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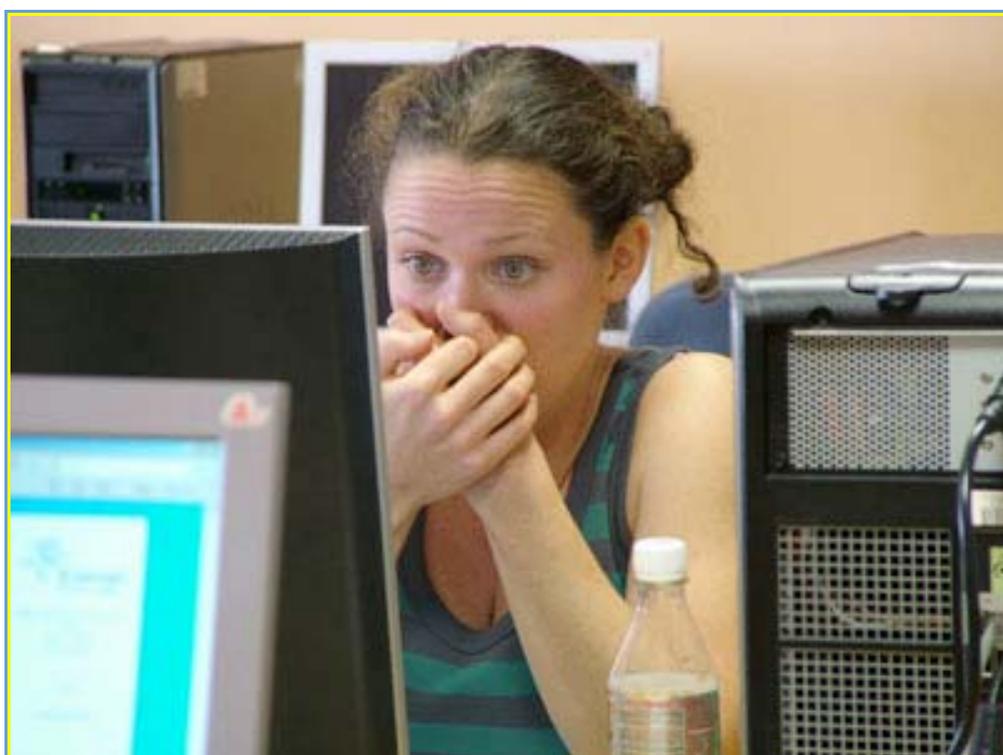
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JISC

Final Report

The Repurposing Existing Virtual Patients Project (REViP)



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In addition to everyone mentioned above, the REViP team would also like to especially thank Heather Williamson, the rePRODUCE Programme Manager, for her continued help and support over the course of this project.

2 Executive Summary

The overall aim of the Repurposing Existing Virtual Patients (REViP) project was two-fold :

- (i) to repurpose six virtual patients (VPs) from the University of Heidelberg in Germany to UK language, culture, and pedagogy
- (ii) embed the repurposed VPs within an accredited SGUL module, and evaluate the impact of the resources.

In the process VPs were content enriched. A new feature was added; VPs were turned from linear case studies into branching VPs that allowed students to take clinical decisions while following the case through, and explore the consequences of those decisions.

The project produced a number of outputs of considerable use to students, staff and the wider JISC community. Eight VPs were repurposed, enriched, peer-reviewed, copyright cleared and placed in the public domain. Through the REViP website, Jorum Open and other well respected learning object repositories of open content. The VPs have been repurposed to be future proof with respect to intellectual property rights through content clearance by content providers and patients; and then by each individual VP covered by a Creative Commons license for future intended use by others.

Internally, the project has provided St George's with an opportunity to refresh and galvanise an existing module with high quality interactive resources that were integrated into the curricula. This has been another key step by the E-Learning Unit at St George's in working towards a Virtual Patient based curriculum for the Medical course.

Externally, REViP has collaborated with international groups such as the Creative Commons Learn (academic strand of the Creative Commons), the Electronic Virtual Patients Programme (European Commission initiative) and the MedBiquitous consortium (VP technical standards group) in order to make the open Virtual Patients suitable prepared for use not just in a national context but worldwide.

Having completed the repurposing and embedding, the team turned its attention to evaluation of the repurposing process, and the final outputs, through questionnaires focus groups, and interviews with students, staff, and members from the wider community. All of the student feedback from these evaluation studies strongly supported the quality and value of the VP resources as a unique learning resource, largely because the VPs filled a pedagogic gap in the teaching of clinical decision making skills. The only alternative resource was real patients. Staff and students highlighted small technical and interface issues that were easily addressed.

The team have presented the findings of the work at major conferences such as the Association of Medical Education (AMEE). The project has also been announced and celebrated in editions of the Medical Teacher journal and the Higher Education Academy for Medicine, Dentistry and Veterinary Medicine. These engagements have led to other interested institutions already adopting the repurposed and enriched VPs from REViP.

The project highlighted several important messages that built upon previous projects involved in repurposing of RLOs. Repurposing resources needs to be worth the effort. The experience of many projects, demonstrates the limitations of repurposing learning resources that are of limited value to teachers and students, because alternatives are easily available 'elsewhere', with or without clearance. Resources with limited value are difficult to sustain beyond the life of the funding which 'repurposed' them, because there are no drivers to do so. Otherwise the resource of choice for the student is the traditional textbook.

By contrast, VPs are expensive to create and offer unique learning opportunities, and so they tick the right boxes for value as assessed by teachers and learners.

3 Background

The Virtual Patient

Electronic virtual patients (VPs) are defined as “interactive computer simulations of real-life clinical scenarios for the purpose of medical training, education, or assessment”¹. Medicine and healthcare face the same problems: a need for interactive scenario based learning that provides alternatives to student-patient contact, which is declining because of the healthcare budget constraints that limit clinical teaching, and the reduction in the time that patients stay in hospital. VPs are now recognised by the medical education community as the best, and maybe the only effective tools for developing clinical reasoning. Such simulations provide students with a reliable and safe environment in which to rehearse and practice physical and communication skills and develop clinical reasoning ability. Students can test their knowledge and skills safely and frequently, whilst at the same time drawing upon learning resources designed to extend their understanding.

The courses in these subjects are largely supported by workplace learning, and in the clinical years these are the ‘clinical attachments’. There are a number of initiatives to support these attachments with virtual patients. Despite persuasive evidence of their effectiveness, virtual patients are not widespread in medical and healthcare curricula. VPs are “time and resource intensive to produce”², which is completely prohibitive to institutions that lack robust e-learning programs. These challenges and others have severely restricted the impact of VP simulation on the undergraduate medical curriculum. Where VPs are produced, development tends to be confined within single institutions, with little evidence of sharing. Those institutions that do prepare VPs have little opportunity to make them for more than one subject area.

Current Virtual Patient initiatives

In Europe, SGUL is leading a major 3-year project funded by the European Commission, called eViP³, investigating the sharing of VPs between the 7 project partners with a view to creating a comprehensive multilingual, multicultural, European pool of VPs. This project is now well underway and is already making excellent progress during the current ‘implementation and dissemination’ phase. The project is also tackling some of the technical issues arising from sharing content between different VP players and systems in order to smooth the way for the pedagogical, language, and cultural changes needed to successfully transfer and implement a VP from one country to another.

This project is collaborating with the MedBiquitous⁴ Virtual Patient working group to ensure that all technical development work conforms to the latest MedBiquitous Virtual Patient standard. This is the first step in technologically ‘future proofing’ the VPs for easy access and transfer between different systems and players, not just in Europe but the world. To aid this process, SGUL have recently been appointed as the MedBiquitous Europe office for administering the VP standard in the UK and other European institutions.

The key difference between the eViP and this REViP project is that REViP has specifically explored and evaluated the embedding of repurposed and enriched VPs within a Paediatrics component in the SGUL Medical curriculum. Embedding of repurposed VPs in different curriculums is specifically not covered by the eViP project, nor is the exchange of complete creator/player systems between institutions, only the exchange of exported ‘content’.

4 Aims

All of the aims and objectives of the REViP project have been fulfilled:

The overall aim of the Repurposing Existing Virtual Patients (REViP) project was two-fold:

- a) To repurpose six virtual patients (VPs) from the University of Heidelberg in Germany to UK language, culture, and pedagogy and subsequently share with the wider community.
- b) To embed the repurposed VPs within an appropriately accredited SGUL module and subsequently evaluate the impact of the resources.

¹ Ellaway, Candler et al., 2006

² Huang et al., Virtual Patient Simulation at US and Canadian Medical Schools, Academic Medicine, May2007

³ eViP – Electronic Virtual Patient, European Commission eContentplus 2007-2010, <http://www.virtualpatients.eu>

⁴ MedBiquitous, <http://www.medbig.org/>

5 Objectives

The main objectives of the Repurposing Existing Virtual Patients (REViP) project were to:

1. Repurpose virtual patients (VPs) produced in the Department of Paediatrics at Heidelberg University (HD) for use in St. George's University of London (SGUL).
2. Content enrich the VPs with high quality existing learning materials.
3. Embed the VPs in the paediatrics attachment of the MBBS undergraduate medical degree (MBBS).
4. Provide easy access to these VPs for UK national use by integrating them into a national repository or local referatory, in such a way that they can be further customised to local needs.
5. Evaluate the impact of the VPs on students carrying out the paediatric clinical attachments.
6. Evaluate the process of repurposing VPs across different European institutions.
7. Deliver a case study focussing on one of the six VPs.
8. Disseminate the evaluation results and feedback to the wider community.
9. Disseminate the basic principles of using and adapting virtual patients in general, particularly for competency based courses.
10. Provide guidance on best practice for the reuse of such scarce resources, and encourage higher education institutions to reuse content more frequently.
11. Create a project website and update a reflective log using a project blog.

By achieving all of the above, the project has fully satisfied the objectives of the rePRODUCE Programme by developing, running and quality assuring technology enhanced courses using reused and repurposed learning materials sourced externally to St George's.

6 Methodology and Implementation

From the start of the project, the decision was taken by the project team to follow an evidence-based project management methodology in order to achieve the project outputs to the desired quality within the agreed budget. This methodology was based on PProjects IN Controlled Environments 2 (PRINCE2) which is a recognised project management method in the UK. All of this work was implemented according to the agreed project plan (see Appendix 1).

Start-up and Initiation stage

Firstly, the Project Director started the project by appointing a Project Manager, and then jointly selecting a project management team. This was all done within the first month of the project, having consulted the key stakeholders, i.e. e-learning staff, module administration staff, subject matter experts (SMEs), project sponsors, intellectual property officer, learning technologists, technical developers and module validation team.

All stakeholders were involved in reviewing previous resources given to students as well as reviewing and selecting the most appropriate topics within the field of paediatrics to be supplemented with virtual patients.

Planning stage

The team then got together to review and refine the project plan. During this process, the critical success factors were identified and analysed. The next step in this process was to identify the activities that were necessary to complete the work, along with any interdependencies. Resource estimating and scheduling was also done during this process.

Controlling stage

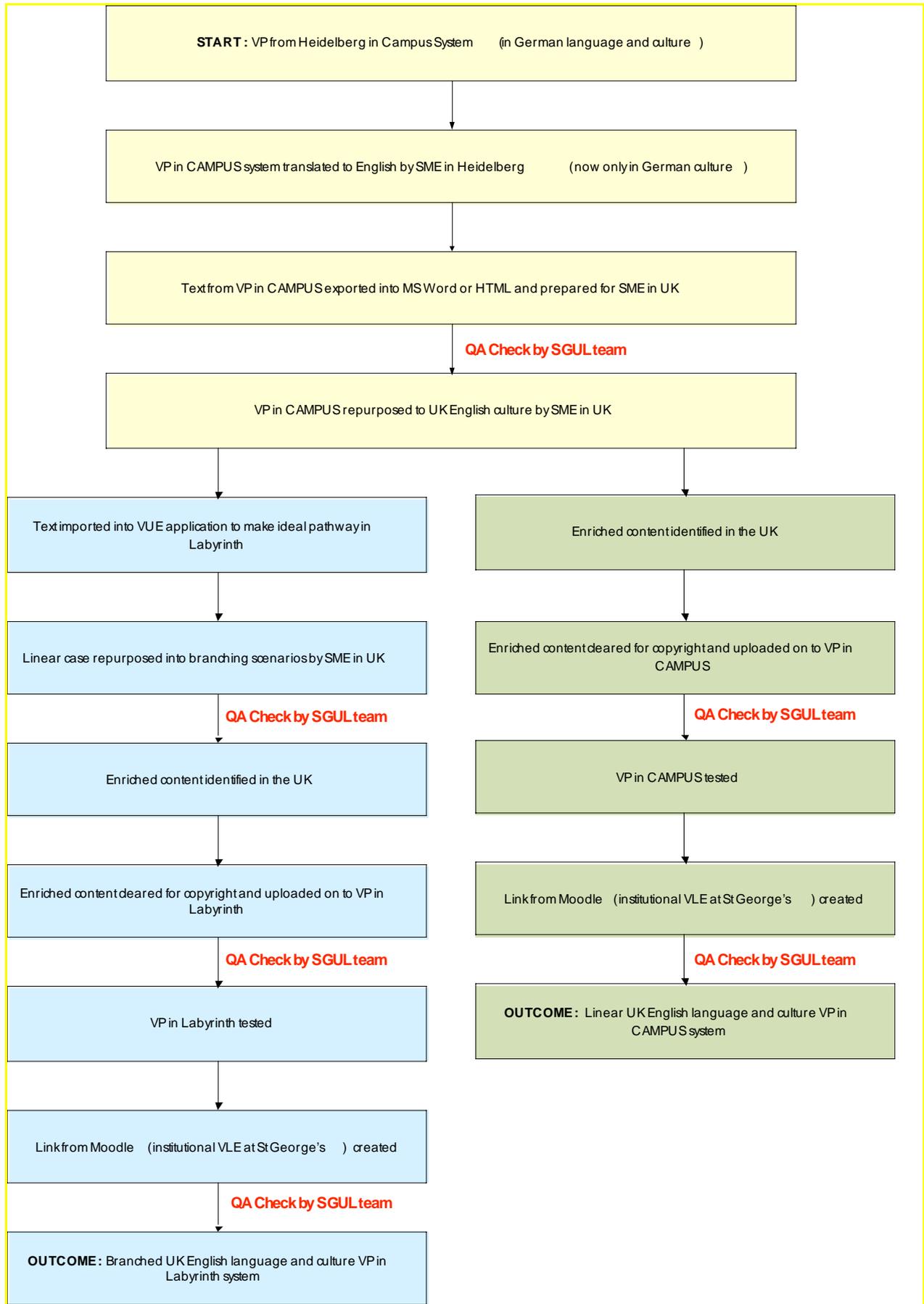
The six virtual patients (VPs) from Heidelberg were then made available to the subject experts at St George's. The next stage was to carry out the repurposing and enrichment tasks. This controlling stage involved:

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- Authorising work packages to start
- Assessing progress of the tasks
- Capturing any project issues or risks and taking corrective action
- Reporting any highlights and disseminating to the wider community via the project website
- Escalating any issues to the JISC where necessary

Repurposing and enrichment

Due to the unique nature of this project involving repurposing and enrichment of content from one country in one VP system into another country and another VP system, a detailed workflow was constructed to outline this process. As such, the process of quality assurance was built into this workflow too:



Quality assurance

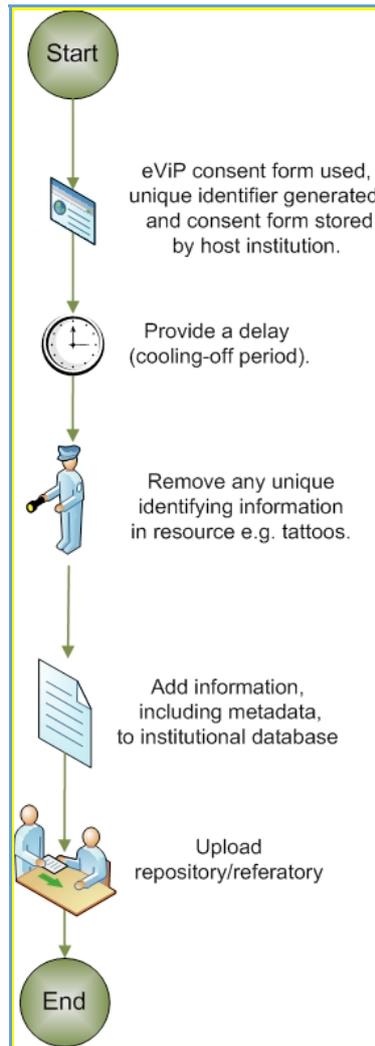
Once the virtual patients were repurposed and enriched, the outputs went through rigorous peer review and quality assurance processes (as illustrated at key points on the workflow above), in order to meet the requirements outlined in the quality plan.

A quality assurance scheme adopted from the outputs of the REHASH project. This scheme was followed to ensure the maintenance of standards in five key areas:

1. The educational validity of each re-purposed RLO;
2. The attractiveness and overall quality of the content;
3. The usability and overall quality of the interface;
4. Consistency of presentation within and between RLOs;
5. Technical conformance to any standards for the sharing of resources

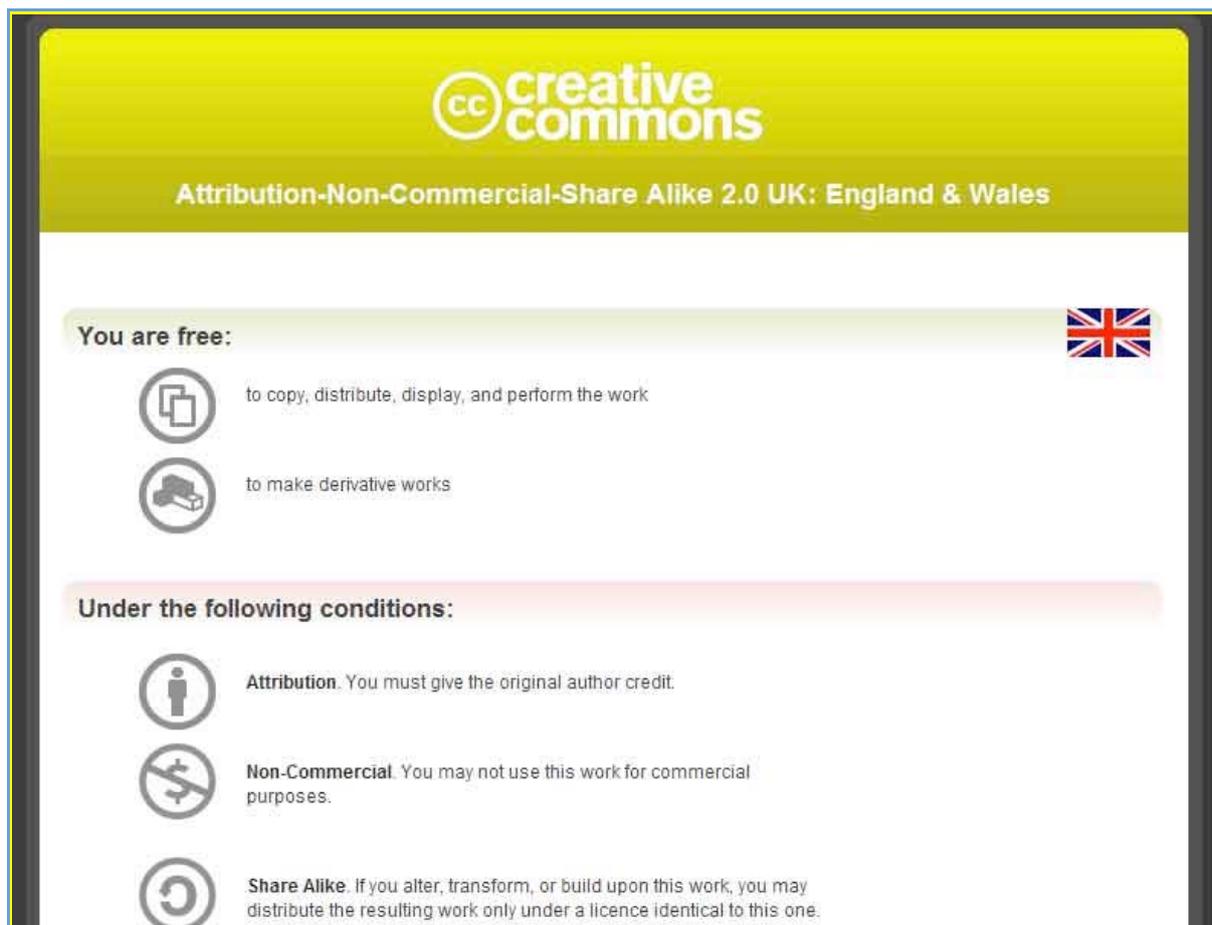
Intellectual Property Rights clearance

The role of intellectual property rights was a key issue to be resolved in the project. When digital content is shared with other schools and distributed widely, digital copyright issues come into play. Unless all intellectual property rights (IPRs) and plans of the authors regarding the VP are confirmed upfront, the ability of the school to share the VP may be inhibited. So, the team had to start the process of resource clearance at the very beginning of the project so that it did not delay the project. This process also had to take into account giving content providers a cooling-off period so that they had the opportunity to revoke or cancel the agreement if they so wished, particularly as the content was often medically related and in some cases personal. The team worked closely with the eViP programme to develop the following workflow for IP clearance for virtual patient content:



The team, lead by the institutional intellectual property officer then adopted the eViP common consent form for appropriate retrospective clearance of content. All content contained with the VPs used in REViP were subject to this sign-off procedure. Refer to the eViP site for a working copy of this consent form: <http://www.virtualpatients.eu/about/example/>

Once this consent form was implemented and completed, the team identified a suitable licensing/sharing model for distributing the VPs. This model is the Creative Commons model and the team decided to use an Attribution-Non-Commercial-Share Alike license to ensure maximum exposure of all content in a way that can be easily used by anyone from the wider community.



Creation of Virtual Learning Environment infrastructure for module

The next step was to ensure that the module page on St George's virtual learning environment was created and suitably customised to incorporate the newly repurposed virtual patient content. Once again, this was subject to rigorous peer review in order to meet the requirements outlined in the quality plan. See below for a screen-shot of the new module page in St George's virtual learning environment:



Testing stage

All content was tested before it was released to the students. Any bugs were identified and fixed as a result of this testing. All content was then finally released to the students on weekly basis for the entire 6-week duration of the course. Below is a screen-shot of a repurposed and enriched virtual patient:



The screenshot displays the OpenLabyrinth web interface. At the top, there is a navigation bar with 'HOME', 'MY ACCOUNT', 'HELP', and 'LOGOFF' buttons. The main content area is titled 'Start' and features a photograph of a baby. Below the photo, the patient's details are listed: First Name: Catherine, Last Name: Miller, Gender: Female, and Age: 5 months. To the right of the main content, there are three vertical panels. The first panel, 'Case Information', shows the case name 'Catherine Miller (nl)', a number '240608 (745)', an ID '23127', and a 'Restart Case' link. The second panel, 'Case Pathway', contains a 'Review your pathway' link. The third panel, 'Case Score', is currently empty.

<http://labyrinth.sgul.ac.uk/mnode.asp?id=qgxlrdbu3lpfvf4jesngxlrbtpr9kq>

Evaluation stage

Once the virtual patients were repurposed and enriched (i.e. the main outputs of the project were complete) a number of different evaluation studies were conducted with different stakeholders. The objectives of the evaluation were concerned less with the processes by which the project went about its activities, and more with gathering information on the ease of adaptation of VPs and effectiveness of the repurposed VPs, feeding back to the wider community.

The evaluation was primarily to establish the worth of what has been achieved. Given the aims of the project, it was important to capture the experiences of the students, academic staff and subject matter experts to provide data which would provide insight to inform future developments. A mixed-methods approach was employed to provide a cost-effective approach to collecting and analysing data. This included the following evaluation studies:

1. Student individual VP questionnaire
2. Student collective VP questionnaire
3. Student focus group report
4. Staff interview
5. Critical friend group report

The REViP team completed an Evaluation Plan by addressing the following areas:

1. How the project led to enhanced capacity, knowledge and skills in the use of ICT to support learning and teaching?
2. How effectively the project contributed to positive and sustainable change in the use and re-use of external learning materials?
3. What other tangible benefits have there been as a result of the project?
4. How fit for (educational) purpose have been the outputs of the project?

The findings from this plan can be found in Appendix 7.

Awareness and dissemination stage

Over the course of this project, a number of awareness and dissemination activities were carried out by the project team. There was much national and international interest in repurposing, enriching and sharing Virtual Patients and a key part of REViP was to disseminate best practice and feed directly into other major initiatives. The REViP team had engaged in collaborations with:

- The eViP Programme on the issues concerning repurposing from one country to another: www.virtualpatients.eu
- The MedBiquitous consortium on implementing a common technical standard to share content effectively from one system to another: www.medbiq.org
- The Creative Commons Learn group on scoping and devising a process to clear an intellectual property rights issues relating to digital medical content- <http://learn.creativecommons.org/>

The team also disseminated throughout the lifecycle of REViP by:

- Direct input into new initiatives relating to Virtual Patients.
- Increasing awareness of repurposing and sharing Virtual Patients through the REViP site and Blog.
- A high profile at the largest International Medical and Healthcare Education conference, AMEE 2008 in Prague.
- Producing a video case study summarising the key outcomes of the REViP project

The project was closed and formally decommissioned after a project evaluation review had been conducted exit and sustainability plans had been put in place as outlined in Outputs. The REViP team has agreed to make ALL repurposed and enriched VPs available for free with open access via an online referatory or repository. It is anticipated that once Jorum Open is 'live', this will become the sustainability model of choice for the REViP project and will be subsumed into Jorum's Business As Usual processes for maintenance. In the meantime, the VPs will be hosted and disseminated on the REViP site. <http://www.elu.sgul.ac.uk/revip>

Summary including critical success factors

In summary, the implementation stage of this project provided the team with an opportunity to address the following critical success factors for REViP:

- Successful adaptation of VP resources from the culture and language of Heidelberg, Germany to the language and culture of the UK
- Successful export and import/re-import of the repurposed VP data into Labyrinth (SGUL's VP system) and Campus (HD's VP system)
- Completed evaluation of the repurposing processes, and the student and tutor responses to use of the VPs
- Open availability of VPs for use in the SGUL open-source player 'Open Labyrinth' by the end of the project
- VPs available in MedBiquitous VP standard format for interoperable use in standard compliant players.

During the project there were few surprises in terms of rate of progress or setbacks. The project had been considered very carefully and discussed thoroughly from the outset, and potential problems had been factored into the project plans and project management. When these problems did not appear, it was possible to go beyond the original plan, for example in the extent of repurposing (including branching), or the investment of time in the Critical Friends partnership.

One point has to be accepted, and this is undoubtedly a factor in the projects level of success. As a result of the high level of individual commitment and enthusiasm, the true financial cost of the project

was far higher than the original budget specified, with time, effort and support contributed from a range of people who were funded separately, as the listing of contributors makes clear.

7 Outputs and Results

The main outputs and results from the REViP project are described below:

The repurposed Virtual Patient resources

The team has repurposed, enriched, implemented, and delivered 8 open VPs for the wider community. This is in fact more VPs than originally committed to the JISC. It is envisaged that these resources will impact all three stakeholder groups (staff, students and the JISC wider community) but will significantly improve the quality students' learning.

There have been two styles of VPs using the same narrative/story (CAMPUS and OpenLabyrinth) by this group of students. They are different in style. The CAMPUS system originates from Heidelberg and is linear in terms of steps through the case. Whereas, the OpenLabyrinth is the St George's VP system and is branched in structure as it gives students different options and pathways to explore. Below is a list of direct links to the 8 repurposed and enriched VPs:

Catherine Miller in OpenLabyrinth:

<http://labyrinth.sgul.ac.uk/mnode.asp?id=qgxlrdbu3lpfvf4jesngxlrdbtpr9kq>

Catherine Miller in CAMPUS:

<http://www.elu.sgul.ac.uk/revip/catherine/index.html?lang=en&caseid=477453>

Anna Lena in OpenLabyrinth

<http://labyrinth.sgul.ac.uk/mnode.asp?id=qgxlrdbarsx9qarsx9qgxlrdb1rx7jz>

Anna Lena in CAMPUS

<http://www.elu.sgul.ac.uk/revip/anna-lena/index.html?lang=en&caseid=396585>

John M in OpenLabyrinth:

<http://labyrinth.sgul.ac.uk/openlabyrinth/mnode.asp?id=qgxlrdbarsx9qarsx9qqajxhqwnw2gc>

John M in CAMPUS:

<http://www.elu.sgul.ac.uk/revip/john/index.html?lang=en&caseid=477537>

Oga in OpenLabyrinth:

<http://labyrinth.sgul.ac.uk/openlabyrinth/mnode.asp?id=qgxlrdb1rx7jzf4jesnqdknamqajxhg>

Oega in CAMPUS:

<http://www.elu.sgul.ac.uk/revip/oega/index.html?lang=en&caseid=477845>

Virtual Patient evaluation with staff

This was conducted by interview with two subject matter expert staff at the end of the module to capture their detailed feedback on the process of repurposing VPs and integration into the curricula in a qualitative manner. The staff commented that their repurposing was done in two steps. The existing content was already translated to English by the German team in Heidelberg.

Firstly, the subject matter experts at St George's would repurpose the existing content from German culture, and German interpretation of the English language to English culture (and specifically London: there is a range of differing healthcare cultures from most rural to most urban), and native English language. In addition to this the expert would also check the validity of units, reference ranges for laboratory tests, and healthcare NHS protocols like the National Institute of Clinical Excellence guidelines to fit the UK requirements. This was a straight forward process and took approximately an hour per case as there weren't many changes in how a patient is treated and cared for between Germany and the UK.

Secondly, the content was then repurposed from linear to a branched in structure and this is what took most time. The existing linear scenario needed to be story-boarded and expanded. This was done during an initial brainstorm meeting between two subject matter experts. Once this was done the narrative of the case had to also be created using the third party Visual Understanding Environments

tool (VUE) developed by the University of Tufts. This second step took an average of 10 hours per case.

In total, 11 hours were taken to repurpose the case to fit the needs of the students and staff at St George's. All of this means that once content such as VPs are made open, it has the power to make an impact internationally. In fact, Heidelberg are now using the branched repurposed and enriched REViP cases to implement back with their students in the OpenLabyrinth system. This supports the notion that a number of VP systems can work in tandem without the need for competition provided their unique selling points are different. In this case, OpenLabyrinth has the ability to include different options and consequences. The Campus system provides students with an opportunity to learn from the consequences of making different investigative decisions. The complete results from this study can be found in Appendix 2.

Virtual Patient evaluation with students

Three separate studies were conducted with students and the repurposed Virtual Patients:

1. Student individual VP questionnaire. This was conducted with students on a weekly basis for 6-weeks during the course of their module immediately after the VPs were deployed. The overall feedback from the students was in favour of such learning resources. The students used both types of VP systems to feedback on. The majority of students who took this questionnaire felt that after completing such a resource, they were better prepared to care for a real life patient. This is a bold statement that shows that these types of resources fit a gap in the curricula with regards to teaching students clinical decision making skills. In fact, over 90% of the students who completed the questionnaire reported back favourably again by adding that resources were a worthwhile learning experience. The complete results from this study can be found in Appendix 3.
2. Student collective VP questionnaire. This was conducted with students at the end of their module to capture their feedback on VPs as a collective. Interestingly 40% of the students who completed this questionnaire felt that VPs were an effective way to learn data interpretation. This came as a surprise to the team as it wasn't something that they felt that students would use VPs for. Another interesting statistic that arose from this questionnaire was that over 56% of the respondents used electronic resources either more often than, or about the same, as a traditional textbook. This clearly shows a change in the student culture over the years in comparison with data from other projects in the past such as REHASH and ACETS. There was also a spread with regards to how much time the students spent on completing the VPs, ranging from less than 5 minutes to over half an hour. It later transpired that this was due to the different ways in which students were using the VPs (some for revision, some to learn generally, some before lessons). The complete results from this study can be found in Appendix 4.
3. Student focus group report. This was conducted with students at the end of their module to capture their detailed feedback on VPs in a qualitative manner. Students were enthusiastic to try out the VPs, and once started, highly motivated to choose correct options. They believed VPs provided excellent learning, in a context which mimicked the making of their profession. It provided them with opportunities to practice clinical reasoning, then take decisions and explore the consequences of their decisions. VPs provided them with opportunities for learning by collaborative discussion and in tutorials, but it also provided opportunities for individual safe practice, personal revision and self-assessment. The students described VPs as quick and easy to use, easily integrated into their study time, and available anytime, anyplace. There were a few improvements suggested to aspects of the VP structure, notably a request to batch the tests up in the way that clinicians would normally practice; students did not like trawling through series of test one after another. Most improvement requests were easily addressed. The complete results from this study can be found in Appendix 5.

Critical friend partnership with other projects

This was a report created by staff from University of Central Lancashire, Chester and St George's based on comprehensive feedback by students and staff from the three institutions on using and sharing Reusable Learning Objects. The complete report from this study can be found in Appendix 6.

Dissemination of Virtual Patients and OpenLabyrinth to the wider community

In order to achieve maximum exposure, the 8 repurposed and enriched VPs (with their Creative Commons licenses) will be made available to the wider community by the following sites:

- The REViP⁵ website
- Jorum Open⁶ once the site is live
- MedEdPortal⁷ VP repository
- eViP referatory⁸ of VP content

Since the start of the project, a number of other European institutions have adopted and trialled the use of OpenLabyrinth as their preferred Virtual Patient system of choice. This is mainly due to the branching nature of the system and also the ability to tap into and test clinical decision making skills. These institutions from Norway, Greece, Holland, Australia and the UK have seen presentations by the REViP team at conferences such as AMEE and have then adopted the open source OpenLabyrinth system for testing.

Below is an example of one such presentation at the International Medical and Healthcare Education conference, AMEE 2008, in Prague.

9C/SC3
An Anglo-German virtual patient case study exploring 'repurposing and enriching' as an effective way to share
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Background: Virtual Patients (VPs) are expensive to make. An attractive solution might be to take those from one institution and move them to another. Technology can be an obstacle in sharing VPs internationally but emerging technical standards are making this type of sharing easier. However, is it pedagogically feasible to simply translate a VP from one country to another?

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Summary of work: The Repurposing Existing Virtual Patients (REViP) project between St George's and the University of Heidelberg aims to repurpose and content-enrich existing German VPs to English language, culture, and pedagogy. These VPs would then be embedded, tested, and evaluated as core components within the paediatrics module and ultimately made open-and-available to everyone for FREE.

Conclusions: In the first 6-months, REViP has created repurposing workflows, best-practice guidelines, and tips for effective curricular embedding. REViP has also shown that you cannot merely translate and transfer a VP from one country to another and expect it to have the same educational impact.

Take-home messages: Repurposing and enriching is an effective way to reuse VPs as opposed to creating from 'scratch'. However, much care should be taken to make them suitable for the educational needs of the student, in their local context.

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<http://www.amee.org/documents/AMEE%202008%20Final%20Abstract%20Book.pdf>

⁵ <http://www.elu.sgul.ac.uk/revip>

⁶ <http://www.jisc.ac.uk/news/stories/2008/04/jorumopen.aspx>

⁷ www.aamc.org/mededportal

⁸ www.virtualpatients.eu

Dissemination has also used less formal routes such as through a video on YouTube.



http://uk.youtube.com/watch?gl=GB&feature=channel_page&v=uCZp30tQ3MM

Improvement in e-learning support for module

The paediatrics module at St George's did not have a web presence on the institutional virtual learning environment before the start of the project. Since then, the REViP team have had the opportunity to design a suitable web infrastructure for their module page, populate it with relevant e-learning resources, add the repurposed and enriched VPs, and integrate it into their learning weeks. Having gone through this process, this institutional change will position the module in a way that it can now be self sustained by the module team in the future years and adapt efficiently as a result of any curricular changes.

Interoperability of resources

All 8 of the VPs repurposed and enriched by the project team now conform to an xml-based technical standard called the MedBiquitous Virtual Patient standard. This standard is now adopted by all the major Virtual Patient systems in Europe and North America. The emergence of this standard will empower institutions to easily integrate VP content from one institutions system and reuse it within their own systems regardless of the eventual output (i.e. web-based, mobile, Second Life etc.). For

more information on the technical standard see

http://www.medbig.org/working_groups/virtual_patient/index.html

Exit and Sustainability

The REViP team has agreed to make ALL repurposed and enriched VPs available for free with open access via an online referatory or repository. It is anticipated that once Jorum Open is 'live', this will become the sustainability model of choice for the REViP project and will be subsumed into Jorum's Business As Usual processes for maintenance. In the meantime, the VPs will be hosted and disseminated on the REViP site. <http://www.elu.sgul.ac.uk/revip>

8 Outcomes and Impact

The project developed, ran and quality assured a technology enhanced Paediatric module using repurposed learning materials sourced externally to the institution. The aims were comfortably achieved, through good management, enthusiastic staff, extensive engagement with all stakeholders in the course, and high quality resources available from Heidelberg. The detailed evaluation plan went beyond these objectives and together with the studies allowed the project to think more closely about the qualities and values that reusable e-learning objectives need to possess.

This echoes the very point made at some length in the introduction to the project plan, which is to highlight the necessity for reusable learning objectives to have some very special value or uniqueness if they are ever to be re-used, unless there is additional funding to effectively bribe the users to use them. This is not always a popular argument, but every evaluation carried out by the SGUL team (and certain other projects such as ACETS) has always pointed in this direction and in this instance so does the questionnaire from the Critical Friend Group; and without that uniqueness, students prefer textbooks!

It is worth noting that, from the point of view of the creator, content production which is not targeted at re-use, is much easier to make, since it only needs to fit to one context.

Usefulness of Reusable Learning Objects

The study and questionnaire by the Critical Friend Partnership Group (see Appendix 6) examined student responses to a number of repurposed learning objects produced by the groups in the partnership. An interesting outcome was that it showed students preferred textbooks under normal circumstances, and students commented that the RLO may in some instances may only offer information that could be included in a textbook.

This may explain the very high approval rating for the SGUL style VP in the evaluation. The very factors which increased the time taken to repurpose VPs i.e. adding choices and consequences, was the element that students described as most important to their learning.

Impact on staff, case creation, and repurposing efficiency

Repurposing proved an efficient process for transforming content from one healthcare culture to another if structures of the cases were similar; there was clearly a considerable amount of conservation between two European healthcare systems i.e. similar structures in terms of patient progress from general practitioners to hospital medicine, and a similar approach in terms of history-taking, examination, management etc., in comparison with, say, North American healthcare. It only took approximately one hour to repurpose a case from the linear system to an English adapted linear model, but then to develop a branching model it took approximately 10 hours more.

Clearly though it is still a saving of time (by repurposing; in comparison with a de novo creation (estimated at 10-120 hours), this saving is now a smaller proportion of the entire effort. However, there are several less tangible advantages: the repurposer now has a case to start from; the outline and suggested format may also be very helpful to a new case writer; if the number of cases is large enough, then a case can be chosen that most closely fits the need of the creator or students. All three of these advantages reduce the need for unnecessarily large amount of creative input on the part of the repurposer.

Impact of repurposed VPs on students: student assessment of VPs

In all the analyses of student feedback (2 questionnaires and a focus group within the REViP trial, one questionnaire in the partnership trial of different RLOs) there were striking similarities (see Appendix 3, 4, 5, and 6).

Students were enthusiastic to try out the VPs, and once started, highly motivated to choose correct options. They believed VPs provided excellent learning, in a context which mimicked the decision-making processes of their chosen profession. It provided them with opportunities to practice clinical reasoning, then take decisions and explore the consequences of their decisions.

VPs were believed to be adaptable to a range of learning styles. Students picked out not only the learning by collaborative discussion and tutorials which they had experienced, but in their judgement it would also provide opportunities for individual safe practice, personal revision, and self-assessment. Students described VPs as quick and easy-to-use, easily integrated into their study time and available anytime, anyplace. A few issues were raised, which were mainly technical and therefore reasonably easily addressed.

In summary, though they never use this phrase, students were describing the virtual patient as an excellent tool for personalised learning and in a comment fundamental to the purpose of the REViP project, there were too few VPs, and students wanted more.

9 Conclusions

In practice the straightforward repurposing of a linear virtual patient from one healthcare culture to another (i.e. from Heidelberg Medical School to St George's University of London) was an efficient use of time and resources. This study and other studies in the Critical friend Partnership, demonstrated that even though there is often a strong requirement for contextualisation each time a learning resource is repurposed, it can still be worth the time and effort, if the learning resource has sufficient value in its new context.

However in this study, the repurposing went further and took on the task of turning the linear VP into a branching VP with options and consequences. In effect this was new work, and so the same time and effort was required as if an English-language linear case was being similarly adapted.

It was clear from the comparative evaluation studies carried out with both (i) the Heidelberg VPs (ii) other repurposed resources within the RePRODUCE projects, that the value attached to VPs arose from the possibility of learning something that was essential to future practice, but difficult to acquire by other methods. This learning was the opportunity for decision-making, exploring consequences of actions, and for safe practice. Students were enthusiastic to use these resources in a variety of different ways and learning styles, and recognised the value of a resource that mimicked practice. It clearly personalised their learning. Teachers, developers and students described the outcome as highly successful.

10 Implications for the future

Repurposing needs to be worth the effort. Alternatively, resources which can be made afresh will automatically be in context, easier to clear for IPR and copyright issues, and can be specifically tailored to the individual needs of learners and teachers.

The experience of many projects, the earlier REHASH and ACETS projects, certain projects in the REPRODUCE programme, and the various experiences of the Jorum related projects, shows the limitations of repurposing learning resources that are of limited value to teachers and students, because alternatives are easily available 'elsewhere', with or without clearance. And, as shown in the Critical Friend Partnership study, 'elsewhere' may turn out be a textbook, clearly still the learning source of choice for the student.

Resources with limited value are difficult to sustain beyond the life of the funding which 'repurposed' them, because there are no drivers to do so. VPs are expensive to create and they offer unique

learning opportunities, and so they tick the right boxes for value as assessed by teachers and learners. They will be sustained indefinitely and updated when necessary, because they are too valuable to leave inactive.

The St Georges experience with open clinical videos over the last four years, tells a similar story in that once the content is made open and it fills a gap in the curricula (in this case the anytime and anywhere appeal of learning clinical and communication skills by using bite-size videos) it will continue to be used indefinitely.

11 Recommendations

Re-use is a problematic area, and many of the issues are shared with open content. With large sums being committed to resources over the next few years, the JISC Open Content programme will undoubtedly experience similar issues to the RLO debate – is the resource worth the trouble?

Our recommendation would be to concentrate on resources which offer unique advantages and are either worth the effort to change context, independent of context, or so valuable to either teacher or learner that context becomes relatively unimportant.

12 Appendices

The following appendices are available in this report:

- Appendix 1 – Completed Microsoft Project Plan
- Appendix 2 – Staff interview
- Appendix 3 – Student individual VP questionnaire
- Appendix 4 – Student collective VP questionnaire
- Appendix 5 – Student focus group report
- Appendix 6 – Critical friend partnership report
- Appendix 7 - Evaluation plan for REViP

Appendix 1 - REViP Project Plan

Background

The project plan shows the various tasks involved in the project from 03/03/08 to 27/02/09

REVIP Final Report Appendices

ID	Task Name	Start	Finish	Predecessors	Resource Names	arter Feb
1	REVIP - Repurposing Existing Virtual Patients	Mon 03/03/08	Fri 27/02/09			
2	WP1 Project Start-up	Mon 03/03/08	Fri 30/05/08			
3	Assemble project team	Mon 03/03/08	Mon 17/03/08		PM,PD	
4	Project team kick off meeting	Tue 18/03/08	Thu 20/03/08	3	ALL	
5	Agree communications plan	Tue 18/03/08	Thu 20/03/08	4SS	ALL	
6	Update and finalise project plan (DELIVERABLE)	Tue 25/03/08	Mon 14/04/08	5	PM	
7	Create evaluation plan (DELIVERABLE)	Tue 25/03/08	Fri 30/05/08	4	PM	
8	Create a dissemination plan (DELIVERABLE)	Tue 25/03/08	Fri 30/05/08	4	PM	
9	Create exit and sustanability plan (DELIVERABLE)	Tue 25/03/08	Fri 30/05/08	4	PM	
10	WP2 Project Web Presence	Tue 25/03/08	Wed 30/04/08			
11	Create content for JISC website	Tue 25/03/08	Thu 27/03/08	5	PD,PM	
12	Create REVIP website	Fri 28/03/08	Thu 24/04/08	11	LT	
13	Implement Blog functionality for reflective log	Fri 28/03/08	Thu 03/04/08	12SS	TD	
14	Populate website	Fri 04/04/08	Tue 15/04/08	13	LT,PD,PM	
15	Test website	Wed 16/04/08	Wed 23/04/08	14	LT,PD,PM	
16	Internal sign-off and launch of site	Thu 24/04/08	Wed 30/04/08	15	PD	
17	WP3 VP Resource Inventory	Tue 25/03/08	Fri 11/04/08			
18	Review VPs from University of Heidelberg (HD)	Tue 25/03/08	Mon 07/04/08	5	HD-SE	
19	Review VPs at St George's (SGUL)	Tue 08/04/08	Thu 10/04/08	18	SGUL-SE,PD,PM	
20	Create inventory list of Paediatric VPs at HD and SGUL	Fri 11/04/08	Fri 11/04/08	18,19	HD-SE,SGUL-SE	
21	WP4 Overview of Module and QA	Mon 14/04/08	Thu 01/05/08			
22	Gather detailed information about the syllabus of paediatrics module on MBBS course	Mon 14/04/08	Tue 15/04/08	20	SGUL-SE,PD	
23	Identify 6 areas within module that can be supplemented by the 6 VPs	Wed 16/04/08	Fri 18/04/08	22	SGUL-SE,PD,PM	
24	Obtain current QA plan for module	Mon 14/04/08	Tue 15/04/08	22SS	PD	
25	Modify QA plan for VP inclusion within module	Wed 16/04/08	Thu 17/04/08	24	SGUL-SE,PD	
26	Finalise QA plan for VP inclusion within module and detail module syllabus (DELIVERABLE)	Fri 18/04/08	Thu 01/05/08	25	SGUL-SE,PD,PM	
27	WP5 Select VPs	Mon 14/04/08	Mon 14/04/08			
28	Select 6 VPs to be used in module based on inventory findings and module requirements	Mon 14/04/08	Mon 14/04/08	20	SGUL-SE,PD	
29	WP6 Transfer of VPs from HD to SGUL	Tue 15/04/08	Thu 01/05/08			
30	Implement technical standards (based on eViP application profile) to HD and SGUL systems	Tue 15/04/08	Mon 21/04/08	28	TD	
31	Export cases out of HD system (out of CAMPUS)	Tue 22/04/08	Thu 01/05/08	30	TD	
32	Import cases into SGUL system (into Labyrinth)	Tue 22/04/08	Thu 01/05/08	31SS	TD	
33	WP 7 VP Repurposing	Fri 02/05/08	Fri 16/05/08			
34	Translate language of VP from German to English	Fri 02/05/08	Tue 06/05/08	32	HD-SE	
35	Repurpose chosen 6 VPs from German culture to English	Wed 07/05/08	Mon 12/05/08	34	SGUL-SE,PD	
36	Repurpose chosen 6 VPs to different educational scenarios to meet module requirements	Tue 13/05/08	Fri 16/05/08	35	SGUL-SE,PD	
37	WP 8 VP Enrichment	Tue 15/04/08	Wed 21/05/08			
38	Create list of internal SGUL resources based on inventory list	Tue 15/04/08	Tue 15/04/08	20,28	LT	
39	Select appropriate resources to be used for enrichment	Wed 16/04/08	Wed 16/04/08	38	SGUL-SE,PD	

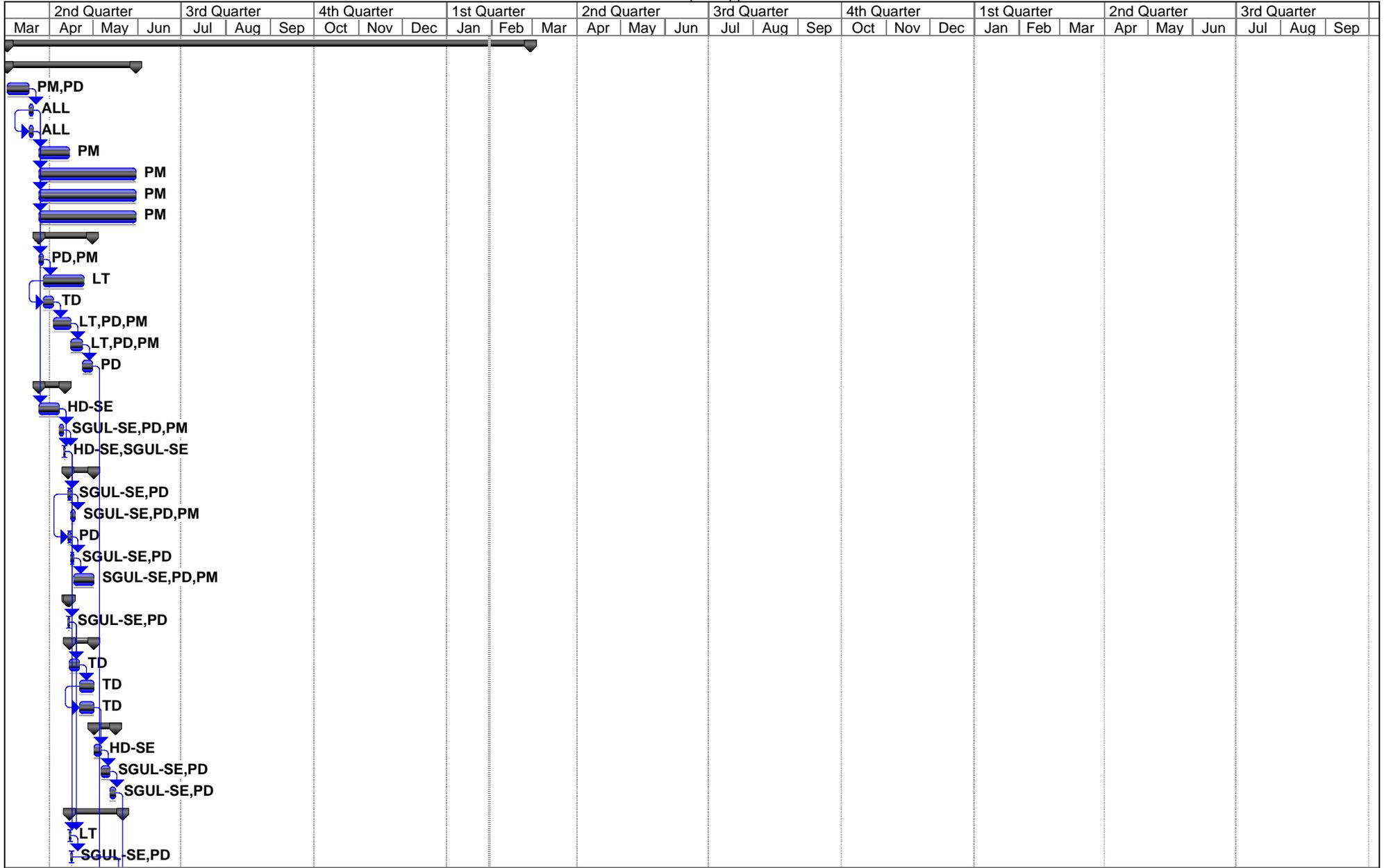
Project: SGUL_VP1.1_2 Date: Fri 30/01/09	Task		Milestone		External Tasks	
	Split		Summary		External Milestone	
	Progress		Project Summary		Deadline	

REVIP Final Report Appendices

ID	Task Name	Start	Finish	Predecessors	Resource Names	arter Feb
40	Add chosen SGUL resources to repurposed VPs	Mon 19/05/08	Wed 21/05/08	36,39	TD	
41	WP 9 VP Testing	Thu 22/05/08	Tue 27/05/08			
42	Internal testing of VP repurposing and enrichment	Thu 22/05/08	Fri 23/05/08	40	ALL	
43	Implement prioritised changes based on testing	Tue 27/05/08	Tue 27/05/08	42	PD,TD	
44	WP 10 VP Embedding	Wed 28/05/08	Fri 13/06/08			
45	Area in Moodle created for Paediatrics module	Wed 28/05/08	Wed 04/06/08	43	LT	
46	Embed VPs within Moodle area for Paediatrics module	Thu 05/06/08	Fri 13/06/08	45	TD	
47	WP11 Instructions and Guides	Wed 28/05/08	Wed 11/06/08			
48	Create instructions for students on how to use and access VPs	Wed 28/05/08	Fri 06/06/08	43	LT	
49	Ensure support mechanism is in place within the eLearning Unit	Mon 09/06/08	Wed 11/06/08	48	LT	
50	WP 12 VP Release	Mon 16/06/08	Tue 15/07/08			
51	Launch VPs and release for students	Mon 16/06/08	Mon 07/07/08	46,49	LT	
52	Release to the wider community via a national repository/referratory (DELIVERABLE)	Tue 08/07/08	Tue 15/07/08	51	TD,LT	
53	WP13 Evaluation and Dissemination	Wed 16/07/08	Fri 19/09/08			
54	Create a case study focussing on one of the five VPs (DELIVERABLE)	Wed 16/07/08	Fri 19/09/08	52	ALL	
55	Implement evaluation based on plan	Wed 16/07/08	Wed 27/08/08	52	ALL	
56	Gather feedback based on evaluation	Thu 28/08/08	Fri 19/09/08	55	PD	
57	Implement dissemination based on plan	Wed 16/07/08	Fri 19/09/08	52	ALL	
58	Disseminate all deliverables via the project website	Wed 16/07/08	Fri 19/09/08	52	LT	
59	Peer review other projects involved in JISC 4/07 programme	Wed 16/07/08	Tue 29/07/08	52	PD,PM	
60	WP14 Exit and Sustainability	Wed 16/07/08	Fri 19/09/08			
61	Implement exit and sustainability based on plan	Wed 16/07/08	Fri 19/09/08	52	ALL	
62	WP 15 Project Management Documentation	Thu 01/05/08	Fri 27/02/09			
63	Deliver progress report and budget at 6-months (DELIVERABLE)	Mon 01/09/08	Mon 01/09/08		PM	
64	Deliver final project evaluation report and financial statement (DELIVERABLE)	Mon 22/09/08	Fri 17/10/08	61	PM	
65	Update and maintain reflective project Blog (DELIVERABLE)	Thu 01/05/08	Fri 27/02/09	16	ALL	

Project: SGUL_VP1.1_2 Date: Fri 30/01/09	Task		Milestone		External Tasks	
	Split		Summary		External Milestone	
	Progress		Project Summary		Deadline	

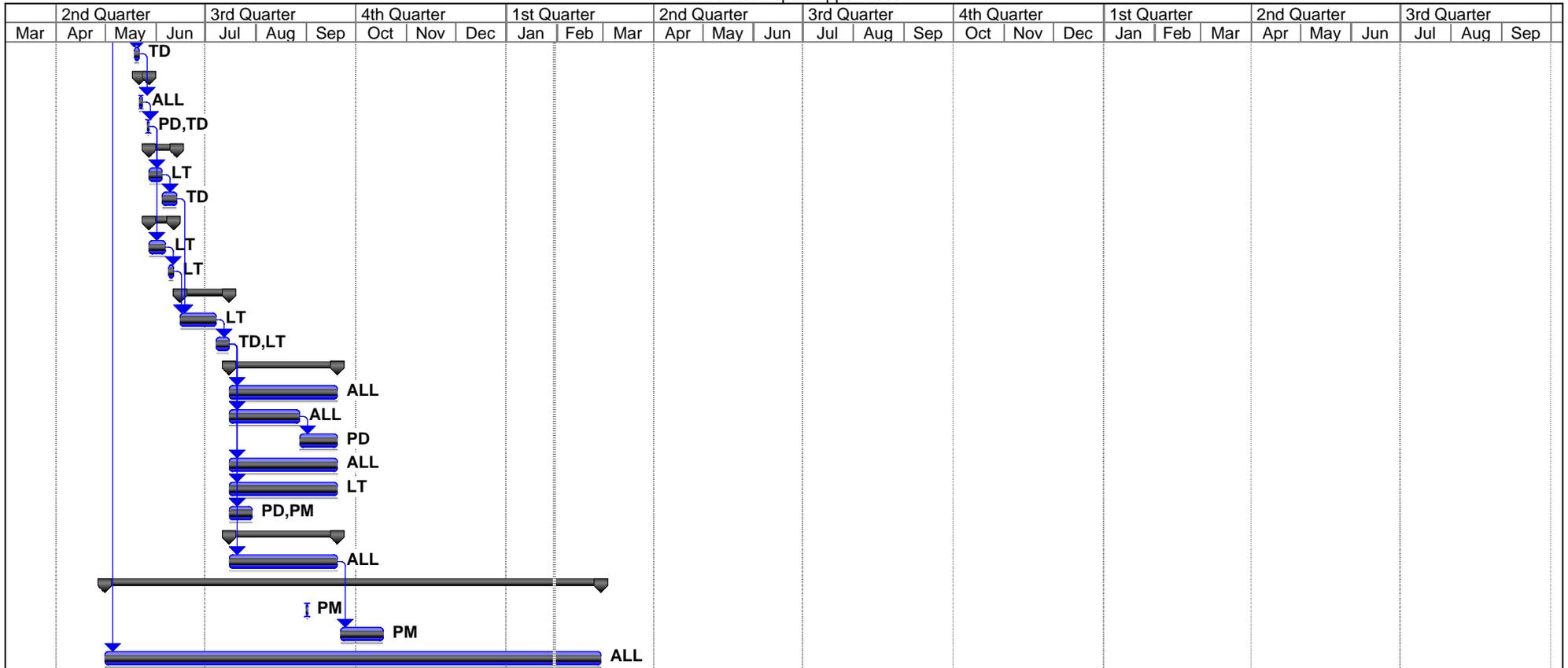
REViP Final Report Appendices



Project: SGUL_VP1.1_2
Date: Fri 30/01/09

Task		Milestone		External Tasks	
Split		Summary		External Milestone	
Progress		Project Summary		Deadline	

REViP Final Report Appendices



Project: SGUL_VP1.1_2
Date: Fri 30/01/09

Task		Milestone		External Tasks	
Split		Summary		External Milestone	
Progress		Project Summary		Deadline	

Appendix 2 – REViP Staff Interview

Background

Interview was conducted by two members of the e-Learning Unit with two subject matter experts.

The purpose of this interview: To get feedback from a subject matter expert about their involvement with VPs as part of the REViP project.

Interview questions

1. **In general, is there a place for VPs in the curriculum? Please explain your answer.**

Every form of teaching targets a specific area. The traditional fact-based approaches don't allow the students to learn in a realistic environment, to make mistakes and by doing so to become more skilled in the clinical decision making process. The contact with the real patients on the wards is very limited and the prevalence of some important diseases is too small to give the opportunity for each student to come face to face with it and learn how to proceed and how to make the right decisions. That's why there is a gap for realistic and interactive virtual patients in the curricula which are always accessible to the students.

2. **Is there a place for branched VPs in the curriculum? If so, how can they be integrated and which level of students would best benefit?**

Branched VPs are much more real-life like; mistakes and the ability to make them is very important – it's more memorable than reading from a book. Many people learn by doing, for some it's also much more easier to learn in this way. You can't learn how to make decision with other resources. You have to be able to make mistakes.

3. **Is there a place for linear VPs in the curriculum? If so, how can they be integrated and which level of students would best benefit?**

Speaking from personal experience: the linear VPs I faced were not really helpful. Maybe because the content wasn't challenging enough. Maybe because VPs are easier than typical MCQs. Dilemma between choice and consequence or mistakes – you're not learning from a VP unless you make mistakes. Maybe it also depends on the personality type, because if a person really hates to make mistakes, he/she'll be much more affected by realistic VPs. There are also people who learn much more effectively from a text book. Which type of VP is better (branched or linear) probably depends from the motivation and what the students would like to achieve working with the VPs (linear: quick review before exams, some sort of tutorial or a HowTo; branched: learning in a group, PBL)

4. **How do VPs compare with other types of resources that teachers create for the student? Do they differ in quality from other types of learning resources used by teachers?**

The VPs and their quality is so different that they're not really comparable to other

learning resources. They're targeting other parts of curriculum. To speak about the quality of a VP, we need to define how this quality should be estimated.

5. On average, how long did it take you to repurpose the culture of the German cases to the English setting?

Reviewing and correcting the VPs took maybe 1hr per case. As the cases were already translated in Germany some of the phrases had to be rewritten as they were suboptimal. Most common changes were:

- a. Units
- b. Drug names and drug doses
- c. Some protocols
- d. The amount of initial investigations

6. On average, how long did it take you to repurpose a case from linear to branched? (LP)

First stage (brainstorming): about 1hr; Second stage: writing the content and creating the pathways was very time consuming; Total time needed: 9 hours.

7. Could you name the main problems you encountered when repurposing the culture of the German cases to the English setting?

- a. Phrasing
- b. Choice of words and definitions were not appropriate (e.g. suckling ;))

Differences in the Medical Practice: the German patients seemed to be investigated more. In the UK more time would be spent with history taking instead of investigative stages.

- c. Making it realistic for the English setting (due to the differences in the Healthcare systems and in the society structure)

8. Could you name the main problems you encountered when repurposing structure of the VPs from linear to branched?

The main problem was that each case had to be "demolished" and transformed to a new branched-version. (Deleting all the YES/NO answers which were only disturbing during the process). So more experienced doctors may be better suited.

9. What experience is needed in order to create or repurpose VPs effectively?

Native language speaker and experienced NHS professional (a clinician). It helps to have been in the situation to make the VP realistic (To be able to find enough alternative paths)

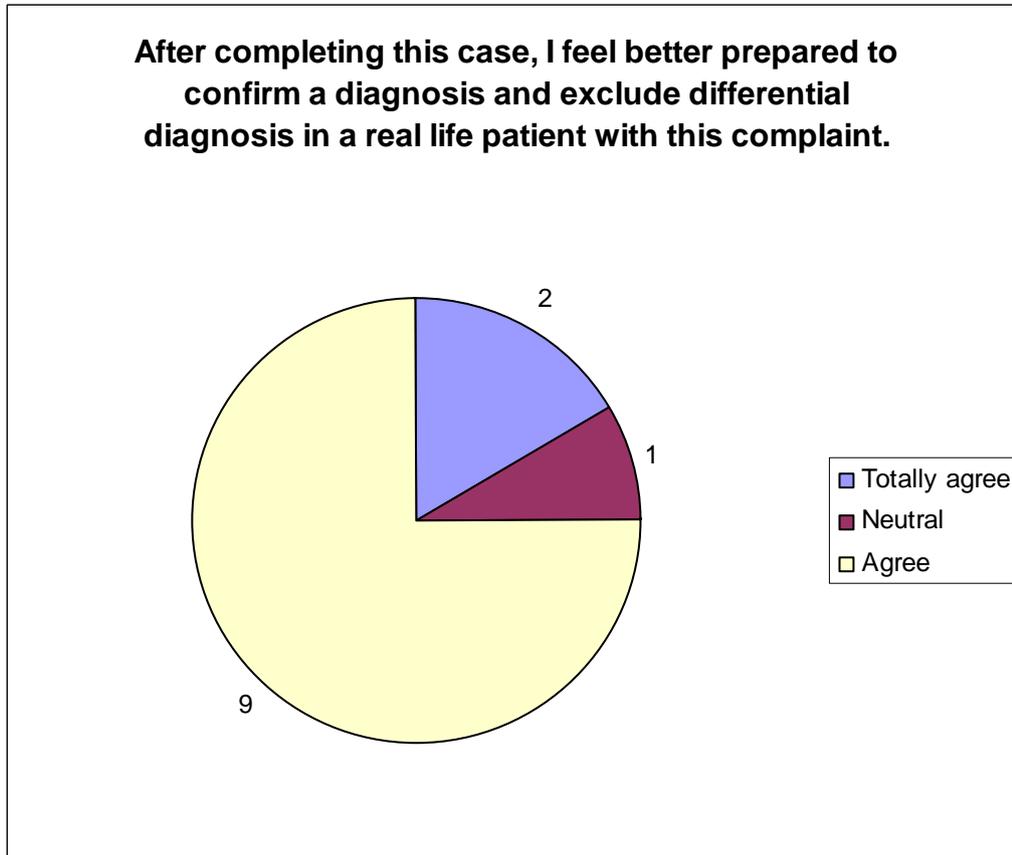
10. What do you think are the best features of the two VP systems? Please name one feature for each system.

(Not really a fair question as Sophie never worked with CAMPUS)

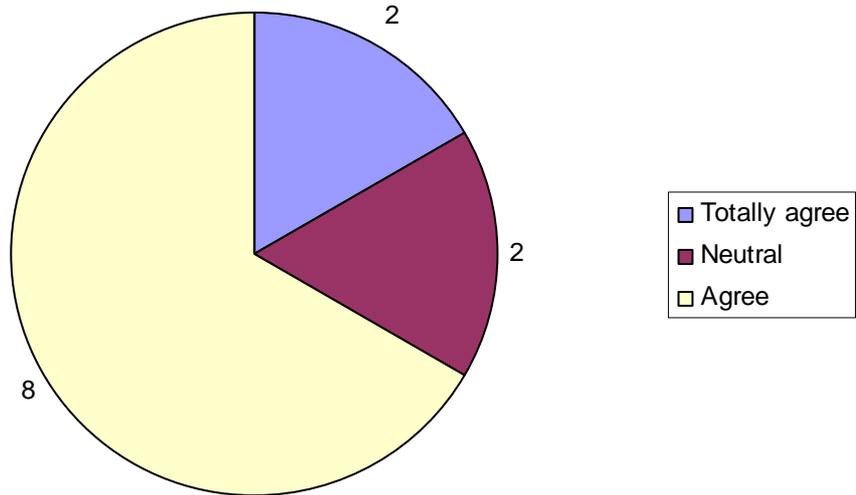
CAMPUS: you really feel like you're in the case – but more in a tutorial way.
Labyrinth: unpredictability – it's more exciting (You can kill a patient!)

Appendix 3 – REViP student individual VP Questionnaire

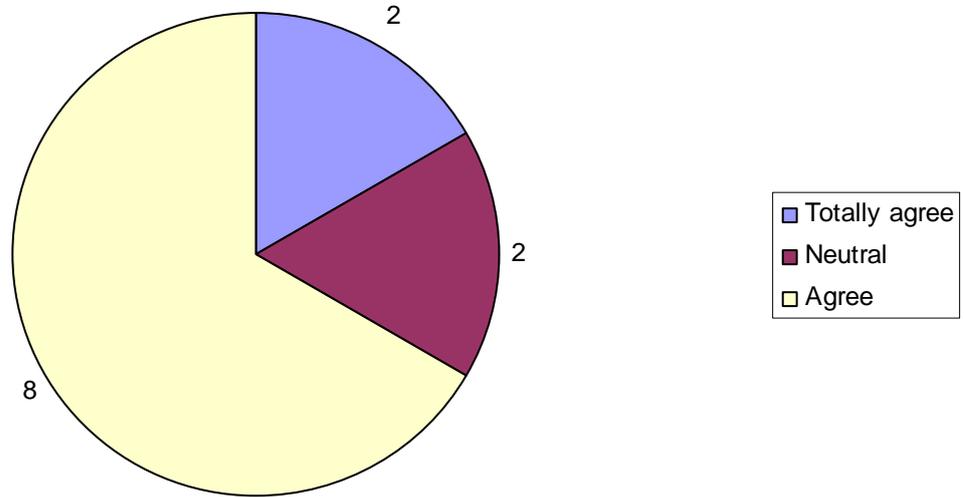
This is a questionnaire completed by 12 students who completed individual questionnaires following the virtual patients that were delivered weekly in their module. Below are the results:



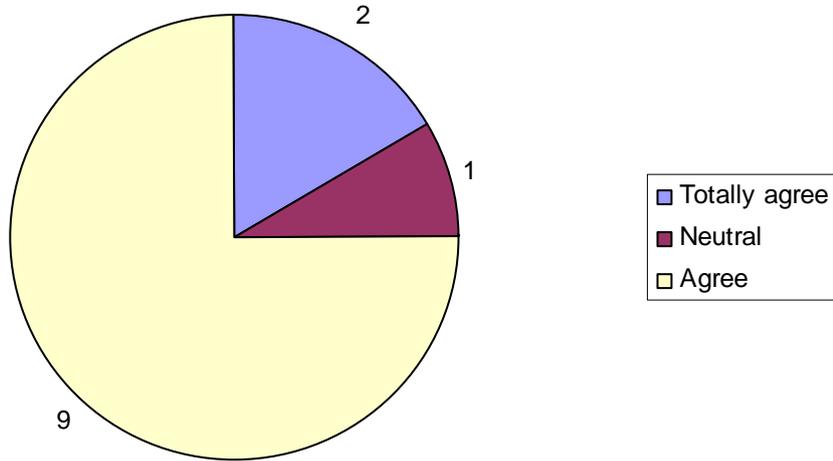
The feedback I received was helpful in enhancing my diagnostic reasoning in this case.



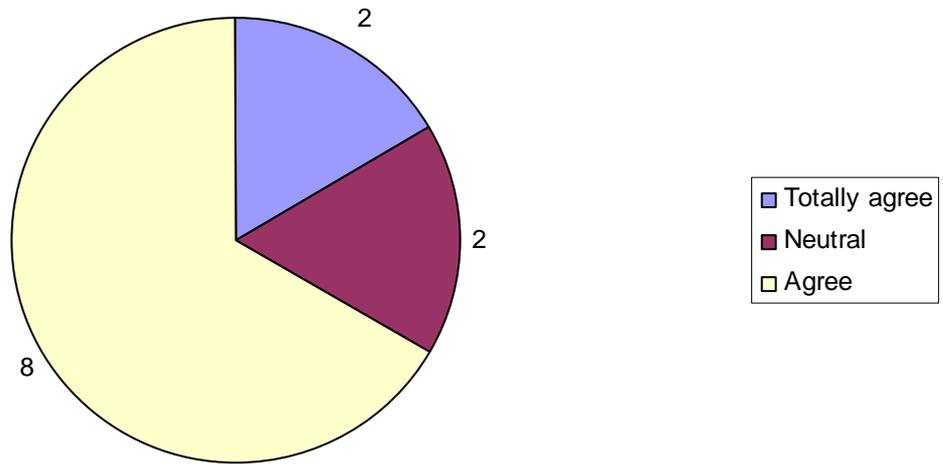
After completing this case I feel better prepared to care for a real life patient with this complaint.



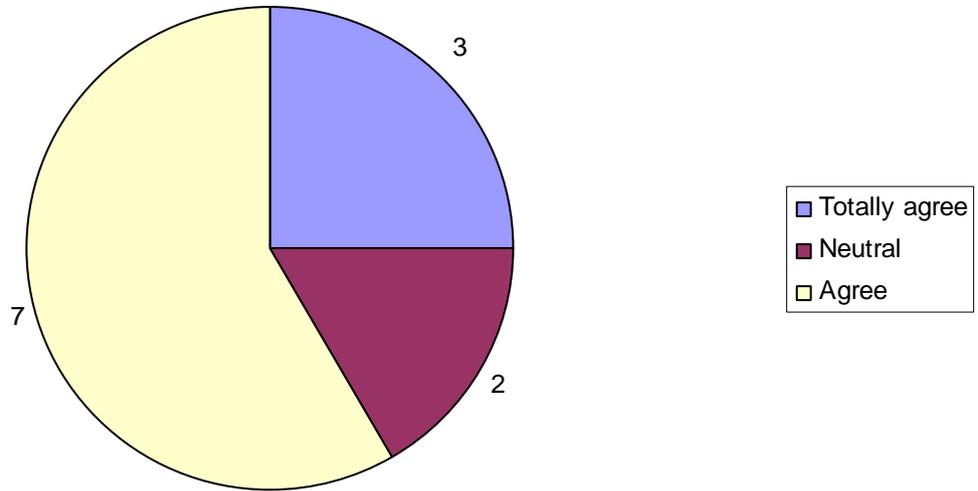
The questions I was asked while working through this case were helpful in enhancing my diagnostic reasoning in this case.



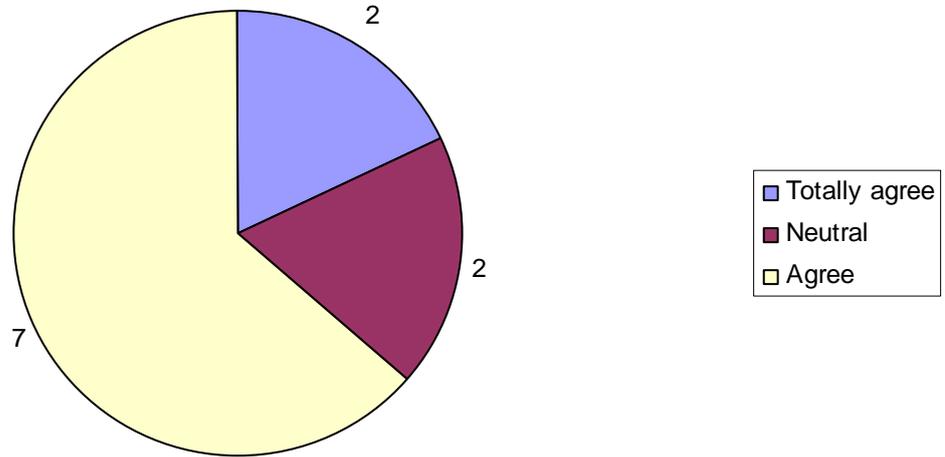
While working through this case, I was actively engaged in revising my initial image of the patient's problem as new information became available.



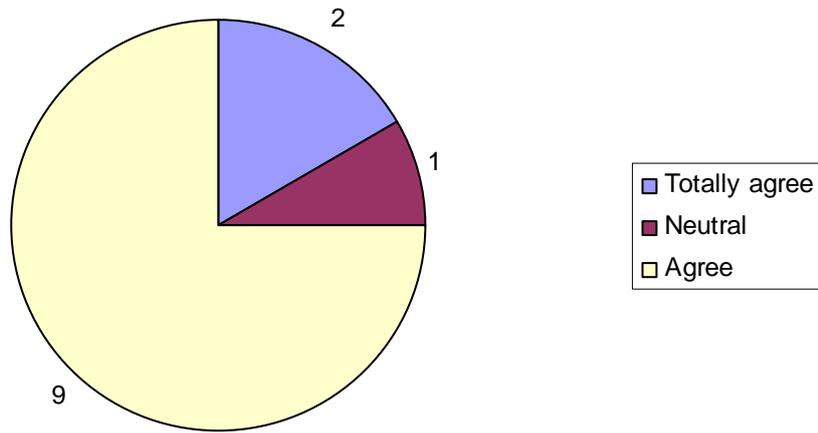
While working on this case, I felt I had to make the same decisions a doctor would make in real life.

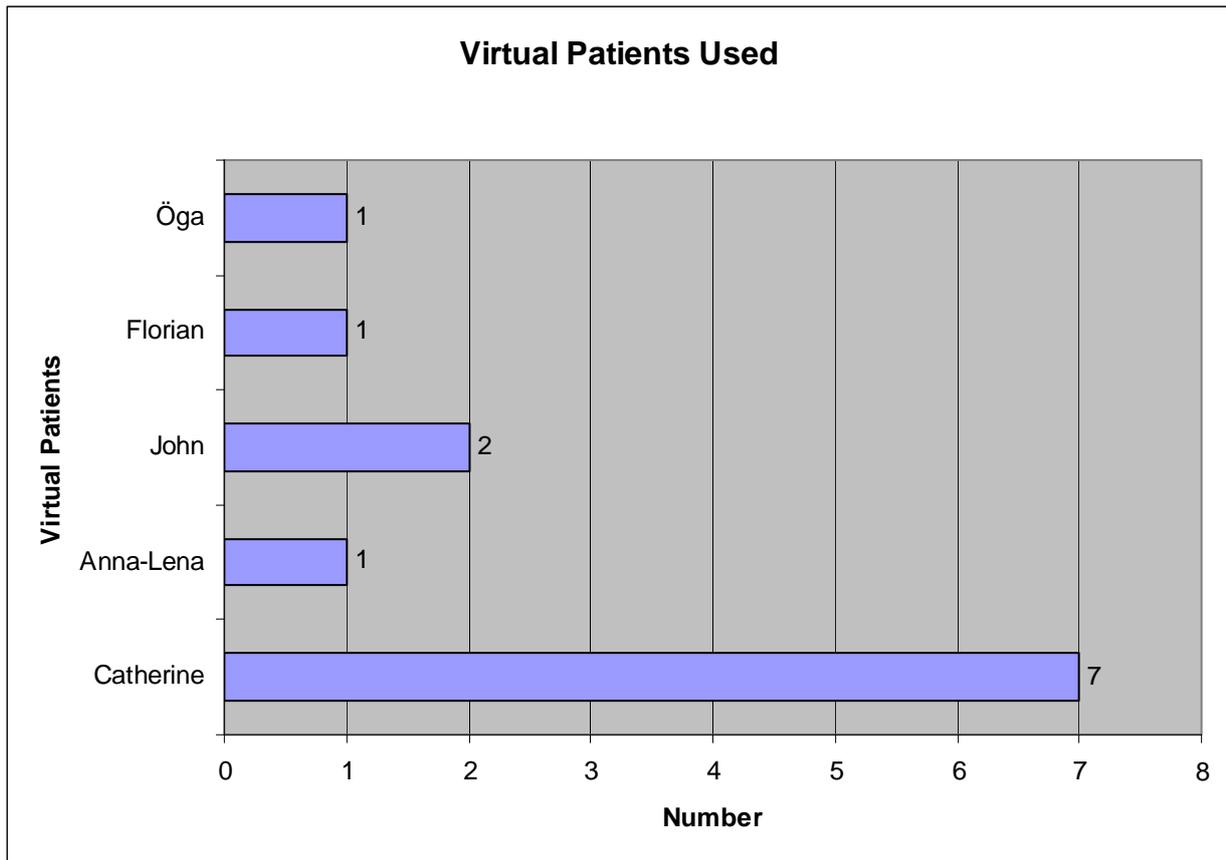


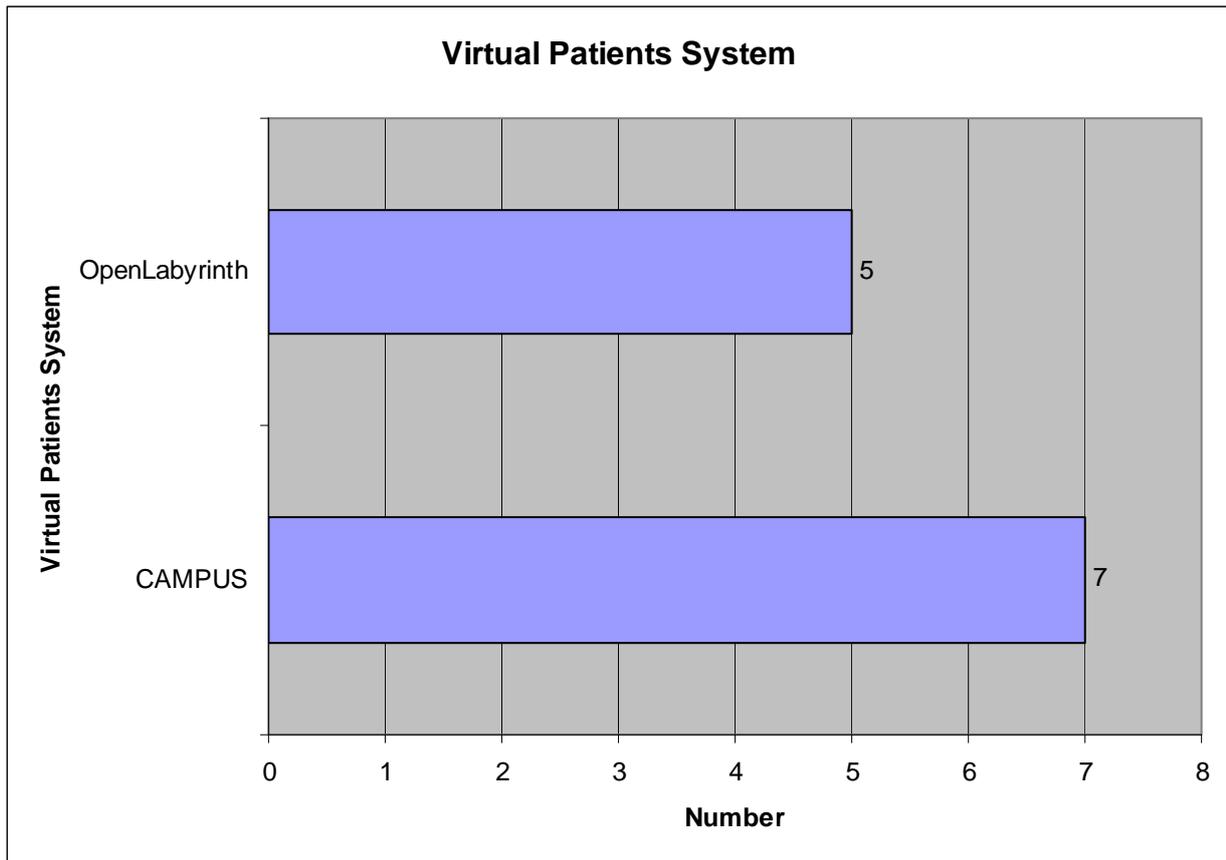
While working through this case, I was actively engaged in creating a short summary of the patient's problem using medical terms.



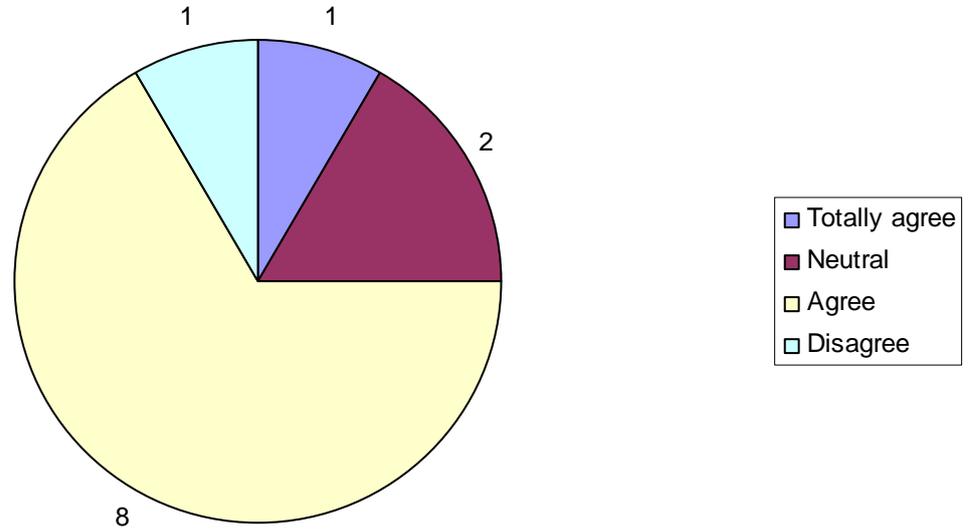
While working through this case, I was actively engaged in thinking about which findings supported or refuted each diagnosis in my differential diagnosis.



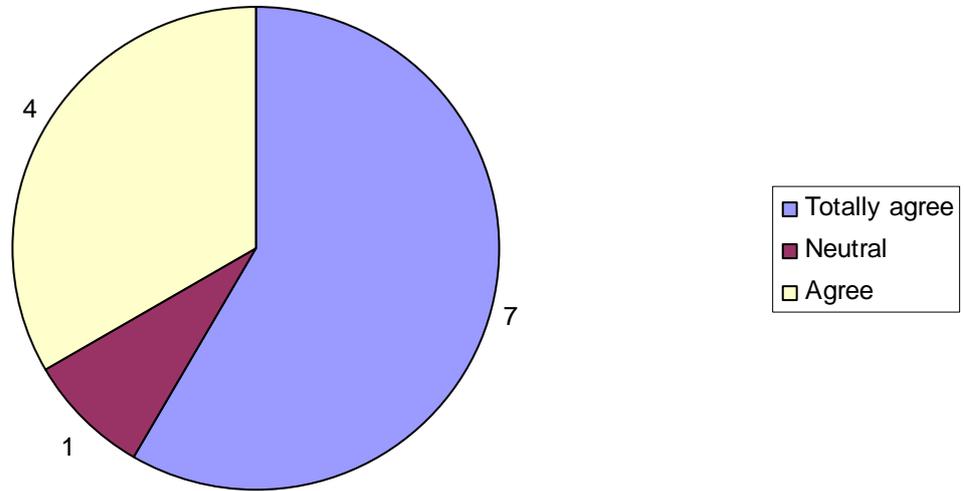




While working on this case, I felt I were the doctor caring for this patient.

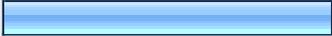
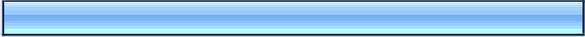


Overall, working through this case was a worthwhile learning experience.



Appendix 4 – REViP Student collective VP questionnaire

1. What is your student 'm number'?		Response Count
		24
<i>answered question</i>		24
<i>skipped question</i>		1

2. What is your sex? (please tick)			Response Percent	Response Count
Male			36.0%	9
Female			64.0%	16
<i>answered question</i>				25
<i>skipped question</i>				0

3. What is your age?		Response Count
		21
<i>answered question</i>		21
<i>skipped question</i>		4

4. Which Virtual Patients (VPs) did you complete? (please tick)

		Response Percent	Response Count
OpenLabyrinth branched VP	<input type="checkbox"/>	27.3%	6
Campus linear VP	<input type="checkbox"/>	27.3%	6
Not sure	<input type="checkbox"/>	45.5%	10
<i>answered question</i>			22
<i>skipped question</i>			3

5. How many times did you access the VPs?

		Response Count
		22
<i>answered question</i>		22
<i>skipped question</i>		3

6. On average, how long did you spend going through the VP (in minutes)?

		Response Count
		21
<i>answered question</i>		21
<i>skipped question</i>		4

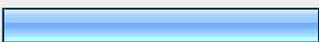
7. Please rate the following statements (please tick)

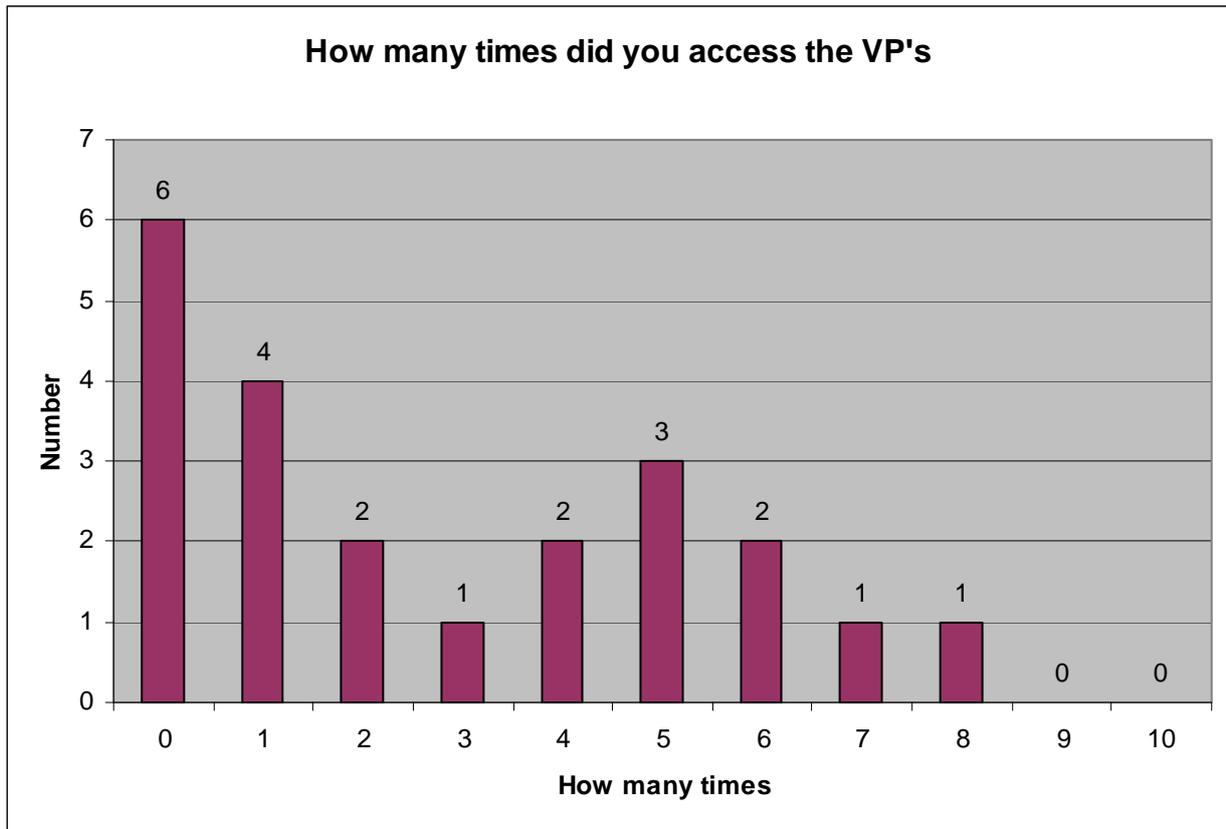
	Strongly agree	Agree	Neutral	Disagree	Strongly disagree	Rating Average	Response Count
VPs are an effective way to learn knowledge about disease	61.1% (11)	27.8% (5)	11.1% (2)	0.0% (0)	0.0% (0)	4.50	18
VPs are an effective way to learn clinical reasoning	58.8% (10)	17.6% (3)	23.5% (4)	0.0% (0)	0.0% (0)	4.35	17
VPs are an effective way to learn data interpretation	41.2% (7)	23.5% (4)	29.4% (5)	5.9% (1)	0.0% (0)	4.00	17
VPs are an effective way to learn about treatment	50.0% (9)	33.3% (6)	16.7% (3)	0.0% (0)	0.0% (0)	4.33	18
VPs motivate me to study more	52.9% (9)	11.8% (2)	23.5% (4)	11.8% (2)	0.0% (0)	4.06	17
I found the VPs useful for my learning	72.2% (13)	16.7% (3)	5.6% (1)	5.6% (1)	0.0% (0)	4.56	18
	<i>answered question</i>						18
	<i>skipped question</i>						7

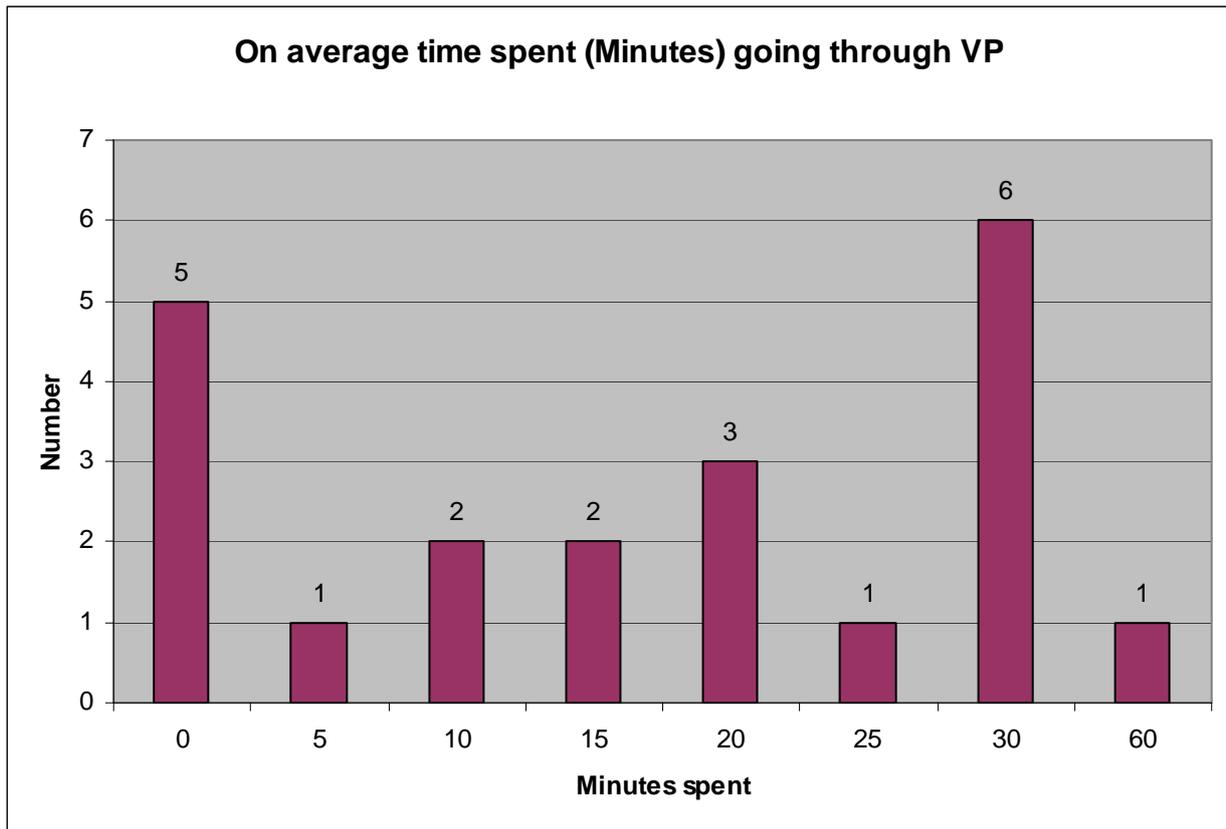
8. Please explain whether you feel that VPs are effective/ineffective in medical education

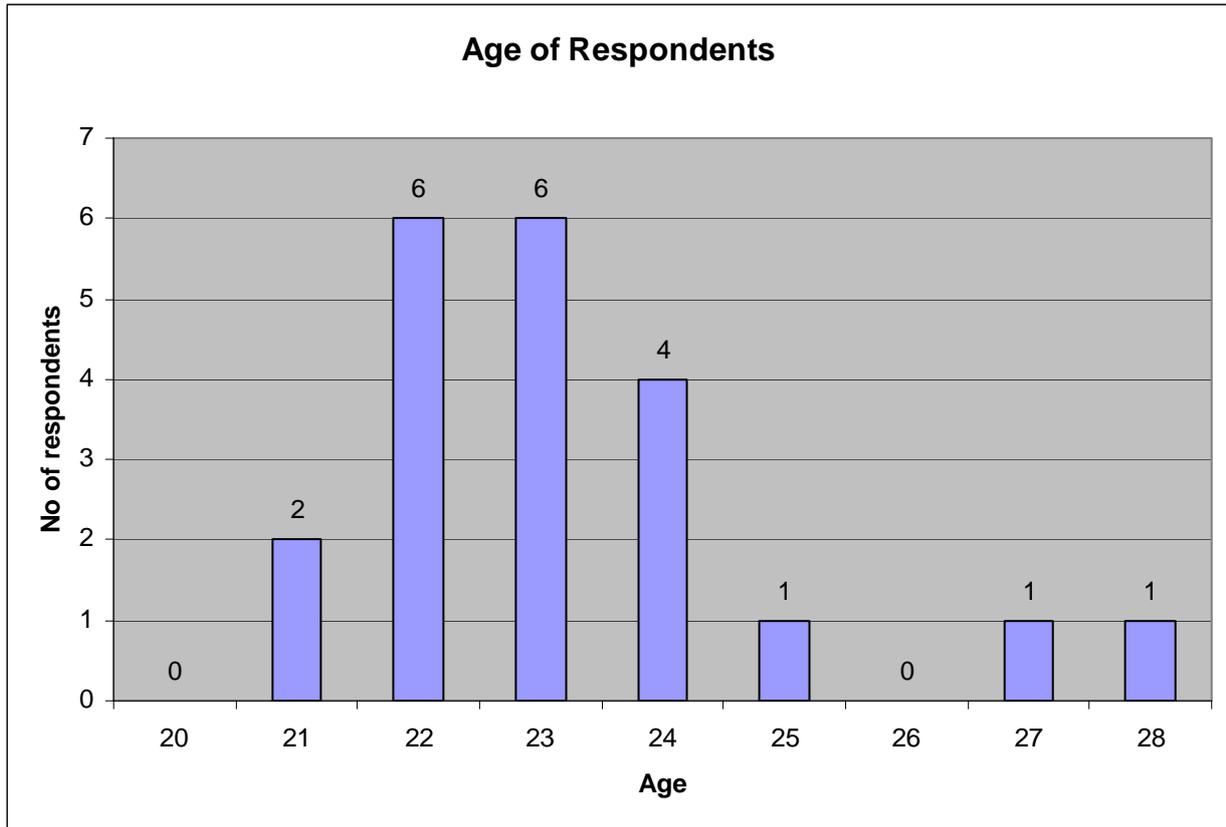
	Response Count
	15
	<i>answered question</i>
	<i>skipped question</i>
	10

9. In general, how often do you use electronic sources for studying? (please select one)

		Response Percent	Response Count
More often than a textbook		34.8%	8
About the same as a textbook		21.7%	5
Less often than a textbook		43.5%	10
	<i>answered question</i>		23
	<i>skipped question</i>		2







Appendix 5 - REViP Student Focus Group Report

Background

Repurposing Existing Virtual Patients (REViP) is a 1-Year project co-funded by the Joint Information Systems Committee (JISC) and part funded by St George's University of London (SGUL). The aim is to explore and evaluate the embedding of repurposed and enriched Virtual Patients (VPs) within a Paediatrics component in the St George's medical curriculum.

For the purposes of this study, the REViP team agreed upon the following definition for VPs: "an interactive computer simulation of real-life clinical scenarios for the purpose of medical training, education, or assessment".

This report is about a student focus group evaluation study relating the use of the actual repurposed and enriched VPs. As per the REViP evaluation plan (refer to Appendix 2 - REViP plans dossier, section 1, evaluation plan), the main aims of this study were in the context of the student as the end-user were to:

- Provide evidence of the specific points of student interest to the JISC and its partners
- Inform current and future developments based on student feedback

Methodology

A cohort of forty students used the virtual patients in this study. Each week, students were told which virtual patient they should view, as supplementary learning material. Twenty students used a virtual patient delivered in OpenLabyrinth, and twenty students used a virtual patient delivered in Campus. Both OpenLabyrinth and Campus are two different types of VP systems but the core information within them was the same week-by-week as seen by the students.

Students were asked to join a focus group to discuss the virtual patients they used. The method for recruiting students started with an email message sent to all students in the cohort, at the start of the course. This message described how the focus group would work and mentioned that anyone who attended the focus group meeting would receive a small financial contribution. Three students agreed to participate. In an effort to recruit more students, a reminder email message was sent one week later, which resulted in two more students agreeing to participate. A second email reminder was sent one week later, which led to one more student joining. A third and fourth email reminder were also sent to students, but nobody responded to these notes. A total of six students agreed to join the focus group.

On the day of the focus group meeting, two students sent email messages saying they could not participate, and a third student missed the meeting without sending a message. A total of three students attended the focus group meeting.

When students arrived at the meeting, they could review virtual patients in OpenLabyrinth or Campus, using electronic or paper printouts. Next, a semi-structure interview of the meeting was conducted by a researcher who had not yet worked with the students. The researcher asked students a prepared set of questions. See below for a full list of the questions:

Focus Group Interview Questions

Do students value VPs?

1. If you had to name one thing you especially like about the Virtual Patient what would it be?
2. If you had to name one thing you dislike about the Virtual Patient what would it be? Perhaps using an example?

How students use VPs

3. How do you use the Virtual Patient?
4. Did the VP integrate with the other learning on your course?

Effectiveness of VPs

5. Thinking about the Virtual Patient, how easy did you find it to use?
6. What one main change do you think would make it easier to use?

Impact on student practice

7. Do you think that the introduction of the Virtual Patient has changed the way that you learn or study?
8. We have covered a lot relating to the VPs. Do any of you have anything else you wish to comment on or add in relation to the VPs?

All students actively participated in the focus group and also signed-off consent for taking part in the focus group, see below:

Consent Form Example

Dear Participant,

This focus group is a part of the REVIP (Repurposing Existing Healthcare Assets to Share) project, conducted by St George's, University of London.

The focus groups have the format of a structured discussion. All views will be noted and fed into the overall results for the project. All views and comments made will be treated in confidence and anonymised in all reporting of the findings. We ask that the participants respect the confidentiality of the group and do not discuss comments made with parties other than the group members.

In order to ensure a full and proper representation of all views, the focus groups will be audio-recorded and photographed for later transcription. These recordings will be kept solely for the purpose of evidence of transcription and writing up of the findings. All recordings will subsequently be destroyed. All names will be changed during the transcription process to protect the anonymity of the participants. The results of this study will be disseminated through the medical education network and the outcomes documented and published.

To comply with the terms of the Data Protection Act, please complete the form below.

Thank you.

.....
I understand the purpose of the focus group and have been given the opportunity to ask any questions.

I am aware that I am free to leave the group at any point in the proceedings.

I agree to the focus group I am attending being audio-recorded and photographed for later transcription and writing up of the findings. I understand that such use will be confined to the project.

Name: Signature:

Date:

The meeting was taped, so that a text transcript could be analysed. The text of the transcript was analysed by three researchers to identify important patterns and outliers. The researchers then compared their findings to create a single description of key findings and results.

Results

This section of the report details the researchers' key finding and results from the focus group. The findings have been summarised into the following themes so that they can inform current and future developments based on student feedback:

- **Theme 1: Motivation**
- **Theme 2: Current use of VPs**
- **Theme 3: Potential future use of VPs**
- **Theme 4: Suggested improvements**

Furthermore, these themes are supported by a short summary of the results along with the relevant student quotes. This provides evidence of the specific points of student interest to the JISC and its partners.

Theme 1: Motivation

The feedback from the students taking part in the focus group suggests that they found the use of virtual patients (VPs) highly motivating. They found the interactive nature of the VPs particularly motivating. This was highlighted by the following quotes from one of the students when comparing the use of VPs with traditional textbook learning:

"...it just makes learning a bit more interesting, rather than just learning from a textbook. Because it's always more helpful going in and seeing patients and seeing cases, and this is a way to do that when there isn't a patient, or when it's in the evening and you just want to sit in bed with your laptop"

"I have to say I've got books at home but because it doesn't take you through step by step, it just asks you general questions, I find it a lot duller than this. I'd rather use this."

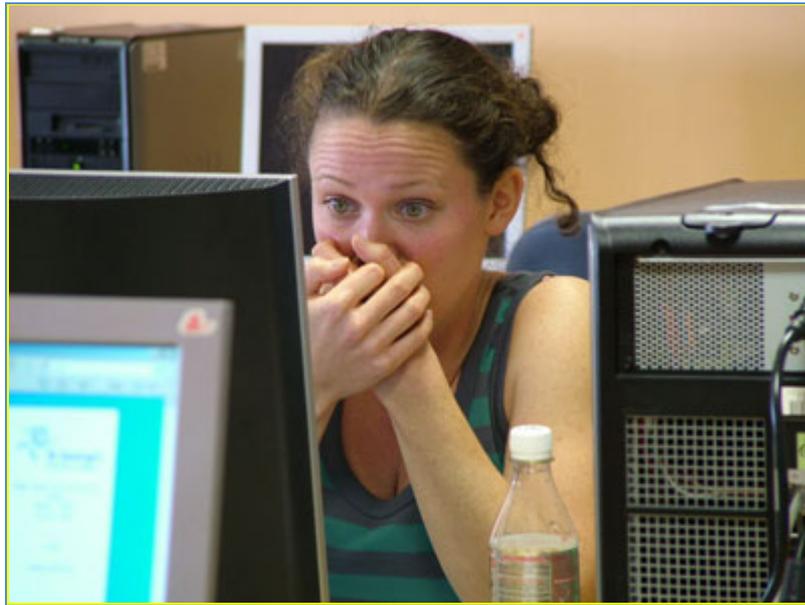
Another general consensus from the focus group was that the students felt that VPs were quick and convenient to use and learn from. They added that it was something that they were easily able to integrate into their studying routine at home. This in turn increased their motivation for using VPs. This was highlighted by the following quote from one of the students:

"I think whenever I want to do some revision or study it always seems like a big thing, I need to set aside at least an hour, whereas with this, I just did it. I had ten minutes and I was a bit bored. I was online, I wanted to go on Facebook, and then there was nothing left to do on Facebook; I

had gone through all my friends. I was like, I don't know what else to do. And so I clicked on the VP and I went through it. So it's just being able to slot it in whenever you want. Because I spend a lot of time on the Internet, and so it was something I could do when I was bored."

"... if you've got ten minutes, this is a really useful, quick and easy thing to do in that ten minutes, but you're still getting something worthwhile out of it. So it probably just means I'd use my little gaps a bit more effectively."

The students also found the use of pictures within the VPs very motivating because it made the learning experience more personal. Especially when treating VPs that they were able to put a face to the name. In fact, the example below shows the impact that killing a VP can have on a student.



The inclusion of pictures in VPs is something that the students felt they would remember more than just reading about it in a textbook. This was highlighted by the following quotes from one of the students:

"I think that having the picture of the baby makes it a bit more personal. Oh, it's a real person I'm dealing with rather than just a case in a book"

"You'll be sat there, or I'll be sat there at an exam with a specific question, and then you think, oh, I can remember this because I remember seeing a case of it. And that's why I think this could potentially be such a useful tool"

Theme 2: Current use of virtual patients

The feedback from the students taking part in the focus group suggests that they used the VPs in a variety of different ways.

Some of the students used the VPs to practise their clinical decision making in a safe environment. This was highlighted by the following quotes from the students:

"I like having the opportunity to make clinical decisions and practise my clinical reasoning."

“Sometimes when I wasn’t sure what the answer was, I’d just have a guess and then see what it said. So just sort of learning by what it told me about what was right and wrong.”

Students also used the VPs as a tool for self-assessment, highlighted by the following quote from one of the students:

“I used it in the same way as you, in that I would do it without a book to test my own knowledge on the signs, symptoms, presentation, and management of the case.”

The students used the VPs as an alternative to a traditional textbook. Some students used VPs as an alternative to learning the same facts that they would acquire from a textbook. Others felt that the VPs brought the facts they learnt in textbooks alive. This is highlighted by the following quotes from students:

“I used it as an alternative to my textbooks. So if I wanted to do some work, I find it more interesting than sitting just with bland textbook facts.”

“I didn’t sit there with a textbook next to it; I just did it to see what I could remember without the textbook.”

“I don’t think books always give you a very good sense of what’s actually important in clinical practice. Because it’s just all dry facts in books, and you can get a bit bogged in the minutia and not really realise, when a patient’s in front of you, which bits are relevant at the time and which ones aren’t. So I think it helps with that.”

Students also found the VPs useful when preparing for their examinations, both to identify gaps in their knowledge and for general revision purposes. This is highlighted by the following quotes from students:

“I think with me – and this is just the way I would work – it’d be something I’d be doing towards whenever I had an exam or a test.”

“It’s also just good to remind you what you need to revise and what you already know, and so you can prioritise your learning.”

Theme 3: Potential future use of virtual patients

The feedback from the students taking part in the focus group suggests that they would indeed use virtual patients (VPs) in the future. They felt that they could use the VPs in different ways (i.e. alongside lectures and in combination with textbooks) and at different stages of their learning (i.e. before exams as a revision tool or as a learning tool over the course of a module). This was highlighted by the following quote from one of the students:

“I think I’d read some, do the theory, and then use it. I think I’d probably start to base my revision more on that kind of thing, now, whereas what I’ve always done before is just gone over

my notes and made little revision notes. I think I'd now be much keener to move to this sort of resource over revising and just making more endless notes."

They felt that this method of learning was clinically relevant and real. This was highlighted by the following quote from one of the students:

"They're all cases that, I think, feature in our learning objectives anyway, so they're all relevant to stuff that we're going to be examined on. So it just makes a nice break and a slightly different way of working, and just to put it into practice, as well, the clinical decision-making."

The students felt that VPs were the most useful e-learning resources that they had ever used. This was highlighted by the following quote from one of the students:

"This is the only thing that I've found useful, ever. Well, semi-useful. So I think it might inspire me to use online information more, but then I'm just not used to bothering to go online to learn, so whether I'd remember to, I'm not sure. I'd probably keep needing those email reminders or else I'd forget."

The students felt that the introduction of VPs had changed their way of learning and their study habits. In the past they felt that they were used to a certain way of learning and stuck to that routine. However, since the implementation of VPs, they had changed their way of learning. This was highlighted by the following quote from one of the students:

"I found it quite easy to get into. Because I was quite stuck in my ways from how I did my career. I was like, no, no, this is how I study and that's it. I'm still quite set in how I write my notes, but as a means of practising I've actually found it has changed how I've worked. And I think it's something that I would definitely stick with."

Theme 4: Suggested improvements

The students suggested two main improvements to the VPs.

Firstly, they wanted to combine small investigative tasks such as simple blood tests into one group, rather than having to choose them individually. This is highlighted by the following quote from one of the students:

"Even down to the simple detail of when you order bloods, you would just say, oh, I'm going to take that, that, that, that, that."

Secondly, students wanted to have the option of doing more than one thing at a time. They felt that this would be more clinically realistic rather than exploring the consequence of each option individually, which they found frustrating. For example when given the option of

multiple examinations, they would often want to choose to do more than one at the same time. This is highlighted by the following quotes from students:

“... that thing of being given a list of four things and you’d do all of them, and I wish I could have just clicked all of them and to get it over there rather than having to go through it step by step.”
“... when it would give you a choice of four things, lots of the time you would do all of those four things. It’s not like you would just choose one thing. So if you’re going to do all of those things anyway, then that might be more realistic, in terms of the ability to tick several things all at once.”

Finally, students wanted there to be a greater number and a wider range of VPs to be integrated into the curriculum. This is highlighted by the following quote from a student:

“I know it’s probably in the early stages of this, but although it did link into my learning, I wish we had a lot more cases, because it only covered a small amount.”

Conclusion

Students were enthusiastic to try out the VPs, and once started, highly motivated to choose correct options. They believed VPs provided excellent learning, in a context which mimicked the making of their profession. It provided them with opportunities to practice clinical reasoning, then take decisions and explore the consequences of their decisions.

VPs provided them with opportunities for learning by collaborative discussion and in tutorials, but it also provided opportunities for individual safe practice, personal revision and self-assessment. The students described VPs as quick and easy to use, easily integrated into their study time, and available anytime, anyplace. Without ever using the phrase, students were describing the virtual patient as an excellent tool for personalised learning.

There were a few improvements suggested to aspects of the VP structure, notably a request to batch the tests up in the way that clinicians would normally practice; students did not like trawling through series of test one after another. Most improvement requests were easily addressed.

A student comment which was fundamental to the purpose of the REViP project was that there were too few VPs and students wanted more.

Appendix 6 – Critical Friend Group

Partnership Group

St Georges University of London: REViP

University of Chester: Environment, Poverty and Health (EPH)

University of Central Lancashire: ADAPT

University of Central Lancashire: BioPeL

N.B Through this document, when the term learning resource is used it is referencing any learning object – images, journals, textbooks, databases, internet resources etc. When the term Reusable Learning Object (RLO) is used it is in reference to the work packages that were developed by the project teams or similar packages which are made up of content that have been taken from learning resources, repurposed and packaged into an individual object..

Introduction

The critical friend partnership group, in preparation for this report, undertook an evaluation of the RLOs produced by the project teams so far, which involved students from each of the three universities. The group met three times over the course of the ReProduce programme life-cycle:

- An introductory session during the JISC meeting in Birmingham
- An evaluation planning session during another JISC meeting in Birmingham (October 2008)
- A debrief meeting at the University of Central Lancashire (27th January 2009)

The RLOs were made available on the REViP website and the students were asked to review the RLOs and complete a survey, which is available in appendix one. It is worth noting that the participants of this evaluation were medical, biomedical science, physiotherapy and nursing students from a range of levels. The survey was planned as a general overview, rather than an in depth analysis. The results of the evaluation can be found in appendix two. The RLOs included in the evaluations were the REViP Virtual Patient - Catherine Miller, the BioPeL pain animation and the Environment Poverty and Health module developed by EPH. Interestingly the four teams have produced very different RLOs. REViP's RLO was

developed with the OpenLabyrinth virtual patient system and enables students to practice clinical decision making skills, EPH's RLO was developed using Wimba (Formerly Course Genie) and they have developed a tool that provides students with a package of resources to support the module. BioPel have used Flash to develop an animation to show the physiology of pain. The ADAPT team have also used Wimba to develop their RLOs, which were not read for this evaluation, but have taken a more interactive and concept focused approach than EPH. As the four partner projects were focused around health, the discussions during the critical friend partnership group meetings were very focused on the use of RLO in the delivery of health courses. This document details the experiences of the group with respect to the work carried out over the course of their individual projects. It is in accordance with the JISC programme evaluation plan template, which is available in appendix 3.

What have we learned about the effective use of content resources to support learning?

Content resources have always been used by institutions; students are directed to these resources through reading lists, institutions' libraries CD ROMs accompanying text books, etc. Part of the reason students are encouraged to seek out these resources for themselves is for them to be able to develop independent study skills, self management and self-directed learning. The group very much valued the implementation of RLOs into the curriculum but added some caution. They felt that if students were 'spoon-fed' content resources or RLOs by teachers this may lead to the students not developing their own self-directed learning skills which were imperative to students from all walks of life.

There was an additional concern that teachers may well 'dumb down' the content included in an RLO in order to fit the RLO around a typical face-to-face teaching session. However, this approach carries a high risk as it may well work to the students' detriment and may put the student off the resource completely. The group agreed that the repurposed resource must add value to the teaching in order to improve student uptake.

The group felt there was potential for these RLOs to be effective tools to support learning in that they could provide additional opportunities to present information in different way than is currently available in the classroom.

It was felt that even though these RLOs are developed to be reusable, they would still have to be adapted to suit each student group they were to be delivered to, whether the context of the RLO is to suit terminology, assignment content, level, learning objectives/outcomes, culture, and language of the individual student group. The group were in complete agreement over this point regarding 'context' and felt that the RLOs must be fit for purpose in order to be used effectively for student learning.

It was felt that if academic staff did not have the technical support in the institution to make this process simple and not time consuming, then the academics would simply not have time, support or technical ability to repurpose and use the RLOs. There was also a feeling that some of the RLOs produced by the team were simply a different way of providing the information they would provide in a lecture and although, arguably presenting the information in a different way may suit the learning needs of some of their students, it was ultimately quicker and easier to produce a standard lecture and handouts.

The general conclusion that the team came to was that they did not want to see teaching replaced with RLOs and indeed the students who participated in the survey identified that the resource they prefer to use is the text book as a learning resource rather than RLOs. Yet there is recognition that there are potential benefits to use of RLOs as discussed above. For example, some content resources allow the creation of a real life scenario to enable the students to develop skills they would not be able to develop until out on clinical placement.

The group feel that the ideal RLO is one that combines the qualities of the three RLOs evaluated. The opportunity to develop skills in a real life scenario, which students will not have the opportunity to do in the classroom such as the REViP tool, the imagery and visual stimulus of the BioPeL animation and the links to resources (although perhaps only a select few) as included in the EPH tool. A key aim of the RLO should be to ignite an interest in the topic, which will motivate the student to undertake further research.

What have we learned about the repurposing of learning content?

The group felt that there was a danger that the content included in RLO was simply re-interpreting the information from a text book or a resource and if this

was to then be repurposed again the information and the quality of the content was at risk of being diluted each time it was reinterpreted.

There was an additional concern that the RLOs could become outdated and the links to other resources no longer work or would also become outdated. This is something that the group felt had to be addressed by the project teams in close partnership with the JISC and/or any repository hosting the content.

REViP had an interesting process for repurposing of their RLOs. Their virtual patient content originally came from Germany and were originally presented to German students in a very linear approach that always showed students how to make the correct clinical decisions when examining patients. So, the REViP repurposing work was three-fold. They had to translate the content, adapt the content for the culture of the UK, and also repurpose the structure of the content to be branched so that students could explore making the wrong clinical decisions as well as the correct ones. All IPR issues relating to the REViP content was cleared retrospectively using a common consent form.

ADAPT struggled with the IPR issues and were not granted permission to use many of the images and resources identified as suitable for the RLOs. There was a feeling that the publishers are developing a lot of content to support their text books, which would be made available online to the students. This content includes quizzes, diagrams, animations, tasks etc, so the question was raised why are we taking the time to develop these when the publishers are doing it anyway? However, the group agreed that we were much closer to true curricular integration than the publishers and this put us in an informed position to develop and repurpose appropriately. The attempts to gain permission to use an object added considerable time on to the development of the RLO. It is worth noting that charities and individual academics were more willing to grant permission for their learning materials to be repurposed. Another issue that was noted was that even if the owner of the material refused permission to reuse their object, the majority of the academics simply linked to the resource instead. They also did this with the resources that they were granted permission to use as it was easier and required far less technical knowledge and support. It was felt that the skills needed to repurpose the learning object may dissuade other institutions from attempting to reuse the RLO.

What have we learned about accessing and evaluating learning content?

Those in the group working on anatomy and physiology related RLOs found that a lot of the really good content was produced by the publishers or by companies for profit. These resources were accessible to the staff but they were not given permission to repurpose them. It took a considerable amount of time for some of the project teams to find the content, evaluate it, request permission to repurpose it and wait for a response (if there even was one).

Academics often have to have a wide knowledge base and often deliver lectures on a topic they may not be as expert in as they felt would need to be to develop an RLO. It was felt that if an academic was to develop an RLO they would have to ensure the quality and that the concept covered in the RLOs was as up-to-date as possible and this would be very time consuming with regards to the research they would have to undertake.

What have we learned about describing, managing and sharing learning content?

It was felt that when designing the learning content, the RLOs might provide a template for other RLOs, such as the REViP virtual patient provides a model for a problem solving scenario, which could act as a template for other scenarios for several other subjects. However, many felt their RLO was very subject or module specific, especially the RLO developed by Environment Poverty and Health which was a module in its self, and therefore could not be repurposed in such a way.

It was felt that although repurposing was considered in the development of the RLOs, the academics were still keen to develop the RLOs around a concept or relate the RLOs to topics covered in the lectures. Therefore it was felt that it would not be as effective to take an RLO "off the peg" and reuse it without some minimal repurposing. The requirement for repurposing made the use of RLOs unappealing to some due to the time this would inevitably take and also not having the technical skill set to complete such a task.

It was also felt that for an RLO to be generic enough to be reused without any adaptation it would have to be at a fairly low level such as the basic structure of the cell. However, one of the benefits of designing the RLOs is that the

academics can position the knowledge they are delivering to the students which they cannot do through text books.

With regards to the managing and sharing of RLOs, it was felt that due to the heavy work load, an external online repository was not perhaps the best location. Academics often search the internet using Google to develop content for their lectures and Google does not currently locate an RLO through Jorum as it would do if it were hosted on an institutions website. It was also felt that Jorum would quickly become outdated and questioned how Jorum would be managed to ensure it remained up-to-date especially if external hyperlinks or references were included in the content resources hosted by Jorum. Previous experience drew the conclusion that there were several layers of Jorum to get through before you could access the content and content was accessed more through more open sources such as YouTube.

What have we learned about the design of learning content to support sharing and repurposing?

There were concerns in designing learning content for repurposing. BioPeL had originally planned to design their animation so that anyone could repurpose it and add their own content. However, they were concerned that others would add content that was perhaps not accurate, yet it would be their name attached to the inaccurate information.

As the partnership group were from a health background they were also conscious that should a former student make an error in practice, there would be potential for the university, the course and the content of the course to be scrutinised by the hospital to ensure the course was up to standard. Although this is an extreme case, there was some reluctance to rely on the RLOs developed by others who do not have the same risk associated with the delivery of their course.

There was also the concern that if the RLO included links out to other sources, these links may stop working in time unless the content is continually kept up-to-date. The group suggested linking to a source that was constantly updated but noted that there was no guarantee of this. It was felt that one of the best examples of an RLO was Wikipedia. Each item was stand alone with links out to related items. It is generally simplistic and a good starting point for developing information.

Over all the team felt there would be value in the use of RLOs, however the time taken to develop the tools, the lack of technical support within the institution and the risks of outdated and diluted content did concern the team. The group agreed that the development of these RLOs had taken more time than they had originally costed for in the original bid.

What previous work did we find useful and how we have built on it?

The REViP team had experience of developing RLOs through the REHASH project and were able to draw on their experiences. They have also been involved in other open content repurposing projects such as Clinical Skills Online and eViP. For the evaluation the teams reviewed previous RLO evaluations tools such as Universities Collaborating in eLearning (UCEL) and RLO-CETL. The team found reading the previous JISC reports hard going and of little value when it came to understanding the project the report was based on. This has offered us some direction with regards to the approach and language used when producing reports for the projects.

The project team also met with other projects who were not partners to share approaches to evaluation and tools the evaluators were using and also the other projects approached to attaining permission to use learning objects. The ADAPT team repurposed the licence agreement used by the ReVOLVE project. The UCLan projects were also in the fortunate position of having four projects within the institution. Therefore we were able to meet and present the development of our projects to each other, share concerns and discuss the information provided at JISC events. The JISC meetings through out the project were useful in the sense that it brought the projects together and allowed project teams to share their concerns and questions. The group found the CASPER resource useful to an extent but more of a first level information tool rather than a tool to provide in depth advice and guidance.

How have we involved other people in our project and what have we learned from them?

The development of the partnership between the four projects has enabled free discussion amongst the group about the challenges we have faced with regards to

developing the RLOs, the time it has taken and understanding the different approaches each group has taken. It has also created a community of sharing and much needed support amongst the group where we are happy to share resources and experiences as well as looking to forge potential partnerships in the future.

REViP had access to an Intellectual Property Officer (IPO) who offered them a lot of support and guidance in association with the Creative Commons. The IPO also introduced a statement with regards to digital content IPR in the university's policy.

Each project involved a validation panel as they had to have the module re-validated although in hindsight the introduction of RLOs, in the opinion of the group was not a necessary reason undertake a module validation. The project teams also enlisted the support of technical staff to help with the development of the RLOs in some institutions the structure of support for the development of eLearning was stronger than others.

The team also included learners in the evaluation of the RLOs. Some of the more interesting findings from this evaluation were the students' preference for text book as learning tools and that they value resources recommended by their tutors and own institutions over those recommended from other highly regarded institutions and would spend more time on a resource recommended by their tutor. The group expected that this was due to them expecting resources recommended by their institution would be more relevant to their assessments. However, the group were surprised to discover that the students ranked searching on Google and Wikipedia fairly low as a method to locating sources relevant to their course and the group wondered if this was a little to do with the students not wishing to admit they used Wikipedia or the like. Many students responded positively to the interactive aspects of the RLOs and noted that the use of animation made the tool more interesting and kept their attention. The students seemed to feel that the RLOs they were asked to evaluate would be valuable to their learning and it also appeared to encourage them to learn and find similar resources. For a detailed summary of the results from the evaluation study refer to appendix two.

Academics outside the project team were asked to review the RLOs developed by the partner so assess whether they would use these or similar tools. Several

academics were interested in the tools. Some academics wanted to use the resources with students and others wanted to use tools such as the EPH tool for themselves. This was yet another pleasantly surprising outcome of our projects.

Appendix One

Survey Questions

Student E-learning Resource Questionnaire

1. Introduction

This survey is to be completed by students involved in health and medical education courses at the following institutions:

- * St George's, University of London
- * University of Central Lancashire
- * University of Chester

This survey relates directly to the e-learning resources available from:
<http://www.elu.sgul.ac.uk/revip/evaluation/>

Please look carefully at these resources before completing the survey.

2. Learning resource information

This section allows you to choose which Virtual Patient you are commenting on. In order to help you make the choice, below is some background information about the types of learning resources being evaluated.

St George's Virtual Patient on Paediatrics: A virtual patient (VP) is an interactive computer simulation of real-life clinical scenarios for the purpose of medical training, education, or assessment. This particular VP is called Catherine Miller and is about a 5-month old baby girl who presents with fever.

UCLAN Learning Resource on Pain: An interactive flash animation that explores the biology of pain.

Chester Learning Resource on Environment, Poverty and Health (EPH): An undergraduate Level 6 module, developed as a set of web pages that explore the inter-relationships between EPH in the Developed and Developing World.

1. Which resource are you commenting on?

- St George's Virtual Patient on Paediatrics
- UCLAN Learning Resource on Pain
- CHESTER Learning Resource on EPH

3. Using the learning resource

This section is about the usefulness of the resource and any associated negative aspects about it.

Student E-learning Resource Questionnaire					
1. Please rate the following statements to help us understand more about our resource:					
	I strongly agree	I agree	Neutral	I disagree	I strongly disagree
This resource could be valuable to my learning.	<input type="radio"/>				
This resource is of sufficient quality for me.	<input type="radio"/>				
This resource was not at the right level for my studies.	<input type="radio"/>				
This resource would have been more useful if it contained more activities.	<input type="radio"/>				
This resource did not help me improve my knowledge of this subject area.	<input type="radio"/>				
This resource covered a useful range of subject areas.	<input type="radio"/>				
This resource made me want to learn more about this subject area.	<input type="radio"/>				
This resource made me interested in finding similar resources.	<input type="radio"/>				
2. What proportion of this resource did you find useful?					
<input type="radio"/> <10% <input type="radio"/> 10-25% <input type="radio"/> 25-50% <input type="radio"/> 50-75% <input type="radio"/> 75-100%					
3. How long did you spend on this learning resource?					
<input type="radio"/> <5 minutes <input type="radio"/> 15-20 minutes <input type="radio"/> 30-45 minutes <input type="radio"/> 5-10 minutes <input type="radio"/> 20-25 minutes <input type="radio"/> 45-60 minutes <input type="radio"/> 10-15 minutes <input type="radio"/> 25-30 minutes <input type="radio"/> >60 minutes					
4. What did you find the most useful about the resource?					
<input style="width: 100%; height: 20px;" type="text"/>					
5. What would you change about the resource?					
<input style="width: 100%; height: 20px;" type="text"/>					
4. Locating and choosing e-learning resources					

Student E-learning Resource Questionnaire

The first two questions on this page are different from previous questions. In the questions below, you must rank the answers based on your preferences.

1. How do you locate e-learning resources relevant to your course? Please rank in order of preference.

	I rank this most important	2nd most important	3rd most important	4th most important	I rank this least important
Recommended by my tutor	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Recommended by another student	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Searching a library catalogue	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Searching the internet using general engines (e.g. Google, Yahoo etc.)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Searching the internet using reviewed sites (e.g. Wikipedia, Google Scholar etc.)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

2. What do you consider most when deciding to spend time on an e-learning resource? Please rank in order of preference.

	I rank this most important	2nd most important	3rd most important	4th most important	5th most important	I rank this least important
Recommended by my tutor	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Recommended by another student	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Provided by my institution	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Provided by another highly regarded institution	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My own judgement	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Relevance to my course	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

3. Would you like to add anything else about locating or choosing e-learning resources?

5. General information

This section is about general information related to you and how you currently use e-learning resources.

Student E-learning Resource Questionnaire		
1. How often do you use e-learning resources like the one you viewed for this survey?		
<input type="radio"/> Rarely	<input type="radio"/> About as often as I use a textbook	
<input type="radio"/> Not as often as I use a textbook	<input type="radio"/> More often than I use a textbook	
2. Which institution are you from?		
<input type="radio"/> St George's	<input type="radio"/> UCLAN	<input type="radio"/> Chester
3. What course are you studying?		
<input type="text"/>		
4. Which year of study are you currently undertaking?		
<input type="radio"/> Foundation Year	<input type="radio"/> Year 2	<input type="radio"/> Year 4
<input type="radio"/> Year 1	<input type="radio"/> Year 3	<input type="radio"/> Year 5
5. What is your sex?		
<input type="radio"/> Male	<input type="radio"/> Female	
6. Please use the drop-down menu below to choose your age		
<input type="text"/>		
6. Thank you		
Thank you for taking time to complete our questionnaire. We very much value your feedback. If you would like to be kept informed of the results, please provide your email address below.		
1. Email address		
<input type="text"/>		

Appendix two

Survey Results

Student E-learning Resource Questionnaire

1. Which resource are you commenting on?					
		Which resource are you commenting on?			
		St George's Virtual Patient on Paediatrics	UCLAN Learning Resource on Pain	CHESTER Learning Resource on EPH	Response Totals
St George's Virtual Patient on Paediatrics		100.0% (39)	0.0% (0)	0.0% (0)	38.6% (39)
UCLAN Learning Resource on Pain		0.0% (0)	100.0% (32)	0.0% (0)	31.7% (32)
CHESTER Learning Resource on EPH		0.0% (0)	0.0% (0)	100.0% (30)	29.7% (30)
<i>answered question</i>		39	32	30	101
		<i>skipped question</i>			0

2. Please rate the following statements to help us understand more about our resource:					
		Which resource are you commenting on?			
		St George's Virtual Patient on Paediatrics	UCLAN Learning Resource on Pain	CHESTER Learning Resource on EPH	Response Totals
This resource could be valuable to my learning.	I strongly agree	61.8% (21)	22.6% (7)	16.7% (5)	
	I agree	35.3% (12)	45.2% (14)	50.0% (15)	
	Neutral	0.0% (0)	12.9% (4)	13.3% (4)	
	I disagree	2.9% (1)	12.9% (4)	3.3% (1)	
	I strongly disagree	0.0% (0)	6.5% (2)	16.7% (5)	
rating average		4.56 (34)	3.65 (31)	3.47 (30)	3.92 (95)
This resource is of sufficient quality for me.	I strongly agree	47.1% (16)	22.6% (7)	16.7% (5)	

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	I agree	32.4% (11)	35.5% (11)	40.0% (12)	
	Neutral	14.7% (5)	19.4% (6)	20.0% (6)	
	I disagree	5.9% (2)	16.1% (5)	16.7% (5)	
	I strongly disagree	0.0% (0)	6.5% (2)	6.7% (2)	
	rating average	4.21 (34)	3.52 (31)	3.43 (30)	3.74 (95)
This resource was not at the right level for my studies.	I strongly agree	8.8% (3)	12.9% (4)	10.3% (3)	
	I agree	20.6% (7)	19.4% (6)	20.7% (6)	
	Neutral	14.7% (5)	29.0% (9)	31.0% (9)	
	I disagree	44.1% (15)	32.3% (10)	24.1% (7)	
	I strongly disagree	11.8% (4)	6.5% (2)	13.8% (4)	
	rating average	2.71 (34)	3.00 (31)	2.90 (29)	2.86 (94)
This resource would have been more useful if it contained more activities.	I strongly agree	11.8% (4)	30.0% (9)	26.7% (8)	
	I agree	17.6% (6)	30.0% (9)	23.3% (7)	
	Neutral	26.5% (9)	10.0% (3)	33.3% (10)	
	I disagree	38.2% (13)	30.0% (9)	13.3% (4)	
	I strongly disagree	5.9% (2)	0.0% (0)	3.3% (1)	
	rating average	2.91 (34)	3.60 (30)	3.57 (30)	3.34 (94)
This resource did not help me improve my knowledge of this subject area.	I strongly agree	0.0% (0)	16.7% (5)	13.3% (4)	

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	I agree	6.1% (2)	20.0% (6)	20.0% (6)	
	Neutral	15.2% (5)	13.3% (4)	10.0% (3)	
	I disagree	39.4% (13)	43.3% (13)	50.0% (15)	
	I strongly disagree	39.4% (13)	6.7% (2)	6.7% (2)	
	rating average	1.88 (33)	2.97 (30)	2.83 (30)	2.54 (93)
This resource covered a useful range of subject areas.	I strongly agree	26.5% (9)	16.1% (5)	23.3% (7)	
	I agree	58.8% (20)	48.4% (15)	33.3% (10)	
	Neutral	11.8% (4)	12.9% (4)	26.7% (8)	
	I disagree	2.9% (1)	16.1% (5)	13.3% (4)	
	I strongly disagree	0.0% (0)	6.5% (2)	3.3% (1)	
	rating average	4.09 (34)	3.52 (31)	3.60 (30)	3.75 (95)
This resource made me want to learn more about this subject area.	I strongly agree	29.4% (10)	9.7% (3)	10.0% (3)	
	I agree	41.2% (14)	58.1% (18)	20.0% (6)	
	Neutral	26.5% (9)	16.1% (5)	26.7% (8)	
	I disagree	2.9% (1)	16.1% (5)	33.3% (10)	
	I strongly disagree	0.0% (0)	0.0% (0)	10.0% (3)	
	rating average	3.97 (34)	3.61 (31)	2.87 (30)	3.51 (95)
This resource made me interested in finding similar resources.	I strongly agree	44.1% (15)	16.1% (5)	16.7% (5)	
		44.1%	45.2%	10.0%	

		(15)	(14)	(3)	
	Neutral	8.8% (3)	9.7% (3)	30.0% (9)	
	I disagree	2.9% (1)	25.8% (8)	23.3% (7)	
	I strongly disagree	0.0% (0)	3.2% (1)	20.0% (6)	
	rating average	4.29 (34)	3.45 (31)	2.80 (30)	3.55 (95)
	<i>answered question</i>	34	31	30	95
				<i>skipped question</i>	6

3. What proportion of this resource did you find useful?					
	Which resource are you commenting on?				
	St George's Virtual Patient on Paediatrics	UCLAN Learning Resource on Pain	CHESTER Learning Resource on EPH	Response Totals	
<10%	5.9% (2)	3.2% (1)	20.0% (6)	9.5% (9)	
10-25%	2.9% (1)	16.1% (5)	20.0% (6)	12.6% (12)	
25-50%	5.9% (2)	22.6% (7)	30.0% (9)	18.9% (18)	
50-75%	29.4% (10)	35.5% (11)	20.0% (6)	28.4% (27)	
75-100%	55.9% (19)	22.6% (7)	10.0% (3)	30.5% (29)	
	<i>answered question</i>	34	31	30	95
				<i>skipped question</i>	6

4. How long did you spend on this learning resource?				
	Which resource are you commenting on?			
	St George's Virtual Patient on Paediatrics	UCLAN Learning Resource on Pain	CHESTER Learning Resource on EPH	Response Totals
<5 minutes	2.9% (1)	3.2% (1)	23.3% (7)	9.5% (9)
5-10 minutes	23.5% (8)	41.9% (13)	43.3% (13)	35.8% (34)
10-15 minutes	47.1% (16)	41.9% (13)	23.3% (7)	37.9% (36)
15-20 minutes	23.5% (8)	9.7% (3)	3.3% (1)	12.6% (12)
20-25 minutes	2.9% (1)	0.0% (0)	3.3% (1)	2.1% (2)
25-30 minutes	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)
30-45 minutes	0.0% (0)	3.2% (1)	3.3% (1)	2.1% (2)
45-60 minutes	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)
>60 minutes	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)
<i>answered question</i>	34	31	30	95
			<i>skipped question</i>	6

5. What did you find the most useful about the resource?				
	Which resource are you commenting on?			
	St George's Virtual Patient on Paediatrics	UCLAN Learning Resource on Pain	CHESTER Learning Resource on EPH	Response Count
	33	29	29	91
<i>answered question</i>	33	29	29	91
	<i>skipped question</i>			10

6. What would you change about the resource?				
	Which resource are you commenting on?			
	St George's Virtual Patient on Paediatrics	UCLAN Learning Resource on Pain	CHESTER Learning Resource on EPH	Response Count
	33	29	29	91
<i>answered question</i>	33	29	29	91
	<i>skipped question</i>			10

7. How do you locate e-learning resources relevant to your course? Please rank in order of preference.					
		Which resource are you commenting on?			
		St George's Virtual Patient on Paediatrics	UCLAN Learning Resource on Pain	CHESTER Learning Resource on EPH	Response Totals
Recommended by my tutor	I rank this most important	55.9% (19)	60.0% (18)	50.0% (15)	
	2nd most important	29.4% (10)	30.0% (9)	30.0% (9)	
	3rd most important	11.8% (4)	3.3% (1)	13.3% (4)	
	4th most important	2.9% (1)	6.7% (2)	6.7% (2)	
	I rank this least important	0.0% (0)	0.0% (0)	0.0% (0)	
rating average		4.38 (34)	4.43 (30)	4.23 (30)	4.35 (94)
Recommended by another student	I rank this most important	26.5% (9)	26.7% (8)	26.7% (8)	
	2nd most important	38.2% (13)	33.3% (10)	30.0% (9)	
	3rd most important	11.8% (4)	10.0% (3)	6.7% (2)	
	4th most important	11.8% (4)	13.3% (4)	20.0% (6)	
	I rank this least important	11.8% (4)	16.7% (5)	16.7% (5)	
rating average		3.56 (34)	3.40 (30)	3.30 (30)	3.43 (94)
Searching a library catalogue	I rank this most important	2.9% (1)	0.0% (0)	3.3% (1)	
	2nd most	14.7%	23.3%	23.3%	

	important	(5)	(7)	(7)	
	3rd most important	50.0% (17)	36.7% (11)	36.7% (11)	
	4th most important	14.7% (5)	20.0% (6)	16.7% (5)	
	I rank this least important	17.6% (6)	20.0% (6)	20.0% (6)	
	rating average	2.71 (34)	2.63 (30)	2.73 (30)	2.69 (94)
Searching the internet using general engines (e.g. Google, Yahoo etc.)	I rank this most important	8.8% (3)	6.7% (2)	16.7% (5)	
	2nd most important	2.9% (1)	3.3% (1)	6.7% (2)	
	3rd most important	14.7% (5)	20.0% (6)	13.3% (4)	
	4th most important	26.5% (9)	33.3% (10)	26.7% (8)	
	I rank this least important	47.1% (16)	36.7% (11)	36.7% (11)	
	rating average	2.00 (34)	2.10 (30)	2.40 (30)	2.16 (94)
Searching the internet using reviewed sites (e.g. Wikipedia, Google Scholar etc.)	I rank this most important	6.1% (2)	6.7% (2)	3.4% (1)	
	2nd most important	12.1% (4)	10.0% (3)	10.3% (3)	
	3rd most important	12.1% (4)	30.0% (9)	31.0% (9)	
	4th most important	45.5% (15)	26.7% (8)	31.0% (9)	
	I rank this least important	24.2% (8)	26.7% (8)	24.1% (7)	
	rating average	2.30 (33)	2.43 (30)	2.38 (29)	2.37 (92)

<i>answered question</i>	34	30	30	94
<i>skipped question</i>				7

8. What do you consider most when deciding to spend time on an e-learning resource? Please rank in order of preference.					
		Which resource are you commenting on?			
		St George's Virtual Patient on Paediatrics	UCLAN Learning Resource on Pain	CHESTER Learning Resource on EPH	Response Totals
Recommended by my tutor	I rank this most important	38.2% (13)	53.3% (16)	48.3% (14)	
	2nd most important	23.5% (8)	10.0% (3)	13.8% (4)	
	3rd most important	11.8% (4)	10.0% (3)	6.9% (2)	
	4th most important	5.9% (2)	10.0% (3)	10.3% (3)	
	5th most important	14.7% (5)	16.7% (5)	17.2% (5)	
	I rank this least important	5.9% (2)	0.0% (0)	3.4% (1)	
rating average		4.47 (34)	4.73 (30)	4.55 (29)	4.58 (93)
Recommended by another student	I rank this most important	5.9% (2)	6.7% (2)	0.0% (0)	
	2nd most important	20.6% (7)	20.0% (6)	24.1% (7)	
	3rd most important	17.6% (6)	20.0% (6)	20.7% (6)	
	4th most important	26.5% (9)	26.7% (8)	34.5% (10)	
	5th most important	5.9% (2)	3.3% (1)	3.4% (1)	
	I rank this least important	23.5% (8)	23.3% (7)	17.2% (5)	
rating average		3.24 (34)	3.30 (30)	3.31 (29)	3.28 (93)

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Provided by my institution	I rank this most important	11.8% (4)	3.3% (1)	3.3% (1)	
	2nd most important	20.6% (7)	30.0% (9)	26.7% (8)	
	3rd most important	29.4% (10)	20.0% (6)	20.0% (6)	
	4th most important	11.8% (4)	10.0% (3)	10.0% (3)	
	5th most important	26.5% (9)	33.3% (10)	36.7% (11)	
	I rank this least important	0.0% (0)	3.3% (1)	3.3% (1)	
rating average		3.79 (34)	3.50 (30)	3.40 (30)	3.57 (94)
Provided by another highly regarded institution	I rank this most important	6.1% (2)	7.1% (2)	6.9% (2)	
	2nd most important	3.0% (1)	3.6% (1)	0.0% (0)	
	3rd most important	6.1% (2)	10.7% (3)	6.9% (2)	
	4th most important	15.2% (5)	21.4% (6)	20.7% (6)	
	5th most important	15.2% (5)	10.7% (3)	13.8% (4)	
	I rank this least important	54.5% (18)	46.4% (13)	51.7% (15)	
rating average		2.06 (33)	2.36 (28)	2.10 (29)	2.17 (90)
My own judgement	I rank this most important	15.2% (5)	17.2% (5)	23.3% (7)	
	2nd most important	18.2% (6)	17.2% (5)	13.3% (4)	
	3rd most important	9.1% (3)	6.9% (2)	16.7% (5)	
	4th most important	27.3% (9)	20.7% (6)	13.3% (4)	

	5th most important	24.2% (8)	20.7% (6)	23.3% (7)	
	I rank this least important	6.1% (2)	17.2% (5)	10.0% (3)	
	rating average	3.55 (33)	3.38 (29)	3.70 (30)	3.54 (92)
Relevance to my course	I rank this most important	23.5% (8)	13.3% (4)	16.7% (5)	
	2nd most important	14.7% (5)	16.7% (5)	20.0% (6)	
	3rd most important	26.5% (9)	33.3% (10)	30.0% (9)	
	4th most important	14.7% (5)	6.7% (2)	13.3% (4)	
	5th most important	11.8% (4)	16.7% (5)	6.7% (2)	
	I rank this least important	8.8% (3)	13.3% (4)	13.3% (4)	
	rating average	3.97 (34)	3.63 (30)	3.87 (30)	3.83 (94)
	<i>answered question</i>	34	30	30	94
					<i>skipped question</i> 7

9. Would you like to add anything else about locating or choosing e-learning resources?				
	Which resource are you commenting on?			
	St George's Virtual Patient on Paediatrics	UCLAN Learning Resource on Pain	CHESTER Learning Resource on EPH	Response Count
	20	9	9	38
<i>answered question</i>	20	9	9	38
				<i>skipped question</i> 63

10. How often do you use e-learning resources like the one you viewed for this survey?				
	Which resource are you commenting on?			
	St George's Virtual Patient on Paediatrics	UCLAN Learning Resource on Pain	CHESTER Learning Resource on EPH	Response Totals
Rarely	29.4% (10)	16.1% (5)	26.7% (8)	24.2% (23)
Not as often as I use a textbook	55.9% (19)	64.5% (20)	43.3% (13)	54.7% (52)
About as often as I use a textbook	5.9% (2)	12.9% (4)	16.7% (5)	11.6% (11)
More often than I use a textbook	8.8% (3)	6.5% (2)	13.3% (4)	9.5% (9)
answered question	34	31	30	95
	skipped question			6

11. Which institution are you from?				
	Which resource are you commenting on?			
	St George's Virtual Patient on Paediatrics	UCLAN Learning Resource on Pain	CHESTER Learning Resource on EPH	Response Totals
St George's	100.0% (34)	100.0% (31)	100.0% (30)	100.0% (95)
UCLAN	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)
Chester	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)
answered question	34	31	30	95
	skipped question			6

12. What course are you studying?				
	Which resource are you commenting on?			
	St George's Virtual Patient on Paediatrics	UCLAN Learning Resource on Pain	CHESTER Learning Resource on EPH	Response Count
	34	31	30	95
<i>answered question</i>	34	31	30	95
	<i>skipped question</i>			6

13. Which year of study are you currently undertaking?				
	Which resource are you commenting on?			
	St George's Virtual Patient on Paediatrics	UCLAN Learning Resource on Pain	CHESTER Learning Resource on EPH	Response Totals
Foundation Year	2.9% (1)	3.2% (1)	3.3% (1)	3.2% (3)
Year 1	50.0% (17)	51.6% (16)	53.3% (16)	51.6% (49)
Year 2	41.2% (14)	38.7% (12)	36.7% (11)	38.9% (37)
Year 3	5.9% (2)	6.5% (2)	6.7% (2)	6.3% (6)
Year 4	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)
Year 5	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)
<i>answered question</i>	34	31	30	95
	<i>skipped question</i>			6

14. What is your sex?				
	Which resource are you commenting on?			
	St George's Virtual Patient on Paediatrics	UCLAN Learning Resource on Pain	CHESTER Learning Resource on EPH	Response Totals
Male	44.1% (15)	48.4% (15)	46.7% (14)	46.3% (44)
Female	55.9% (19)	51.6% (16)	53.3% (16)	53.7% (51)
<i>answered question</i>	34	31	30	95
	<i>skipped question</i>			6

15. Please use the drop-down menu below to choose your age				
	Which resource are you commenting on?			
	St George's Virtual Patient on Paediatrics	UCLAN Learning Resource on Pain	CHESTER Learning Resource on EPH	Response Totals
16	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)
17	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)
18	8.8% (3)	9.7% (3)	10.0% (3)	9.5% (9)
19	38.2% (13)	38.7% (12)	40.0% (12)	38.9% (37)
20	11.8% (4)	16.1% (5)	13.3% (4)	13.7% (13)
21	26.5% (9)	19.4% (6)	20.0% (6)	22.1% (21)
22	8.8% (3)	9.7% (3)	10.0% (3)	9.5% (9)
23	2.9% (1)	3.2% (1)	3.3% (1)	3.2% (3)
	0.0%	0.0%	0.0%	0.0%

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	(0)	(0)	(0)	(0)
25	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)
26	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)
27	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)
28	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)
29	2.9% (1)	3.2% (1)	3.3% (1)	3.2% (3)
30	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)
31	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)
32	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)
33	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)
34	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)
35	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)
36	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)
37	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)
38	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)
39	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)
40	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)
41	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)
42	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)

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43	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)
44	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)
45	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)
46	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)
47	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)
48	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)
49	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)
50	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)
51	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)
52	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)
53	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)
54	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)
55	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)
56	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)
57	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)
58	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)
59	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)
60	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)

>60	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)
<i>answered question</i>	34	31	30	95
<i>skipped question</i>				6

16. Email address				
	Which resource are you commenting on?			
	St George's Virtual Patient on Paediatrics	UCLAN Learning Resource on Pain	CHESTER Learning Resource on EPH	Response Count
	28	21	23	72
<i>answered question</i>	28	21	23	72
<i>skipped question</i>				29

Appendix 7 – REViP Evaluation plan for reproduce programme

A. What has been done, to what quality and how efficiently?

Evaluation questions	What is the baseline situation for your project (if relevant)?	What is the 'blueprint' or ideal endpoint for your project?	What would demonstrate this? (e.g.)	How might your project gather this evidence (who, how and when?)
A1 How has the programme led to enhanced capacity, knowledge and skills in the use of ICT to support learning and teaching?	Academic staff were unaware about the role of intellectual property rights associated with digital medical content	Academic staff aware of the role they play in clearing any issues relating to intellectual property rights associated with digital medical content	Academic staff participation in intellectual property rights seminar	Attendance list from intellectual property rights seminar and signed consent forms
	No previous e-learning component used in the paediatric module	A high quality e-learning component for the module with integrated virtual patients delivered by VLE	Student and staff feedback on the module and associated e-learning content delivered by the VLE	Usage data gathered from VLE reporting tool and student/staff feedback
	Academic staff were not involved in direct authoring/repurposing of e-learning content	Academic staff empowered to use e-learning authoring tools to create and repurpose digital content	Academic staff gaining new skills which they transfer to other contexts and also use themselves without the need for a learning technologist	A register of academic staff authoring the digital content
A2 How effectively has the programme contributed to positive and sustainable change in the use and re-use of external learning materials?	Academic staff had previously not been involved in any formal reuse of external content initiatives	Academic staff fully informed on best practice about reusing existing content from external learning materials	Academic staff using repositories of content to find 'open' digital content so that it can be 'safely' integrated into their teaching	A register of all 'open' digital content used from external sources
	The institution does not have an intellectual property rights policy for digital content	The institution develops an intellectual property rights policy for all digital content	Staff would refer to the intellectual property rights policy for all digital content	Review institutional intellectual property rights document to determine the inclusion of digital content
A3. Have there been other tangible benefits not referenced in this table?	Students had not previously been exposed to any e-learning digital content resources for this module	Students aware of and using e-learning digital content resources for this module	Students using the resources on a regular basis and giving feedback about the resources to the e-Learning Unit	Student focus groups and questionnaires
A4 How fit for (educational) purpose have been the outputs of the programme?		The repurposed module along with its associated digital content (virtual patients) meet the requirements of: <ul style="list-style-type: none"> The Institution A suitable content repository Other virtual patient systems 	This can be demonstrated by the digital content resources meeting the: <ul style="list-style-type: none"> Institutional quality assurance plan Jorum contributor requirements MedBiquitous Virtual Patient technical standard for interoperability 	This evidence can be collected by: <ul style="list-style-type: none"> The latest version of the institutional quality assurance plan and the minutes from such a meeting Jorum contributor records MedBiquitous Virtual Patient technical standard working group minutes