosa & Self Harm	0	0	0	0	1	0	0	1
George, Diabetic Ketoacidosis	0	1	0	0	0	0	0	0
James, Non-accidental Injury	1	0	1	1	0	1	0	0
Katy, Dehydration with Diarrhoea & Vomiting	0	0	0	0	0	0	0	0
Maria, Acute Anxiety	1	1	1	1	1	1	0	1
Melaine, Anaphylaxis	1	1	1	1	0	1	1	0
Melanie, Acute Severe Asthma	1	1	1	1	0	1	1	0
Sam, Asthma	0	0	0	0	0	0	1	0
Sam, Pneumonia with Respiratory Distress	0	0	0	0	0	0	1	0
Sarah, Anaphylaxis	0	0	0	0	0	0	1	0
Sarah, Diabetic Ketoacidosis	0	1	0	0	0	0	1	0
Wilfred, Dementia & Difficult Behaviour	0	0	0	0	1	0	0	1
Wilfred, Urosepsis & Delirium	1	1	1	1	0	1	0	0
Total modules which each group had access to	5	7	5	5	5	5	6	5

Table 2 above details which cohorts had access to which scenarios. Most cohorts had access to five modules – C&YP nursing 3rd year had access to six and adult nursing (3rd year) had access to seven.

3.2 Number of scenarios participated in

Students were asked by staff to participate in five scenarios. The survey asked students to indicate which scenarios they had participated in (from a list of 16). 12 students reported not participating in any scenario or could not recall; 12 had done one scenario; 10 students had participated in two scenarios, eight had participated in three scenarios, 21 had participated in four scenarios and 58 students had participated in five scenarios. The median number of scenarios participated in was five and only 20 students had participated in more than that (including one who reported participating in 15 scenarios).

Figure 4: Number of scenarios participated in



3.3 Scenarios participated in

Respondents were asked which scenario they had last participated in. The scenarios most frequently mentioned were Melaine Anaphylaxis (27.4%), Melanie Acute Severe Asthma (22.6%); Maria, Acute Anxiety (14.5%); James (Non-accidental Injury) and Wilfred, Urosepsis & Delirium both on 9.7%. Users of these five scenarios accounted for nearly 84% of all responses. Students were not directed towards any particular scenario and had a free choice. The evaluation did not ask students why they had chosen particular scenarios but one member of staff hypothesised that students may have preferred more acute scenarios where they were likely to have had less experience.

Table 3: Last scenario participated in

Scenario	Frequency (N)	%
Melanie, Anaphylaxis	34	27.4
Melanie, Acute Severe Asthma	28	22.6
Maria, Acute Anxiety	18	14.5
James, Non-accidental Injury	12	9.7
Wilfred, Urosepsis & Delirium	12	9.7
Deepak, Upper Gastrointestinal Bleed	4	3.2
Wilfred, Dementia & Difficult Behaviour	4	3.2
Deepak, NSTEMI	3	2.4
Sarah, Anaphylaxis	3	2.4
Sam, Asthma	3	2.4
Sam, Pneumonia with Respiratory Distress	2	1.6
George, Bulimia Nervosa & Self Harm	1	0.8
Total	124	100

It is important to note that respondents were asked (on most questions in the student survey) to think about the last scenario which they participated in, when answering³.

³ This was necessary because it would not be meaningful to ask about satisfaction (for example) with more than one scenario – if students were satisfied with one and dissatisfied with another they would not be able to give a valid response. As shown in Appendix 2, if a student had indicated that the last scenario in which they participated was 'Boris.- alcohol dependence and suicidal ideation', then the name of the scenario is automatically inserted into subsequent questions.

3.3.1 Number of attempts per scenario

Analysis of secondary data (data which is compiled by the OMS platform and supplied to the evaluation team by the skills team/teaching staff) showed that second year adult and CYP students had attempted each scenario between five and six times.

Table 4: No. of attempts per scenario (top 5 most used scenarios)-2nd year adult & CYP students⁴

Scenario	Adult 2 nd year - Mean attempts	Adult 2 nd year N	CYP 2nd year - Mean attempts	CYP 2nd year N	Overall mean attempts across adult & CYP (2 nd year)	N
James, Safeguarding Concerns	5.27	81	5.34	38	5.30	119
Maria, Acute Anxiety	5.86	81	5.52	38	5.69	119
Melanie, Acute Severe Asthma	5.36	81	5.32	38	5.34	119
Melanie, Anaphylaxis	5.27	81	5.26	38	5.26	119
Wilfred, Urosepsis & Delirium	6.19	81	5.42	37	5.80	118
Overall mean attempts across scenarios	5.59	81	5.37	38	5.48	119

⁴ The data on number of attempts per scenario was not available for 3rd year students

3.4 Attitudes to scenarios

Respondents were asked to rate the last scenario in which they had participated on a range of Likert scale items (1=strongly disagree and 5 = strongly agree). The table below shows the mean (average) rating on each question, overall (total) and broken down by scenario. Scenarios which were mentioned by fewer than five respondents were not included for the purposes of this analysis as the average would be unreliable.

Table 5: Attitudes to scenarios

Scenario	Melanie, Acute Severe Asthma		James, Non-accidental Injury		Maria, Acute Anxiety		Melanie, Anaphylaxis		Wilfred, Urosepsis & Delirium		Total	
	Mean	N	Mean	N	Mean	N	Mean	N	Mean	N	Mean	N
Overall, I was satisfied with the scenario	4.29	28	4.33	12	3.94	18	4.29	34	4.08	12	4.21	104
The scenario was useful to me	4.42	28	4	12	4.17	18	4.62	34	4.42	12	4.39	104
The scenario was appropriate for my learning style	4.17	28	4.5	12	3.94	18	4.35	34	4.5	12	4.27	104
The audio was clear throughout most or all of the scenario	4.37	28	4.25	12	4.28	18	4.53	34	4.33	12	4.39	104
The video was clear throughout most or all of the scenario	4.25	28	4.17	12	4.33	18	4.15	34	3.67	12	4.15	104
The scenario had a logical sequence	3.96	28	4.33	12	3.94	18	3.85	34	4.08	12	3.98	104
I was able to get support from member/s of university staff during the scenario	3	28	3.08	12	2.67	18	2.76	34	2.67	12	2.83	104
The interaction in the scenario seemed realistic	4.25	28	4.5	12	4.11	18	4.41	34	4.08	12	4.29	104
I was able to get support from my peers during the scenario	3.08	28	3.17	12	2.83	18	2.85	34	2.83	12	2.94	104
I was clear what I was supposed to be learning in the scenario	4	28	4.33	12	4.06	18	4.18	34	4.33	12	4.15	104

Overall, all questions regarding attitudes to the scenarios had mean ratings of four or above, suggesting a high level of agreement with all of the statements (and hence positive attitudes to the scenarios) apart from:

- The scenario had a logical sequence (3.98)
- I was able to get support from my peers during the scenario (2.94)
- I was able to get support from member/s of university staff during the scenario (2.83).

The two questions to do with support stand out as having lower ratings but this does not necessarily mean that students were unhappy with the support from peers or staff, as some may not have felt they needed such support and therefore did not try to obtain it (hence a large proportion of respondents were neutral on these items, bringing down the average). Nonetheless it does suggest that there may be room for improvement in the opportunities for peer support and the way in which staff support is delivered, in its various forms.

Looking at variation in attitudes by scenario, it can be seen that there is relatively little difference in the means for each scenario on each Likert scale item and these differences are not statistically significant (One way ANOVA $p > .05$ on all items). In addition the question 'The scenario was appropriate for my learning style' was tested against the respondent's self-identified learning style and there were no statistically significant differences (One way ANOVA $p > .05$).

Those respondents who said that they had been able to get support from staff were asked to briefly describe the support they had asked for and whether they were satisfied with the response. The majority of responses referred to requests for technical help in downloading, installing or using the OMS software and most responses indicated satisfaction with the quality and timeliness of the support.

"Whenever I was not sure of what was expected of me, the staff were always there to deal with my queries. Also, the feedback I got from participating in the scenarios were helpful in that the feedback enabled me to go over the scenario again and perform better".

"I was unable to log in when I first started the scenario, I contacted a member of staff who was able to support via email".

"I was able to attend a short meeting that was held with regards to the scenarios which was helpful to understanding what was needed to be done first in sequence order with this scenario"

"When trying to download the OMS software, I had problems and could not get it working at first. I was able to email {name of member of staff} at university for help. I found this very helpful and was able to get it working. There were also Webinars on Anaphylaxis and Acute Severe Asthma available"..

Just one comment referred to seeking help in relation to interacting with the content in the scenarios:

“I asked a member of staff on how to prioritise in during the diagnosis and when to make urgent decisions to help the patient.”

3.4.1 Attitudes to scenario by programme/specialty and year

Adult nursing students and TNAs tended to have slightly higher mean agreement on many of the items (the scale was 1=strongly disagree and 5 = strongly agree) but this difference was only statistically significant in relation to one item ('The scenario was appropriate for my learning style') where adult nursing students had a statistically significant higher mean than mental health students ($p < .05$, one way ANOVA).

Table 6: Attitudes to scenarios by programme/specialty

Programme / specialty	Adult		Mental Health		Child and young person		TNA		Total	
	Mean	N	Mean	N	Mean	N	Mean	N		
Overall, I was satisfied with the scenario	4.31	58	4.13	15	4.11	18	4.26	27	4.25	118
The scenario was useful to me	4.5	58	4.2	15	4.28	18	4.52	27	4.43	118
The scenario was appropriate for my learning style	4.45	58	3.8	15	4.11	18	4.37	27	4.3	118
The audio was clear throughout most or all of the scenario	4.43	58	4.33	15	4.5	18	4.33	27	4.41	118
The video was clear throughout most or all of the scenario	4.31	58	3.87	15	3.89	18	4.11	27	4.14	118
The scenario had a logical sequence	4.19	58	3.67	15	3.78	18	3.93	27	4	118
I was able to get support from member/s of university staff during the scenario	2.74	58	3	15	2.94	18	2.85	27	2.83	118
The interaction in the scenario seemed realistic	4.47	58	4.2	15	4.11	18	4.37	27	4.36	118
I was able to get support from my peers during the scenario	2.97	58	3	15	2.94	18	2.93	27	2.96	118
I was clear what I was supposed to be learning in the scenario	4.22	58	4	15	4.06	18	4.22	27	4.17	118

3.4.2 Attitudes to scenario by year of programme

Year 3 students had slightly higher mean agreement on all items (1=strongly disagree and 5 = strongly agree) but none of these differences were statistically significant (independent samples t test $p>.05$).

Table 7: students' attitudes to scenarios by year of programme

Year of programme	Year 2		Year 3		Total	
Statement	Mean	N	Mean	N	Mean	N
Overall, I was satisfied with the scenario	4.21	104	4.5	14	4.25	118
The scenario was useful to me	4.39	104	4.71	14	4.43	118
The scenario was appropriate for my learning style	4.26	104	4.57	14	4.3	118
The audio was clear throughout most or all of the scenario	4.38	104	4.57	14	4.41	118
The video was clear throughout most or all of the scenario	4.13	104	4.21	14	4.14	118
The scenario had a logical sequence	3.97	104	4.21	14	4	118
I was able to get support from member/s of university staff during the scenario	2.81	104	3	14	2.83	118
The interaction in the scenario seemed realistic	4.31	104	4.71	14	4.36	118
I was able to get support from my peers during the scenario	2.91	104	3.29	14	2.96	118
I was clear what I was supposed to be learning in the scenario	4.15	104	4.29	14	4.17	118

3.5 Sources of support from staff

Those respondents who agreed/strongly agreed that they had been able to get support from staff were asked which staff roles they had received the support from. Just under two-thirds said it had been a member of the clinical skills team; 20.8% said it was a PPDT and the same proportion said 'other'.

Table 8: Source of support from staff

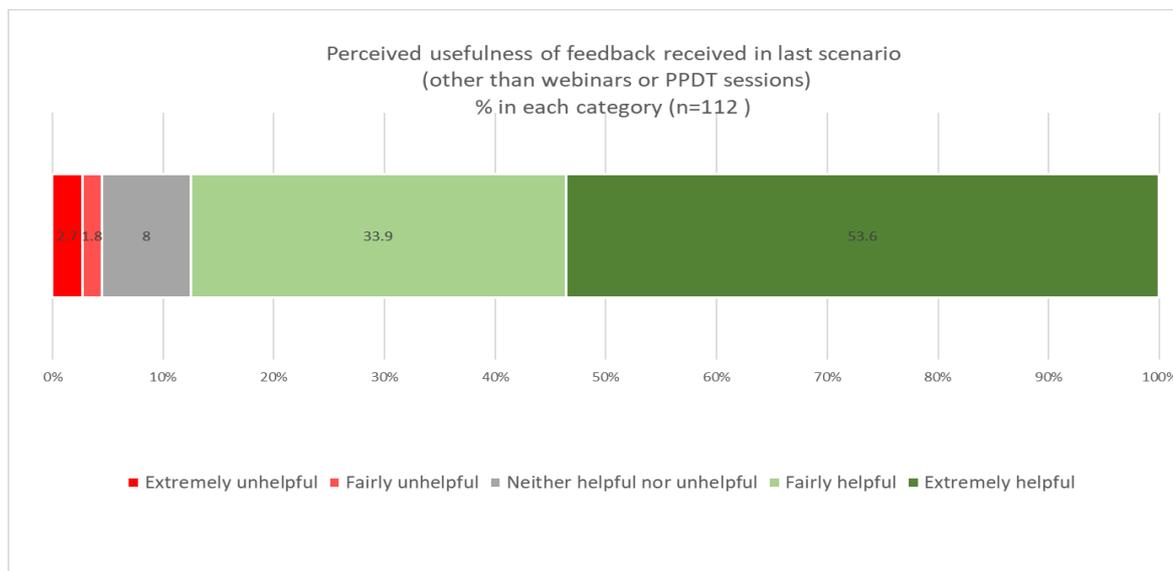
Which staff role student got support from	%	N
Member of clinical skills team	62.50%	15
PPDTs	20.80%	5
Other (please write in)	20.80%	5
Don't know/not sure	16.70%	4

The 'other' responses did not provide any additional insight about who was contacted apart from one which said 'Social services/ Safeguarding'.

3.6 Usefulness of feedback

Respondents were asked if they felt that the feedback received directly in the last scenario (i.e. excluding webinars or PPDT sessions) was helpful or unhelpful to their learning. The vast majority (87.5%) considered that such feedback was fairly or extremely helpful.

Figure 5: Perceived usefulness of feedback received



3.7 Peer support

Respondents who had been able to get support from peers (those who agreed/strongly agreed that they had been able to get support from peers during the last scenario in which they participated) were asked what peer support they had received and how they had received it. A selection of responses are shown below.

Table 9: Student views on peer support - open ended question

Was unable to log in and almost gave up, asked peers for support and I was told I had to download the OMS app which I did and since then I have been doing it once a day.
I discussed the scenario with the peer about the illness and prioritise the important assessment.
I was about to get support from my peers about the indicated task which I initially didn't complete and how to improve my percentage.
The support from my peers was simply of encouragement
I wasn't sure how many times I needed to keep redoing this scenario or the others. They also helped by explaining their results and what the end results should be in order to receive good marks and securing the patient safety first also.
Peers supported me to download the scenario because I was having problems.
After the first attempt of the scenario, I contacted my peers and we discussed about the scenario. This was very useful as we were able to share our ideas which improved my understanding of the topic scenario (anaphylaxis).
I was communicating with my fellow colleagues when I was in doubt.
During the scenario, the computer was freezing and I contacted two of my fellow students how to go about it. I was advised to keep logging on and off until I get through the Scenarios.
I also learned from a fellow student that I could use as many as learning aids as I could as long as they were relevant to the patient's diagnosis and making him/her getting better.
I was concerned that I couldn't open the medication cupboard so I texted my colleague and she advised on how I could go about

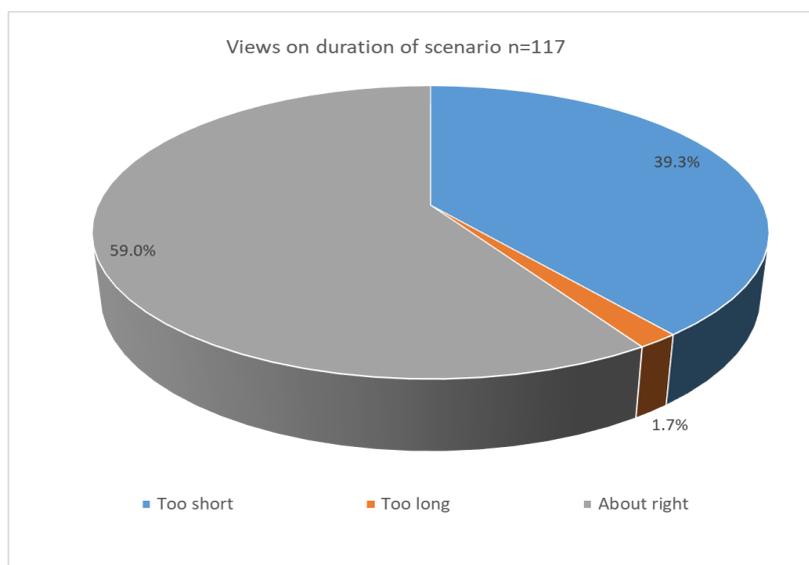
A number of these responses suggested that some students did not understand the term 'peer support' as they referred to support from staff or support from within the scenario. However, the examples of peer

support which were given were to do with asking peers for technical support (e.g. how to log in) or 'solving' particular problems within the scenario or simple encouragement. Channels of communication mentioned including email and text.

3.8 Duration of scenarios

59% of students thought the scenario duration was 'about right' but a large minority (39.3%) thought it was too short. Less than 2% of respondents felt that the scenarios were too long. Clearly then, there is a desire for the scenarios to be longer, although the data does not allow us to say how much longer students would like them to be. This was confirmed in open-ended comments on other questions (which are presented later) which also suggest related issues of students wanting more scenarios and/or more time to complete them. There were no differences in this question by last scenario used (Chi-square $p > .05$).

Figure 6: View on duration of scenarios



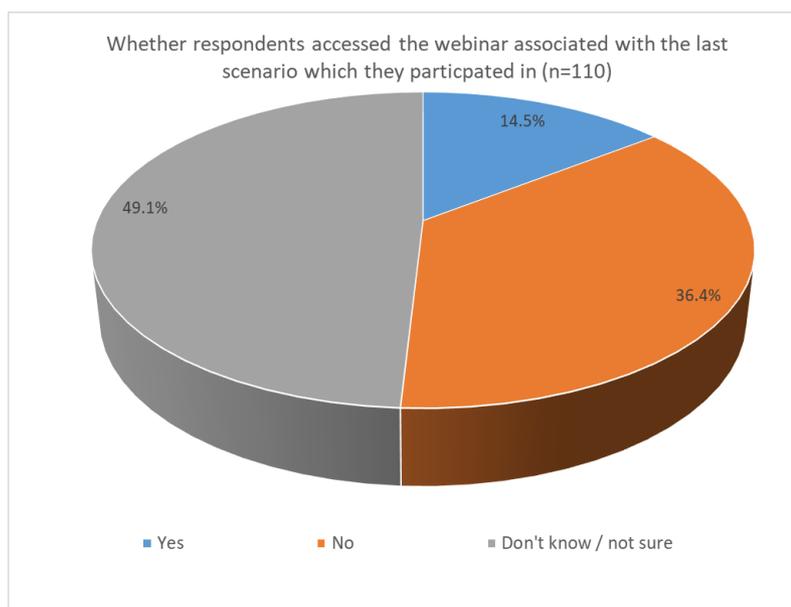
3.9 Webinars

The OSBS initiative included regular webinars where students could come together (online) to discuss their experiences and receive support from PPDTs (links to university support services were shown at the beginning and end of sessions and a web link to these was made available on the student website (unihub). Students could interact with peers in webinars so it was also an opportunity for peer learning/support

3.9.1 Take up of webinars associated with each scenario

Just under half of respondents (49.1%) were not sure/didn't know if they had accessed the webinar; 36.4% of respondents said that they had not accessed the webinar and just 14.5% said that they had done so. Take up of the webinars would therefore seem low but clearly many were unclear what was being referred to in the term 'webinar' and so participation may have been under-reported.

Figure 7: Take up of webinars



There was some variation in take-up of webinars according to last scenario participated in, as shown below (e.g. Melanie, Anaphylaxis had the highest take-up at 18.8% and Wilfred, Urosepsis & Delirium had the lowest at 8.3%), however these differences were not statistically significant (Chi square $p > .05$).

Table 10: Take up of webinars - by scenario (top five scenarios)

Scenario	Yes		No		Don't know/not sure		Total	
	N	%	N	%	N	%	N	%
Melanie, Acute Severe Asthma	2	8.70%	8	34.80%	13	56.50%	23	100.00%
James, Non-accidental Injury	1	9.10%	6	54.50%	4	36.40%	11	100.00%
Maria, Acute Anxiety	2	12.50%	5	31.30%	9	56.30%	16	100.00%
Melaine, Anaphylaxis	6	18.80%	14	43.80%	12	37.50%	32	100.00%
Wilfred, Urosepsis & Delirium	1	8.30%	4	33.30%	7	58.30%	12	100.00%
Total	12	12.80%	37	39.40%	45	47.90%	94	100.00%

3.9.2 Rating of webinars

Ratings of webinars were high (all statements on webinars receiving a rating of 3.94 or above, on a scale where 1 = strongly disagree and 5 = strongly agree). This indicates very positive attitudes to webinars amongst those who did use them but this was based on a very small number of responses (n=16).

Table 11: Attitudes to webinars (all scenarios)

Statement	Mean agreement (n=16)
The webinars were beneficial to the learning process	4.25
The lecturer's voice was clear in the webinar	4.19
The platform used within the webinar was easy to use	4.00
I had the opportunity to ask further questions in the webinar	3.94

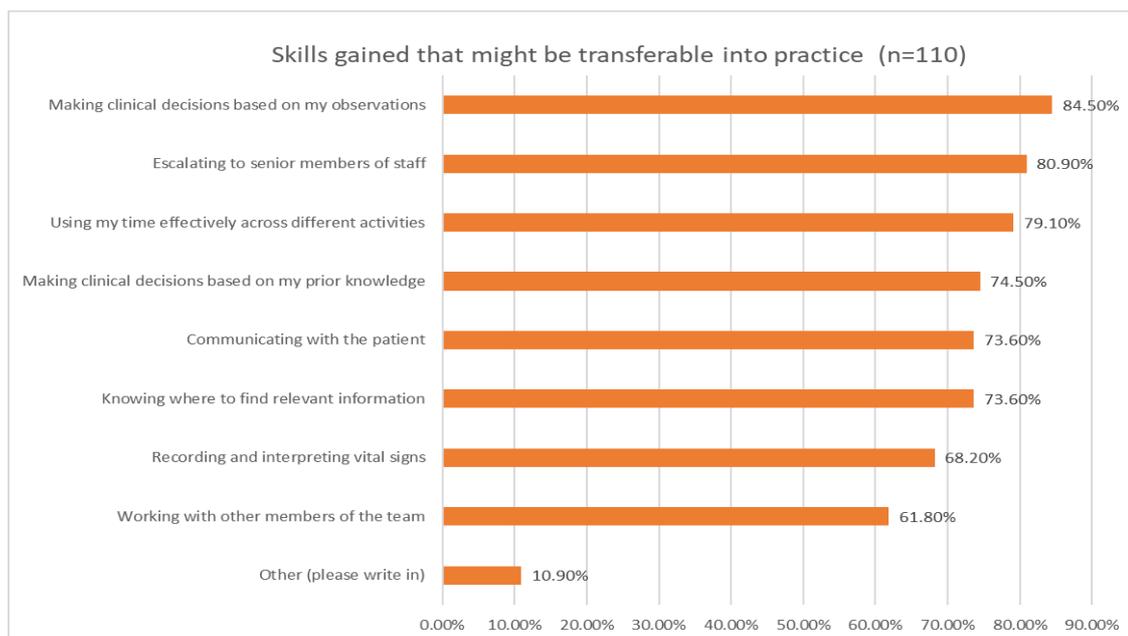
There were no significant differences on attitudes to webinars according to scenario (one way ANOVA $p > .05$). There were a small number of open-ended comments in relation to webinars (n=9) but these did not offer any additional insight.

3.10 Perceptions of skills gained

Respondents were asked "Which skills (if any) do you feel you have gained, in the last scenario participated in, that might be transferable into practice? (please tick all that apply).

A very large majority of respondents felt that they had gained skills in making clinical decisions based on their observations; escalating to senior members of staff; using time effectively across different activities and making clinical decisions based on prior knowledge.

Figure 8: Skills gained which respondents think might be transferable into practice



3.11 Learning objectives achieved/outcomes

The evaluation team worked with teaching staff involved in delivering and supporting the OSBS initiative to identify explicit learning objectives/outcomes from the OSBS initiative. The extent to which these had been achieved (in the view of respondents) was measured through a series of Likert scale questions where strongly disagree=1 and strongly agree =5). As the table below shows, there were high levels of agreement on all of these questions, with none getting a mean below 4.13.

Table 12: Learning objectives/outcomes perceived to have been achieved

Learning objectives/ outcomes	Mean
The OMS platform developed my understanding of escalating delivering SBAR handover to medical team and/or nurse in charge	4.38
The OMS platform developed my understanding of the physical assessment of an acutely unwell patient	4.35
The OMS platform developed my understanding of intervening in the treatment of an acutely unwell patient	4.32
The OMS platform made me feel more confident about establishing a medical history for an acutely unwell patient	4.22
The OMS platform made me feel more confident generally about communicating with an acutely unwell patient	4.21
The OMS platform made me feel more confident about establishing a medication history for an acutely unwell patient	4.2
The OMS platform made me feel more confident generally about working in a clinical area	4.15
The OMS platform made me feel more confident about completing a full set of observations for an acutely unwell patient and documenting them on a PEWS/NEWS chart	4.15
The OMS platform made me feel more confident about making rational and timely clinical decisions	4.15
The OMS platform made me feel more confident about maintaining patient safety and comfort	4.15
The OMS platform made me feel more confident about being able to administer appropriate medications as prescribed by the medical team	4.13

3.11.1 Differences in perceived learning outcomes/objectives by programme and year

There were few differences by programme: Adult nursing students had statistically significantly higher scores⁵ on ‘The OMS platform made me feel more confident generally about communicating with an acutely unwell patient’ than did mental health nurses (means of 4.42 and 3.80 respectively) and this also applied in relation to ‘The OMS platform made me feel more confident about being able to administer appropriate medications as prescribed by the medical team’ (means of 4.30 and 3.53 respectively). Although 3rd year students tended to get slightly higher mean scores on these questions than 2nd year students there were no statistically significant differences⁶.

⁵ One way ANOVA $p < .05$.

⁶ Independent samples T Test $p > .05$

3.12 Barriers to participation in OMS

Respondents were asked to rate the extent to which a range of factors may have been barriers to their participation in OMS. Table 12 below shows the responses on each item and also shows a category which combines 'something of a barrier' and 'a very significant barrier' to simplify analysis. Most items were considered 'not a barrier at all' by a majority of respondents with the exception of 'difficulty in installing the software or logging in' which was the biggest barrier (something of a barrier or significant barrier for 52.9%) followed by feeling stressed due to COVID-19 lockdown and not having enough time to do the scenarios.

Table 13: Barriers to student participation - in percentages and including 'don't know' N=121

Barriers	Not a barrier at all	Something of a barrier	A very significant barrier	Something of a barrier or significant barrier (combined)	Not sure/don't know
Difficulty in installing the software or logging in	44.60%	34.70%	18.20%	52.90%	2.50%
I felt stressed because of living under lockdown (due to COVID-19)	50.40%	28.90%	17.40%	46.30%	3.30%
I did not have enough time to do the scenarios	57.00%	24.80%	16.50%	41.30%	1.70%
Poor quality / low speed internet access at home	64.50%	19.00%	11.60%	30.60%	5.00%
Lack of access to a suitable device with which to access OMS	66.90%	19.00%	9.10%	28.10%	5.00%
Having to compete with other members of the household for internet access or use of a device	70.20%	17.40%	8.30%	25.70%	4.10%
My IT skills are not very good	74.40%	18.20%	4.10%	22.30%	3.30%
I am not confident about using information technology (IT)	79.30%	16.50%	2.50%	19.00%	1.70%
Lack of internet access at home	85.10%	5.80%	6.60%	12.40%	2.50%
I did not understand what the benefits of using the OMS platform might be	80.20%	7.40%	3.30%	10.70%	9.10%
I tried the OMS platform but did not find it useful	81.80%	5.80%	2.50%	8.30%	9.90%

As the barriers were rated on a three point scale, further analysis is presented in terms of means as this is a more concise form of representation. On the scale used, 3 = not a barrier at all, 2= something of a barrier and 1=very significant barrier therefore the items with the lowest means were less of a barrier. Those saying don't know were excluded for the purposes of this analysis.

Table 14: Barriers to participation in OMS, by scenario

Scenarios	Melanie, Acute Severe Asthma		James, Non-accidental Injury		Maria, Acute Anxiety		Melanie, Anaphylaxis		Wilfred, Urosepsis & Delirium		Total	
	Mean	N	Mean	N	Mean	N	Mean	N	Mean	N	Mean	N
Difficulty in installing the software or logging in	2.41	22	2.36	11	2.31	16	2.3	30	2.08	12	2.31	91
I felt stressed because of living under lockdown (due to COVID-19)	2.23	22	2.64	11	2.6	15	2.45	29	2.17	12	2.4	89
I did not have enough time to do the scenarios	2.59	22	2.36	11	2.67	15	2.55	31	2.18	11	2.51	90
Poor quality/low speed internet access at home	2.55	22	2.73	11	2.73	15	2.54	28	2.42	12	2.58	88
Having to compete with other members of the household for internet access or use of a device	2.67	21	3	11	2.79	14	2.58	31	2.58	12	2.69	89
Lack of access to a suitable device with which to access OMS	2.76	21	2.82	11	2.87	16	2.6	30	2.45	11	2.7	89
My IT skills are not very good	2.73	22	2.82	11	2.71	14	2.84	31	2.91	11	2.8	89
I am not confident about using information technology (IT)	2.82	22	2.64	11	2.8	15	2.87	30	3	12	2.83	90
Lack of internet access at home	2.73	22	3	11	2.94	16	2.83	30	3	12	2.87	91
I did not understand what the benefits of using the OMS platform might be	2.82	22	3	11	2.92	12	2.89	28	2.92	12	2.89	85
I tried the OMS platform but did not find it useful	3	19	2.8	10	2.93	15	2.96	28	2.75	12	2.92	84

Most items received a similar rating (between 2.31 and 2.83) indicating that they were between 'something of a barrier' and 'not a barrier at all'. The items with the lowest mean (biggest barriers) were 'difficulty in installing the software or logging in' (2.31); and 'I felt stressed because of living under lockdown (due to COVID-19)' mean 2.4 and 'I did not have enough time to do the scenarios' (mean 2.51). Aspects which were least likely to be considered a barrier were 'lack of internet access at home', not understanding the benefits of OMS or having tried it and not finding it useful.

There was not a great deal of variation by last scenario used (as shown in Table 15 above) which is perhaps not surprising given that most of the barriers mentioned are not scenario specific.

3.12.1 Age and barriers to participation

It was considered that there might be differences by age in relation to some of the barriers (e.g. that older people might be less confident about using IT, as some would not be 'digital natives') and although there was some evidence of such a difference on the question 'my IT skills are not very good' this difference was not statistically significant ($p > .05$, one way ANOVA).

3.12.2 Gender and barriers to participation

In relation to gender, the only statistically significant difference was regarding 'having to compete with other members of the household for internet access or use of a device' (T Test independent samples, $p = .045$). Men found this more of a barrier (mean 2.33) compared to women (mean 2.73) but the small number of male respondents ($n=9$ compared to $n=94$ for women) makes the finding unreliable.

3.12.3 Learning style and barriers to participation

There were no statistically significant differences regarding barriers in relation to respondents' self-identified learning style ($p > .05$, one way ANOVA).

3.12.4 Programme/specialty, year and barriers to participation

There were no statistically significant differences regarding barriers in relation to programme/specialty or year of programme ($p > .05$, one way ANOVA).

3.12.5 Those who did not participate in any scenario - barriers to participation

There were 12 survey respondents who had not participated in any scenarios. These respondents experienced certain barriers (indicated in italics in the table below) to a statistically significant greater extent than those who did participate in one or more scenarios. For example, those who had participated in no scenarios were much more likely to say that "I did not have enough time to do the scenarios" was a barrier (mean 1.64) compared to those who had participated in one or more scenarios (mean 2.49). The barriers in italics may be particularly important in understanding the barriers to participation in the OSBS initiative although the sample of non-participants is small.

Table 15: Comparing perceptions of barriers to participation in OMS for participants and non participants

Scenarios	Participated in at least one scenario		Did not participate in any scenario		Total	
	Mean	N	Mean	N	Mean	N
<i>I did not have enough time to do the scenarios</i>	2.49*	108	1.64	11	2.41	119
I felt stressed because of living under lockdown (due to COVID-19)	2.36	107	2.1	10	2.34	117
<i>Lack of access to a suitable device with which to access OMS</i>	2.65*	106	2.11	9	2.61	115
Difficulty in installing the software or logging in	2.28	109	2.11	9	2.27	118
<i>Lack of internet access at home</i>	2.86*	108	2.2	10	2.81	118
Having to compete with other members of the household for internet access or use of a device	2.69*	106	2.2	10	2.65	116
Poor quality/low speed internet access at home	2.58	105	2.3	10	2.56	115
<i>My IT skills are not very good</i>	2.77*	107	2.3	10	2.73	117
<i>I did not understand what the benefits of using the OMS platform might be</i>	2.89*	101	2.33	9	2.85	110
I am not confident about using information technology (IT)	2.81	108	2.55	11	2.78	119
I tried the OMS platform but did not find it useful	2.89	102	2.71	7	2.88	109

*Statistically significant difference between those who had participated in at least one scenario compared to those who had not : $p < .05$, T test independent samples. N.B. Barriers were rated on a 3 point scale where 3 = not a barrier at all 2= something of a barrier and 1=very significant barrier. Therefore items with the lowest means were less of a barrier.

3.12.6 'Other' responses in relation to barriers

Respondents were offered an 'other' response as well as the Likert scale items above. There were 33 responses to this, the most common theme being technical problems around freezing /crashing or difficulties logging on; the duration of the scenarios being too short; lack of IT skills or confidence or not liking having to interact with the scenarios through cursor/mouse. One student highlighted that due to being on placement s/he was in accommodation with no internet access. Two comments reflected a view that OSBS is not a substitute for placements or did not increase confidence about working in clinical settings.

Table 16: Students' perceptions of barriers to participation in OSBS - selected 'other' responses

Downloading the app initially. It takes good technical skill to do it.
Had problems logging in
Installing software
System crashed several times.
To do a full set of vital signs is not possible in the system. .. to get the respiratory rate should go somewhere else.
My own learning using it steep learning curve
Programme/scenario blocking/interrupting while running the session
There wasn't enough time to hover a cursor around in order to finish assessing the patient
Not enough child scenarios
Overall very good but impossible to increase confidence in a real clinical setting
Twenty minutes for the scenario not enough. Also ran out of time when completing reflective sections therefore I am not sure if any of my reflection was stored by OMS. This happened on three scenarios.
Due to placement and being put into accommodation with no internet access i have struggled to do the OMS. Also to add, I am currently on placement therefore {not} had the time.

3.12.7 Conclusion – barriers to participation in OSBS initiative

Overall, most respondents did not consider most of the aspects mentioned in the questionnaire to be serious barriers and there was no evidence that barriers were experienced differently on the basis of age, gender, learning style, year of programme or programme/specialty. However it should be taken into account that students who had participated only very briefly in the OSBS initiative or had been put off trying it at all, for whatever reason, would be much less likely to take part in the survey so the data may underestimate the significance of some of these barriers. Those respondents in the survey who had not participated in any scenarios experienced certain barriers to a statistically significant greater extent than those who had participated in one or more scenarios (e.g. lack of access to suitable devices, lack of internet access at home having to compete with other members of household for internet access or use of a device, not having good IT skills (self-rated) and not understanding what the benefits of OMS might be).

3.13 Most and least useful aspects of scenarios

Respondents were invited to say (through an open-ended question) what they had found most and least useful about the last scenario they participated in.

3.13.1 Most useful aspects of scenario last used

The aspects of the scenario (which they last participated in) which respondents found most useful are shown in the table below. Selected verbatim quotes from the top three themes are presented to illustrate each theme.

Table 17: Themes of open ended comments (what students found most useful in scenario)

Theme	Number of times coded
Improve clinical assessment skills	19
Realism	17
Liaising with team members - delegating or escalating	10
Manage patient suffering from anaphylaxis, tachycardia or hypotension	7
Working under pressure	7
Using SBAR handover	6
Learning about emergency medication or treatment	5
Feedback was good	5
Relevance for child nursing or safeguarding	5

3.13.1.1 Improving clinical assessment skills

Students noted improvements to clinical assessment skills resulting from OMS, in a range of contexts, including assessment of elderly patients, patients with anaphylaxis and handover.

Table 18: Improving clinical assessment skills

I found listening and carrying out vital signs useful, I also realised the importance of carrying out urine examination on a confused patient, as I realised not all diagnoses of dementias are true as in the case of Wilfred, which was delirium.
Learning more about assessment of elderly patients and how to gather information. I also liked that I can review the scenario to see if I have improved my clinical and assessment skills.
How to attend to a patient suffering from anaphylaxis, tachycardia, hypotension, wheeze and widespread rash.
Also I learnt how assess a patient within a short period time.
applying knowledge about emergency medication
<ul style="list-style-type: none"> - prioritising assessments and decision-making - using SBAR handover - relating to MDT
A-E assessment practise in realistic scenarios.
It provided a realistic experience, that allow for a real time situation that a nurse would go through. It was good to be able to learn of how to identify a patient at risk of anaphylaxis whereby making decision that is vital to the patient's health and even saving the person's life. The best part is that no real person was harm in the experiment and it is highly likely that a scenario like this would occur during a registered nurse practice.
Everything about the scenario was useful as it enabled me to do a step by step assessment on the patient, The SBAR prompts enabled me to call for help when needed and also the medical team were very helpful. The prescription charts were clear. The support worker was very helpful in carrying out the examinations. Communication was good.
Completing a full observation assessment was helpful to support the diagnosis. Such as checking his vital signs and assessing his abdominal pain. And also gaining support from the charge nurse.

3.13.1.2 Realism

Comments drew attention to the realism of the scenarios in terms of the level of detail in the simulations (both in relation to the graphics and the level of detail in the interactions), the level of communication, the ability to complete the scenario in a non-linear way and the interaction with family members.

Table 19: Realism

It seemed realistic. I kinda felt stressed because she was wheezing throughout the conversation which prompted me to think faster”.
I liked how quick you have to act and you have to do A-E in logical manner like you would have done in real life scenarios and everything felt realistic while I was doing it”
It provided a realistic experience, that allow for a real time situation that a nurse would go through. It was good to be able to learn of how to identify a patient at risk of anaphylaxis whereby making decision that is vital to the patient's health and even saving the person's life. The best part is that no real person was harm in the experiment and it is highly likely that a scenario like this would occur during a registered nurse practice.
The whole scenario. The communication seems so real.
Was realistic as an emergency situation. Working under pressure, communicating with emergency support- was all great practice for confidence and
The fact that it was realistic to what we see in clinical placement and the resource which were available once the scenario was completed in order to expand our knowledge
Unlike previous stimulations, this one did not require a specific order for interventions. I felt this helped a lot because I was able to go back and do things if i had forgotten. The examinations were very useful and realistic. The options given were also useful as you really had to think what interventions were needed and which were not.
It felt real like you are in the hospital.
It appreciated the reactions of James and his mother when they thought of "going home", it given a realistic respond as per real patient and carer.
The three dimensional learning environment is so much better than the one dimensional scenario on paper. I could see the rash on the patient. I recognised the issue was an allergic reaction.

3.13.1.3 Liaising with team members – escalating or delegating

Several comments in this theme referred to improved skills around liaising with team members, including delegation.

Table 20: Liaising with team members

Being able to use the phone to speak to on call medical and nurse in charge. The nursing assistant was very helpful in doing ECG, urine sample, bloods, rechecking blood pressure, heart rate and saturations.
A-E assessment practise in realistic scenarios.
Delegating.
Was realistic as an emergency situation. Working under pressure, communicating with emergency support- was all great practice for confidence and
It was useful to have an assistant.
Through communication is important to Wilfred scenario .
Everything about the scenario was useful as it enabled me to do a step by step assessment on the patient, The SBAR prompts enabled me to call for help when needed and also the medical team were very helpful. The prescription charts were clear. The support worker was very helpful in carrying out the examinations. Communication was good.
About how to quickly address her respiratory problems. Taking vital signs and escalating to doctor
Giving the handover to the doctor and stating the condition or diagnosis

3.13.2 Least useful aspects of scenario last used

The aspects of the scenario (which they last participated in) which respondents found least useful are shown in the table below. Selected verbatim quotes from the top four themes are presented for illustration: quotes are not presented for the theme of ‘none - everything was useful’ as this is self-explanatory and the comments offer little additional insight .

Table 21: Themes of open ended comments (what students found least useful in scenario)

Theme	Number of times coded
None - everything was useful	37
Scenarios should last longer	15
Technical problems	9
Usability	7
Insufficient multi tasking capability	2
Lack of realism	2
Insufficient follow up or reflection	2
Scenario not useful	1
Scenario could have been more organised	1
Made me feel stressed	1
Did not know who to ask questions of about patient's health	1

3.13.2.1 Scenarios should last longer

Many students felt that the least useful aspect of the scenarios was that they did not last long enough and many expressed a wish for a longer duration. Several comments referred to the stress that they felt because of the short duration of the scenarios, and some students also felt that the short duration

decreased the realism of the scenarios. One TNA felt that it would be particularly difficult for those not working in hospital settings (e.g. community-based) to complete the scenarios within the time given.

Table 22: Scenarios should last longer

I think in this situation, although we needed to act quickly more time was needed to keep the patient and mother reassured and in the department.
I found the timer as the least useful, because it was quite unrealistic. As a result of the fact that, in real life you need more time to attend to a patient with Anaphylaxis. Furthermore, technical difficulties that may occur during the scenario do slow you down and therefore less time to concentrate on the patient's wellbeing.
I struggled to get everything done in under 14 minutes as I was doing everything back to back but the assessments were taking too long to do and the communications took a long time as well so I was unable to get 100% in this scenario just because of timing.
in a short time frame you have to get all the communication and examinations done before ringing the medical team and doctor to get prescription but it cannot all be done in a swift action so you end up having to ring multiple times before all the relevant actions can take place.
In my opinion the twenty minute timing for this and the other scenarios was not enough. I can imagine that my fellow Trainee Nursing Associates that do not work in a hospital setting might have struggled to finish the scenario successfully within the time allotted.
All the scenario are starting from 19:00 minutes. I felt very stress out because of the time. when it started the Wilfred scenario, after @ 8 minutes the scenario frozen and at 0:09 it started again, I was not able to do much as I was running out of time. I was very disappointed with the system. It does not give you the option to assess the patient and to learn from.
With the other scenarios the freezing was on and off, but all of them started at 19 minutes. This was putting me under stress and i could not focus an learn properly as all the time I was thinking of the time. was going to be great if we could have 30 minutes for each assessment.
Nothing was least useful, only that I could not calculate a EWS score or complete my SBAR handover as my time was limited.

3.13.2.2 Technical problems

Technical problems which were highlighted included ‘freezing’ of the software (presumably due to laptops not having fast enough processors or insufficient memory or internet connections not being fast enough) and laptops running very hot – again presumably because of the demands being made on the processor.

Table 23: Technical problems

I wish the program wasn't lagging/freezing as often as it did and also it was very hard to manoeuvre cursor around the screen. This took most of the time as well
I found all useful however, the scenario/software seems to have a problem keeping up with my Lenovo computer, as it kept freezing hindering my performance a lot.
In all of the simulations - my computer would freeze and not allow me to complete them resulting in low percentages. Had to use a friends which caused inconvenience.
The scenario kept freezing so it caused time to lag and then I'd forget what I was going to do.
I found the app difficult as it keep on frozen on numerous occasions. However, communication between the nurse and Wilfred was not coherent
In term of time management for the patient care it was too short and stressful and sometimes the action on the patient is slow you click on the patient leg exam it still showing the last action you already done

As was evident in the previous theme ('scenarios should last longer'), technical difficulties or limitations such as video freezing, and having to interact with the scenario through a mouse, perhaps exacerbated the stress caused by time pressure.

3.13.2.3 Usability

There were a number of comments relating to what might be termed ‘usability’ or the user experience of the software.

Table 24: Usability

It can be difficult to search through menus to request questions or look for tests, etc.
For the time allocated to practice the scenario, understandably it is geared for VR. Using a mouse to navigate can be exhausting and time consuming. It just seem difficult to accomplish all the task within the given time.
In a short time frame you have to get all the communication and examinations done before ringing the medical team and doctor to get prescription but it cannot all be done in a swift action so you end up having to ring multiple times before all the relevant actions can take place.
Finding appropriate action keys took a bit of time
Asking for help with the MDT(multi disciplinary team)

3.14 Students’ suggestions for improvements to scenarios

Respondents were asked what (if anything) could be done to improve the last scenario in which they participated. Many responses indicated that there was nothing that could be improved, but the most frequently suggested change was increasing scenario duration of (or to reduce the number of tasks within the given time). Illustrative quotes for each theme are presented below (excepting ‘nothing’ and themes with fewer than five codes).

Table 25: Themes of open-ended comments (suggested improvements to scenarios)

Theme	Number of times coded
Increase duration	23
Nothing	21
Increase realism	9
Solve software/technical problems	8
Improve usability	8
More multi tasking capability	4
Better instructions	3
Better feedback	2

3.14.1 Increase duration of scenarios

The issue of scenarios being perceived as too short was discussed above under ‘least useful’ aspects and the comments here are very similar and again draw attention to the interaction of the time pressure and the ‘usability/user experience’ in the scenarios.

Table 26: Increase duration of scenarios

In order to improve the Melanie, Anaphylaxis scenario there should be more time given for users to attend to the patient properly.
More time needed and help from staff
It was a very useful scenario, but I struggled to complete it within the 14 minutes.
Give a bit more time maybe as there are many steps to do and no much time or enough time but pressuring James and the mother.
The time frame. It is very difficult to manoeuvre the cursor whilst doing the assessment as it is time consuming. plus you do not get to finish your assessment. the choice of going back to change your decision, allowing you time to think critically which will enable good decision-making.
The timing was too short which could make the person feel under pressure to finish it on time.

3.14.2 Increase realism

Various suggestions were made as to how the scenarios could achieve improved 'realism'.

Table 27: Increase realism

When calling the daughter and she saying she is on her way it would be nice if she actually did walk in, to see if students (including myself) will be able to handle the pressure when you have a family watching over you as you care for the patient. Or being able to wean Wilfred off oxygen and see him fully recover instead of having the oxygen still on but still receiving full marks for the scenario. Other than that nothing at all.
Yes the crash team should have shown up to talk me through their process also if I was taking to long
Ability to assess whilst characters are talking a -sub screen where you can see what action you have already clicked Because in real life you can cancel thing you have planned to do but on here you don't have a choice
'Ability to queue the commands' - like a Sims games
Melanie could have said that she though her symptoms were related to medication she had taken.
Technically move of cursor around on laptops without a VR headset is time consuming.
I felt that the time in which you had allocated the tasks to be completed was unrealistic but for a simulation that is understandable.
I personally felt that Melanie should have received oxygen much faster as she found it hard to talk and get her words out. This made it harder to get a background on her issue.
A better handover of the presenting problems should be established due to the poor due to the confused communication from the client
To improve the Melaine Anaphylaxis scenario by working as a team and give enough time

3.14.3 Solve Software/technical problems

Many of the comments in this theme referred to freezing of the video or the software being too demanding for the laptops to handle.

Table 28: Solve software/technical problems

The scenario is good but the actual program need to be made laptop friendly. It was too big and not ideal to be used for normal laptop.
I think the system needs to be improve because it crashes few times.
The software becoming more smooth
The simulation software overall is not suitable for all types of laptops.
I think the freezing of scenarios is the only thing that could be improved but other than that this was very useful for me as a year 2 student refreshing myself with clinical skills during the pandemic
However, when opening the medical records on the computer the screen would freeze sometimes and cause a delay, other than that it was a good learning experience.
If a computer freezes during the scenario, the given time should be increased to enable the student to complete all the given/required assessment questions and effectively complete the scenario

3.14.4 Improve usability

Several suggestions were made about how to improve the usability/user experience of the scenarios.

Table 29: Improve usability

It is very difficult to manoeuvre the cursor whilst doing the assessment as it is time consuming. plus you do not get to finish your assessment. the choice of going back to change your decision, allowing you time to think critically which will enable good decision-making.
The room settings was little bit difficult to understand.
An option to change the order of command
The slowness of getting the communication and examination done it takes awhile to get it all done. As the processing is slow and cannot multitask much of doing the communication and examination it takes longer.
I never could understand how to update NEWS score for all cases.
I think if I practised more the scenarios I would be more familiar with operating keys. Also when filling the NEWS chart and SBAR I had to take time to go back/ find the details
It was very hard to record patients vital signs, I didn't manage to do it at all

4 Focus group findings

Three online focus groups were carried out – two with students and one with staff. The focus group topic guide for staff was based on initial informal conversations with staff regarding OMS and the student focus groups topic guide was developed based on issues emerging from those initial conversations with staff but also on the online survey findings. Each focus group lasted around an hour and the transcripts were analysed thematically in NVIVO. The major themes extracted are shown in the tables below. There were three themes which were common to both student and staff focus groups (feedback/assessment, realism and peer support) which are highlighted in red. These common themes are presented jointly, followed by the individual themes for staff and student focus groups.

Table 30: Themes of student focus groups

Theme	Number of codes to this themes
Feedback, assessment and support for students	22
Learning outcomes for students	16
Improvements to scenarios	16
Technical support for students	13
Barriers to student participation in OSBS initiative	9
Realism	6
OMS things liked about scenarios	6
Peer support or learning	4

Table 31: Themes of staff focus group and interview

Theme	Number of codes to this themes
Feedback, assessment and support given to students	38
Integrating OSBS initiative into curriculum	14
Realism/ simulated learning experience	12
Pedagogical model	10
Placements	9
Peer support for learning	6

4.1 Feedback assessment, and support for students (joint theme from staff and student focus groups)

The views of staff in relation to feedback, assessment, and support are presented below, followed by the views of students.

4.1.1 Staff views on feedback, assessment, and support given to students

One potential issue with the assessment that students receive from OMS (the mark calculated by the software for their performance in the scenario) is the fact that the marking 'algorithm' or marking criteria are not available to students and staff. Although the platform does provide feedback to students about their performance, and benchmarking against their cohort, it is not always clear how the marks are arrived at, as these two quotes from staff illustrate:

"Yeah, I mean the feedback and the score system wasn't clear, like in terms of I guess you can miss something that you didn't classify as being quite major and it would maybe lower your score quite a bit, as opposed to missing something that you thought actually was clinically quite important and it seemed to only lower your score slightly. So I guess the percentage feedback, it wasn't always clear how it worked".

"and the algorithm as I was saying before, it's quite basic and it doesn't acknowledge experience or expertise".

Therefore, students may be left with questions about why they got a particular mark, and staff may not necessarily be able to answer these questions with as much clarity as they might like. Some staff did not see this as a major issue or they worked around it by not focussing on the score per se:

"because the score might not have been accurate as to how well you performed, or not performed, it's looking at actually the things that you did forget and looking at them from a clinical point of view and how that actually relates to practice and how that would impact if you did forget that in practice."

One member of staff felt that taking the OMS marks at face value would not be appropriate in any case, at this stage of its integration into the curriculum:

"because if a student didn't do an arterial blood gas, because they don't know how to do it, they wouldn't be doing it, it's not part of their role and their feedback then came back and they scored 80% because they missed an arterial blood gas, they might feel a bit disheartened by the fact that they only scored 80%. But you explain to them you've lost points on something that we wouldn't expect you to do at this stage in your career and therefore don't look at it like that, don't look at the score, look at it as the rest of your feedback and you've performed very, very well. So yeah."

It was also noted that one member of the team who was not a nurse or health professional had scored 40% in a scenario, which underlined that the marks from the OMS software have to be interpreted with a great deal of caution and (probably) were only useful for formative purposes. As touched on elsewhere, every scenario had an associated webinar where a member of teaching staff went through the scenario itself, goes through the outcomes, but also expanded on it.

“So if it was something like asthma, then you might give information on the anatomy and physiology of the lung. I mean I’m ... but that type of thing. So basically it gives the students a little bit more learning, it actually gives them some background learning in some ways when it should be done beforehand. But we are presuming the students have some knowledge and then they do the scenario and then we give, it’s just enhancing the learning basically”.

Staff felt webinars were very useful (although as discussed in relation to students - there seemed to be varying levels of awareness about the webinars but those who took part in them seemed to find them useful). Students had support available for a number of sources as discussed elsewhere in this report: they could contact the skills team directly for technical support, they had webinars available after each scenario and they also had access to a PPDT whose role was to ensure that they had completed the scenarios and give them pastoral support if needed or to refer them to other sources of clinical or technical support which they might need.

Staff had provided much technical support for students in downloading, installing and using the OMS software. This had often been labour intensive and time consuming. Some members of the skills team had trained themselves on the software in order to be able to advise students.

One member of staff had evidently enjoyed the challenge of self-teaching the software but also highlighted that:

“I think that’s something we have to acknowledge as being a limitation, if we’re going to do this as a screen-based thing, someone has to be prepared to spend an awful length of time, a) understanding it, and b) with the students”.

This member of staff referred queries to other members of staff as needed, to get additional technical or clinical expertise if she was unable to deal with a query. Staff also noted that fortunately they had been planning and preparing around the OSBS initiative for several months before the COVID-19 pandemic resulted in the suspension of face to face teaching (March 2020). It seemed that technical support was perhaps over concentrated in a few individuals and that there was a need for wider staff training in how to support students in the OSBS initiative, especially if the number of users/frequency of use was to increase.

4.1.2 Student views on assessment, feedback and support

Students were generally satisfied with the automated feedback which they got within the scenario although there were a small number of instances where it was felt that it was unclear:

“And again when it comes to like, there was a particular area I got it, it was like I was supposed to call for help ... I was like I really did not know the exact time to call for help in this situation, especially when she was saying that she couldn’t breathe and stuff like that, I was like okay I’m giving her oxygen and stuff like that, so it was still like when they were kind of debriefing of where I did well, it was like I didn’t call, I did call for help, but in my own perspective I really didn’t know when exactly I should have done that, because the patient was like breathless and I give her the oxygen that she needed,” ...

Most students were also satisfied with the summative feedback at the end of the scenario which summarises the student’s performance and identifies areas where they performed weakly or strongly and what they should have done to get a better score. However, one student had expected feedback from staff as well as the automated feedback from OMS:

“you know after you finish the course and it was like mapping you where you did right and where you did wrong. I was like okay we did this course and at first I’ve not looked at an anaphylactic patient before. So I was expecting like a debriefing from {the skills team} at the end of the day, because that was what I was expecting, so I should know what to do better when in real life for that patient”.

It is possible that this support could have been provided within a webinar but the student was perhaps unaware of that as it seemed there was mixed levels of awareness regarding the webinars – some students had used them and some were unaware of them, in approximately equal proportions (survey evidence also suggested low levels of awareness regarding webinars). One student suggested that it would be more useful to have webinars before the scenario and another said that they believed the webinars were recorded and it was useful to be able to access the recordings.

One student referred to being logged out too quickly from the scenario before she had had time to fully absorb the feedback:

“the time for you to look at the scenario, to go back to get the medication that is prescribed, it wasn’t enough. Before I know it’s logged me off and logged me out and by the time I keep doing it, after about three or four times, it’s then I actually got a good score. I think the time is too short”.

4.1.2.1 Technical support for students

Many of the students at the focus groups reported experiencing technical problems around the installation of OMS software and freezing of the video although it seemed in most cases they had been able to get appropriate remote support in an effective and timely way. The sources of support included the skills team,

online support from the software providers (OMS) or from peers or family (especially their children) and PPDTs. Some quotes illustrated how challenging some students found it to engage with the software/ the scenarios - this one is appreciative of the instructional video provided but does not consider it sufficient.

“Yes because at the beginning it was really difficult. It’s something new and all the information which was provided is not really enough clear when you are starting in simulation to understand. So we really need I think .. when we are starting, even though we have a video to explain what we should do, but at the same time it’s not so easily as the video can explain it when you are trying to understand”.

The two quotes below were typical of several indicating that most students felt that they had received adequate technical support:

“Initially I had issue in setting everything up as in downloading it and setting it up before it gets up and running, I had issue initially. But once and I emailed my tutor and {named member of Middlesex skills team} as well, so the advice and your team as well, it could be you that have responded as well and give me wrote down a guide on how to do everything and I followed the guide and there was no issue. It was working expressly for me. But on the other hand if you were someone who is not really very good IT-wise, I think they would really find it challenging setting it up initially”.

“For me I did get enough, I got enough support. When at the initial stage I was finding it to start off the scenarios, to log in, I was able to get through to {named member of Middlesex skills team}, who sent another link with explanation. Then when I complained about my laptop freezing up and freezing up, I had an offer from the university for me to come and pick up another laptop. However before I did that I got feedback from other students to say that they, some people were having similar problems. So I had to email back to IT to let them know that the problem was not my computer that it was from the system. So I did, I got enough support from them and I’m thankful.”

There were several mentions of laptops becoming very hot while running the scenarios, presumably because of the demands the software makes on the processor and it was suggested by one student that newer laptops would be better able to cope with these demands.

4.2 Realism of scenarios/user experience (joint theme from staff and student focus groups)

Staff views on the ‘realism’ of the scenarios and the user experience are described below, followed by the views of students.

4.2.1 Realism of scenarios - staff views

Generally speaking, staff considered the scenarios had a high degree of realism in terms of reflecting situations which nurses might have to deal with. However, more experienced staff also felt that they might not necessarily have handled the situation in the scenario in the way which the software considered

“correct” (i.e. they might perform certain actions in a different order in real life) but they did not consider this problematic – rather it could be seen as a basis to discuss what would have been the most appropriate actual best practice in that scenario.

Although the scenarios do allow for certain amount of multitasking, they were still seen by some staff as rather linear in nature and not allowing for as much multitasking as might happen in real life. It was also recognised that it was useful to have scenarios which were not typical in some senses i.e. to allow students to experience situations that they might only rarely come across in practice.

Staff also recognised that some actions which might be required in a scenario do not map exactly onto the expected learning outcomes for preregistration nursing students in the UK (e.g. to get 100% mark in certain scenarios it might be necessary to carry out tasks around taking an arterial blood gas, which is not part of preregistration nursing curriculum in the UK as referred to previously).

The researcher asked whether there were any issues caused by the fact that the software provider (OMS) is a U.S. based firm and potentially there might be differences in practice or emphasis between the US and the UK. This was not felt to be a problem and staff reported that if they had needed to have any changes made, these were usually carried out promptly by OMS.

4.2.2 Realism of scenarios – student views

One student described how the scenarios had given her a real sense of the responsibility of being a nurse, and although this weighed on her to some extent, she appreciated this preparation:

“when we now went for this extended placement it made me aware that you now have kind of a job. You have probably about two or three patients to look after yourself for the whole day, so you have to be kind of supervised when you are doing the medications, so they are kind of trying to set our independence you can manage a patient. So the scenario is just like that, so it’s like getting used to understand your responsibilities. So I believe that by the third year that I will be better than what I did, even in second year like when I did my first placement I wasn’t this good. So this scenario and the way they manage the, I think I’m in a better place to practice better”.

Another student agreed with this and also highlighted how the realism had helped her understanding of decision-making under pressure, communicating with colleagues and the responsibility of being a nurse:

“Yes adding to the point that my colleague said about the confidence, I don’t know being at home during the lockdown, I’ll be forgetting of what I’ve learnt, since I didn’t go to an extended placement or any placement, therefore it was really a positive learning point and through it I’ve learnt a lot of responsibility. I mean how responsible nursing can be and it’s surely when you have to act immediately in the case of anaphylactic and so on and the importance of communicating with other healthcare professionals.

Therefore it was really positive the scenarios, really a lot of positive points that enhanced my knowledge to act immediately, you know communicating with other staff and also knowing that I'm responsible"

However, one student pointed out that the issue which has been discussed earlier (about the scenarios being perceived as having too short a duration) detracted from the realism and several other students agreed with that.

4.3 Peer support for learning (joint theme from staff and student focus groups)

Staff views on peer support for learning are described below, followed by the views of students.

4.3.1 Staff views on peer support for learning

A member of staff made the interesting point that whereas in a simulation in the classroom he would be able to observe that some students might be lacking in confidence (e.g. through their non-verbal communication) and he might create mixed groups to counterbalance that, this was not an option in a remote / online simulation. Another member of staff said that peer learning was becoming increasingly embedded into the curriculum as time goes on, and that it was important to make staff aware of the need to incorporate the learning from that into the development of OSBS initiatives:

"this means that you have to spend more time prepping your class, you have to make sure that the discussion board is open, you have to be thinking about how in this webinar can I get these students to be engaging with each other. I feel that people may, unfortunately, just think that they just are responsible for the delivery of the session. So I've got an hour to teach the respiratory system, you deliver the hour, you go away and then don't really support any of the learning that would have taken place in the classroom".

4.3.2 Student views on peer support for learning

There was some evidence of peer support occurring in the OSBS initiative. Some students mentioned contacting each other to ask for support on technical problems (as mentioned earlier) but also to exchange notes or seek advice about aspects of completing scenarios:

"I think it matters a little, like not a lot, ... because there was one scenario that we all agreed we couldn't get 100%, because there was a problem .. it was about the timing, it asked you to do something, but when you were in the scenario, you were not able to do that, so you couldn't understand why, let's say why is it asking me to do this, to improve on this but then when I'm in the scenario there is no way you can do that, you can achieve that. So to be able to talk with your friends - if they are having the same situation, or the same kind of feedback, it's quite reassuring".

"Yes it's regarding our peers, for example I'm part of a WhatsApp group and some of us would encourage each other to participate and to do that kind of training, because we found that it was really interesting and especially to acquire more knowledge".

However, it did not seem that there was a lot of peer support occurring, perhaps because the support provided by various staff and the support staff of the software provider (OMS) was considered sufficient.

4.4 Unique themes from staff focus group and interview

Having examined the themes which were common to both staff and students in the above section, we now report the themes which were unique to the staff focus group/interviews.

One online staff focus group was carried out with seven staff participants. One key member of the skills team who played a leading role in procuring the OMS software and getting it up and running was unable to attend the focus group and was interviewed in a one-to-one online interview, a few days after the focus group. The transcript of this interview and the focus group transcript were analysed together in NVIVO, and the sources are not differentiated in the analysis reported here, in order to protect anonymity.

4.4.1 Integrating OMS into the curriculum

The researcher asked staff to what extent they saw OSBS being integrated into the curriculum and how they saw that happening. One suggestion was what might be called a blended approach, as follows:

“the way that I see it being used is we deliver a session, let’s say a respiratory session, so you kind of go through, you get some pre-reading on the anatomy and physiology of a respiratory condition, or just respiratory system in general. You then go through the pathophysiology within a session, so where students can ask about certain conditions and how that relates to the respiratory system and other things that you need to be concerned about. After that you kind of do a screen based, or virtual reality based simulation, where you kind of bring in all the theoretical components of what you’ve learnt and then get the opportunity to practice that.”

This participant also suggested that it was important to think about how peer learning could be maximised within this model:

“because that’s something that happens out in practice and how can you actually get it so that the students do then have the opportunity to ask questions about a simulation and how is that actually then monitored”.

Some barriers to further integration of OSBS into the curriculum were perceived in that staff were aware that although it was popular, it was not liked by all students and it was felt that some might need incentives to engage with it, at least initially.

The evaluator asked staff whether they saw OSBS having a much bigger place in the curriculum than it currently did and it was felt by a member of staff who had played a leading role in OSBS initiative (as referred to previously) that it would remain a relatively small part of the curriculum and might form about one quarter to one half of the content of one module in the third year.

“P{OMS} will probably sit within a single module that takes place within third year and it will be used alongside, while they only participate in a 20-minute simulation, the learning that takes place on a peer level, the learning that takes place in a webinar from a clinician level, but also that you could bring in an aspect of a service user in as well ”

“I: So you see it as being about a quarter of one module in the third year”.

P: “Yeah. I would say a quarter to a half. Again I would be worried that this would take over too much and we would just be getting the students to do a simulation, the learning would, there would be learning lost because of that. So I don’t think that it should be, it should be used as something to support the learning that takes place and to create discussion whether that be on a peer or service user level”.

This member of staff also envisaged that the scenario would be available throughout the academic year and could act as a focus or stimulus for discussion online (e.g. in online forums) or in person, between students or between staff and students. In this view/model, OSBS is seen as stimulating discussion and supplementing teaching, being careful not to let it dominate. Obviously the nursing curriculum in UK Higher Education must adhere to the Nursing and Midwifery Council (NMC) requirements and standards and although the new curriculum was felt to have made simulation more integral to the curriculum, it seemed that there was also considerable ambiguity in NMC guidance regarding simulation in the curriculum:

“the NMC have said that simulation for it to be used to support practice hours should be three things. So it needs to have service user involvement, it needs to have clinician involvement, so it needs to have somebody in practice involved with the teaching that goes on and it needs to have some form of peer learning that takes place. Now while the NMC have said these three things, they’ve left it to HEI to be interpreted, to interpret as to what that actually means.”

One member of the skills team explained that to some extent OSBS was being used experimentally, working towards an understanding of how it might be better integrated into the curriculum. This member of staff said:

“I think at the moment it is, we didn’t, well I certainly didn’t use it more on learning outcomes, I used it more of an experience clinically. Students that were from say community or mental health or child, really, really liked the fact that they could have experience of adult scenarios, albeit not in a real-life situation and they used it to do reflective activities and reflect on how to care for acutely ill patients and it worked for that instance. But I think we would have to re-evaluate it at the end of the next academic year to see if the outcomes of it have worked in terms of care for the acutely ill patient”

⁷ I=interviewer, P=participant

It was also highlighted in the focus group that the students who had had access to the OSBS initiative were working within a curriculum which was established in 2010 – whereas the ‘new curriculum’ was thought to be *“more science heavy, more technically focused”*. This perhaps suggests that OSBS might have more ‘affinity’ with the new curriculum. Another member of staff framed OSBS in terms of offering alternatives to didactic modes of teaching such as lectures and as part of preparation for practice, giving students experience of acute settings (including those who might not normally experience them as part of their work or training).

“it provides lecturers with an opportunity to give students an adjunct to content delivery. And it gives us this unique opportunity to move away from this kind of didactic content delivery where we’re giving out lectures and all of this and where we can, we have to intelligently look at how we embed it in our curriculum and make it sit very much as part of the curriculum, where we as lecturers are, because it’s a fantastic piece of equipment, which cost an arm and a leg I’m sure, and I just think if we use it to the ability that it has, it can prove very beneficial, particularly for students that don’t get the acute care level experience. And that’s really, really key is that we, you know placement year is, because of COVID, are reduced now and we are looking for these areas and particularly you know we’ve got a lot of students from mental health and I think they really like the fact that they could have this acute level experience and it can be used as preparation for practice”.

Another member of staff drew attention to the quality of the skills team who were integrating the OSBS into the curriculum and felt that Middlesex were leading the way in terms of integrating OSBS into the curriculum and that having such a good team available made it possible to be agile and innovative.

“That is where embedding it in the curriculum is key. So if you bring it into the curriculum, you are giving them that time within their theory weeks, or within their theory box to really focus on it and that’s the same with safe medicating, you bring it into the curriculum and have it embedded in it and it doesn’t become an isolated feature of your whole programme that you might look at it every now and again”.

It was also highlighted that to some extent it was up to members of teaching staff to think about how they could use OSBS and to then draw on the specialised knowledge of the skills team to discuss that and implement it:

“I think what is key to the success of this is building the relationship and the close working group between the skills department and lecturers”

“I think the other way I would really like to see it brought in and obviously we are going to bring it in, is I’m going to bring it in as a formative learning activity that links into teaching in Year 2 and post work and it’s going to be used as, TNAs have to write up formative learning, 500 words and this acquires for NMC hours

and for every OMS {scenario} that is successfully completed, with 100% or thereabouts and we can see this fundamental learning, we will award three FLAs⁸. So they don't have to write 1500 words, they've done this practice".

However, it was also reported that not all members of staff were enthusiastic about the OSBS initiative. Some staff were thought to have fears about it perhaps because they lacked confidence in their IT skills or doubted its value. Clearly these fears or concerns should be accepted as perfectly valid and need to be addressed if OMS is to be further integrated into the curriculum. Staff who participated in the focus group were mainly those who had been involved in implementing or supporting the OSBS initiative so it must be recognised that an important part of the staff perspective has not been captured.

At the time of the evaluation, there were four modules in Year 3 of the new curriculum, one of which is practice learning. While it was thought that OMS might most easily be situated within the practice learning module, it was also seen as being closely related to aspects of the other three modules, as one member of staff explained:

"So it fulfils kind of aspects of clinical deterioration, care of deteriorating patients as well as decision-making and there are themes that run throughout all four modules arguably within "..

4.4.2 Pedagogical models

Some might consider that simulation is a pedagogy or a pedagogical approach in its own right but as Erlam et al. (2017) rightly argue, that would be a misconception because simulation is not inherently constructivist, behaviourist or cognitivist - that depends on the content, how it is used, in what order and how students are able to interact with it and what sort of support from staff or peers they get in doing so and what the intended learning outcomes or objectives are.

Some of the discussion under the previous theme 'integration into the curriculum' implicitly refers to pedagogical assumptions or ideas – i.e. that OSBS should be used to stimulate discussion, to reinforce learning acquired in a 'traditional' lecture or as preparation for practice or that it was being used in an exploratory or experimental way. The evaluators wanted to understand the pedagogical approach of teaching staff so some questions were asked in order to explore what 'pedagogical model' staff might consider they were using OSBS in or would wish to use it in. The researchers asked the staff focus group participants "What pedagogical model if any, do you think underlies the construction of the OMS scenarios?". A member of staff replied that they saw these as a means of supporting practice-based learning and that therefore they questioned whether:

"virtual reality education has yet got the ability to be a pedagogy in itself, because it becomes so reliant on interactions from many different perspectives, I don't know whether it can be a pedagogy at the moment. I

⁸ Formative learning assessments

think it's definitely got the ability to support learning and should be something that's used alongside it, but I think it needs to be something that's used alongside some practice based teaching already"

Other staff in the focus group supported the view that the pedagogical approach to using OSBS had not been fully worked out yet as they had only had it for two to three months at the time of the evaluation and had not been entirely sure whether licences would be purchased on an ongoing basis. That decision had been made by the time of the focus group so there was a feeling that more detailed planning of how to use OSBS from a pedagogical perspective (and with regard to integration into the curriculum) could now happen and that in due course the effectiveness of OSBS in relation to learning outcomes could be evaluated as these two quotes from teaching staff show:

"I think moving forward now that we are definitely buying in the system, hopefully, that we can use it very much to look at aspects of the scenarios so say if we are teaching about care of the acutely ill with asthma and that's the teaching subject or the topic that you can do part of OMS as pre-work, filter that into the teaching and then do OMS post session work. I think then when you embed it within module learning outcomes you can see if it has helped and if the students do find it and I think that's where we will really see if the outcomes have helped. But I think at the moment it is, we didn't, well I certainly didn't use it more on learning outcomes, I used it more of an experience clinically"

"Students that were from, say community or mental health or child, really, really liked the fact that they could have experience of adult scenarios, albeit not in a real life situation and they used it to do reflective activities and reflect on how to care for acutely ill patients and it worked for that instance. But I think we would have to re-evaluate it at the end of the next academic year to see if the outcomes of it have worked in terms of care for the acutely ill patient .."

One member of staff explained that a blended learning approach had been envisaged (i.e. linking face-to-face learning and simulation) but the COVID-19 pandemic meant that face to face teaching had been suspended in March 2020 so this was not an option.

A member of staff who had led on the introduction of the OSBS initiative saw it a means to better link practice and theory in teaching and learning:

"And other than simulation there isn't really another way to actually bring in the theoretical components of nursing alongside a practical aspect of it and bring the two together. And I saw it initially as a really good way to bridge this theory/practice gap, something that we can use on campus, in university, to try and make that learning".

This member of staff also felt that the OSBS initiative represented the likely future direction of teaching in nursing:

"I do remember thinking like this {OMS} is going to be the future of what simulation is and how, especially with distance learning, takes place. And I think you kind of need to be on top of what is already happening and I thought that was the other reason as to why we should be doing this now, be one of the first to be using such equipment and then be able to make recommendations of how it's used and its place within the curriculum".

Overall, it seemed that while staff did not explicitly identify a particular pedagogical approach that the OSBS initiative sat within, it seemed clear that they were using terms that were consistent with an implicit constructivist approach. As stated earlier, simulation is not inherently aligned with one pedagogical approach but the content and structure of OSBS would seem to lend itself much more readily to constructivist approaches especially when combined with webinars (these are currently used post- learning – but they could potentially also be used before the scenarios as some staff and at least one student suggested) and self-guided reflection.

One member of staff highlighted the expertise of the skills team:

"I think the difference is that all of us here are skilled at working in simulation, so there's that part of the teaching, which we are all embedded in. We all know about repetition, we all know about the spiral curriculum and you do the fundamental bits and then you add a bit more, which we do as second nature. I think unless you are au fait with that type of teaching, it's not going to be something you can do abstract".

This member of staff added that the pedagogy around the OSBS initiative is:

"a changing landscape, because depending on like the student feedback and what they say and how much they've learned from it, the pedagogy in that way would change to suit them and their learning"

4.4.3 Clinical placements

The researcher asked teaching staff to what extent, if any simulation (or the OSBS initiative specifically) might be used as a substitute for placements, in view of the pandemic and placements being scarce even before the pandemic. One member of staff pointed out that the UK nursing curriculum requires more clinical hours (3,200) than most high income countries and that the NMC might be seeking to align to the average over a period of time but also suggested that nursing students were often not being treated as students in practice in any case (that they were being used as part of the workforce rather than being supernumerary). Simulation may count as part of placement hours under some circumstances (up to a maximum of 75 hours) but it seems the guidance from NMC is not very clear on this point as yet.

Another limitation of using OSBS as part of practice hours is that simulation must include some involvement of service users (in a way which has not been made entirely clear) whereas OMS is based around case studies, which one member of staff felt were

“very generic stereotypical patient cases they are not actually pinpointed”

Therefore it was difficult for some staff to see how service users could be meaningfully involved with the OSBS initiative but one approach suggested was to have service users discuss the scenarios, with students, in a post-scenario webinar e.g. through having a diabetic patient discuss a scenario dealing with diabetic ketoacidosis.

4.5 Unique themes from student focus groups

There were 13 students across two online focus groups (seven in one and six in the other). Students were from a range of programmes (five adult, four mental health, three TNA, one CYP). Demographic information of participants was not collected but there were a range of ages and around 25% were male and 75% female. All students who *potentially* could have accessed OMS were invited to the focus group and it was made clear that those who had not accessed or not even tried to access it were equally welcome but all of those at the focus groups had at least downloaded the software and used it, albeit not frequently in some cases. Therefore, those attending the focus group are not necessarily typical of the population from which they were drawn (where at the time of the evaluation it was estimated that around 50% had engaged with the OSBS initiative in any way). This is important to bear in mind, especially when looking at barriers to participation, as the focus group did not include students who were not interested in the OSBS initiative or who had experienced a barrier which prevented them engaging with the OSBS initiative at all. Having examined the themes common to staff and student focus groups, and those unique to the staff focus group/interview, we now describe the themes which were unique to the student focus group below, using illustrative verbatim quotes from students.

4.5.1 Learning outcomes for students

An important aspect of the of the focus group topic guide was to investigate which learning outcomes, if any, students thought had been achieved through their use of the OSBS. Some students felt that the scenarios were not sufficiently relevant to, or reflective of, their branch/specialty which obviously might limit the extent to which there could be relevant learning outcomes. Some students felt that most of the scenarios were in acute settings and therefore they were not directly useful for those who were working in non-acute settings (e.g. TNAs working in general practice). A related issue is the extent to which students could find scenarios which were relevant to their branch / specialism. A mental health nursing student explained how she has found one scenario useful:

“Yeah I am doing mental health nursing and there were a couple of them, one with a gentleman who was quite confused, which I could very much relate to. If though however he’s an old gentleman and was very

confused, but in that I got to learn how you can differentiate between their mental health and maybe some delirium caused by infection maybe from UTI, so it was a learning curve for me and the interaction as well."

The scenarios did not have to map exactly onto the branch/specialism of the student in order to provide useful learning, as one adult nursing student said of a scenario that focussed on a mother and child:

"I really enjoyed James and the mum and really it's quite interesting because I found that when James was not looking at me, he wasn't giving the eye contact, so that made the nurse {realise} that there is a lot of things going on with James's life, you know when they said they should hold, they shouldn't discharge him, they should um enquire more to find out who is living with James and how he got the bruises on his body. So I really enjoyed that and .. even if, I'm an adult nurse, if I'm with any child, I will be able to assess a child very well".

Another adult nursing student described how a scenario with a mental health focus had been extremely useful to her and she felt it had helped prepare her for working with dementia patients:

"You asked earlier which of the scenario I learn more about - it was that of Maria who was having anxiety and stress. ... it really helped me as an adult nurse student to be able to care for people that are stressed, having anxiety and I was able to communicate with the family, the daughter to know most of the thing about this patient, Maria. It's really nice, it helped me before I went to placement and I was able by the time I get to placement, actually I work in a mental health ward, it really helped me a lot, to be able to cope with dementia patients I care for during my placement".

Another student described how simulating the use of the SBAR handover procedure has been useful to her:

I: "have any of you found any sort of direct benefit from doing a scenario and then you went into a placement, or you may be worked as an HCA and you obviously found some link, or not?"

P: "Yes for me I think about something about the SBAR, like getting it updated, that's something I hadn't done and the importance of it obviously when it is picked on the scenario how accurate you have to be, because it is concerning that specific time, or in your sheet what happened, or what need to be done. So that's something I'm going to take to placement, so it's a plus on my side and how they said you have to be very specific about the pass on their situation, what you did. So it's all that, taking all those is quite beneficial, so I'm going to take that on board".

One student indicated that she had found the scenario useful for developing her theoretical knowledge:

“Not in placement, but I have to say it really helped me in my theory, in my assignments, because well the platform had really good resources that I used on my assignments like one, like she was saying the SBAR was having the references and you could also practice scenarios, so I think that’s really useful”.

Another student explained how she felt the scenario had helped her to update technical skills even though she was not imminently going on placement (she had not applied for the ‘extended placement’ which students were offered during the first wave of COVID-19 in Spring/Summer 2020).

“Yes I really enjoyed it, it was like a, it kind of updating my skills. Yeah I didn’t have to go for a placement, I didn’t get a place, so I was using it to kind of update my skills, learning more technical skills, how to manage a patient you know, because our opportunities, I’m at home, not doing anything, nothing to do, so I just use it to keep myself busy and it was really, really helpful to me”.

Other learning outcomes which were mentioned included being able to check allergies before giving medication, using the ABCD assessment and the importance of involving the patient’s family in decisions about care, better understanding of making decisions under pressure.

4.5.2 Improvements to scenarios and completion time

The improvements which students wanted have been captured in other places in this report and centre on a perception of the scenarios being too short. However there were some other important improvements that were suggested included more non-acute scenarios (as touched on above) and the ability to take notes within the simulation/software:

“I found it like we were given too much information at the beginning and I had to keep like um, I had to keep a piece of paper to write down as I go along, because when you are doing the history taking and everything and before you do your actions you need to have that moment to think about it, like about the information that you have collected and then what I’m going to do now. So, if there was inside the platform, like a blank paper where I can just type as I listen to what’s happening around me, it would be easier then to take the next steps, rather than just looking back at the paper and then trying to find out what I’m going to do next”.

One mental health nursing student felt that there was not enough in the scenarios for mental health students:

“Okay. Yeah I’m doing mental health nursing and I found the scenarios not maybe giving me fully. I would have wanted maybe a scenario where there’s a real situation, you’d be on the ward with a patient who is aggressive and how to de-escalate and you know how to deal with a real situation, besides somebody, I think there were two scenarios about the elderly. So there was nothing like an adult, I mean working with adults, which I felt it lacked. So for me I felt, the mental health side is a bit lacking on that”

4.5.3 Barriers to student participation in OMS

The main barrier to student participation appeared to be technical difficulties in downloading, installing and setting up the software and problems such as freezing/crashing. This has been discussed to some extent under “technical support” above. Some students did not feel confident with IT generally and although this did seem to be more of an issue for older students this should not be overstated-it was not the case that older students were necessarily unconfident about IT. One student said:

“I’ve never been really confident with the IT skills, but I think it took me a while to get used to it, I’m still kind of learning, I come from the generation of pen and paper, we wrote everything down. So over this whole COVID period having to do things online has helped me a little bit with that, but um I’m getting there”.

And another said:

“.. for me computer is something that I’m still like learning about this um simulation I kind of at the beginning find it difficult in terms of downloading the software to use, because I don’t have it on my laptop. And it was very stressful communicating, they tell you what to do and you go back and towards the simulation sometimes the mouse can seize and to, very hard on the computer, which I find it very stressful sometimes. I’m still learning about how to use um, navigate around the computer”.

On the whole though it seemed most students had a reasonable level of IT skills, but downloading and installing the OMS software might have been beyond the capability of some - but with support it seemed that even these students had been able to participate.

An important barrier appeared to be the fact that several students were having to share their main device (i.e. laptop or tablet) with their children and in some cases having to give the children priority to do their studies or homework before the student could use the device to log onto OMS or do university work. The extracts below are from three female nursing students:

“Yes I experienced that problem, because I was sharing the laptop with my son, he’s doing, he’s in secondary school, doing online studies. So what we normally do, he will have the laptop in the morning, while I will have to wait ‘til, in the night to have the laptop to do it and sometimes by the time I start doing, if I start doing one scenario I didn’t get the score I needed, I have to repeat it over and over and over and with the time I maybe get tired and I want to sleep and something like that”.

“Listen, with me my son, we have to share it together, because he was having a lot of online schoolwork, because he goes to grammar school, so we have to share, whenever he finish I will take the laptop, the same thing happened with me. It was a bit stressful but then thank god it was over. (Laughs.)”

"I had the same experience also. My son is in Year 10, so he's having to learn his lessons in the morning, from morning until afternoon so I do mine in the night".

Due to time constraints, focus groups did not fully explore whether these students already had university-issued laptops or had requested them, nor whether the situation had been exacerbated by school closures due to the COVID-19 pandemic, so some further research may be needed around that. Broadband speed or access did not seem to have been a problem for most students. The COVID-19 pandemic did not seem to be a barrier to participation either and might in fact have facilitated interest and participation (one student mentioned that it had been a positive distraction from the pandemic).

"For me I would say, I kind of found it a way also to distract myself from everything else. So I could have had a busy morning and then I will have that to like my 'me' time and I would be able to concentrate. It just gave me something from everything else and then just concentrate on it. I found it also quite interesting, it's something you find you've got the focus, the minute you turn it on and you're in one scenario you have to really focus, because you are timed, so you can't like be distracted."

It should be noted that at the time of the evaluation, about 50% of students were estimated to have engaged with the OSBS initiative in some way, meaning that they had at least downloaded the software and participated in at least one scenario. Although it was made clear in the invitation to participate in the evaluation that students were welcome to participate, whether or not they had engaged with the OSBS initiative, and there were questions in the questionnaire for those who had not engaged, it is clear that the vast majority who took part in the evaluation had participated in the OSBS initiative. Therefore while the evaluation may have identified some important barriers to participation, it is likely that further research is needed to understand the reasons why some students did not engage with the OSBS initiative. These may be more subtle than those identified (e.g. not seeing the value of OMS or not liking online learning).

4.6 Synthesis of quantitative and qualitative findings

In this section, some points where the quantitative and qualitative findings can be 'triangulated' (i.e., compared to increase insight/check validity) are described.

Staff focus group data shows that the implementation of the OSBS initiative was accelerated because of the COVID-19 pandemic and the suspension of face-to-face teaching. Staff seem satisfied with the implementation of the OSBS initiative and had put support in place for students which seemed to be successful and adequate, though perhaps support provided by the skills team was too concentrated in a small number of staff and there may be a need for more structured training for staff who are supporting the OSBS initiative.

Students were on the whole satisfied with support from staff (mainly through the skills team) in terms of accessing and using the OSBS but most requests for support from students were on technical matters and less often to do with interacting with the scenario.

The student survey showed that just 14.5% of respondents said that they had accessed the webinar associated with the scenarios they had last participated in and nearly half were unsure if they had done so. Perhaps students did not recognise the term 'webinar' or did not know exactly what it offered or simply that there is very low awareness. Survey data showed that those who had taken part in the webinars were very positive about them.

Both the quantitative and qualitative data show that most students who have engaged with the OSBS initiative were satisfied with the scenarios and found them realistic, useful, easy to use and survey data showed a large majority of students reporting that they had gained skills which they thought might be transferable into practice, in making clinical decisions based on their observations; escalating to senior members of staff; using time effectively across different activities and making clinical decisions based on prior knowledge. Survey data suggested that students also felt that they had achieved some important learning outcomes around SBAR (handover), physical assessment of an acutely unwell patient and many others (see Table 12: Learning objectives/outcomes perceived to have been achieved).

Many nursing students felt that the OSBS initiative had helped them become more prepared for being a nurse. However there was a clear wish from students (in focus groups and in the survey) for scenarios to be longer in duration (or to have less activity in the time given). Survey results showed that a majority of students thought that the scenario duration was 'about right' but a large minority (39.3%) thought it was too short.

Focus group data showed that both staff and students were aware of shortcomings or limitations in the automatic assessment provided by the OMS system and staff agreed that the scores provided by OMS were not necessarily a valid reflection of performance/competence in scenarios and did not completely map onto the required learning outcomes for pre-registration nurse training in the UK. The OMS scores were therefore understood by staff as formative rather than summative. Despite this, 87.5% of students said that the feedback from the OMS platform was very or fairly helpful.

Staff focus groups suggested that OSBS was being used in an exploratory way, and this seemed implicitly aligned with constructivist pedagogical approaches but not yet explicitly worked through in terms of a pedagogical model. Staff have identified some learning outcomes which they hope the OSBS initiative would contribute to, but were not yet in a position to measure the extent to which the OSBS initiative had contributed to learning outcomes being achieved.

The survey data shows that the most frequently used scenarios were:

- Melaine, Anaphylaxis
- Melanie, Acute Severe Asthma
- Maria, Acute Anxiety
- James, Non-accidental Injury
- Wilfred, Urosepsis & Delirium

Survey data showed that there did not appear to be much variation by scenario in terms of student perceptions of satisfaction or usefulness. There are some barriers to student participation and it was not clear to what extent all students will engage with OSBS, or what additional support or incentives they might need to do so. Amongst those who engaged with OSBS the most significant barriers to participation (according to the student survey) were difficulty in downloading/installing the software; stress related to lockdown (due to COVID-19) and lack of time to do scenarios.

Survey data suggested that having insufficient access to laptops devices was not a major barrier for most students but focus groups suggested that it was a significant problem for a sizeable subset of the population (men and women with school age children). However, analysis of survey data found that men were statistically significantly more likely than women to agree that "having to compete with other members of the household for internet access or use of a device" was a barrier to participation but there were no other statistically significant differences on barriers to participation, according to gender, or learning style. This suggests that competing for devices was a problem for both men and women – and while the survey evidence suggests it was more of a problem for men, the small sample of men (n=9) might make that finding unreliable.

Comparing responses of students who had not participated in any scenarios to those who had participated in one or more scenarios suggested that non-participants experienced some barriers to a greater extent than did participants (not having enough time, lack of access to suitable devices; lack of internet access at home; having to compete with other household members for internet access or use of a device, poor IT skills and not understanding the potential benefits of the OSBS initiative).

The student focus groups also found that lack of IT skills/IT confidence and not finding scenarios which were sufficiently relevant to their needs/specialism appeared to be barriers to participation for some students. Although it might be expected that older people would have lower IT confidence than younger people (since many are not 'digital natives') analyses of survey data showed there were no significant differences by age in self-rating of IT skills.

Staff focus groups suggest that there were also some barriers to staff participation which are probably to do with lack of IT skills/IT confidence, lack of time and (perhaps for some) not feeling particularly motivated to try new technology/pedagogical approaches in their teaching.

Peer support is not built into OMS and was perhaps underutilised as a result (as shown in survey data) but focus group data shows that staff are aware of that and are considering how to embed peer support more fully into the way in which OSBS is delivered (e.g. pre-learning or post-learning which includes discussion boards, webinars (currently available post-scenario only). Open-ended student survey responses suggested that peer support (as with support from staff) was most often being used for technical support and (to a lesser extent) to discuss issues that arose in the scenarios, to compare experiences and 'solutions' to challenges in the scenarios.

5 Conclusion

In this section, the extent to which project objectives have been achieved is assessed.

5.1 Project objectives

The OSBS initiative objectives were to upskill 3rd year students who opted in for 'extended placement' to prepare them for being deployed early as a result of the COVID-19 pandemic and to enable them to:

- develop knowledge and understanding of the physical assessment of an acutely unwell patient and reflect on their practice.
- develop their technical and non-technical skills required when assessing and intervening with the acutely unwell patient and reflect on their practice.

The evaluation did not capture which students opted for extended placement, but the data were analysed in relation to 3rd year students overall in relation to these objectives. There is a strong evidence from the online student survey that all students did go some way to meeting these objectives (e.g. see Figure 8: Skills gained which respondents think might be transferable into practice and Table 12: Learning objectives/outcomes perceived to have been achieved) where a majority of students agreed that they had increased their understanding with regard to these two learning objectives/outcomes and that 3rd year students had higher levels of agreement that they had met these objectives than did 2nd years (although the difference was not statistically significant). Student focus groups (which were mixed by year and programme) seem to confirm these survey findings with students reporting mostly positive experiences of the OSBS initiative and of finding the scenarios useful in developing skills around physical assessment and intervention with acutely unwell patients.

5.1.1.1 Learning objectives

The OSBS initiative also aimed to achieve some specific learning objectives in relation to 3rd year students who did not opt in to extended placement and Adult and children and young people second year students; mental health nursing students (2nd and 3rd year); nursing associates (2nd year); third year midwifery students; PG Dip 2nd year students. These were to:

- Enable health care students to develop knowledge and understanding of the physical assessment of the acutely unwell patient.
- Enable health care students to develop technical and non-technical skills required when assessing and intervening with the acutely unwell patient.

A key evaluation objective was to assess the extent to which the learning objectives mentioned above were met, which we do below. The survey was not distributed to midwifery students as it was felt that the scenarios would not be sufficiently relevant for them. There was only one PG dip student respondent to the survey which prevented any analysis of results by this programme. However, for the other groups mentioned above there is good survey evidence (as with the 3rd years) of progress towards the stated learning objectives.

Again, survey and focus group evidence suggests that students felt they had achieved learning objectives in these areas and furthermore, on most survey items which were tested, there were no statistically significant differences by year which suggests that 2nd and 3rd years were both experiencing benefits from the OSBS initiative, to a similar extent. Mental health nurses did not rate their progress towards learning outcomes as positively as those of adult nurses, probably because most of the scenarios were not mental health based, but mental health students were not referenced in the OSBS initiative objectives in any case.

5.1.1.2 Reflecting on practice

Part of the stated learning objectives for 3rd years was to help them develop their reflection on their own practice. There was some evidence from student focus groups that the self-guided reflection tool which the skills team created, to be used by many students after completing scenarios, was being used by some students and that some found it useful while others were unclear about its value especially as some did not discuss it with staff or other students. One student said:

“Yes because when I did the scenario, when I just started, the first one, I did the reflection on what are my difficulties, or what I found very useful and what I can improve on, but ... I’m not getting anything like encouragement or something like that, so I didn’t do it as often on the scenarios”.

However, it seemed other students had shared or discussed the self-guided reflection with peers, staff or mentors and found it useful. One student described using the self-reflection with her mentor:

“For me it was really, it really helped me because when I didn’t really understand when I got a mistake I use it and then I ask my mentor at work to check it with me and to see where I should improve and where I should maybe focus more than some of part of the simulation, because you’ve got so many parts they are more useful, more important than some others.”

Use of the self-reflection tool was not covered in the survey (there was a need to keep the questionnaire short to maximise the response rate). As the self-guided reflection tool was intended for personal use (i.e. not reviewed or assessed by staff) data is not available on the quality or quality of reflection through that channel. Students may not always recognise when they are doing ‘reflection’ or ‘self-reflection’ per se. Some comments in the focus groups suggested that self-reflection was taking part when using the assessment/feedback from the OMS platform and in webinars. Reflection in practice may also be occurring during peer support/peer discussions but the evaluation did not find evidence of that.

6 Limitations

The main limitations of the evaluation data are to do with methodology (particularly that the staff and students who did not engage with the OSBS initiative were under-represented) and also in terms of the evaluation or research design which was limited to the student and staff experience of the OMS initiative and to some extent, measures of learning outcomes and changes in attitude (such as increased confidence). It was not possible in the timescale available, and particularly in view of the COVID-19 pandemic, to follow nursing students through into practice to assess how participation in the OSBS initiative might have affected their behaviour or competencies in practice over time, or what effect any such changes might have within the NHS (e.g. patient outcomes or satisfaction). The evaluation was able to compare (to some extent) those who had participated in the OSBS initiative against those who did not, but only in respect of their experience of barriers to participation (i.e. it was not possible to compare any change in learning outcomes for participants against non-participants). The evaluation could be placed in stage two of the Kirkpatrick hierarchy in terms of the outcome variables or ‘effects’ of the OSBS initiative which were evaluated, whilst acknowledging the various limitations of the Kirkpatrick model which Yardley and Dornan (2011) and others have highlighted.

Figure 9: Kirkpatrick training evaluation levels.

Kirkpatrick levels					
1	2a	2b	3	4a	4b
Participation	Attitudes	Knowledge and/or skills	Behaviour	Organisational practice	Benefit to patients

(adapted from Yardley and Dornan 2011)

7 Recommendations

In this section some recommendations are made, based on the evidence gathered and the conclusions reached. As the use of OSBS in the ACM department at Middlesex is still at a relatively early exploratory stage, and as there are limitations of the evaluation data (not being able to track users of OSBS over time and having non-users of OSBS under-represented in the evaluation), these are proposed tentatively as suggestions to consider). It is possible that many of the recommended actions are already being carried out in some form, since the last data collection with staff in September 2020.

- a) On the whole, students clearly enjoyed the scenarios and felt that they got a lot from them in terms of learning outcomes and confidence. However, the scenarios were much more tailored to acute settings and some students felt that relatively few scenarios had relevance for mental health students and CYP students. This might potentially give an advantage to some students (e.g. adult nursing students). Therefore it may be worth discussing with the developers what other scenarios are available, which ones may be in development and whether there is any potential to commission or influence particular scenarios (and if not, whether these might be obtained from other suppliers). It seems that OMS does not currently offer scenarios for midwifery, which may perhaps place midwifery students at a disadvantage compared to nursing students. It may also be useful to regularly review what other OSBS software is available and compare systematically to OMS.
- b) The duration of scenarios was felt to be too short, relative to the number of tasks/activities in the seminar, by a very substantial minority of students. It is not clear whether it is intended that students should feel a certain amount of time pressure, as they might do in real life situations, but certainly many students felt stressed by what they saw as the short duration of the scenarios. It may be useful for staff to review whether the duration of the scenarios is appropriate and if so, whether students need any preparation or support in relation to the stress they may experience in the scenarios. The time pressure aspect seems to interact with, or be exacerbated by, the fact that students are not using the OSBS in VR mode and it is not clear if the scenario duration is adjusted in any way to allow for what may be a more cumbersome interaction when not using VR mode.
- c) It may be useful to have a plan to address barriers to student participation in OMS. Overall, the top three barriers to student participation (based on survey evidence) were difficulty in installing the software or logging in, feeling stressed because of living under lockdown (hopefully a temporary barrier) and not feeling confident about using IT. These items were considered 'something of a barrier' overall but for those who did not participate in any scenarios 'I did not have enough time to do the scenarios' was a much more significant barrier. Clearly these factors need to be taken into account when thinking about how to remove barriers to participation.

- d) Take up of OSBS should be monitored by programme, year and possibly demographic characteristics to make sure that no segments of the student population are being disadvantaged or inadvertently excluded.
- e) An assessment should be made of the suitability of existing Middlesex University laptops in relation to OSBS in order to inform future procurements of laptops for students in the department (adult nursing midwifery) since it is likely that most will be using OMS or some other OSBS in the future. Many laptops were reported to be running hot and numerous instances of crashing/freezing were reported, suggesting that the demands of the software are hard for some laptops to meet.
- f) Staff may wish to consider what training/support needed may be needed for staff who do not feel confident about using OSBS as part of their teaching. This may perhaps be related to a more general lack of confidence about IT, lack of time or other factors. The evaluation was not able to directly obtain the views of staff who did not engage with the OSBS initiative so further research or consultation may be needed with staff about this. The support which staff provide to student seemed to be concentrated in a small number of individuals which creates a risk that the service cannot be accessed if those individuals are on leave, or unavailable for any reason, and this provides another rationale for developing technical skills around OSBS more widely.
- g) It was evident that students who currently used OSBS would like to use it more. It is also likely that as they recommend it to peers, demand will continue to grow. No doubt staff are aware of that but it raises questions of whether the demand can be met and what the cost may be (in staff time, equipment or licenses) in meeting student demand for OSBS so again it might be useful to include that in a plan or strategy document for the development of OSBS.
- h) An issue related to demand for OSBS is how it is integrated into the curriculum. It may be useful to consult with staff and students on the detail of how OSBS can or should be integrated into the curriculum i.e. which modules, which programmes, which learning outcomes or objectives are intended and how these will be assessed (given that teaching staff are agreed that the grades supplied by the OMS system are not appropriate for summative assessment).
- i) It may be useful to have an explicit plan regarding which mode students will access OSBS through in the future, whether learning remotely or on campus, and what proportion can have access to VR headsets. Students using the OSBS remotely do not have access to headsets and so are not using the OSBS in a VR mode, but rather in a 2D (screen based) simulation mode, which is limited to a mouse/keyboard interface which it seems some students found cumbersome, especially under time pressure. It may be impracticable and unaffordable to have students using headsets at home but perhaps there can be a systematic way to offer students access to headsets when COVID-19

restrictions allow it (e.g. could perhaps students could book a session where they can access a headset).

- j) Students may be losing important aspects of peer support or learning when working remotely .and therefore some consideration may be needed as to how peer support in relation to OSBS can be facilitated (other than in post-scenario webinars and noticeboards).
- k) It is important that teaching staff are explicit with students about intended learning outcomes (e.g. regarding their decision-making/clinical assessment and that they should view the simulation as part of a suite of related learning activities e.g. webinars and perhaps the self-reflective exercise). Awareness/take up of webinars associated with each scenario seemed to be low. The webinars (currently offered post-scenario) seem a very valuable way to consolidate learning and are also an opportunity for peer learning and support in relation to OSBS. Therefore it would seem important to increase awareness of the webinars and the benefits of participation. It may also be an option, as suggested by one member of staff and a small number of students, that the webinars could be offered pre-scenario instead of, or as well as, post-scenario.
- l) There is some use of the self-guided reflection (post-scenario) and some evidence that students find it useful. However it seemed clear that students would be much more likely to use and benefit from the self-guided reflection if it was more embedded in the programme (e.g. the self-guided reflection is always discussed with teaching staff and/or mentor). Students might also be encouraged to share and discuss their self-guided reflections with each other as a way of strengthening peer learning/support around OSBS.
- m) The system data which is available at the 'back end' of OMS (i.e. that which is available to staff or system administrators) seems to be very limited in some important respects (e.g. it does not seem possible to generate reports/metrics at individual student level). This data could potentially be very useful for understanding student learning at an individual learning. Therefore, perhaps this is something that can be discussed with the developers of OMS in the context of a 'wish list' of improvements to inform future development.
- n) Finally, it may be useful for staff to consider how the OSBS initiative relates to other educational technology which the ACM uses such as the A&P mannequin and the Lucine and 'Super Tori' midwifery mannequins and whether it is possible or even desirable to have a single strategy that encompasses all simulation and virtual reality facilities, across all programmes in ACM.

8 References

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9 Appendix 1: OMS – the user experience



⁹Online Screen Based Simulation (OSBS) has been utilised by Middlesex University to teach many of the skills required by student nurses to achieve registration. The software evaluated for this project is Oxford Medical Simulation(OMS) which was originally designed to be used with virtual reality hardware and delivered in the classroom setting. However, due to COVID-19 restrictions the delivery of the programme

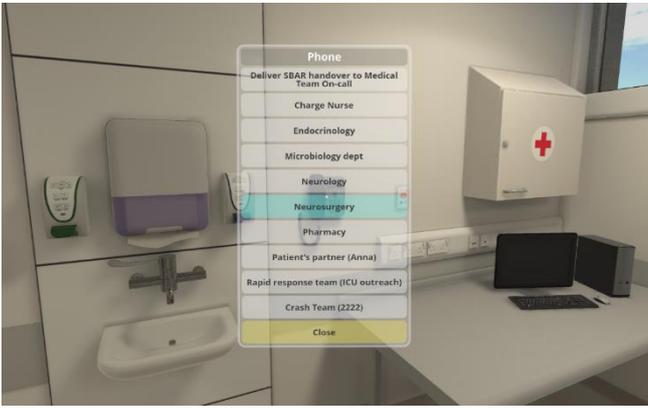
was remote and online only i.e. students participated in these simulations on their own computers, and mostly at home.

This simulation platform places students into a virtual ward or single bedded area, students are then able to control their environment and interact with the surrounding equipment as in clinical practice. There is usually a support worker present in the room who the student can interact and communicate with. Each of the simulations features a patient presenting with a specific medical condition with certain scenarios also involving patients presenting with a variety of social or psychological issues. The student is then required to undertake a clinical assessment of that patient, using their clinical knowledge to draw conclusions and make decisions regarding patient care within a safe environment.



Students have a total of 20 minutes to carry out the assessment and make decisions regarding the required care. Students are able to see the time remaining in the simulation on a clock behind the patient. As the environment is interactive, students are required to speak with the multidisciplinary team regarding care, such as the prescribing of required medications or make an assessment on the requirement for existing prescribed medications based on a comprehensive A-E assessment.

⁹ Thanks to Josh Sharman for providing this section



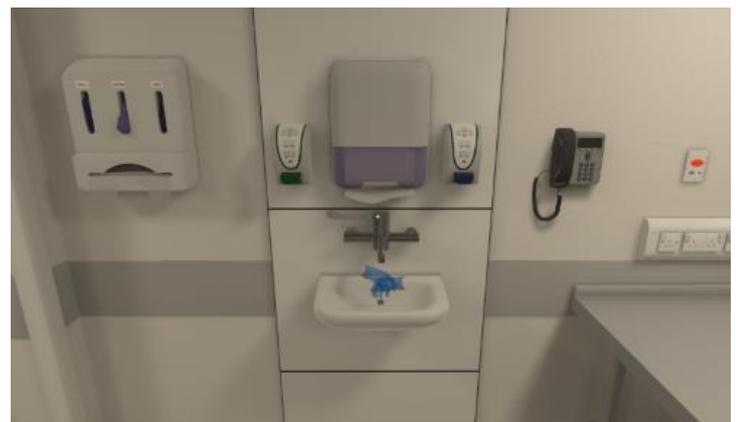
Students should carry out a systematic A-E assessment and the support worker is able to provide prompts when required. As in clinical practice there is an expectation that the student documents their clinical findings following information obtained in the clinical assessment. Vital signs are displayed on a virtual cardiac monitor and are documented on electronic patient records. This information can be accessed if required for re-assessment. Aspects of clinical

assessment should also be obtained from communicating with the patient.

Following the completion of the simulation, the student is taken to an area of self-directed reflection where they are asked how they feel they performed and what areas can be focused on for improvement in the future. Following a period of reflection, the student will be presented with a score of their overall performance and a detailed breakdown of actions they performed correctly and areas which they can improve on in the future. Each of the actions has a link to clinical guidance or further reading to embed clinical guidance and also provide references for further reading.



Students can repeat the same simulation and also apply learned knowledge from these simulations in further simulations that they undertake with the same system.



10 Appendix 2: screenshot showing personalisation of questions in the student survey

Figure 10: Screenshot of online questionnaire in Qualtrics, showing personalisation of questions

In this example, the respondent has indicated in a previous question that the last scenario they participated in was 'Boris, alcohol dependence and suicidal ideation'. The name of that scenario was then automatically inserted into later questions (using Qualtrics functions) so that the respondent is being asked specifically about that scenario (and not scenarios in general).

Restart Survey Place Bookmark Mobile view off Tools



Q5.1. Below are a number of statements regarding the OMS scenarios. Thinking only about the Boris, Alcohol Dependence & Suicidal Ideation scenario, which you indicated was the last OMS scenario in which you participated, could you please indicate to what extent you agree or disagree with each statement? (please make one choice in each row)

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
The Boris, Alcohol Dependence & Suicidal Ideation scenario was useful to me	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The video was clear throughout most or all of the Boris, Alcohol Dependence & Suicidal Ideation scenario	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The Boris, Alcohol Dependence & Suicidal Ideation scenario was appropriate for my learning style	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The audio was clear throughout most or all of the Boris, Alcohol Dependence & Suicidal Ideation scenario	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I was clear what I was supposed to be learning in the Boris, Alcohol Dependence & Suicidal Ideation scenario	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I was able to get support from members					

11 Appendix 3 - Glossary

Some of the key terms used in this report are defined below.

Term	Definition	Notes
Extended placement	During the peak of the COVID-19 infection in the UK, special arrangements were made for healthcare students, which meant that they either opted-in to extended paid placements or temporarily moved into theory-only education.	Council of Deans of Health (2020) https://www.rcot.co.uk/file/7176/download?token=NtEx1dwC
OMS	Oxford Medical Simulation	A provider of simulation software focussed on education of health professionals. See https://oxfordmedicalsimulation.com/
OSBS	Online screen-based learning	Learning taking place online and where the interaction is mainly through a conventional two dimensional screen (as distinct from virtual reality or augmented reality).
OSBS initiative	The project in the Adult Child Midwifery department in the school of Health and Education at Middlesex University which is the subject of this evaluation	The initiative included the introduction of OMS and a framework of teaching and support around that, including webinars , self-guided reflection and dedicated support from staff regarding technical issues or other barriers to participation that the students might encounter.
PPDT	Personal and professional development tutor	
Scenario	A simulated healthcare 'episode' involving interaction between the students and virtual patients and colleagues	
Self guided reflection	A process that encourages students to reflect on personal experience of a learning activity in order to gain insight into their performance	
Webinar	a seminar conducted online	In the OSBS initiative, students were offered a dedicated webinar for each scenario which they took part in.