



Guidelines for VP repurposing to different structure

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Introduction

The original VPs were implemented as a means of self-study within the curriculum of Heidelberg Medical School in Germany using the CAMPUS Classic-Player of the CAMPUS Virtual Patient system. These cases were rather elaborate with an approximate duration of 45-60 min. They were translated to English language and repurposed to the OpenLabyrinth system with a branched structure. The resulting OpenLabyrinth cases were significantly shorter in terms of linear nodes and did not contain all the amount of laboratory/investigative information of the original virtual patients. However, the repurposing to branched scenarios added new options and consequences to the case. These repurposed cases were also used for self-study in undergraduate medical education at St George's, University of London. All cases are in the field of paediatrics.

Description of original VP and original educational setting

The original VPs used for repurposing were paediatric VP cases that are used as self-study at St George's University of London. They were the result of a repurposing of VPs of the CAMPUS system that were created for the paediatrics module at Heidelberg.

Brief description of VP format

The original VPs were OpenLabyrinth cases with a branched pathway through the case. They contained several images. The cases were available as the final case within the OpenLabyrinth system as well as a Visual Understanding Environment (VUE) file.

Methods and Materials

Below is description of the methods employed in this type of repurposing along with the electronic material used to facilitate this process.

Selection criteria

The VPs were selected because they feature a significantly shorter linear case itinerary than the original cases from the CAMPUS system. This makes them an ideal means for short recapitulation, e.g. as wrap-up after a lecture.

What type of repurposing was done

The repurposing of these cases (according to the eViP definitions) was repurposing to different VP structures, i.e. from branched VPs (OpenLabyrinth cases) to linear VPs (CAMPUS CARD cases).

Steps involved in repurposing

The repurposing work was mainly done by using the Visual Understanding Environment (VUE) tool and the CAMPUS system.

The steps involved in repurposing were:

Step
1. Case selection, first check
2. Selection of linear path
3. Implementation into CAMPUS Card case
4. Comparison of VUE-file with new case
5. Identification of dead ends
6. Creation of summaries
7. Implementation into CAMPUS Card case
8. Review and corrections
9. Final check

How the work was planned

The repurposing process was supervised and coordinated by the junior lead of the Heidelberg eViP team. The repurposing efforts were monitored using the eViP repurposing effort sheets.

Brief outline of skill set required

- Medical student with proficient knowledge in paediatrics to transfer the cases from the VUE files to CAMPUS and to identify duplicate pathways
- Physician to supervise the repurposing process, create the summaries and check the final case.
- Learning technologist to eliminate duplicate empty cards of the final CAMPUS Card cases

Results

How the content was enriched

The selected cases were repurposed from branched to linear structure. The OpenLabyrinth cases consist of cards arranged in a branched itinerary. Embedded media included pictures. A member of the Heidelberg eViP team selected a linear path through the branched case and manually created a CAMPUS Card case. This was done by using the VUE-files of the OpenLabyrinth-cases. Due to the fact that in a branched system the student has many different choices of what to do, all of these choices exist as additional branches. By this, many branches do not contain additional information as they exist to supply the student with the necessary information regardless of the path he takes through the case. These branches with duplicated information were selected and all necessary information was compiled to present only once in the linear path. Also, there were several branches that led to a premature end of the case because a wrong option was chosen by the student leading towards an unwanted or critical outcome for the patient. These dead ends were not possible to display in the linear CAMPUS CARD-Player. However, a short summary of the dead end's content was created. It was added as a comment to the wrong answer at the critical point in the case to explain to the student what would have happened if this option would have been chosen. To increase learning outcome of some crucial choices and questions a "bounce" feature was added to the questions. Only when the student gives the correct answer he/she can proceed with the case. If the wrong answer is given, he/she cannot proceed unless he/she chooses the right answer. Apart from the summaries added to display the dead ends, no further enrichments were conducted. As the CAMPUS system follows a certain case structure, at the end several empty cards had to be removed manually from the final case by a learning technologist. After completing the creation of the CAMPUS Card case it was reviewed by another team member and compared to the original case.

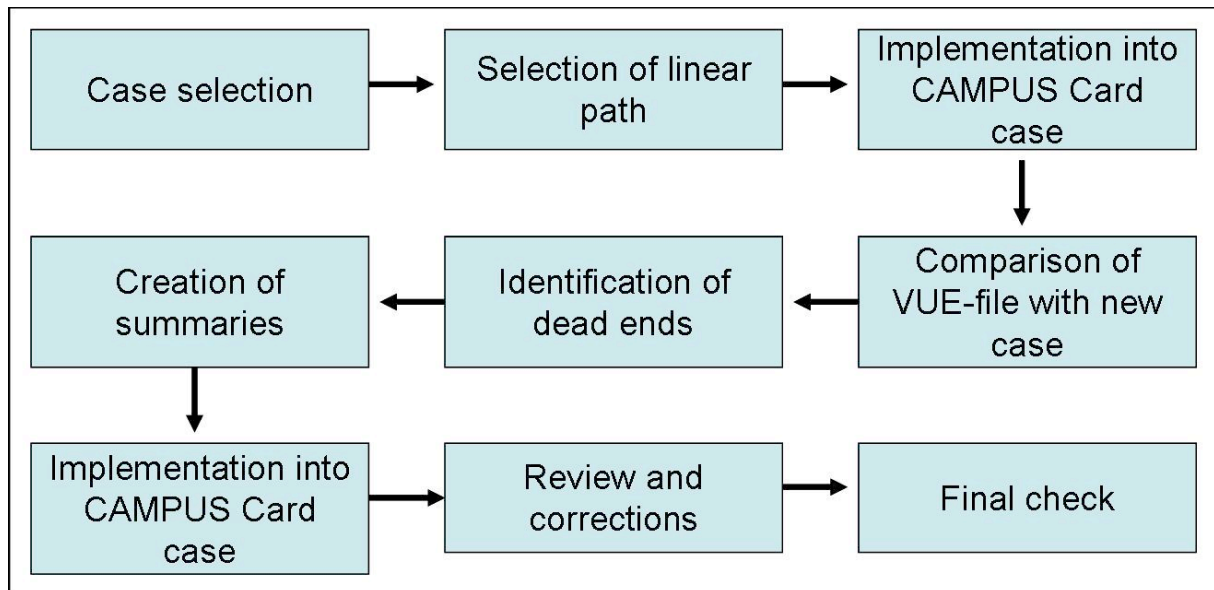
How long it took per step and in total

Depending on the complexity of branching and length of the case the efforts took from about 7 hours to about 13 hours. In one case it took 21 hours related to technical problems with the VUE-file. Translation efforts were not counted.

<i>Step</i>	<i>hours</i>
1. Case selection, first check	0,5
2. Selection of linear path	1
3. Implementation into CAMPUS Card case	3
4. Comparison of VUE-file with new case	1

5. Identification of dead ends	1
6. Creation of summaries	2
7. Implementation into CAMPUS Card case	0,5
8. Review and corrections	2
9. Final check	1
Total	12

The repurposing workflow



How the repurposed VPs were evaluated

Due to the winter break in the students' year to date an evaluation of the cases has not been possible yet. Quantitative controlled trials will be conducted to find out whether students perform better in assessment situations after they have been exposed to virtual patients designed to foster clinical reasoning.

Discussion and conclusions

In our views, the efforts were reasonably spent. The plain repurposing from branched to linear VPs posed no major problems. We consider the summary of missing branches as comments as a good substitute for simulating a branched scenario. We are looking forward to evaluate the repurposed CAMPUS Card cases in comparison with the Open Labyrinth cases and further evaluate the differences of branched vs. linear cases.