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TAME

Training Against Medical Error

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D4.4, Evaluation report

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1 INTRODUCTION

This report summarises the evaluation activities conducted in the TAME project. The evaluation has been an essential part of the implementation of the project and has served to improve the effectiveness and efficiency of the program as well as to assess its effects and plan future projects to ensure the sustainability of the achieved results. The evaluation plan in deliverable D4.2 has guided all data collection activities throughout the project: where deviations from the plan have occurred the reasons for this will be noted and described in this report.

Data gathered from the assessment tools from those who participated in curriculum modification, students', tutors' and adaptors' feedback on VPs has been analysed. Each PCU was actively involved in data collection. The evaluation report provides an overall summary of progress of the project, including strengths and weaknesses, and all new areas of development within the curriculum transformation for medical error cases in paediatric and new subject areas, and will demonstrate changes with implementation of VPs in medical error.

2 RATIONALE OF THE EVALUATION

The overall objective of the TAME project is to introduce innovative pedagogical methods that will provide training for students against medical error, building upon the partnerships experience of using Virtual Patients for teaching undergraduate medical students. TAME innovates curricula towards teaching and learning in a safe environment and closer to the needs of real clinical practice, in which medical errors occur. Based upon these objectives the evaluation identified key stakeholders and the key evaluation questions relating to curriculum development for these stakeholder groups. Evaluation instruments were designed and tailored to each stakeholder group for data collection. Findings from the evaluation will be used to inform and support both dissemination and sustainability objectives for the project.

3 EVALUATION AIMS AND OBJECTIVES

The evaluation process enables the project to meet its objectives through monitoring and controlling of quality and effectiveness of activities on all stages of the project's life-cycle. The TAME project evaluation involves a series of activities throughout the life-cycle of the project, designed to evaluate all aspects of the project, and drawing upon the experience of the project consortium.

The evaluation report is formed on the basis of the evaluation plan approved by the project consortium.

The key aims of the evaluation include:

- Provide a summary of progress of project
- Capture useful outcomes from the work
- Capture any unintended outcomes
- Disseminate best practice
- Capture experiences of stakeholders
- Disseminate findings

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- Inform future work and evaluation of similar projects.

4 METHODOLOGY

4.1 Conceptual model for TAME

A conceptual model for the project, describing the resources, activities and goals of the project, was described in D4.2 Evaluation Plan. This model formed the basis for identifying the key stakeholders and evaluation questions.

The inputs were the resources that were available at the start of the project. The short-term outputs represent the project deliverables, and were directly related to the project activities. The long term outputs represented the project's overarching aims, which will only be realized after the lifetime of the project, and can therefore not be summatively evaluated as part of the evaluation strategy.

4.2 Key stakeholders

Having established a conceptual model for the project which summarizes the key inputs, activities and outputs, the key stakeholders for the evaluation process can be identified.

Table 1 Identified Key Stakeholders

Stakeholders	Persons/spokespersons for each audience	Audience's key values, interests, expectations
Learners	Students at each of the PCUs	Learner experience, learner performance, impact upon workload
Tutors	Tutor staff at each of the PCUs	Training requirements, impact upon workload, learner performance
Tutor Trainers	Project team members at PCs and PCUs	Training strategies, training requirements, documentation requirements
Case writers (creators and adapters)	Project team members at PCUs	Creation and adaptation of resources
Course teams (Curriculum Planning and Course Management)	Project team members at PCUs	Resource requirements (time, rooms, equipment), learner performance
Project Consortium and funding body	Members of the project team, European Commission	Project completion, project progress, effective decision making, project monitoring procedures

4.3 Key evaluation questions

Based upon the stakeholder analysis and the activities and outputs identified in the conceptual model of the project, the following were proposed in the evaluation plan as key research questions for each individual stakeholder group.

- **Learners**

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- Does the use of error VPs affect learner performance and knowledge relating to medical error?
- Do the error VPs provide an effective and engaging learner experience?
- Do the error VPs represent an appropriate workload for inclusion into existing curricula?

- **Tutors**
  - Was the training provided to tutors to facilitate error VP sessions sufficient?
  - Did the use of error VPs significantly impact upon the workload of tutors?
- **Tutor Trainers**
  - Was the training provided to tutors effective?
  - How was the training delivered to tutors?
  - What training documentation was required?
- **Case writers (creators and adapters)**
  - What were the significant challenges when creating/adapting the VP cases?
  - What skills and input were required to create/adapt the cases?
- **Course teams (Curriculum Planning and Course Management)**
  - What resources were required to deliver the error VP cases effectively?
- **Project consortium and funding body**
  - Has project met key milestones/performance indicators?
  - Has project remained in budget?
  - Have project management tasks (decision making, reporting, communication) been carried out effectively?
  - Have project dissemination activities been targeted effectively, and future opportunities identified?

4.4 Data collection and analysis

All data collection was performed using on-line tools – PDF forms and Survey Monkey platform. Where required for practical and educational purposes, partners were permitted to use printed versions of these electronic tools to collect data. Partners were then responsible for inputting the data into the online data collection system accurately and in a timely manner.

4.5 Evaluation Instruments

As identified in D4.2 Evaluation plan, the following evaluation instruments were created as part of the project.

Evaluation Instrument	Type of Data to be collected	Notes
E1.1 Learner Experience Survey	Survey (SurveyMonkey)	Based upon validated instruments produced for evaluating VP effectiveness (Huwendiek et al., 2014), affected states (Thompson, 2007), mental strain (Borg & Borg,

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		2001) and self-efficacy (Bandura, 2006)
E1.2 Learner Motivation Survey	Survey (SurveyMonkey)	Based upon Motivated Strategies for learning Questionnaire (Pintrich, Smith, Garcia, & McKeachie, 1991)
E2.x Learner Assessment instrument at PCU	Performance Data	All assessment instruments will adhere to and be described by the assessment strategy documented in Deliverable D1.4. An individual assessment instrument will be created at each PCU site that is tailored to their specific teaching and curriculum. Where multiple PCUs share an assessment structure instruments can also be used at multiple PCUs.
E3 Tutor Experience Survey	Survey (SurveyMonkey)	Based upon an instrument developed for the ePBLNet project (ePBLNet, n.d.)
E4 Case writer (adapter and creator) Written Interview Questions	Written Interview (PDF form)	Based upon an instrument developed for the ePBLNet project (ePBLNet, n.d.)
E5 Tutor Trainer Written Interview Questions	Written Interview (PDF form)	Based upon an instrument developed for the ePBLNet project (ePBLNet, n.d.)
E6 VP Case Implementation – Written Interview Questions	Written Interview (PDF form)	Based upon additional material developed for the eViP project (De Leng, Huwendiek, Donkers, & EViP, 2009)

The creation of the instruments was developed as outlined in the plan. A first draft of the instruments was created in Google Docs, and finalised following a review from all partners. As described in the plan, the instruments were based upon, or subsets of, existing instruments validated in other contexts.

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Where required, the evaluation instruments have been translated into the native languages of each PCU. Reverse translations and second checks were carried out to confirm the accuracy of the translation.

4.6 Data analysis and reporting strategy

The evaluation has been constructed based upon clearly identified stakeholder groups, with defined evaluation questions for each group, although it was anticipated that new and unexpected findings of relevance would emerge as part of the analysis. For many of the stakeholder groups there were multiple evaluation activities taking place, at different times and with different areas of focus. Evaluation activities each targeted a different aspect of the experience of the identified stakeholder groups.

It was agreed by the project consortium that, due to the range of activities relating to common stakeholders, that results and findings would not be reported directly based upon activities. Instead the findings of all activities would be collated and reported on a stakeholder basis, providing a rounded picture of the evaluation findings related to the stakeholder groups. The importance of institutional culture has also been considered, in particular where survey and virtual patient translations have taken place, and in some instances it has been considered more appropriate to present results from different institutions separately.

It should be clearly noted that the purpose of this evaluation report is not to provide pure research findings, and the results will not be presented as such. The key goal is to provide a measure of the effectiveness of the project goals and outcomes.

For each stakeholder group this report will list the evaluation activities that took place, along with the instrument used and key evaluation questions. We will summarise any deviations from the original plan, and then present the key results obtained. Finally, we will summarise overall conclusions and findings synthesised from the results of all activities.

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5 RESULTS AND FINDINGS - LEARNERS

Learners are represented in the TAME project by undergraduate medical students at each of the PCUs. Multiple evaluation activities took place with this stakeholder group.

5.1 Activities

Evaluation Activity	Instruments	Key Evaluation Questions	Completed (Dates)
A1- Learner experience of paediatric cases	E1.1, E1.2	Do the error VPs provide an effective and engaging learner experience? Do the error VPs represent an appropriate workload for inclusion into existing curricula?	Yes (Nov 16-Feb 17)
A2 - Learner performance relating to Paediatric cases	E2.x	Does the use of error VPs affect learner performance and knowledge relating to medical error?	Yes (April 17-Sep-17)
A6 – Learner experience of PCU-selected cases	E1.1	Each PCU developed their own evaluation strategy tailored to the particular area of interest of their designed virtual patients	Yes (Summer 2018)

5.2 Deviations from plan

Having reviewed the results from the paediatric cases, the project consortium agreed that the data received was comprehensive and it was felt that partners would address their own evaluation goals for the PCU-selected cases. For that reason, not all partners were required to rerun the E1.1 survey in the final year of the project.

5.3 Results

5.3.1 Paediatrics Cases - Survey E1.1

This survey consisted of 11 multi part questions, yielding a total of 35 data points per response across domains such as VP effectiveness, self-efficacy of learning, mental strain and affective states. The survey was provided in 3 languages: KSMU, AMU and ZSMU conducted evaluation activities in Russian. BSMU in Ukrainian, and Vietnamese partner in the Vietnamese language.

Each learner completed the survey 6 times, once after every Paediatrics VP case. The responses were anonymous. In total 2033 responses were received from all sites, although some responses omitted answers for some survey questions. The table below

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shows the number of responses for both branched and linear cases from each site, per case (based upon number of responses to the first question in the survey).

		Case 1	Case 2	Case 3	Case 4	Case 5	Case 6
BSMU	**Branched**	23	9	28	23	25	21
	Linear	7	5	23	0	25	0
HMU	**Branched**	27	46	22	28	27	20
	Linear	27	27	28	25	31	20
HUMP	**Branched**	25	25	23	25	24	26
	Linear	27	21	34	22	21	26
AMU	**Branched**	32	32	30	31	27	29
	Linear	32	31	32	31	28	27
KSMU	**Branched**	26	32	24	11	53	46
	Linear	30	29	24	26	33	43
ZSMU	**Branched**	32	33	32	33	32	33
	Linear	32	32	32	32	33	33

There is no straightforward way to aggregate data from the survey, and the full dataset is too large to attach in tabulated form. However, a number of trends emerged from the data.

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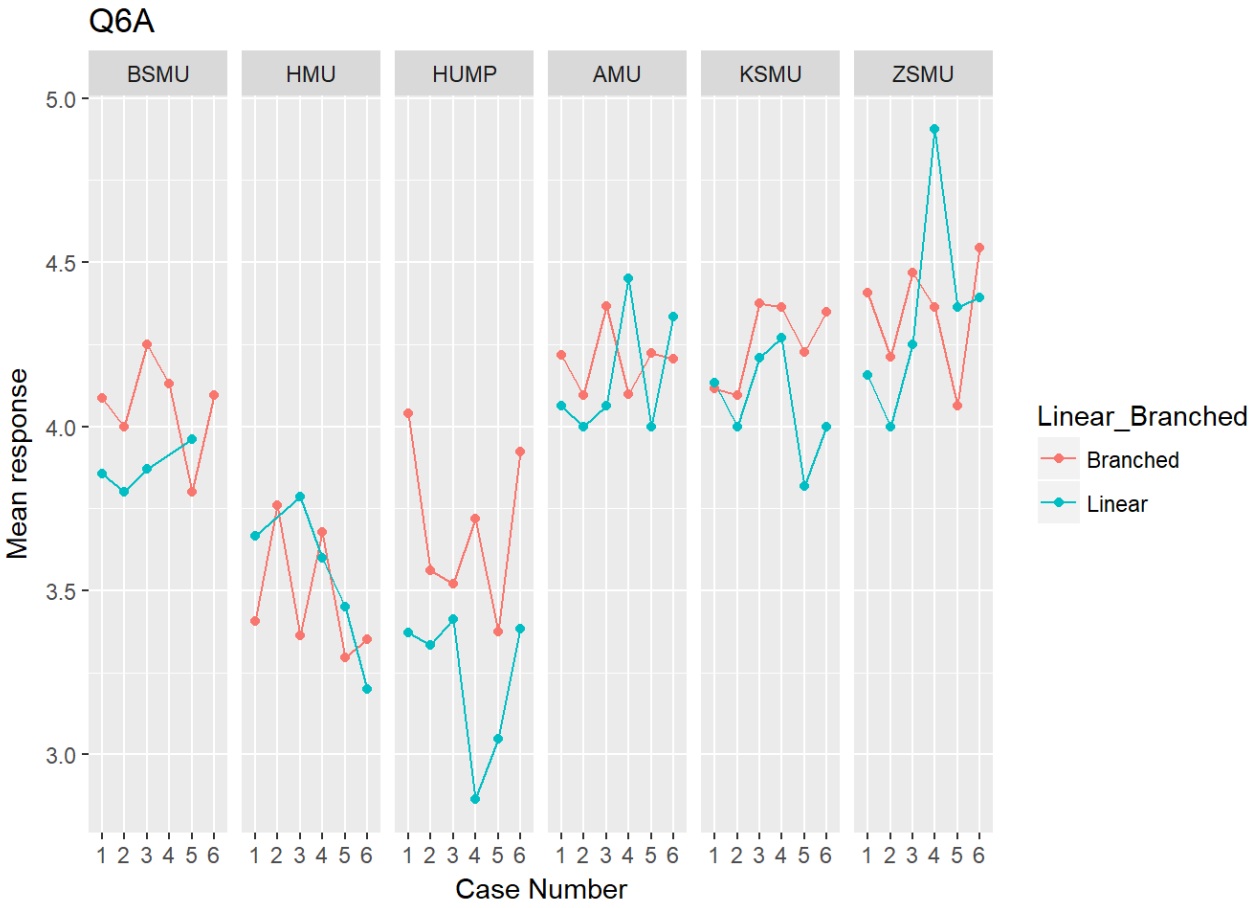

The plot above relates to the learner evaluation of the effectiveness of the cases at each site. In general these questions shared a similar pattern, and did not indicate a consistent difference between branched and linear cases. However, a general trend indicated that learners at KSMU, ZSMU and AMU rated the cases higher than those at BSMU, HMU and HUMP. This trend is indicative that the level of experience of the institution with delivering VPs, and having an established educational culture that supports them is crucial to acceptance of the resources; BSMU, HMU and HUMP had not previously used VPs with students, while the other institutions had.

5.3.2 Paediatrics Cases - Survey E1.2

Survey E1.2 is adapted from a validated instrument called the Motivated Strategies for Learning Questionnaire (Pintrich, Smith, Garcia, & Mckeachie, 1993). This instrument is designed to provide insight into learner motivation and learning strategies, based upon a number of sub-scales.

Each learner completed survey E1.2 once, having completed all 6 Paediatric cases.

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In total, 346 out of a possible 384 students completed survey E1.2, with an overall response rate of 90.10%. The average age of respondents varied between 21 and 23.75 depending upon the institution. A higher number of female participants were included in the study at each institution, but this was equally reflected in both the branched and linear groups. The table below provides details of the response numbers for linear and branched cases at each institution.

Institution	No. Responses			Response rate (%)
	Branched	Linear	Total	
BSMU	29	29	58	90.63
HMU	27	31	58	90.63
HUMP	28	28	56	87.50
AMU	29	29	58	90.63
KSMU	25	27	52	81.25
ZSMU	32	32	64	100.00

Student t-tests were conducted to test for differences between the linear and branched VPs. The results of these tests are shown in the table below.

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		Motivation Scales						*Learning Strategies*			
		Value		*Value*		*Expectancy*		*Expectancy*		*Cognitive and Metacognitive Strategies*		*Resource Management*	
Institution	VP Type	Intrinsic Goal Orientation		Task Value		Control of Learning Beliefs		Self-Efficacy for Learning and Performance		Critical Thinking		Help Seeking	
		Mean	P value	Mean	P value	Mean	P value	Mean	P value	Mean	P value	Mean	P value
BSMU	Linear Branched	5.402 5.483	.750	5.507 5.724	.396	5.347 5.069	.337	5.526 5.375	.501	5.409 5.566	.496	5.494 5.322	.572
HMU	Linear Branched	4.753 5.037	.314	4.948 5.069	.635	4.812 4.944	.678	4.092 4.343	.340	4.206 4.525	.199	4.462 4.351	.764
HUMP	Linear Branched	4.738 5.286	.027	4.753 5.275	.016	4.848 5.360	.031	4.757 5.198	.070	4.717 5.284	. 015	4.571 5.357	.001
AMU	Linear Branched	6.402 6.609	.324	6.477 6.510	.873	6.397 6.440	.848	6.375 6.483	.606	6.331 6.460	.553	6.069 5.764	.297
KSMU	Linear Branched	6.370 6.160	.260	6.253 6.293	.806	5.519 5.610	.733	5.906 5.799	.540	5.911 5.768	.488	5.210 5.480	.387
ZSMU	Linear Branched	6.625 6.510	.376	6.651 6.609	.675	6.234 5.742	.010	6.464 6.098	.001	5.831 5.856	.883	5.604 5.094	.103

The results of student t-tests comparing the mean values for the linear and branched groups in each of the survey sub-scales are provided in the table above. This showed that, in general there was no significant difference between the branched and linear groups when it came to learner motivation and self-efficacy after the six cases had been completed. A series of graphical plots for the mean response rates of the different subscales are provided below.

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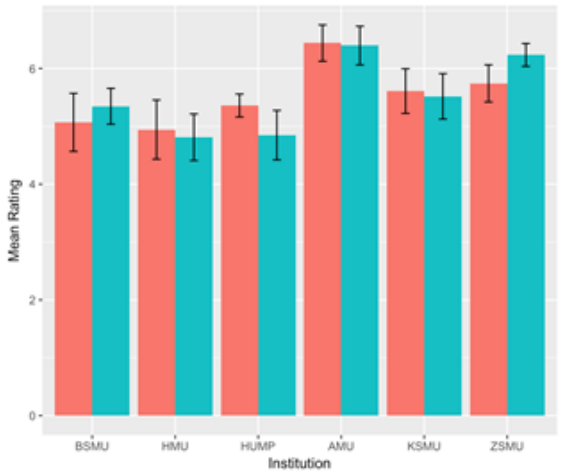
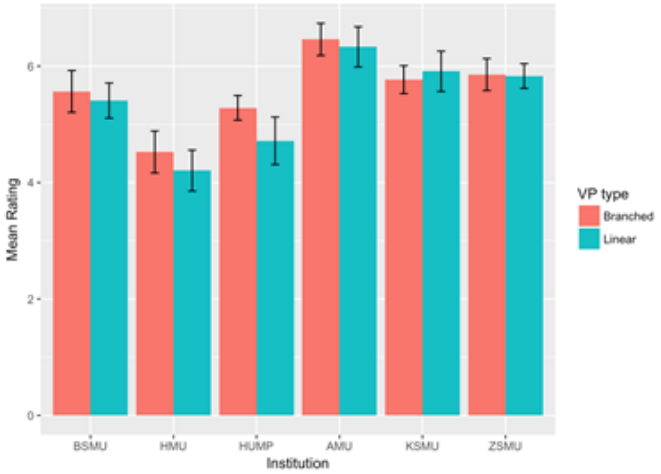
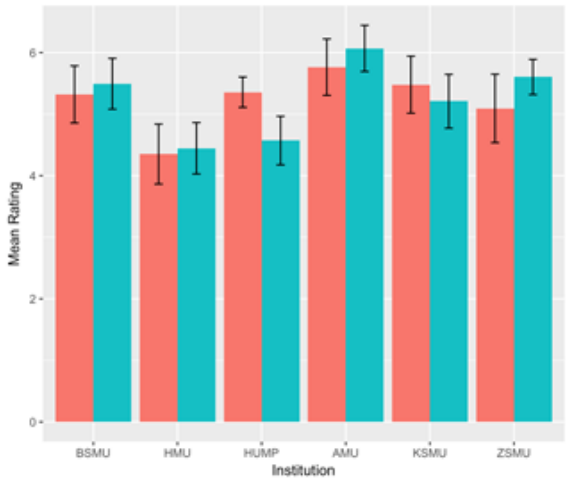


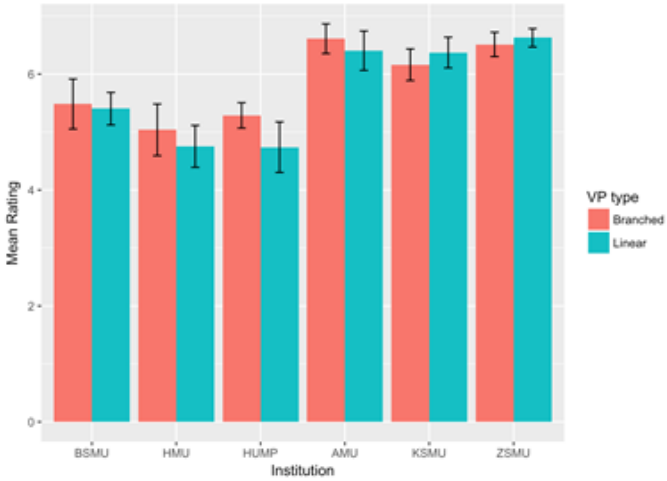
Control of learning beliefs



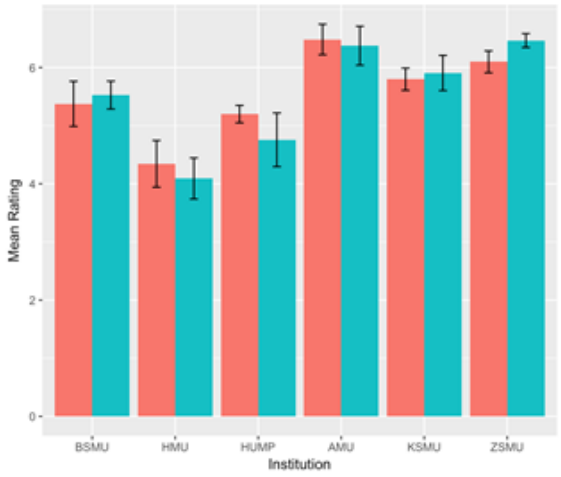
Critical thinking



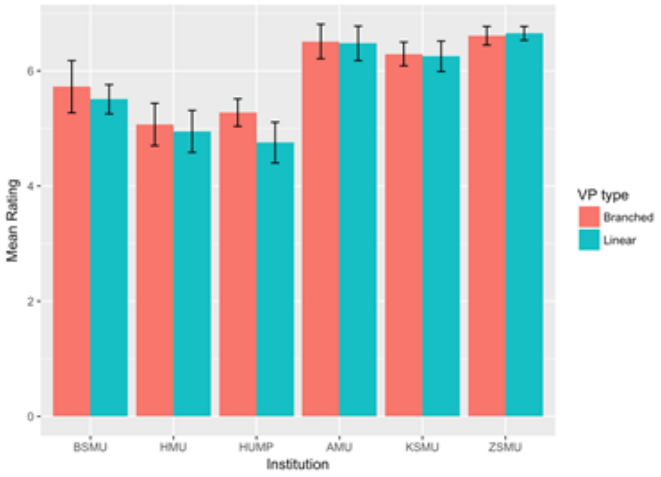
Help Seeking



Intrinsic Goal Observation



Self efficacy for Learning and Performance



Task Value

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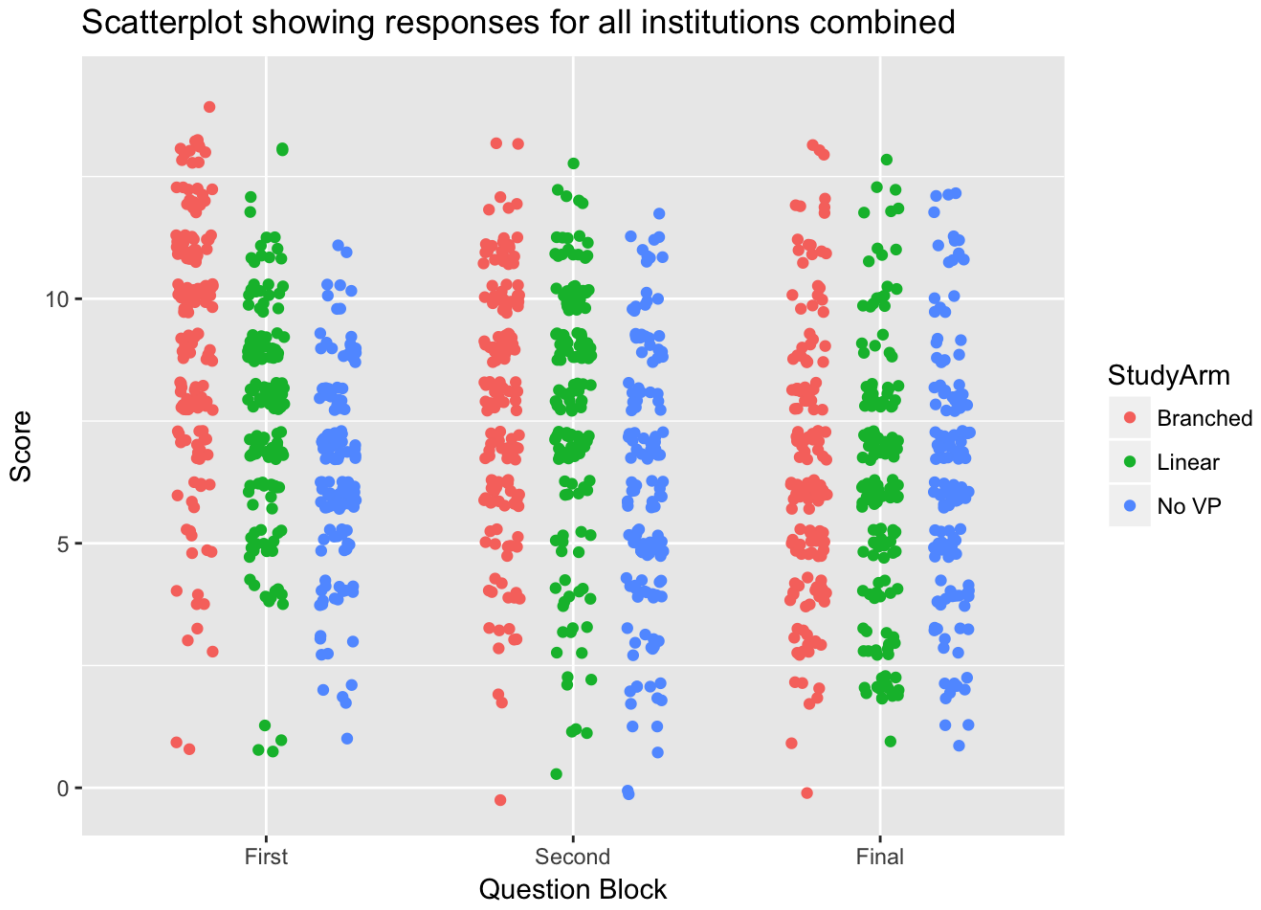
5.3.3 E2.X – Student Performance on Paediatrics cases

At each PCU each partner performed an assessment of learner performance related to the paediatrics cases. The strategy for this is described in WP2 and is beyond the scope of this evaluation report. In brief, the assessment was divided into three blocks of 18 questions, with each block increasingly removed from the content of the virtual scenarios in its relevance. The results are summarised briefly below.

The scatterplot below shows the general spread of results.



Although this is indicative of the general pattern from an illustrative perspective, we plotted frequency density curves to give a more detailed view of the distributions that the findings followed, shown below.

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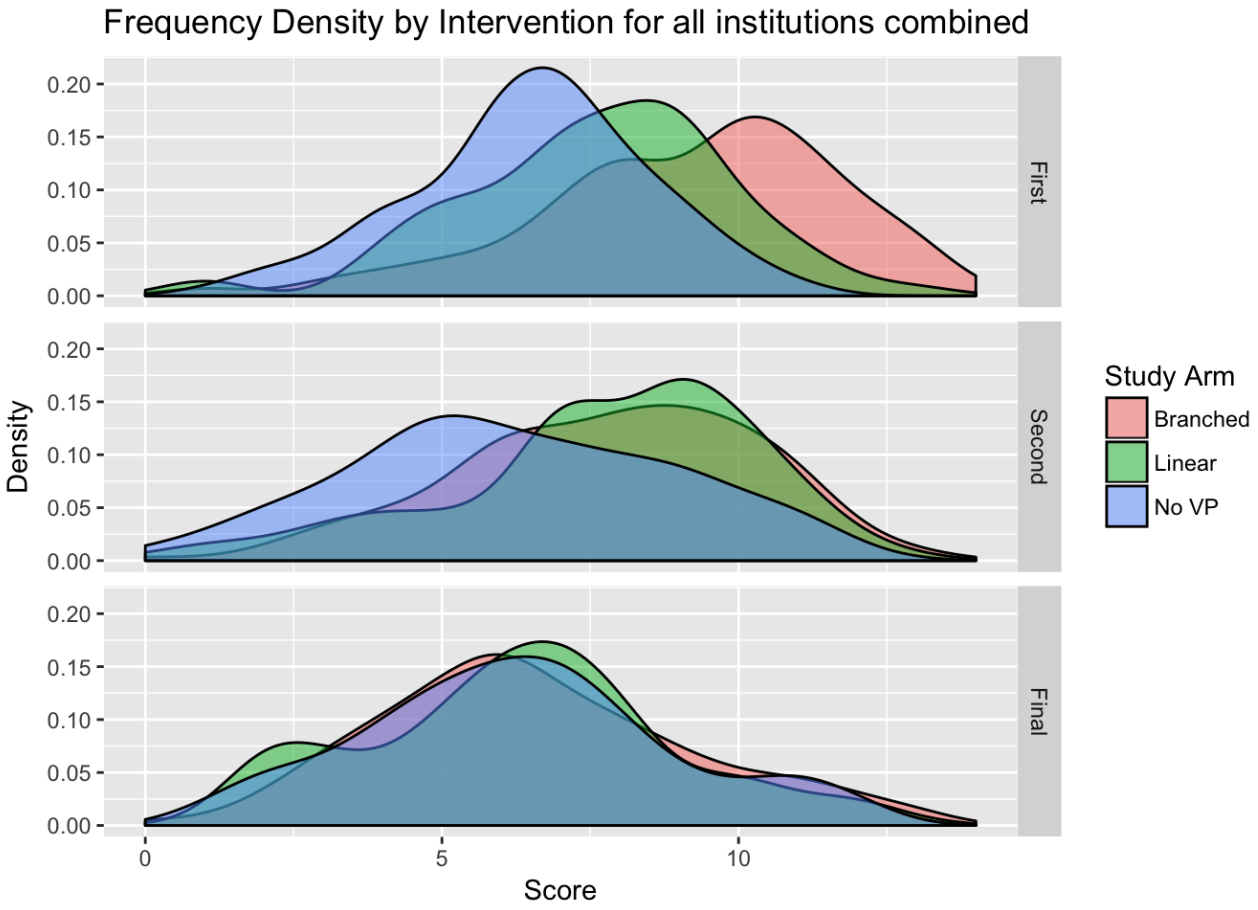

This provided a clear indication of a general trend for the learners in the branched and linear group to outperform the control equally in the second question block, while there is no significant difference in the scores between the groups in the final question block. In the first question block, in which questions directly related to the intervention, it appears that the branched group performed better than the linear group, who in turn performed better than the control group. This is borne out in the final diagram, a bar chart shown below.

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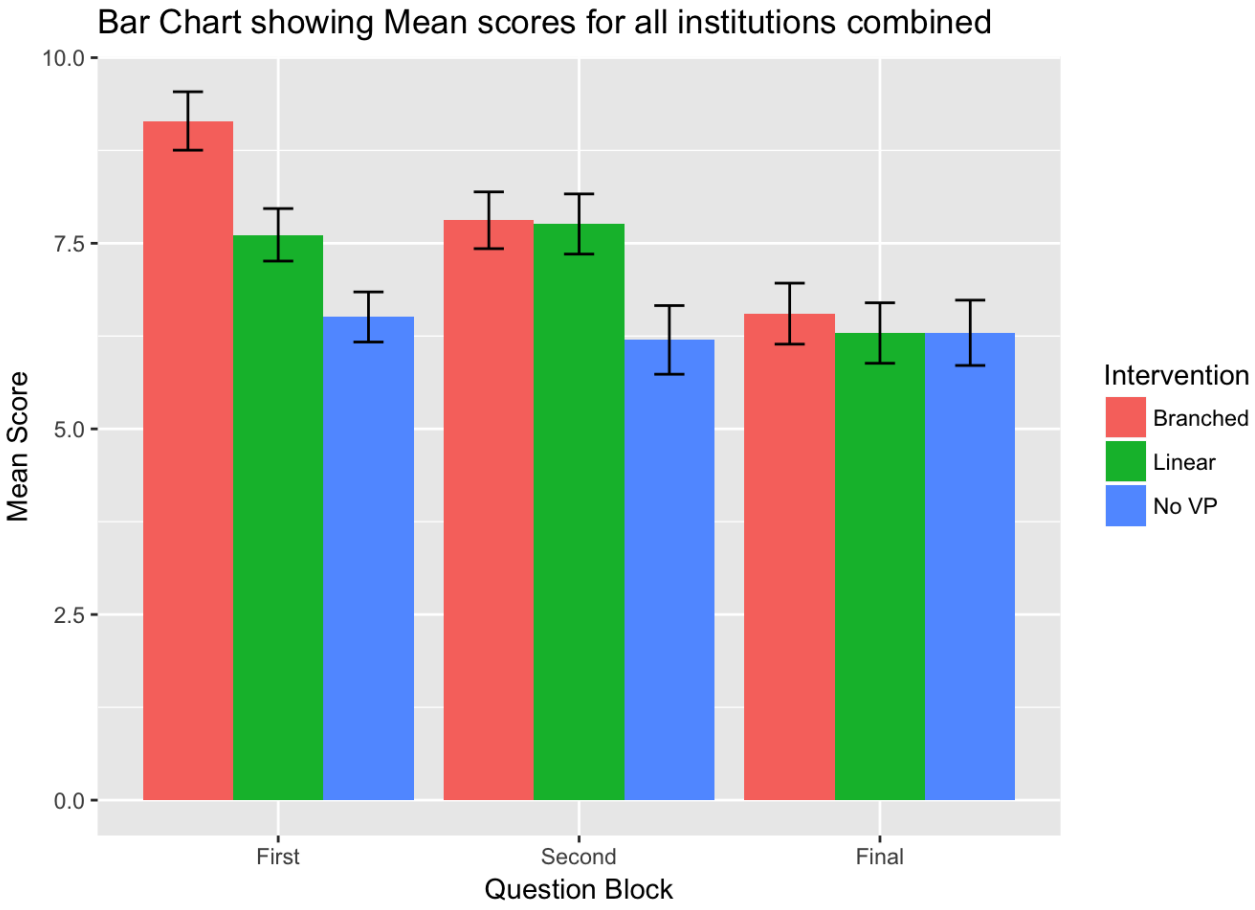

This chart clearly shows that the mean scores in each group reflect the trends described above, and that the more closely the questions relate to the cases, the better the branched group perform.

5.3.4 A6 – Learner experience of PCU-selected cases and E2.X – Student Performance on PCU-selected cases

Each institution designed and completed their own evaluations for the PCU-selected cases. These are described in a standardised form in Appendixes 1-5. The range of approaches and activities to evaluation varied significantly, ranging from re-use of the existing survey instruments, to essay questions, OSCE-style assessment tasks and general multiple-choice question or single-best answer style exercises.

5.3.5 Analysis and Conclusions

The range of data collected about learner perceptions, acceptance and experiences of using the error VPs within the TAME project is considerable. The diversity of the data collected, and the differences in implementations of some aspects of the evaluation make it clear that it is not feasible to draw firm conclusions generalised across the whole learner

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population, but there are some emergent themes and general principles that can be examined from the data.

A clear finding is that the impact of institutional culture is significant and has a great effect on learners experience and evaluation of aspects of the TAME interventions. In particular, as previously noted, the results show some clear differences between the results of those learners from institutions with prior exposure to Problem-Based Learning and Virtual Patients, when compared to those institutions who have not. In general, the ratings for VPs were higher in those institutions that had previous experience. This may be down to the impact of having more experienced tutors, as well as learners' expectations for the sessions being more closely aligned with the requirements for their engagement. Likewise, the impact of language and the adaptations of the cases can clearly have a substantial impact. This institutional effect indicates that although we can identify trends amongst learners, we cannot universally generalise the results to all institutional settings.

We were able to establish within the Paediatrics evaluation that there was in general no significant difference between the motivation and learning strategies of the groups that received linear and branching structure VP cases. This, when combined with the results from other aspects of the evaluation, indicates that learners at all sites were able to overcome any initial discomfort from being asked to take decisions within the branched cases, and indeed being induced to make errors within those cases. At isolated institutions there were some significant differences on selected sub-scales that indicated institutional culture had a part to play in student responses.

The assessment of performance as part of the assessment strategy, while not a formal part of the evaluation, sheds some further light on the experiences of the students. The results indicate that increases in performance are most pronounced from the use of branched VPs in areas of knowledge that are most closely related to the VP cases. There is a lesser performance increase associated with linear VPs. However, as the relevance of the VPs to the area of knowledge decreases, the results show that these performance increases diminish, to the extent performance across all 3 groups (branched, linear and control) equalises. This speaks to the transferability of the learning associated with the VP cases; that the learning becomes well-embedded in the direct areas that it is taught, but learners do not necessarily develop the skills to transfer that to a new setting from the VP cases alone. Further reflective work to explore how the learning can be better transferred could be considered for the future.

PCU evaluations on their own case yielded a number of disparate but interesting insights. The VP cases were generally well-received at all sites, with learners indicating that they found them to be a worthwhile, engaging and valuable learning experience. Experiences at KSMU indicated that the VPs proved more suitable for skills acquisition than knowledge acquisition. Some of the data also indicated that learners using linear cases demonstrated improved confidence but lower motivation compared with branched cases.

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6 RESULTS AND FINDINGS - TUTORS

Tutors at each of the PCUs completed an evaluation survey following completion of all the paediatrics cases. Tutors generally facilitated both linear and branched cases, so no distinction was made between these experiences for tutors.

6.1 Activities

Evaluation Activity	Instruments	Key Evaluation Questions	Completed (Dates)
A3 – Tutor experience of paediatric cases	E3	Was the training provided to tutors to facilitate error VP sessions sufficient? Did the use of error VPs significantly impact upon the workload of tutors?	Summer 2017
A7 – Tutor experience of PCU-selected cases	E3	Was the training provided to tutors to facilitate error VP sessions sufficient? Did the use of error VPs significantly impact upon the workload of tutors?	Subject to individual approaches at each PCU

6.2 Deviations from plan

As in the case of learners, having conducted an evaluation activity for the paediatrics cases which yielded satisfactory findings, it was agreed by the project consortium that completion of the E3 survey was not mandatory for the PCU-selected cases. In the case of the tutors, it was agreed that there would be no fundamental difference in the experience of tutoring PCU-selected cases rather than Paediatrics case, so no further evaluation of tutors relating to the PCU-selected cases was required.

6.3 Results

In total 70 tutors completed the survey. This included 20 tutors from BSMU, 8 from AMU, 13 from KSMU, 17 from ZSMU, 5 from HUMP, and 7 from HMU. The survey consists of a mix of likert-items, and open ended responses.

The mean values for the likert item responses are shown in the table below.

tion No.	tion		
4a	The use of error VPs in the clinical sessions provoked high-quality discussion amongst the group.	4.41	0.55
4b	The group found the use of error VPs in the clinical PBL sessions engaging.	4.55	0.53

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4c	The error VPs cases met all the required learning objectives.	3.93	0.52
4d	The use of error VPs made tutoring the clinical session difficult.	3.03	1.16
4e	The technology (equipment and programs) used to support the use of error VPs in the PBL sessions was effective.	4.26	0.68
4f	The technology (equipment and programs) used to support the use of error VPs in the clinical sessions was easy to use and reliable.	4.19	0.65
4g	I was provided with all the resources I needed to tutor the clinical sessions based on error VPs effectively.	4.51	0.70
4h	I have received appropriate levels of training and support to be able to tutor the clinical sessions based on error VPs effectively.	4.45	0.70
4i	I would be happy to tutor further clinical sessions based on error VPs in the future.	4.62	0.55

A range of open-ended responses were received, that identified both positive and negative aspects of the experience of tutoring the cases. One tutor commented favourably that they "would like to keep all classes at graduation courses by PBL". Others expressed a preference for branched cases, commenting that "while conducting classes with branched cases, students were more active and interested in comparison with linear cases".

Some tutors reflected negatively on the impact of the cases having been translated from the English versions, requesting more "accurate" translations and "understandable terms. For example, grunting breathing would be more understandable if it was called a noisy breathing, chest recession". Few technical challenges were identified, and some responses requested further VPs in other areas of medicine, including infectious diseases.

6.4 Analysis

Overall there was a generally high acceptance for the VPs amongst tutors at all sites. The mean values for nearly all likert items were consistently high, placing them in the range of "Agree". The question whether cases met the learning objectives was slightly lower, with a mean of 3.93. This indicates that there were aspects of the local case adaptation and translation that could be improved, making the cases more suitable for the specified learning outcomes once translated. This is borne out by the comments regarding translation issues by some tutors.

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The lowest mean of 3.03 was for the item “The use of error VPs made tutoring the clinical session difficult” which was reverse weighted such that a low mean was a positive result. Nevertheless, the mean was high enough to give some indications that tutors found facilitating the sessions to be a challenging experience. This is universally recognised to be the case, and would be an expected outcome. The fact that the mean value indicated a neutral response to this question suggests that the training provided in TAME for tutors was generally effective.

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7 RESULTS AND FINDINGS - TUTOR TRAINERS

This written interview activity was designed to capture experiences of those training tutors at the PCU. The instrument were sent out to purposefully selected individuals (1 from each University) who have been identified as having been involved in training tutors at PCUs. Data from each PCU were collected and merged into a single dataset for analysis.

7.1 Activities

Evaluation Activity	Instruments	Key Evaluation Questions	Completed (Dates)
A5 – Tutor trainer experiences of training tutors at PCUs	E5	Was the training provided to tutors effective? How was the training delivered to tutors? What training documentation was required?	October - December 2016

7.2 Deviations from plan

The tutor trainers were quizzed on-line according to the plan after the training organized locally to new tutors.

Due to some misunderstandings 6 results from HMU from tutors instead of 1 from a tutor trainer was received. But the results are still valuable to answer the first question, whether the training provided to tutors was effective?

7.3 Results

5 answers were collected from the PCUs' tutor trainers in Russian and Vietnamese languages to the questions that referred to the process of tutors training, documentation or materials used to support the training, changing in their attitude to teaching in future, one from each PCU.

7.4 Analysis

The PCUs have provided their strategy for choosing teachers to participate in the training, which included advertisement on the official web pages to invite teachers (ZSMU), free will to participate in the project and learn new educational methodology (ZSMU, BSMU, KSMU). The differences between linear and branch VP cases were explained in ZSMU, BSMU and KSMU, before the training lectures on D-PBL methodology, Virtual Patient and medical error were delivered to the participants (BSMU, KSMU, ZSMU and also HUMP). The practical trainings with students were organised to show the future tutors the methodology in process (AMU, KSMU, ZSMU, BSMU).

Before this activity, following the advice of Ella Poulton (SGUL), future tutors learnt the case in role of students (KSMU, ZSMU, BSMU) in order to understand better the challenges that students face during the tutorials. At the end of the tutor training sessions, the trainer had a personal conversation with every trainee, pointing out weak and strong aspects of their behaviour during the tutorial (BSMU, KSMU). The feedback was collected from students and tutors (KSMU, ZSMU, BSMU).

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The PCUs indicated that materials on D-PBL and medical error based on presentations provided by Ella Poulton and Jonathan Round (SGUL) were used for preparing lectures for students and tutors on the tutor training.

The PCUs tutor-trainers highlighted that regular training with students of different years of study and tutors of different departments would be useful for D-PBL methodology learning (KSMU, ZSMU, BSMU). Short overview of the case to discuss the difficulties in the case are necessary (KSMU, ZSMU, BSMU). BSMU and KSMU also propose to visit tutorials of newly involved staff to help him/her if required.

In the section "Other comments" BSMU shared that in order to disseminate the D-PBL methodology and to enhance skills on tutor trainings, BSMU's representative conducted training in the "School of young teacher".

HUMP noted that for a successful tutorial, marker boards, good technical supply and positive atmosphere are needed, as well as rich educational database, that would be useful for both students and tutors.

ZSMU's tutors and students highlighted the innovative character of the teaching methodic and noted friendly surrounding, small size of a student group, development of clinical reasoning skills as positive aspects; among challenges low motivation of students to independent work and lack of possibility to tell them the right answer were mentioned by tutors.

8 RESULTS AND FINDINGS - CASE WRITERS (CREATORS AND ADAPTERS)

8.1 Activities

Evaluation Activity	Instruments	Key Evaluation Questions	Completed (Dates)
A4 – Case adapters experience of paediatric cases	E4	What were the significant challenges when adapting the VP cases? What skills and input were required to adapt the cases?	February, 2017
A8 – Case writer experience of PCU-selected cases	E4	What were the significant challenges when creating the VP cases? What skills and input were required to create the cases?	September-December, 2017

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8.2 Deviations from plan

Due to peculiarities of the adaptation and writing process the activity was performed 2 month later then indicated in a plan.

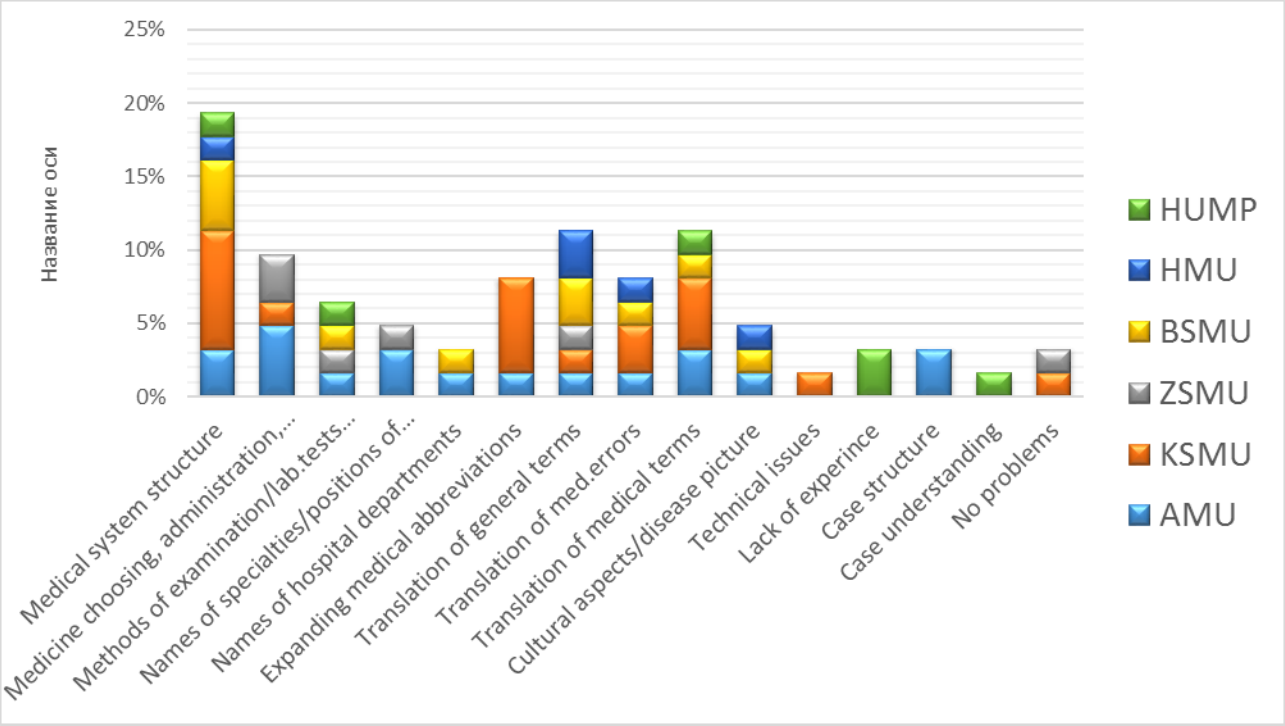
8.3 Results

A4. – Case adapters experience of paediatric cases

The survey was delivered for completion to the selected staff dealing with the adaptation of the paediatric VP cases with medical error. 33 answers were received from 6 PCUs in English, Russian and Vietnamese languages, concerning the challenges faced, approaches used, support and resources required. This included 5 answers from AMU, 8 answers from KSMU, 5 answers from ZSMU, 5 answers from BSMU, 3 answers from HMU and 7 answers from HUMP.

Among the challenges the adaptors indicated medical aspects (35,47%), linguistic aspects (46,76%), cultural aspects/disease picture (4,83%), other issues (as technical issues lack of experience, case structure, case understanding - 9,68%) and 3,22% faced no problems.

Chart. Challenges faced during cases' adaptation



Among the means of overcoming the challenges, the participants mentioned the following:

- local teamwork
- personal development
- workshops
- F2F meetings

The interviewees were also asked about essential skills and resources, and any additional support required to write VP cases effectively.

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Chart. Skills required to be a good adaptor

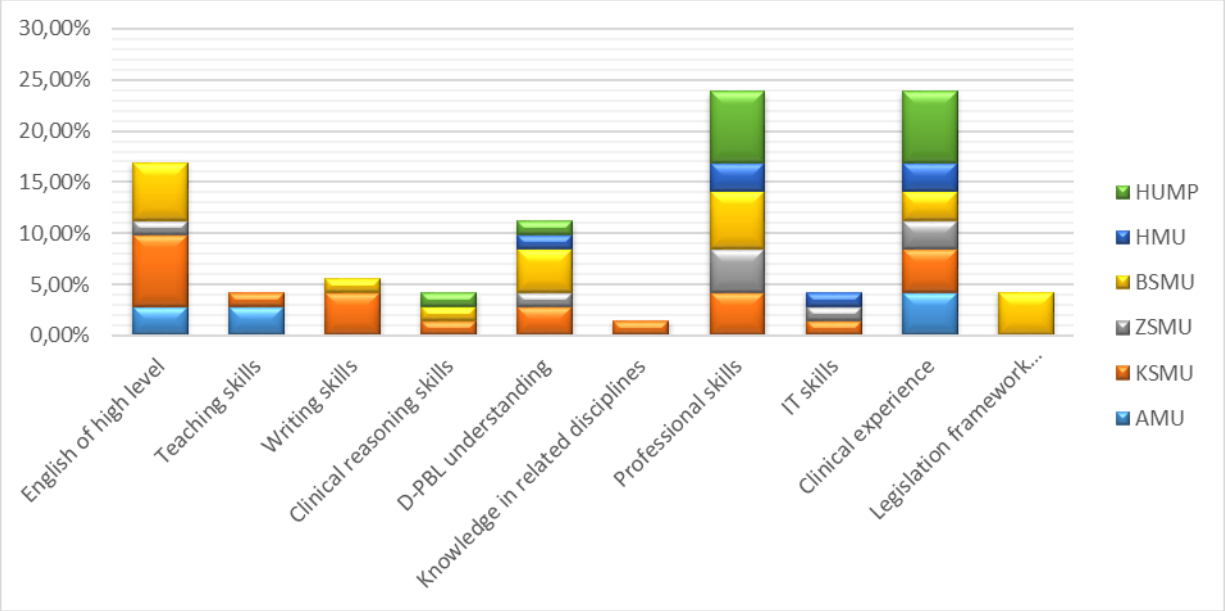
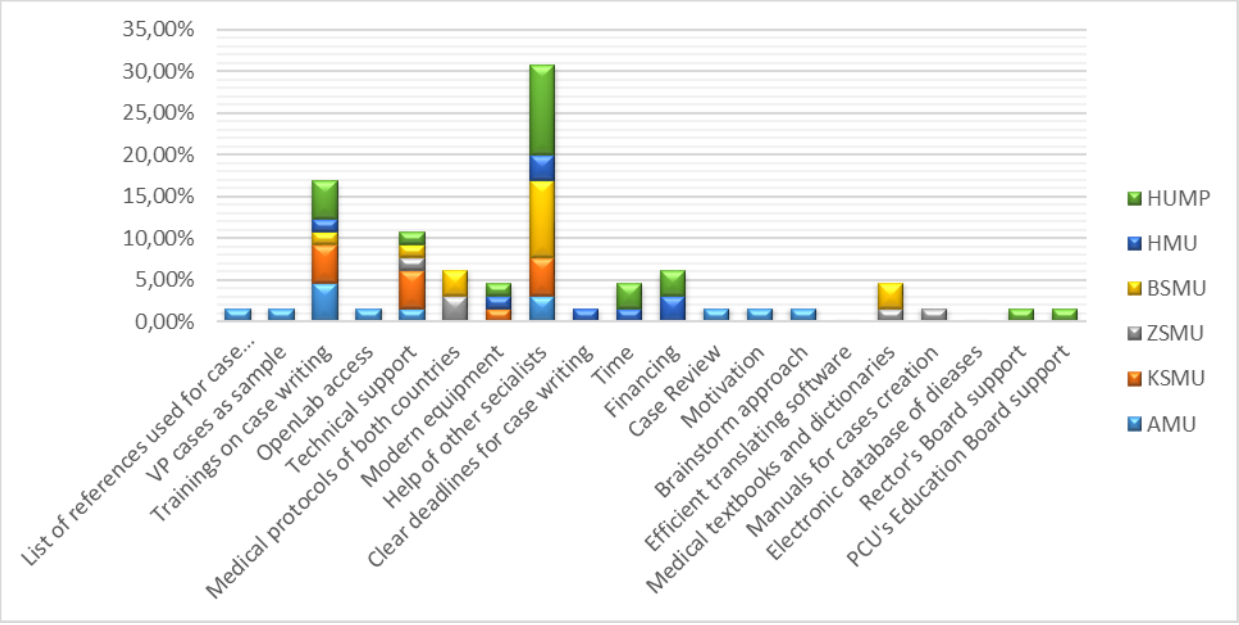


Chart. Sources and support required for cases adaptation



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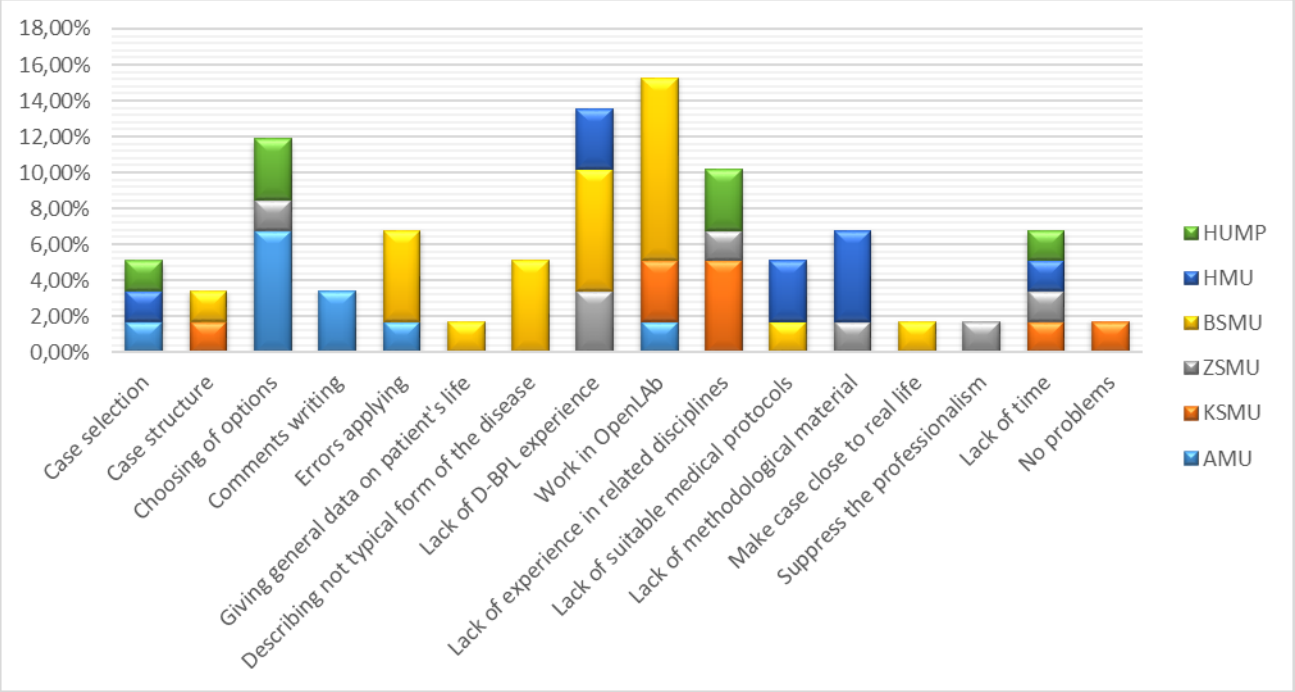
A8 - Case writer experience of PCU-selected cases
In surveys for case creators, the interviewees were to answer the same questions as case adaptors did: challenges faced, skills and sources required. 35 answers were received for analysis – 6 from AMU, 5 from KSMU, 4 from ZSMU, 9 from BSMU, 6 from HMU and 5 from HUMP.
Chart. Challenges faced during cases' creation



To overcome challenges the participants highlighted the following:

- Trainings
- Cooperation with other specialists
- Technical support
- Studying additional material
- Real patients' cases study

Chart. Skills required to be a good case writer

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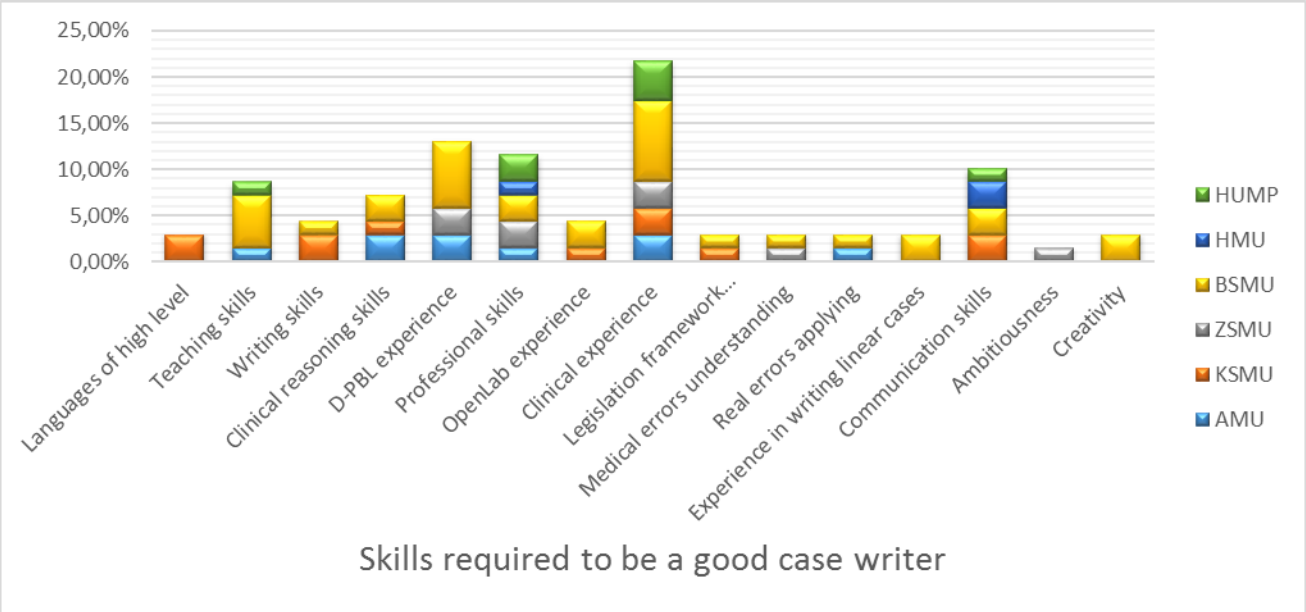
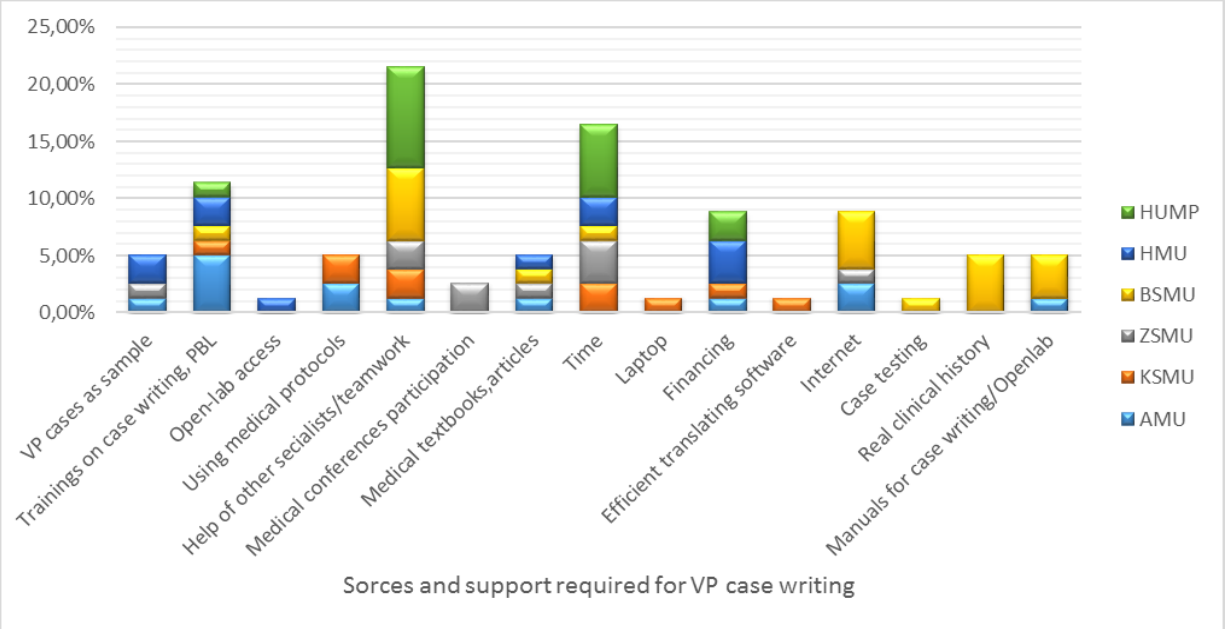


Chart. Sources and support required for cases creation



8.4 Analysis

Case writers, as well as adaptors highlighted the importance of high level of professional skills, clinical experience and D-PBL methodology understanding for the process of creation and adaptation D-PBL error cases. The more specialists are involved the more vivid and realistic the case is. A high percentage of interviewed adaptors/writers share the meaning that clinical reasoning skills are essential for creation effective VP case.

Additionally, in the “Other comments” section of A4, 7 adaptors marked D-PBL and VP cases as valuable approach, and 4 marked the process of adaptation as interesting.

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In the “Other comments” of A8 section, the interviewees with previous PBL experience highlighted once again the necessity of starting VP case writing process from linear cases writing experience, as well as approbation of cases created.

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9 RESULTS AND FINDINGS - PROJECT TEAM AND COURSE TEAMS (CURRICULUM PLANNING AND COURSE MANAGEMENT)

The project and course teams are presented in TAME project by the coordinator and manager from each PCUs, as well as staff from educational departments and IT support and other staff involved into curriculum planning and course management.

9.1 Activities

Evaluation Activity	Instruments	Key Evaluation Questions	Completed (Dates)
A9 – Implementation of PCU-selected cases	E6	What resources were required to deliver the error VP cases effectively?	November, 2018
A10 – Project progress	Project progress reports, Quality report	Has project met key milestones/performance indicators? Has project remained in budget? Have project management tasks (decision making, reporting, communication) been carried out effectively? Have project dissemination activities been targeted effectively, and future opportunities identified?	December, 2018

9.2 Deviations from plan

A10 evaluation activities will be concluded following the closure of the project and form part of the D4.3 report and TAME final report.

9.3 Results

The survey consisted of 4 open questions concerning the experiences of implementing VP cases at PCUs and “Other comments” section. It was provided in English and the answers were returned in Russian and English languages. 15 responses in total were received from all partners. This included 9 separate answers from AMU, 3 separate answers from ZSMU, 1 from KSMU, 1 joint answer from HMU and 1 joint response from BSMU team. All answers were collected in excel sheet at the Google Drive for further analysis.

The Project teams of the PCUs consisted of members with different roles in the project, as coordinators, managers, case writers, tutor trainers and tutors, IT specialists and accountants, so the answers received covered all aspects of the courses implementation.

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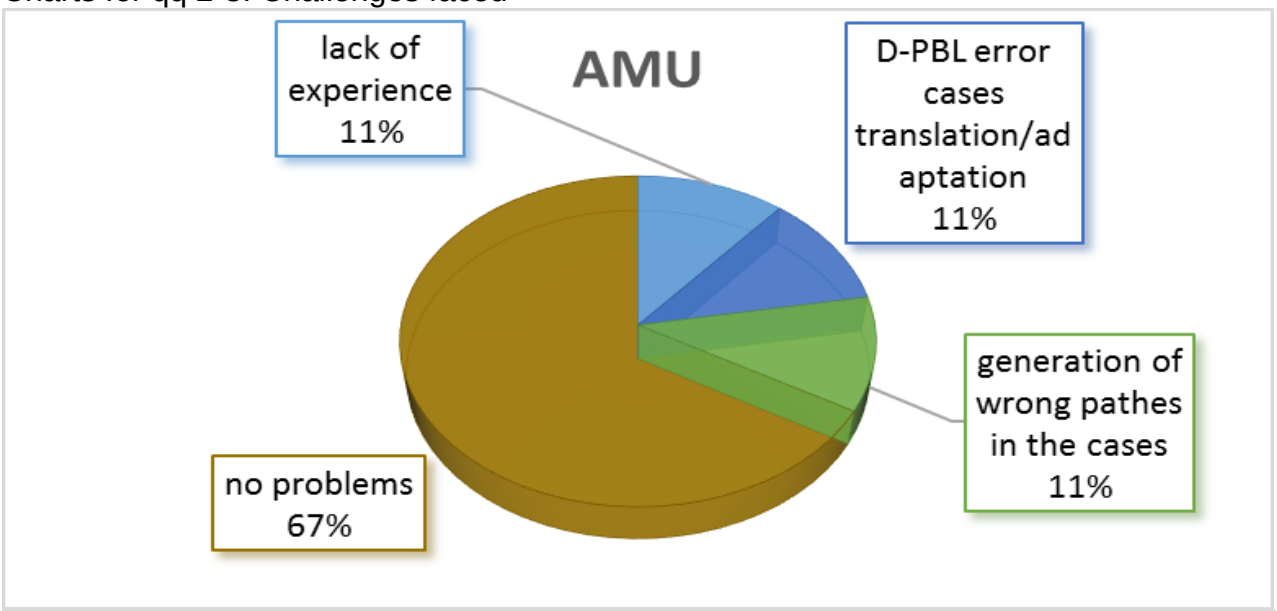
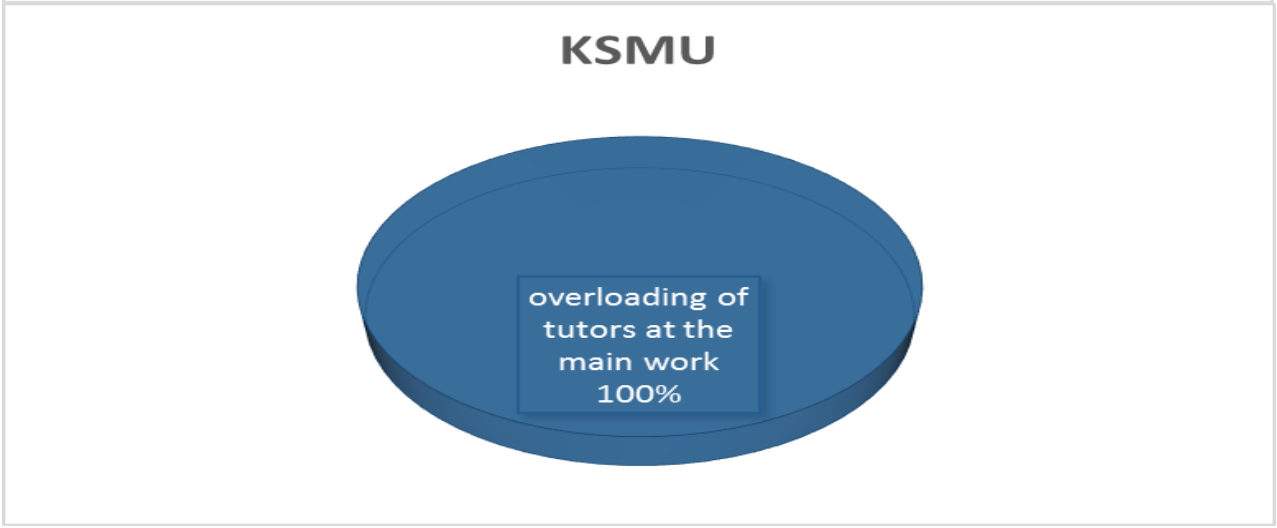
The biggest difficulties faced during the courses implementation are presented below considering the PCU.

Charts for qq 2-3. Challenges faced





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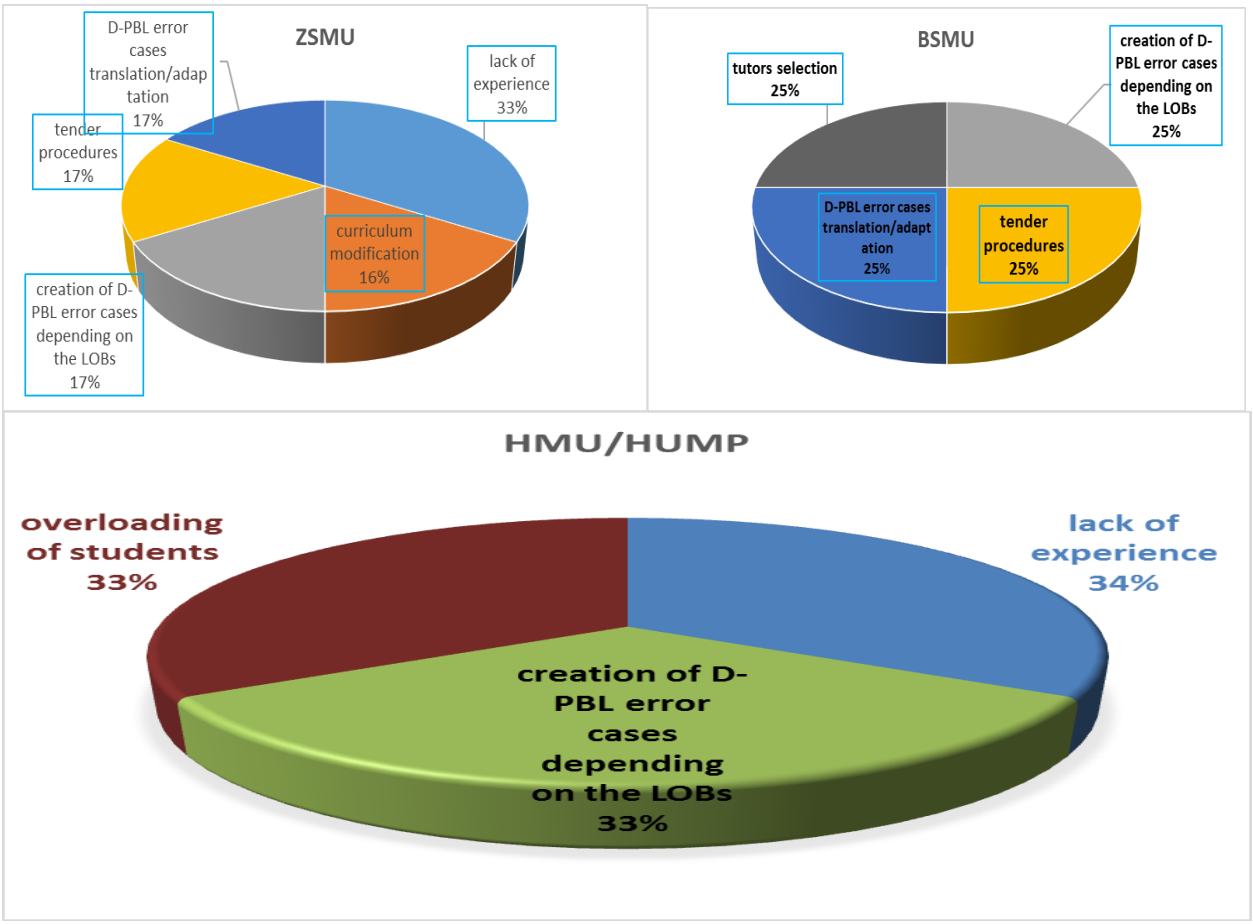
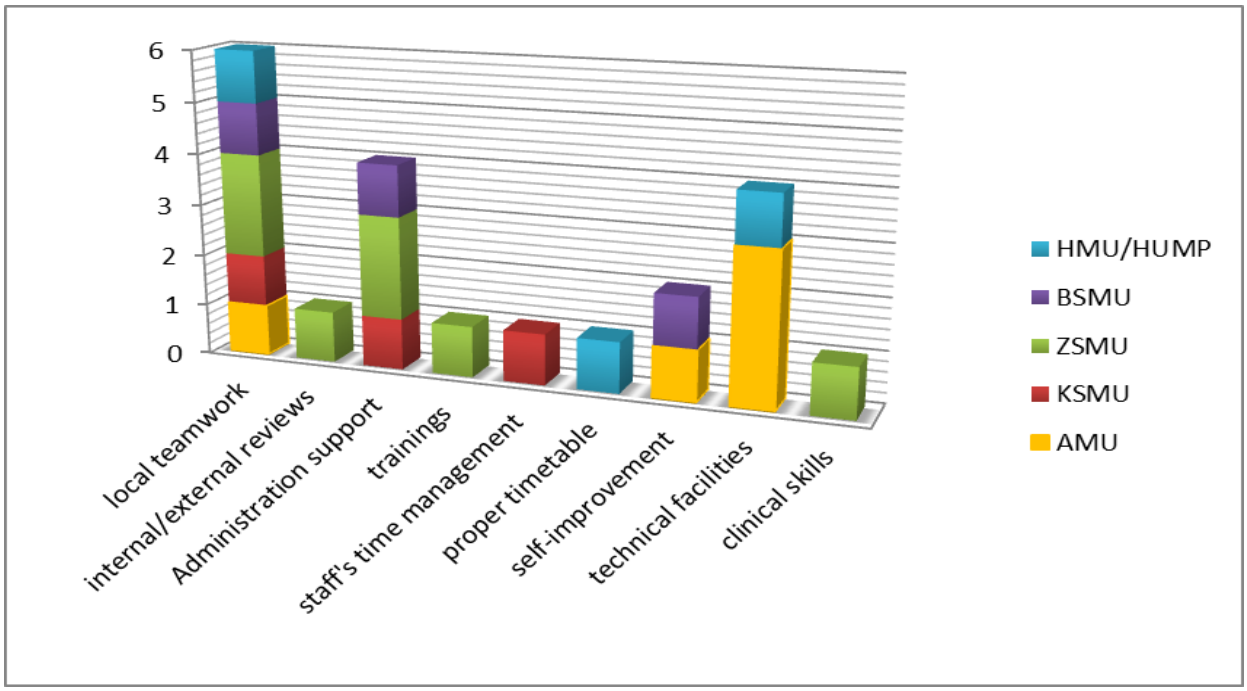


Chart Means/resources to overcome the difficulties



9.4 Analysis

A9 – Implementation of PCU-selected cases

As the main difficulties, the participants see lack of experience, curriculum modification challenges, creation of D-PBL error cases to fit the LOBs, tendering procedures, D-PBL error cases translation/adaptation, generation of wrong paths in the case, overload of tutors and students and tutors selection.

Some responses are linked with the geographic and cultural factors of the partners. Ukrainian PCUs faced tendering challenges due to governmental regulations while equipping rooms for PBL tutorials.

One of the crucial issues was overloading of students and associated safety concerns (HMU). Students at this stage of education have both theoretical and practical classes, so they have to move from the University to the hospital and back all the time. So, due attention had to be paid to the development of the timetable to save students' time and avoid unfavourable risks for their safety due to the chaotic traffic in Vietnam.

Special attention was paid to the selection of tutors (KSMU, BSMU) due both to their overloading and to matching to the specific requirements of the Project. Cases Adaptation and writing ,process was a challenge for half of participants, but they overcame it thanks to their own clinical experience (ZSMU), self-improvement for writing cases, and studying regulations and recommendations on conduction of equipment purchase procedure properly.

Local teamwork was indicated by all the participants to implement the course effectively.
Support of the PCUs Administration Boards and responsible Authorities of the institutions as well as rich technical facilities were marked as sufficient for the Project implementation and smooth work of the project teams.
For the course implementations, the PCUs (KSMU, AMU, ZSMU and BSMU) indicated that a modification of curriculum and development of an adequate time-table were required. No other additional changes were made.
In the Other Comments section the responders indicated the value of D-PBL cases within the educational process (AMU), and highlighted surprisingly high level of students' interest and motivation while mastering disciplines in the frames of the Project (ZSMU), insisted on the importance of further providing BPL trainings to the Academic Staff (AMU, HMU) and summarized that it would be great to continue the TAME project (AMU).

A10 **-** Project progress

Regarding Activity 10, all the project progress has been monitored successfully, with deliverables completed. The Quality Report has been completed and run successfully. It covers strength and weaknesses of the Project realization, its dissemination level and sustainability strategy.

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10 REFERENCES

Pintrich, P. R., Smith, D. A. F., Garcia, T., & Mckeachie, W. J. (1993). Reliability and Predictive Validity of the Motivated Strategies for Learning Questionnaire (MSLQ). *Educational and Psychological Measurement*, *53*(3), 801–813. https://doi.org/10.1177/0013164493053003024

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11 INDEX OF APPENDICES

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APPENDIX 1 – KSMU – SUMMARY OF YEAR 3 EVALUATION ACTIVITIES

Institution Name: Karaganda State Medical University

Activity Summary - VP cases in General Medical Practice

Stakeholder	Instrument type	Key evaluation questions	Dates
Learner (Year 5 students of medical curriculum) *students of intervention group)*	Learner experience of GMP cases survey	Do the error VPs provide an effective and engaging learner experience?	
Learner (Year 5-6 students of medical curriculum) *students of intervention group, 36 students of Year 5 control group and 14 students of Year 6 control group)*	Progress test MCQ test and OSCEs in each cases 6 months after intervention	What is the initial level of students' performance before the tutorials? Does the use of error VPs affect learner clinical performance and knowledge relating to medical error?	

Description of Work

Please provide a brief summary of the work that you did – what you were evaluating, how you collected data, what analysis you did

1. We used virtual patients (VP) scenarios in General Practice for clinical PBL with senior students (Year 5 of undergraduate curriculum) to train them in prevention of medical errors. We investigated how group dynamics influence student perceived ability, experience, knowledge and communication skills to help them manage the patients in the future. Team of GP teachers carefully analyzed possible medical errors in their practice, designed 6 VP cases and lead tutorials with students (PBL-VP track). After finishing the tutorials on each case, the online link to questionnaire was sent to all the students in PBL-VP track. The questionnaire aimed evaluating personal experience, perceived abilities, mental effort and emotional reactions

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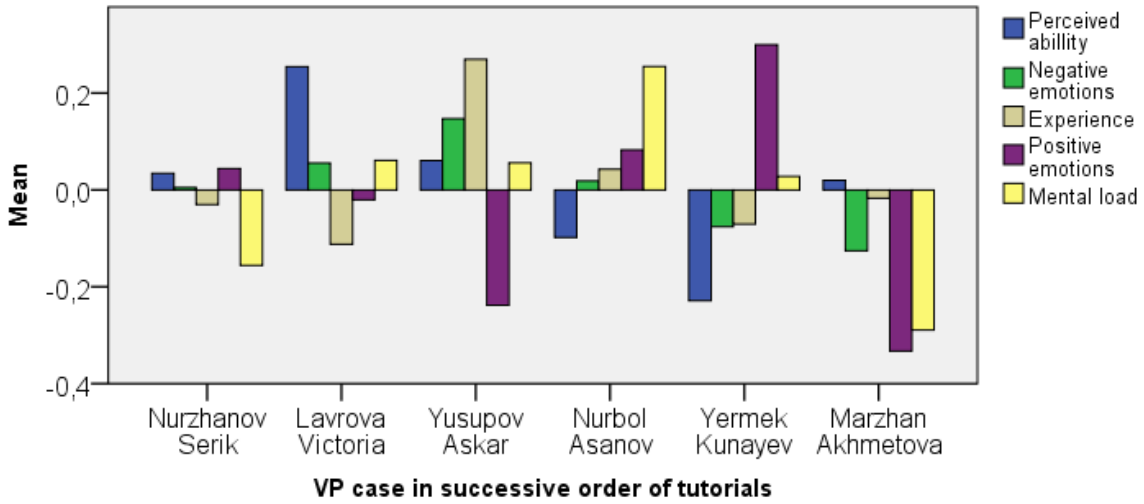
related to the tutorial on the case and was exactly the same questionnaire used in the WP2 (instrument E1.1).

The survey included 28 questions. To make evaluation results to be more interpretable, we conducted confirmatory factor analysis of responses. The analysis grouped all the responses into 5 predictable components: personal experience, perceived abilities, mental load, positive emotional reactions, negative emotional reactions. The Anderson-Rubin score was calculated for each component – it is measured on the scale from -1.0 to +1.0 with the mean of 0 and standard deviation of 1. The breakdown of component scores after each case is presented below.



2. In 6 months after completion of cases the students were given multiple choice exam on each case (10 questions per case) and went through 6 OSCE stations with standardized patients' scenarios mimicking the VP cases. Routine progress test score prior to tutorials was used as indicator of initial academic abilities of students. The intervention group included all the students in PBL-VP track, the control groups were composed of students of regular traditional curriculum (which is not utilizing any PBL-VP tutorials) of Year 5 and Year 6 for MCQs, and Year 5 students for OSCE stations.

   Unfortunately, the initial level of students as judged by progress test score differed in all 3 groups of students (intervention, Year 5 control and Year 6 control). It could be the consequence of randomization. Due to this fact, the progress test score was used as covariate in all consequent analysis to eliminate the effect of previous knowledge on result of OSCE and MCQ exam.

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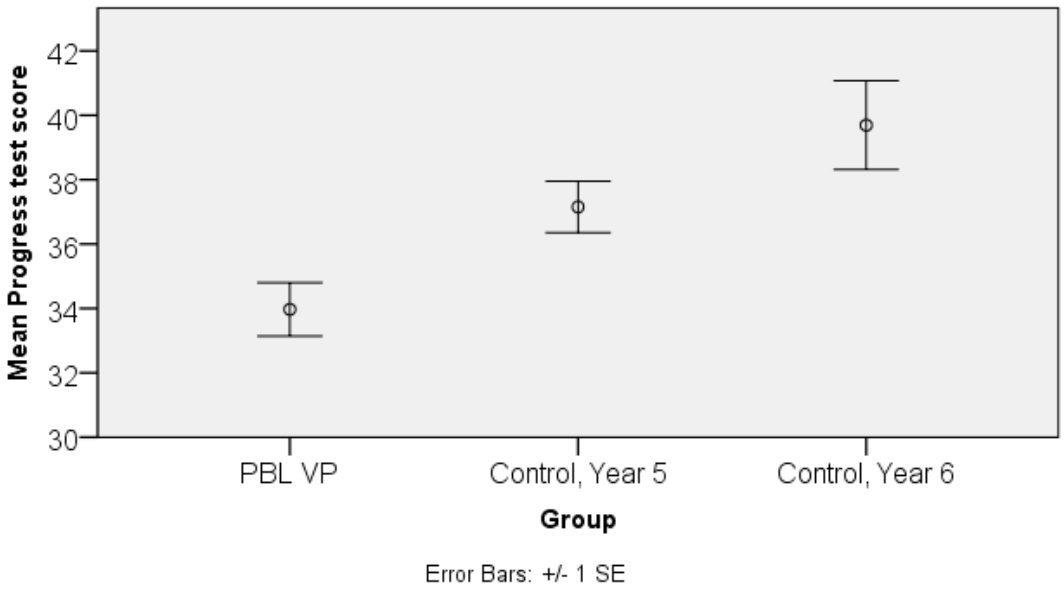
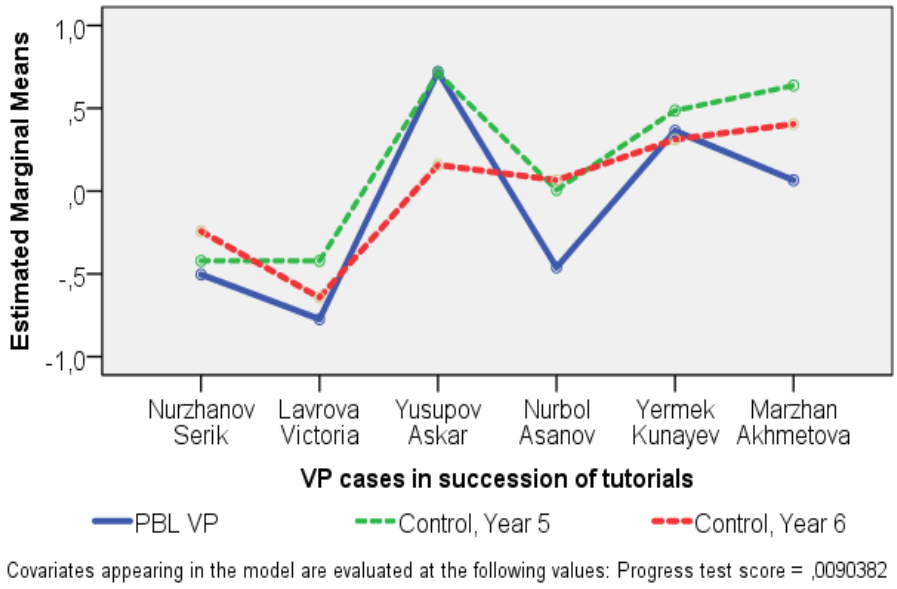


Comparing assessment results of PBL VP track to control group, we registered that in 4 cases PBL VP demonstrated similar knowledge retention, in 2 cases it was lower. Patient interview skills (as assessed by OSCE) were much better for 3 cases and comparable for other 3 cases. So, the virtual patient cases tend to provide better practical applications (measured by OSCE), but less benefits to knowledge retention (measured my MCQ).

MCQ on each case in 6 months after PBL VP



OSCE on each case in 6 months after PBL VP

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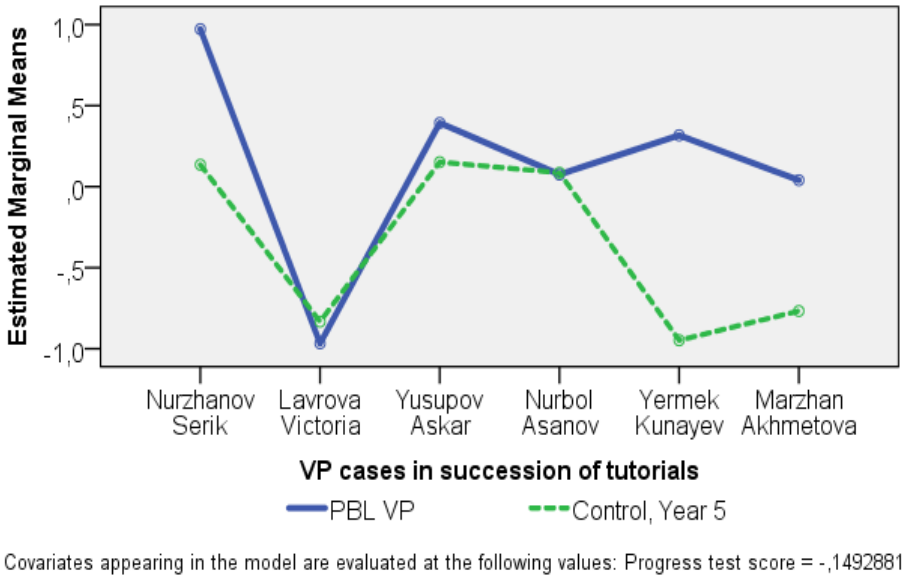

Covariates appearing in the model are evaluated at the following values: Progress test score = -,1492881

Summary of Findings

Please provide a summary of your findings – what was shown by the results, what conclusions can you find, were there any issues/limitations

1. Each case had unique combination of perceived ability, emotional reactions, experience and mental load. It was obviously caused by the structure of the case itself and not by the personal characteristics of the learner.
2. The initial level of students as judged by progress test score differed in all 3 groups of students (intervention, Year 5 control and Year 6 control). Due to this fact, the progress test score was used as covariate in all consequent analysis to eliminate the effect of previous knowledge on result of OSCE and MCQ exam.
3. Virtual patient cases closely mimic the behavior of future doctors in real life situations leading to better retention of interview and practical skills.
4. Knowledge retention is not the most prominent feature of PBL VP case, though it provides comparable results to traditional curriculum.

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APPENDIX 2 – BSMU – SUMMARY OF YEAR 3 EVALUATION ACTIVITIES

Institution Name: Bukovinian State Medical University

Activity Summary

Stakeholder	Instrument type	Key evaluation questions	Dates
Learner/Tutor	Survey/Focus Group/Interview/MCQ etc.		
Internal medicine cases: Branch group - 38 students (27 female, 11 male) Linear group - 35 students (28 female, 7 male) **Total 73 students/9 Tutors**	Learner Experience Survey (after each case) Learner Motivation Survey (after all cases) Learner Assessment instrument (Final Knowledge test - 60 questions)	**Learners** 1. Does the use of error VPs affect learner performance and knowledge relating to medical error? 2. Do the error VPs provide an effective and engaging learner experience? 3. Do the error VPs represent an appropriate workload for inclusion into existing curricula? **Tutors** 1. Was the training provided to tutors to facilitate error VP sessions sufficient? 2. Did the use of error VPs significantly impact upon the workload of tutors?	16/11/2017, 22/11/2017, 29/11, 6/12, 13/12, 20/12/2017 20/12/2017 05/05/2018

Description of Work

Please provide a brief summary of the work that you did – what you were evaluating, how you collected data, what analysis you did

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Learner Experience Survey (after each case) and Learner Motivation Survey (after all cases) were translated into Ukrainian. After each case (once a week) the students from all groups (branch and linear) felt out the information in paper form of Learner Experience Survey. After all cases they described their opinion of classes in Learner Motivation Survey. The results were entered in the computer program “Statistics” and processed. On the basis of the data obtained, analysis and comparison of students’ answers from different groups was made.

Final knowledge test was created by BSMU TAME team into Ukrainian. It consists of 60 tasks based on cases information: 30 MCQ with single answer (5 per each case), 18 multiple-answer tests (3 per case) and 12 shot open answer tasks (2 per case). Assess students' knowledge of new cases was conducted on 5 th May, 2018 (in paper form). The results were entered in the computer program “Statistics”. The evaluation of test results is in progress.

Summary of Findings

Please provide a summary of your findings – what was shown by the results, what conclusions can you find, were there any issues/limitations

- 92,0% of students would like to study at senior courses precisely by this method;
- helps to see and understand the consequences of the decisions (60%);
- actively immerses into the diagnostic and therapeutic process (53.3%);
- stimulates interest in independent study of material (45%);
- helps to acquire skills for making independent decisions (38,4%);
- gives the opportunity to "pause" in the process of working with the patient and obtain the necessary reference information (20%).
- students who studied branch cases were more motivated and interested in working with VP;
- students who studied linear cases are more confident in their knowledge, don’t need to use additional materials.

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APPENDIX 3 – AMU – SUMMARY OF YEAR 3 EVALUATION ACTIVITIES

Institution Name: Astana Medical University

Description of Work

Please provide a brief summary of the work that you did – what you were evaluating, how you collected data, what analysis you did

Assessment instruments consisted of two parts: an essay for evaluation of clinical cases and multiple choice questions for evaluation students' knowledge. All essay responses were saved in the Moodle program, for each student and group. We were assessing in the following way: we read the answers and using with the help of the evaluator's table chose the criteria and the program counted the score.

Essay questions were: 1. What did I know, what did I learn,2. what was unclear for me or with what did I have difficulties during the case tutorial, 3. about what did I need to think more or I need to learn the topic deeper, 4. what was done by the doctor effectively, appropriately, fully in the case, 5. what could be done in a different way during the case tutorial, what would I do to avoid these errors.

The essay answers were evaluated using some criteria:. The first criterion called completeness of answers and had three levels: 2 - the student clearly and fully answers all the questions of the essay, 1- the answers to the question are not full, 0 - there are no answers to more than half the questions and / or monotonous answers from one or two words. In this criterion the maximum points that could be acquired were 20.

The second criterion was analysis and assessment of information, 4- correctly and reasonably explains textual information; gives personal assessment of the problem, 3- correctly, but there is no clear justified response, gives personal assessment of the problem, 2 - correctly explains text information; gives a partial personal assessment of the problem, 1 - illiterate interpretation of textual information and partially personal assessment of the problem; 0 - information is not correctly and not reasonably presented; there is no personal assessment of the problem. The maximum points to be acquired were 40.

Third criterion for students evaluation is called logical and coherent summary: 4- the summary is clear and concise; the evidence is logical and reasoned; different points of view and personal assessment are given, 3 - the summary is clear, but not concise; the evidence is logical, but not argumentative; a partial assessment is given, 2 - the summary is unclear and partially not clear; the evidence presented is illogical, and partially argued; partial assessment is given, 1- the summary is vague and unclear; but there is evidence and partly argued; but there is no personal assessment, 0 – the summary is vague and unclear; there is no evidence and arguments; there is no personal assessment. The maximum points that a student could get were 40.

How will be essay assessed

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criteria	levels					Max. points (100)
completeness of answers	**(20)- the student clearly and fully answers all the questions of the essay**	**(10)- the answers to the question are not full**	**(0) - There are no answers to more than half the questions and / or monotonous answers from one or two words**			**20**
Analysis and assessment of information	**(40) correctly and reasonably explains textual information; gives personal assessment of the problem**	**(30) correctly, but there is no clear justified response, gives personal assessment of the problem**	**(20) - correctly explains text information; gives a partial personal assessment of the problem**	**(10) - illiterate interpretation of textual information and partially personal assessment of the problem;**	**(0) - information is not correctly and not reasonably presented; there is no personal assessment of the problem**	**40**

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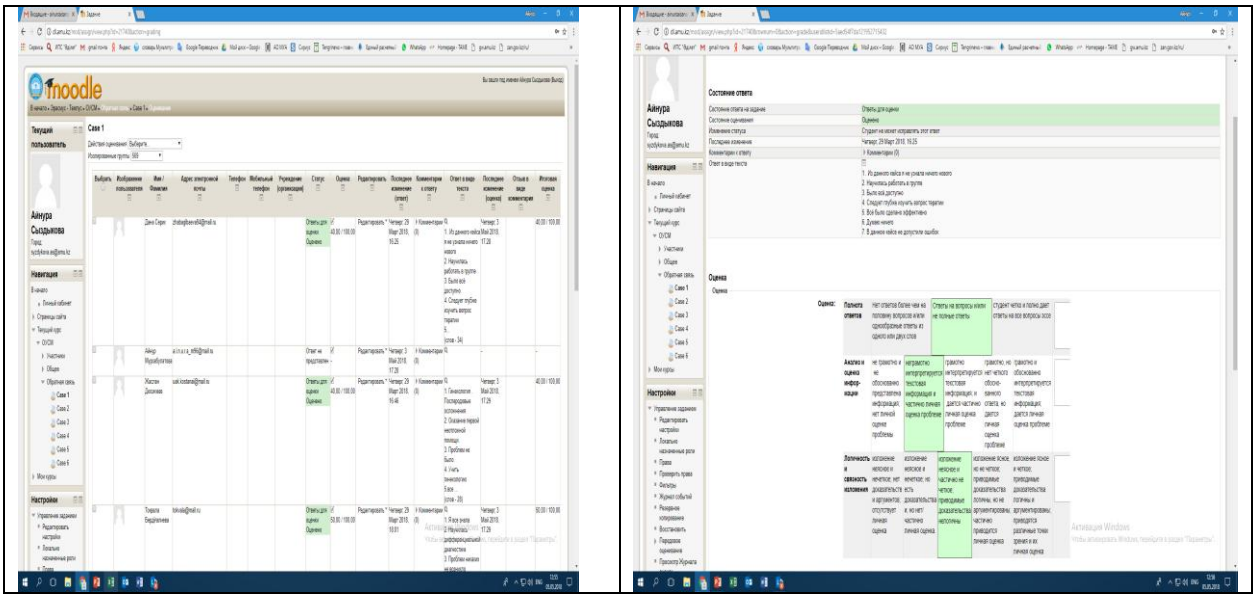
Logical and coherent summary	**(40) the summary is clear and concise; the evidence is logical and reasoned; different points of view and personal assessment are given.**	**(30) the summary is clear, but not concise; the evidence is logical, but not argumentative; a partial assessment is given.**	**(20) the summary is unclear and partially not clear; the evidence presented is illogical, and partially argued; partial assessment is given.**	**(10) the summary is vague and unclear; but there is evidence and partly argued; but there is no personal assessment.**	**(0) the summary is vague and unclear; there is no evidence and arguments; there is no personal assessment.**	**40**

All essay responses were saved in the Moodle program, for each student and group. We were assessing in the following way: we read the answers and using with the help of the evaluator's table chose the criteria and the program counted the score.



Summary of Findings

Please provide a summary of your findings – what was shown by the results, what conclusions can you find, were there any issues/limitations

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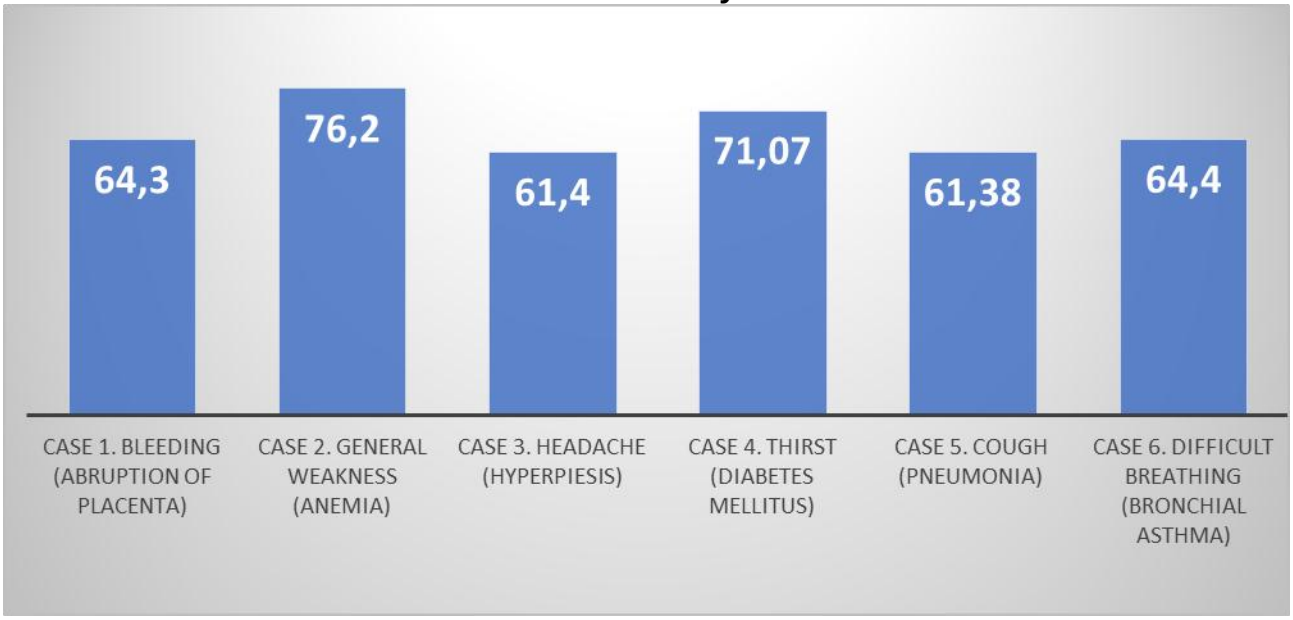
Results: Based on the results of the essay assessment, we received the following data: we got more complete answers for those cases that interested students and taught something (Case 1, 2, 4.6 (67-75 points). Caused difficulty in the description Case 3 and case 5 (Cough and Headache). We think this is because these cases they passed easily and some pathology were familiar to them. The highest scores were received from the Case 4 and Case 2, because case 2 called more controversy in the clinic, and Case 4 was the most interesting among all cases and all students liked this case. The most active were groups 570 and 571. The case with the highest score is case 4 (groups 570 and 571) and the smallest points received case 3. Group 569 on the contrary highly recommended case 2 and 3. And the average score for cases was 64.5.

The results of the essay assessment



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MCQ test had conducted after clinical cases completed by students, results compare with answers where students learning by traditional method, result from using D-PBL cases based on medical errors were high 84.8%, to compare with traditional method where result was 83.7%.

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APPENDIX 4 – ZSMU – SUMMARY OF YEAR 3 EVALUATION ACTIVITIES

Institution Name: Zaporozhye State Medical University

PAEDIATRICS CASES - Activity Summary

Stakeholder	Instrument type	Key evaluation questions	Dates
1. Learner (Medical Faculty No2, Paediatry) udents)	Learner experience of paediatric cases Survey Learner Motivation Survey	Do the error VPs provide an effective and engaging learner experience? Do the error VPs represent an appropriate workload for inclusion into existing curricula?	15.11.17-20.12.17 20.12.17
2. Learner (Medical Faculty No2, Paediatry) (33 students)	54 questions for pre-test Learner performance relating to Paediatric cases MSQ	What is the initial level of studentsə performance before the tutorials? Does the use of error VPs affect learner performance and knowledge relating to medical error?	15.11.17 21.05.18-01.06.18

Description of Work

Please provide a brief summary of the work that you did – what you were evaluating, how you collected data, what analysis you did

1. Learner experience of paediatric cases Survey

After each case the students were questioned through on-line platform SurveyMonkey concerning their perceptions of the scenarios, their feelings and mental strain, cases' effectiveness.
TAME E1.1 - Learner Experience Survey was used for this purpose. 11 questions in total (6 questions conc. students' perception and feelings).
After all cases students were proposed one more questionnaire on-line platform SurveyMonkey to find whether the cases have motivated their learning.

Answers of both questionnaires were sent directly to the responsible person from SGUL**,** Luke Woodham.

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2. At the end of May the students were proposed 54 MSQs to see the sustainability of knowledge. The assessment tool E2 was used, the same as for the 2nd year assessment. The other 54 MSQ (questions on finding the best answers), prepared by the corresponding staff of ZSMU, were used to identify the initial level of students' knowledge.

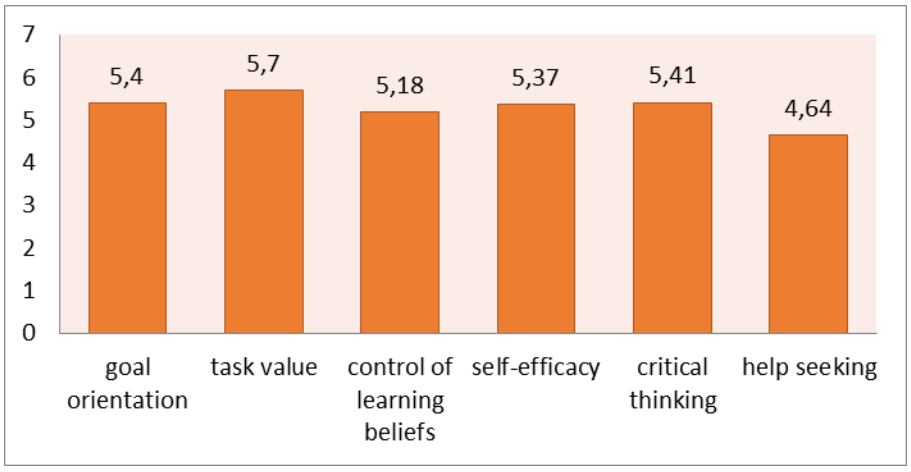
Summary of Findings

Please provide a summary of your findings – what was shown by the results, what conclusions can you find, were there any issues/limitations

1. Learner experience of paediatric cases Survey

The age of students was 21-27 y.o., mostly 21-22 y.o (36.52%).
The most of students consider working through the paediatric cases worthwhile learning experience (96,4%).
88,31% feel that after completing the cases they are more prepared to treat patients in real life.
91,27% of students found cases as a motivation to enhance of making differential diagnosis.
82,08% of students felt they are real doctors.
Students most frequently highlight possibility to work in a team, variety of choices to go through, realistic character as strong spots of cases and they mark confusion of analysis, absence of possibility to give their own variant as weak spots of cases.
The weighted average mental strain of students during working through the cases is 6.52, where 1,24% felt no mental strain at all, 19,88% marked as 8 (the biggest group), and 10,56% marked their strain as 10 (grade 1-10).
According to their feelings (*Grade 1-5)* the students were mostly active (average 3.94), attentive (average 3,88), determined (average 3,47), inspired (average 3,52).

Second questionnaire showed the following reactions to the cases in weighted average (grade 1-7) :



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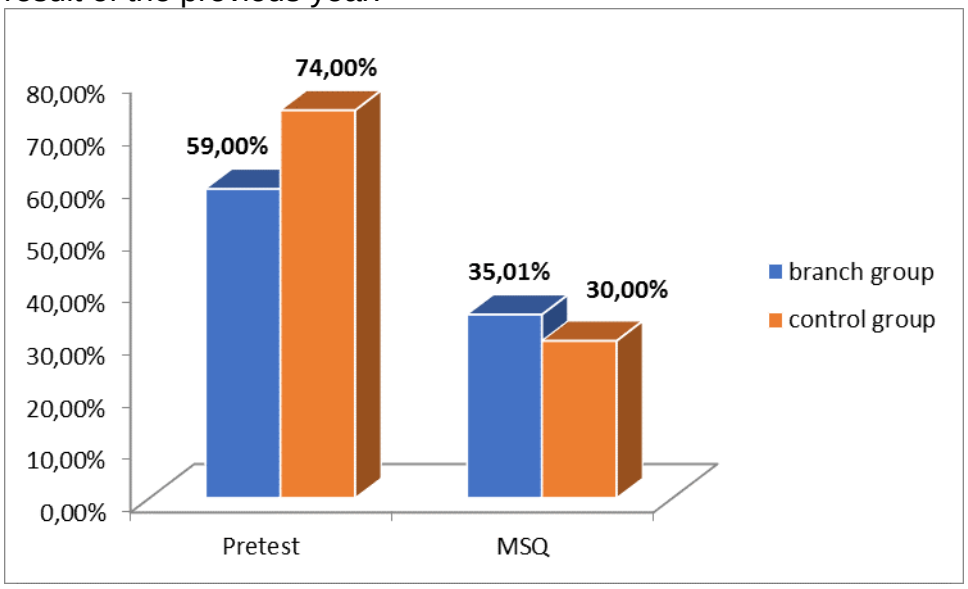
Students were highly motivated to do their best to find right answer themselves, but were not afraid to find help in their group mates and related materials.

Learner performance relating to Paediatric cases MSQ

The result of student's assessment was analyzed and compared to the control group's result of the previous year.



The initial level of knowledge of branch group was less than the control group (respectively 59.00% and 74,00%), but the MSQ results show better preparation of students in the following specialty.

Surgical VP cases - Activity Summary

Stakeholder	Instrument type	Key evaluation questions	Dates
1. Learner (Medical Faculty No1, Surgery) *tudents of a branch group)*	Learner experience of surgical cases Survey Learner Motivation Survey	Do the error VPs provide an effective and engaging learner experience? Do the error VPs represent an appropriate workload for inclusion into existing curricula?	05.12.17-18.01.18 18.01.18
2. Learner (Medical Faculty No1, Surgery)	36 questions for pre-test	What is the initial level of students performance before the tutorials?	05.12.17

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tudents of a branch group and 12 students of a control group)	Learner performance relating to Surgical cases	Does the use of error VPs affect learner performance and knowledge relating to medical error?	end of April, 2018

Description of Work

Please provide a brief summary of the work that you did – what you were evaluating, how you collected data, what analysis you did

1. After each case the students were questioned through on-line LimeSurvey platform concerning their perceptions of the scenarios, their feelings and mental strain, cases' effectiveness.
TAME E1.1 - Learner Experience Survey was used for this purpose. 11 questions in total (6 questions conc. students' perception and feelings).

After all cases students were proposed one more questionnaire on-line LimeSurvey platform to find whether the cases have motivated their learning.

2. Three months after the tutorials on-line evaluation of students' knowledge was conducted to identify the sustainability of knowledge on Surgery after a period of time. For this reason 36 questions were created (6 questions per one case): 2 single questions for finding the best answer directly related to a case; 2 single questions for finding the right answer related to a disease; 2 open questions connected with the disease (on diagnostics or management strategy).

Summary of Findings

Please provide a summary of your findings – what was shown by the results, what conclusions can you find, were there any issues/limitations

32 students: 18 girls and 14 boys.
The age of students was from 22 to 24 years. The average – 23 y.o. (50%).
Students most frequently highlighted the realistic aspect of the VPs , possibility to choose different variants and to see the consequences of their decisions, as well as possibility to use VPs for individual study at home as an additional tool for medical training. Among the weak points they noted poor quantity of branches.

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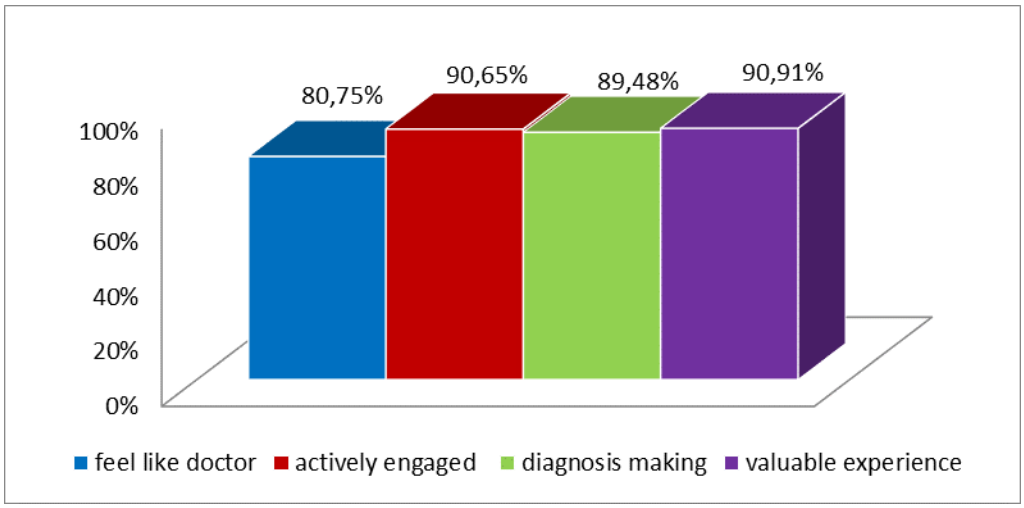
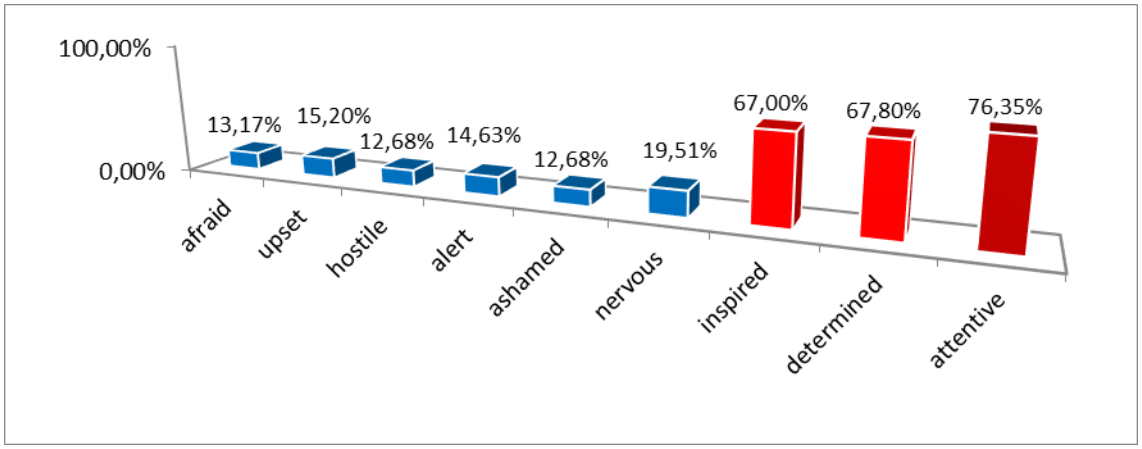
The weighted average mental strain of students during working through the cases is 4,13 (grade 1-5), where 1,46% felt no mental strain at all, 15,61% were stable to make decisions, 35.12 highlighted high mental strain and 36,59% highlighted the highest one. So, 71,71% of students had to work hard during the VPs trainings.

The questionnaires on emotional state of the students and their attitude showed that students were actively engaged in gathering the information for case solving.



The cases appeared to be favourable for psychological state of students. The team work and principles of tutorial conduction helped them to fight the modesty and unfriendliness for achieving the common goal.



The students were highly motivated to solve the cases, and were more independent in the comparison with the 5th-year student.

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APPENDIX 5 – HMU – SUMMARY OF YEAR 3 EVALUATION ACTIVITIES

Infectious Diseases VP cases

Stakeholder	Instrument type	Key evaluation questions	Dates
Tutors (teaching new cases)	In-depth interview	-Advantages/Benefits of TAME teaching approach -Drawbacks of this teaching approach -Recommendations/requirements (technical and academic aspects) for further implementation of this method	16-20/7/2018
Students (learning new cases)	MCQs and T/Fs Surveys	- What is the initial level of students' knowledge prior to the tutorials? - Does the use of error VPs affect learner performance and knowledge relating to medical error? - Surveys: Examine students' attitude and experience after exposure	-3/2018 -7/2018 (evaluate after 3 months)

1 Description of Work

During the sessions, surveys examining students' attitudes and experiences after learning each case study.
The surveys were applied to examine the student's attitude and experience after exposure. The survey investigating students' experience is undertaken after finishing each case study while the survey of students' motivation is conducted after teaching all case studies.

2 Summary of Findings

3 Among 70 students participating in the study (intervention arm: 35, control arm: 35), 54.3% of the intervention arm and 48.6% in the control arm were female students.

Learners' attitude and experience after learning Infectious Diseases VP cases

The assessment instruments include 04 domains:

a. Experiences with VPs design*:*

- We adopted the instrument of Sören Huwendiek et al. to measure the perception of VPs by the students after completing each VP case. The original instrument contained seven items in four aspects: "Authenticity of patient encounter and the consultation" (2 items), "Cognitive strategies in the consultation" (2 items),

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"Coaching during consultation" (2 items), and "Global score" (1 items). In this study, we added three more items, one for "Cognitive strategies in the consultation" and two for "Coaching during consultation" to cover all issues that were appropriate for teaching against medical errors. The internal consistency reliability of the new instrument was good with Cronbach's alpha = 0.8079.

- Overall, there are none of differences of the experiences found among six cases ($p>0.05$), and the students rated high scores for "Global score". The domain "Authenticity of patient encounter and the consultation" had the lowest scores across study cases compared to other domains.

b. Affective well-being and stressfulness:

- International Positive and Negative Affect Schedule Short Form (I-PANAS-SF) was used to measure students' affective well-being after learning each VP case. This tool comprised 10 items with five-point Likert scale from 1 "never" to 5"always" in order to assess two moods: Positive affect -PA (5 items, such as interested) and Negative affect-NA (5 items, such as scared). The Cronbach's alpha for PA and PA were 0.7589 and 0.8170, respectively. In addition, we employed one global rating scale with a score range from 0 to 10 to measure the mental strain of students when learning each case. The higher score indicated the higher level of mental strain.
- It is indicated that a high mean of positive affect (from 18.4 to 19.4) and a low level of negative affect (from 7.7 to 8.1) across cases. Meanwhile, students also perceived a low level of mental strain (with the mean score ranging from 3.0 to 4.2). There were no differences among these cases regarding positive and negative affect, and mental strain ($p>0.05$).

c. Motivation of learning:

- The Motivated Strategies for Learning Questionnaire (MSLQ) was utilized to measure the motivational orientations as well as learning strategies of students in studying six cases proposed. There were 81 questions in the measure; however, in this study, we employed only 31 questions that evaluated six domains: Self-efficacy, Intrinsic Goal Orientation, Task Value, Help Seeking, Control of Learning Beliefs and Critical thinking, which via expert panel discussion, we found their appropriateness in learning against medical errors. The Cronbach's alpha was 0.9237.
- The scores of all motivation domains were in high level. The "Task value" perspective was rated the highest score (Mean=77.1, SD=9.1), while "Help seeking" aspect had the lowest score (Mean=65.9, SD=13.5). After the intervention, compared to male students, females had significantly higher scores in "Self-efficacy", "Task value", "Help seeking", and "Critical thinking" ($p<0.05$)

***d. Self-efficacy*:**

- We adapted the Bandura's guideline to construct the self-efficacy scale. This scale included 7 items about their certainty in selecting appropriate management options, predicting the most likely errors made, making appropriate decisions, identifying the most likely situation that errors can occur, taking necessary measures to avoid

making errors, identifying errors when reviewing other people's practice, and understanding the common causes of errors. Each item had scores ranging from 0 "Cannot do the task at all" to 100 "Can completely do the task". The Cronbach's alpha = 0.9628. The students were asked to perceive their level of certainty in doing these tasks before and after implementation of each case.

- Students perceived substantial improvement for all seven clinical skills -related patient safety/medical errors ($p<0.01$).

Paediatric VP cases

Stakeholder	Instrument type	Key evaluation questions	Dates
Students (Year 2 Paediatric cases)	MCQs Surveys	-MCQs: Examine students' performance before, after and after 3 months of exposure - Surveys: Examine students' attitude and experience after exposure	-4/2018 -8/2018 (evaluate after 3 months)

4 Description of Work

Similar to evaluation activity for new cases, students were introduced about the PBL approach. During the sessions, surveys examining students' attitudes and experiences after learning each case study.
The surveys were applied to examine the student's attitude and experience after exposure. The survey investigating students' experience is undertaken after finishing each case study while the survey of students' motivation is conducted after teaching all case studies.

5 Summary of Findings

Learners' attitude and experience after learning Paediatrics VP cases
The assessment instruments include 04 domains:

a. Experiences with VPs design*:*

- We adopted the instrument of Sören Huwendiek et al. to measure the perception of VPs by the students after completing each VP case. The original instrument contained seven items in four aspects: "Authenticity of patient encounter and the consultation" (2 items), "Cognitive strategies in the consultation" (2 items), "Coaching during consultation" (2 items), and "Global score" (1 items). In this study, we added three more items, one for "Cognitive strategies in the consultation" and two for "Coaching during consultation" to cover all issues that were appropriate for teaching against medical errors. The internal consistency reliability of the new instrument was good with Cronbach's alpha = 0.8079.
- The results illustrate the experiences of students toward the effectiveness of different cases in "Authenticity of patient encounter and the consultation", "Cognitive

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strategies in the consultation", "Coaching during consultation", and "Global score". The statistically significant difference was found only in the domain "Coaching during consultation", of which case 2 had the highest score compared to other cases. Overall, the students rated the highest scores for "Global score", while the domain "Authenticity of patient encounter and the consultation" had the lowest scores across study cases compared to other domains.

b. Affective well-being and stressfulness:

- International Positive and Negative Affect Schedule Short Form (I-PANAS-SF) was used to measure students' affective well-being after learning each VP case. This tool comprised 10 items with five-point Likert scale from 1 "never" to 5"always" in order to assess two moods: Positive affect -PA (5 items, such as interested) and Negative affect-NA (5 items, such as scared). The Cronbach's alpha for PA and PA were 0.7589 and 0.8170, respectively. In addition, we employed one global rating scale with a score range from 0 to 10 to measure the mental strain of students when learning each case. The higher score indicated the higher level of mental strain.
- It is indicated that a high mean of positive affect (from 16.6 to 17.1) and a moderate level of negative affect (from 10.8 to 11.4) across cases. Meanwhile, students also perceived a moderate level of mental strain (with the mean score ranging from 5.2 to 6.4). There were no differences among these cases regarding positive and negative affect ($p>0.05$). The statistically significant different was found in mental strain across study cases ($p<0.05$).

c. Motivation of learning:

- The Motivated Strategies for Learning Questionnaire (MSLQ) was utilized to measure the motivational orientations as well as learning strategies of students in studying six cases proposed. There were 81 questions in the measure; however, in this study, we employed only 31 questions that evaluated six domains: Self-efficacy, Intrinsic Goal Orientation, Task Value, Help Seeking, Control of Learning Beliefs and Critical thinking, which via expert panel discussion, we found their appropriateness in learning against medical errors. The Cronbach's alpha was 0.9237.
- The scores of all motivation domains were in high level. The "Task value"and "Critical" perspectives were rated the highest score (Mean=69.3, SD=13.9; and Mean=69.3, SD=13.7, respectively), while "Self-efficacy" aspect had the lowest score (Mean=61.2, SD=12.9). After the intervention, compared to male students, females had significantly lower scores in all domains ($p<0.05$).

***d. Self-efficacy*:**

- We adapted the Bandura's guideline to construct the self-efficacy scale. This scale included 7 items about their certainty in selecting appropriate management options, predicting the most likely errors made, making appropriate decisions, identifying the most likely situation that errors can occur, taking necessary measures to avoid making errors, identifying errors when reviewing other people's practice, and understanding the common causes of errors. Each item had scores ranging from 0

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”Cannot do the task at all” to 100 “Can completely do the task”. The Cronbach’s alpha = 0.9628. The students were asked to perceive their level of certainty in doing these tasks before and after implementation of each case.

- Students perceived substantial improvement for all seven clinical skills -related patient safety/medical errors ($p<0.01$).

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APPENDIX 6 – HUMP – SUMMARY OF YEAR 3 EVALUATION ACTIVITIES

Institution Name: Hue University of Medicine and Pharmacy
Activity Summary

Stakeholder	Instrument type	Key evaluation questions	Dates
Learner/Tutor	Survey/Focus Group/Interview/MCQ etc.		
56 learners	56 surveys	Motivational scales before start of the course include 4 domains: Feelings (affected): 6 items; Cognitive processing: 4 items; Interaction and opportunity: 3 items; Error awareness: 5 items.	2/5/2018
56 learners	56 surveys	Motivational scales after finished the course include 4 domains: Feelings (affected): 6 items; Cognitive processing: 4 items; Interaction and opportunity: 3 items; Error awareness: 5 items.	21/5/2018
8 learners	2 Focus Group: 4 learners of each group.	- Feelings about clinical skills. - Perceptions of the role and importance of "medical errors" in professional practice. - Feelings about “medical errors”. - Interesting and activating in learning virtual patient.	21/7/2018

Description of Work

Please provide a brief summary of the work that you did – what you were evaluating, how you collected data, what analysis you did

Brief summary of the work

Six clinical cases including 2 internal medical cases, 2 external medical cases, and 2 obstetric cases were built and validated by the lecturer from Hue University of Medicine and Pharmacy based on 10 common medical errors. These cases have been intervening to three groups in the fifth year of GP student using web-based software - Open Labyrinth (OL). Each group of students studied only 2 cases of each specialized. Each student was provided with a personal account to review these cases upon completion of the course. The course lasted four weeks in May 2018.

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We evaluated the learning motivation in the training against medical errors of 56 students before start of the course and after finished the course. Motivational scales include 4 domains: Feelings (affected): the feelings of students about the course as in actual clinical practice with 6 items, range 6 - 30; cognitive processing: students have the capacity to be knowledgeable about collecting, synthesizing, evaluating, and diagnosing based on clinical situations with 4 items, range 4 - 20; interaction and opportunity: Students have the opportunity to discuss with lecturers and students as well as make evidence-based decisions with 3 items, range 3 - 15; error awareness: Students are well aware of the importance and skill to prevent of the medical errors with 5 items, range 5 - 25.
We matched the intervention group of 56 students enrolled in the course and 56 students who did not participate in the same gender and learning outcomes in the fourth year. A total of 112 students were assessed through MCQs for each clinical case after 2 months of intervention. Score range of each student from 0 to 10.

Evaluation Methods

We use self assessment questionnaire to evaluate the learning motivation and MCQs for evaluate the knowledge after the course. A focus group discussion was organized to further explore issues not covered in the learning motivation questionnaire.

Data collection

Quantitative data: The tutor provide self assessment questionnaire and MCQs to students and instructors to fill out and answer MCQs. After that, the self assessment questionnaire and MCQs are entered into the computer.
Qualitative data: The group discussion was recorded for qualitative analysis.

Data analysis

Data analyzing by using SPSS software.

Summary of Findings

Please provide a summary of your findings – what was shown by the results, what conclusions can you find, were there any issues/limitations

Results

Learning experiences and motivation evaluation

56 students answered about learning experiences and motivation evaluation. We calculate the mean difference of learning experiences and motivation before starting intervening TAME and after completion intervening TAME.
Feelings (affected): The feelings of students about the course as in actual clinical practice.
- Before starting intervening TAME (E1.1), mean scores: 15.66 ± 2.48
- After completion intervening TAME (E1.2), mean scores: 21.88 ± 3.34
- Mean difference: 6.21, 95% CI: 5.11 – 7.32, p<0,001

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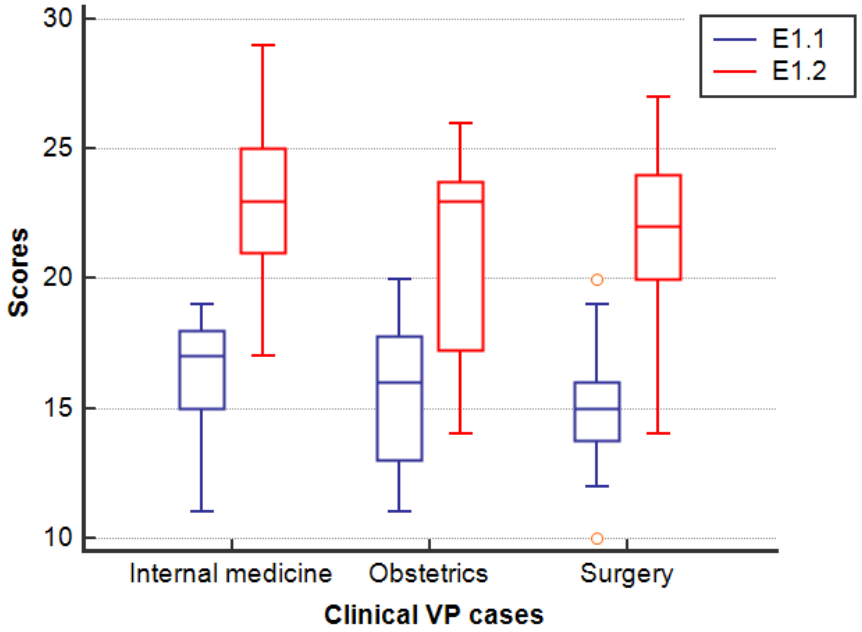
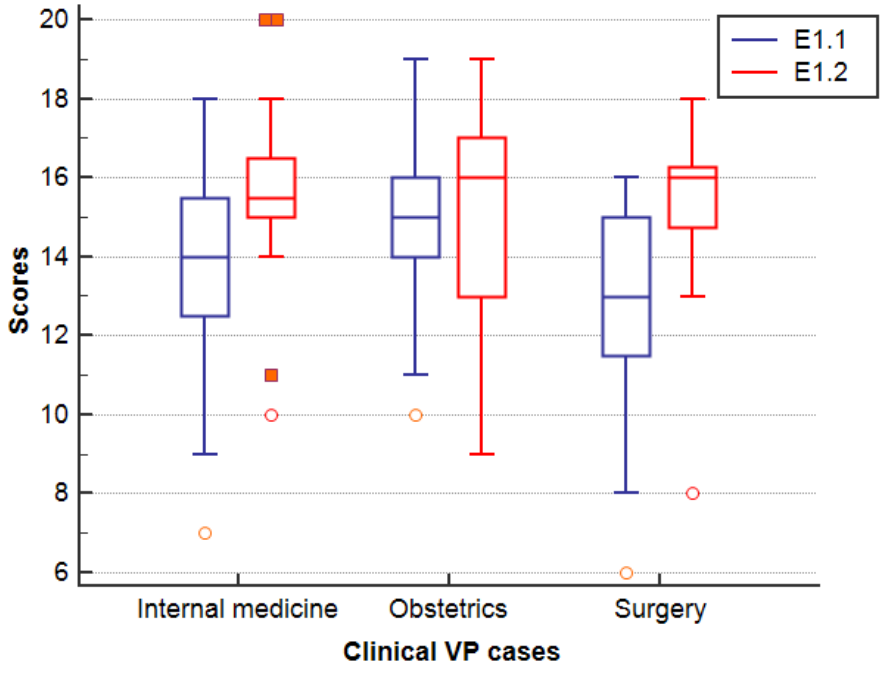


Qualitative data show that during the course, students feel as if they are practicing clinical in the hospital: *"In this course, we are organized in small groups so it is convenient for group discussion. After completion this course, we have the ability to diagnostic and treatment as in clinical practice at the hospital"* (5th year female medical student).

Cognitive processing: Students have the capacity to be knowledgeable about collecting, synthesizing, evaluating, and diagnosing based on clinical situations.
- Before starting intervening TAME (E1.1), mean scores: 13.64 ± 2.75
- After completion intervening TAME (E1.2), mean scores: 15.25 ± 2.57
- Mean difference: 1.61, 95% CI: 0.61 – 2.60, p=0,002



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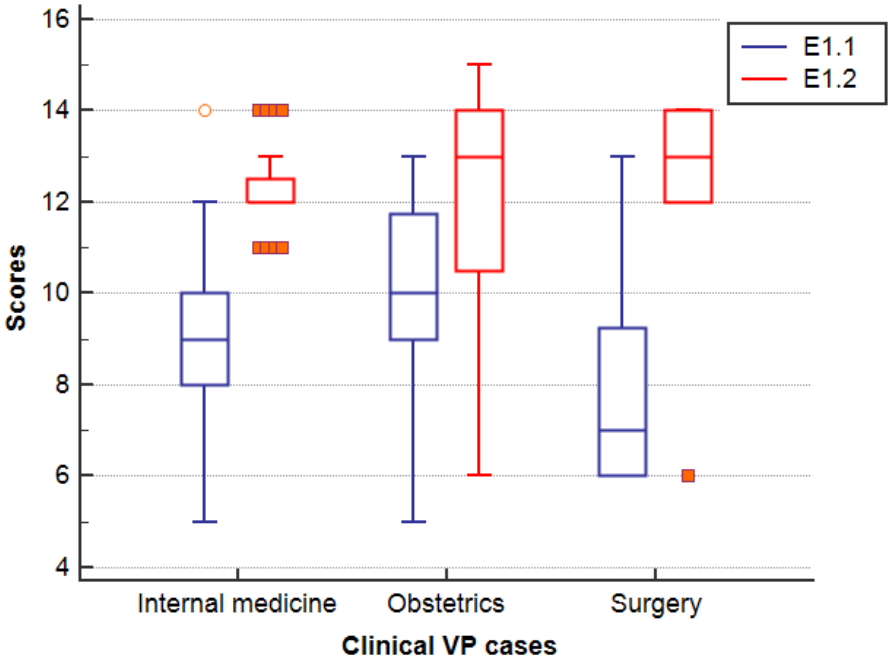
Qualitative data shows that virtual clinical cases help students develop the same skills as in a actual clinical case without harmful to the health of the patient: *"I can indicate for the treatment based on the specific situation of the virtual patient's clinical case. If this treatment is wrong, I can choose another treatment without affecting the health of real patients"* (5th year male medical student).

Interaction and opportunity: Students have the opportunity to discuss with lecturers and students as well as make evidence-based decisions.
- Before starting intervening TAME (E1.1), mean scores: 8.93 ± 2.19
- After completion intervening TAME (E1.2), mean scores: 12.25 ± 1.96
- Mean difference: 3.32, 95% CI: 2.54 – 4.10, p<0,001.



The results of the qualitative analysis show the interaction between lecturers and students as well as between students and students: *"Previously we learned clinical case mainly by the passive method. In that way, students and lecturers do not interact with each other. In the TAME course, we were discussed and proposed solutions for each virtual patient case. Therefore, we found TAME to help us actively participate in the learning process"* (5th year male medical student).

Error awareness: Students are well aware of the importance and skill to prevent of medical errors.
- Before starting intervening TAME (E1.1), mean scores: 13.43 ± 2.84
- After completion intervening TAME (E1.2), mean scores: 17.46 ± 2.70
- Mean difference: 4.04, 95% CI: 3.00 – 5.07, p<0,001.

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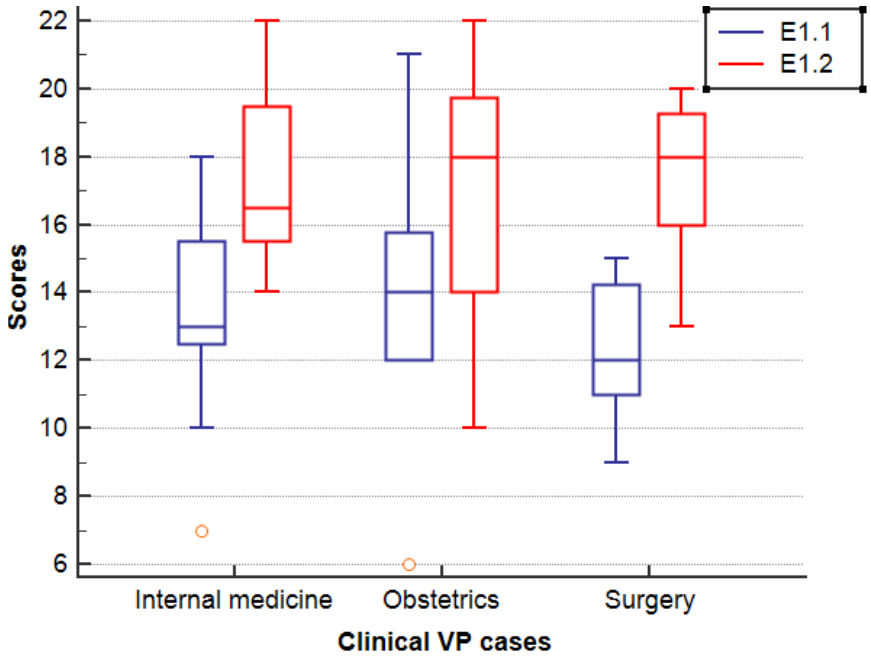

Results of qualitative analysis: After the course, students are more cautious with medical errors when practicing in clinical. *"In the internal medicine case, we just completed, if the mistake in the diagnosis will result in the death of the patient. The wrong diagnosis, in this case, will lead to wrong treatment and lead to very bad consequences for the patient. Therefore, learning against medical errors is very important"* (5th year female medical student).

Conclusions

The web-based virtual clinical cases on the training against medical errors platform indicated significant improvement of students' learning motivation, achievement, and their confidence to apply in clinical practice. Given the context of medical education in Vietnam which is limited of time, lacking of patients, and large size of classes; the application of TAME in the web-based seems to be appropriate.

At present, Hue University of Medicine and Pharmacy is in the process of renewing the learning method with active learning and apply clinical cases. Therefore, System and Person based TAME integration in pre-clinical learning is very effective for the innovation process.

Limitations

TAME method is difficult to apply to the large number of students. We have limited time in developing and teaching new clinical cases.

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APPENDIX 7 - LEARNER EXPERIENCE SURVEY

TAME E1.1 - Learner Experience Survey

Introduction

Thank you for agreeing to complete this survey, which aims to capture your experiences of participating in the teaching sessions using scenarios to introduce issues relating to medical error. You will be asked a series of questions about your perceptions of the scenarios, their effectiveness, and how you felt as you were taking part in the session.

The results from this survey will be used as part of a research project called 'Training in Medical Error'. By completing the survey you will be agreeing to your responses being used for this research. Your participation is voluntary, and you are free to withdraw at any time by not submitting the survey responses, without giving reason and without penalty. Your response will be anonymous, and the research team will not identify you by name in any reports using information obtained by this survey. By submitting the survey, you agree to the use of your comments being used as anonymous quotes in publications relating to this research.

* 1. Do you agree to the above terms? By clicking Yes, you consent that you are willing to answer the questions in this survey.

- ◯ Yes
- ◯ No

1

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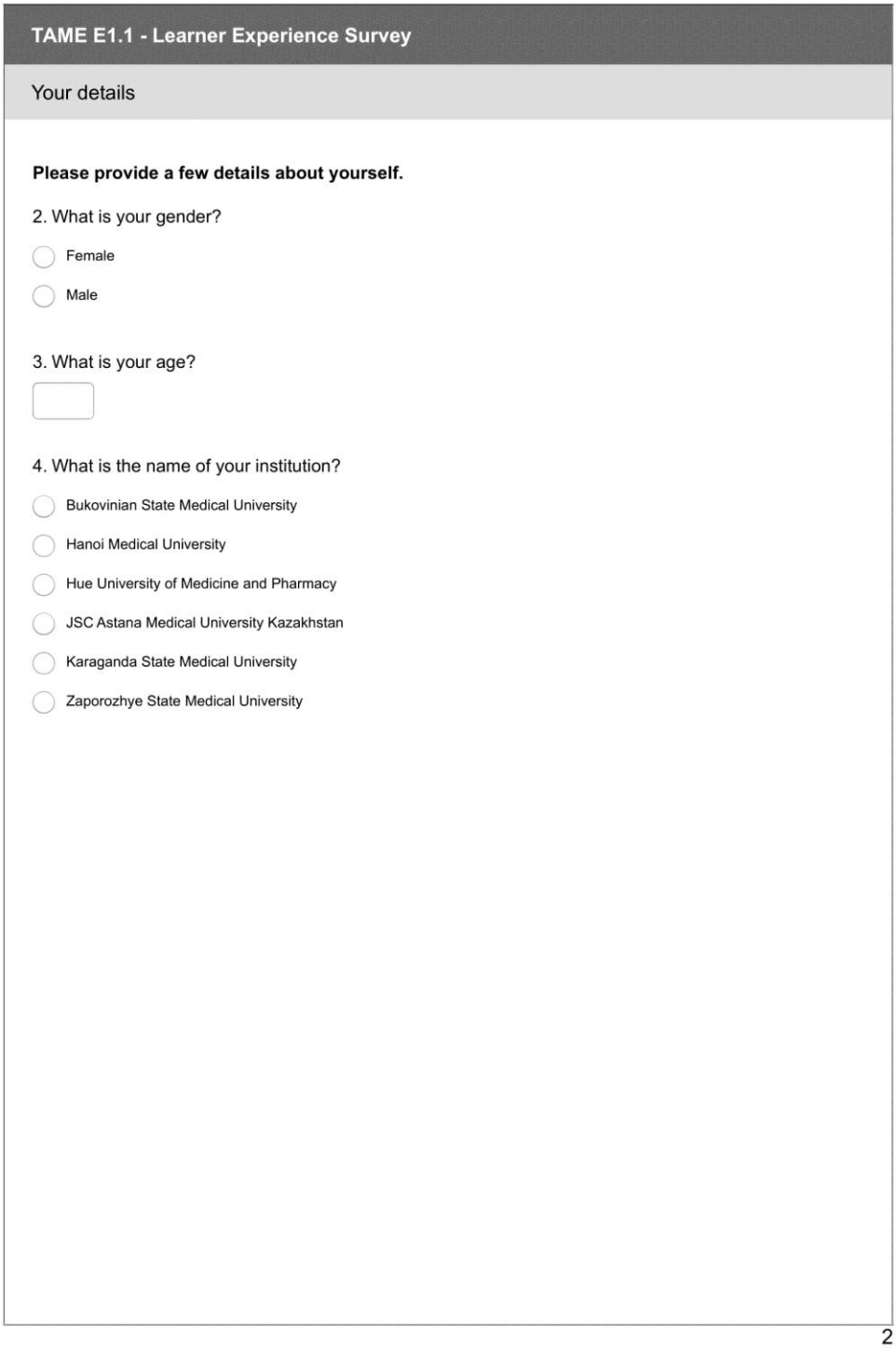

TAME E1.1 - Learner Experience Survey

Your details

Please provide a few details about yourself.

2. What is your gender?

- ○ Female
- ○ Male

3. What is your age?

4. What is the name of your institution?

- ○ Bukovinian State Medical University
- ○ Hanoi Medical University
- ○ Hue University of Medicine and Pharmacy
- ○ JSC Astana Medical University Kazakhstan
- ○ Karaganda State Medical University
- ○ Zaporozhye State Medical University

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TAME E1.1 - Learner Experience Survey

Your experience of the patient case

The following questions ask you to reflect upon your experiences and feelings as you were working through the patient case.

5. Please select the option that most closely describes your experience of using the patient scenario/case.

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
While working on this case, I felt I had to make the same decisions a doctor would make in real life.	○	○	○	○	○
While working on this case, I felt I were the doctor caring for this patient.	○	○	○	○	○
While working through this case, I was actively engaged in gathering the information (e.g. history questions, physical exams, lab tests) I needed to characterise the patient's problem.	○	○	○	○	○
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 through this case, I was actively engaged in thinking about which findings supported or refuted each diagnosis in my differential diagnosis.	○	○	○	○	○
I felt that the case was at the appropriate level of difficulty for my level of training.	○	○	○	○	○
The questions I was asked while working through this case were helpful in enhancing my diagnostic reasoning in this case.	○	○	○	○	○

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	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
After completing this case, I feel better prepared to confirm a diagnosis and exclude differential diagnoses in a real life patient with this complaint.	○	○	○	○	○
After completing this case I feel better prepared to care for a real life patient with this complaint.	○	○	○	○	○
Overall, working through this case was a worthwhile learning experience.	○	○	○	○	○

6. Did you feel that the case had any particular strengths? If so, please can you briefly describe those features and why you felt they were strengths.

7. Did you feel that the case had any particular weaknesses? If so, please can you briefly describe those features and why you felt they were weaknesses.

4

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TAME E1.1 - Learner Experience Survey

Your reactions to the case

8. Please rate how certain you are that you would have been/be able to do the following tasks both before and after having completed the patient case. Rate your degree of confidence by recording a number from 0 to 100 using the scale where 0 means cannot do the task at all, 50 means you are moderately certain you could do it, and 100 means you are highly certain that you could do it.

	Before completing the patient case	After completing the patient case
Select the most appropriate patient management options in this patient case		
Predict the most likely errors made in this patient case		
Make appropriate decisions in other similar patient cases		
Identify the most likely situations in which errors can occur in clinical practice		
Take necessary measures to avoid making errors in my own practice		
Spot and identify errors when reviewing other people's practice		
Understand the common causes of errors in practice		

9. How would you rate the level of mental strain that you had when working through the patient case ? Please rate your level of mental strain from 0 to 10, where 0 is no mental strain at all, and 10 is extremely high mental strain.

0 - No mental strain at all	1	2	3	4	5	6	7	8	9	10 - Extremely high mental strain
○	○	○	○	○	○	○	○	○	○	○

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10. Thinking about yourself and how you felt when working through the case, to what extent did you feel:

	1 - Never	2	3	4	5 - Always
Upset	○	○	○	○	○
Hostile	○	○	○	○	○
Alert	○	○	○	○	○
Ashamed	○	○	○	○	○
Inspired	○	○	○	○	○
Nervous	○	○	○	○	○
Determined	○	○	○	○	○
Attentive	○	○	○	○	○
Afraid	○	○	○	○	○
Active	○	○	○	○	○

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APPENDIX 8 - LEARNER MOTIVATION SURVEY

TAME E1.2 - Learner Motivation Survey

Introduction

Thank you for agreeing to complete this survey, which aims to capture your experiences of participating in the teaching sessions using scenarios to introduce issues relating to medical error. You will be asked a series of questions about your approach to the scenarios, and the ways in which they may have motivated your learning.

The results from this survey will be used as part of a research project called 'Training in Medical Error'. By completing the survey you will be agreeing to your responses being used for this research. Your participation is voluntary, and you are free to withdraw at any time by not submitting the survey responses, without giving reason and without penalty. Your response will be anonymous, and the research team will not identify you by name in any reports using information obtained by this survey. By submitting the survey, you agree to the use of your comments being used as anonymous quotes in publications relating to this research.

* 1. Do you agree to the above terms? By clicking Yes, you consent that you are willing to answer the questions in this survey.

- ◯ Yes
- ◯ No

1

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TAME E1.2 - Learner Motivation Survey

Your details

Please provide a few details about yourself.

2. What is your gender?

- ○ Female
- ○ Male

3. What is your age?

4. What is the name of your institution?

- ○ Bukovinian State Medical University
- ○ Hanoi Medical University
- ○ Hue University of Medicine and Pharmacy
- ○ JSC Astana Medical University Kazakhstan
- ○ Karaganda State Medical University
- ○ Zaporozhye State Medical University

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TAME E1.2 - Learner Motivation Survey

Your reactions to the case

5. Please rate the following based upon your feelings during and about the patient cases that you have gone through in these sessions?

	1 - Not at all true of me	2	3	4	5	6	7 - Very true of me
When working on a patient scenario, I like when it really challenges me so I can learn new things.	○	○	○	○	○	○	○
When working on a patient scenario, I prefer it to cover material that arouses my curiosity, even if it is difficult to learn.	○	○	○	○	○	○	○
The most satisfying thing for me in these cases was trying to understand the content as thoroughly as possible.	○	○	○	○	○	○	○
When I was choosing options in these cases, I sometimes chose the option that I felt I could learn from even if I thought it was incorrect.	○	○	○	○	○	○	○
I think I will be able to use what I learnt in these scenarios in other areas of my training.	○	○	○	○	○	○	○
It is important for me to learn the material in these scenarios.	○	○	○	○	○	○	○
I am very interested in the content area of these scenarios.	○	○	○	○	○	○	○
I think the material in these cases is useful for me to learn.	○	○	○	○	○	○	○
I like the subject matter of these cases.	○	○	○	○	○	○	○

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	1 - Not at all true of me	2	3	4	5	6	7 - Very true of me
Understanding the subject matter of these cases is very important to me.	○	○	○	○	○	○	○
If I study in appropriate ways, then I will be able to learn the material in these cases.	○	○	○	○	○	○	○
It is my own fault if I don't learn the material in these cases.	○	○	○	○	○	○	○
If I try hard enough, then I will understand the material in these cases.	○	○	○	○	○	○	○
If I don't understand the material in these cases, it is because I didn't try hard enough.	○	○	○	○	○	○	○
If assessed, I believe I would receive an excellent grade in these cases.	○	○	○	○	○	○	○
I'm certain I can understand the most difficult material presented in the readings for these cases.	○	○	○	○	○	○	○
I'm confident I can understand the basic concepts taught in these cases.	○	○	○	○	○	○	○
I'm confident I can understand the most complex material presented in these cases.	○	○	○	○	○	○	○
If assessed, I'm confident I could do an excellent job on the assignments and tests relating to these cases.	○	○	○	○	○	○	○
I expect to do well in these cases.	○	○	○	○	○	○	○
I'm certain I can master the skills being taught in these cases.	○	○	○	○	○	○	○

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	1 - Not at all true of me	2	3	4	5	6	7 - Very true of me
Considering the difficulty of the cases, the teacher, and my skills, I think I will do well in these sort of scenarios.	○	○	○	○	○	○	○
When working on the cases, I tried to relate the scenarios to material I already know.	○	○	○	○	○	○	○
I often found myself questioning things I read in the scenarios to decide if I found them convincing.	○	○	○	○	○	○	○
When a theory, interpretation, or conclusion was presented in the scenarios I tried to decide if there was good supporting evidence.	○	○	○	○	○	○	○
I treated the cases as a starting point and tried to develop my own ideas about it.	○	○	○	○	○	○	○
I tried to play around with ideas of my own related to what I was learning through the scenarios.	○	○	○	○	○	○	○
Whenever I read an assertion or conclusion in the scenarios I thought about possible alternatives.	○	○	○	○	○	○	○
Even if I was struggling with the scenarios, I tried to do the work on my own, without help from anyone.	○	○	○	○	○	○	○
I asked the instructor to clarify concepts I didn't understand well.	○	○	○	○	○	○	○
When I couldn't understand the material in the scenarios, I asked another student in the class for help.	○	○	○	○	○	○	○
I tried to identify other students in the class whom I could ask for help if necessary.	○	○	○	○	○	○	○

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APPENDIX 9 - LEARNER ASSESSMENT INSTRUMENT AT PCU

Instruments and assessment results are provided in D3.4
https://drive.google.com/drive/u/0/folders/0B6iDqFPfqnjjTWZpZV9iSUpORkk

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APPENDIX 10 - TUTOR EXPERIENCE SURVEY

TAME E3 - Tutor Experience Survey

Tutor Experience Survey

Thank you for agreeing to participate in this study. The questions below are designed to capture your experiences of using interactive error VPs for your tutoring of PBL sessions, and to understand how this affected your experience of tutoring the group.

Most of the questions in the survey are multiple choice, requiring that you select your preferred option. However, where there are questions that require text, please can you provide your responses in English.

1. What is your name? (Ваше имя и фамилия?)

* 2. What is the name of your institution? (Выберите Ваш вуз?)

- ○ Hue University of Medicine and Pharmacy
- ○ Hanoi Medical University
- ○ Bukovinian State Medical University
- ○ Zaporozhye State Medical University
- ○ Karaganda State Medical University
- ○ JSC Astana Medical University Kazakhstan

* 3. What year of study was your PBL group in? (На каком курсе Вы вели занятия ПОО?)

- ○ Year 1 (1-ый курс)
- ○ Year 2 (2-ой курс)
- ○ Year 3 (3-ий курс)
- ○ Year 4 (4-ый курс)
- ○ Year 5 (5-ый курс)

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* 4. Please select the option that best describes your answer to the following statements.

	Strongly Disagree (Совершенно не согласен)	Disagree (не согласен)	Not sure (не уверен)	Agree (согласен)	Strongly Agree (Согласен со всем)
The use of error VPs in the PBL sessions provoked high-quality discussion amongst the group.	○	○	○	○	○
The group found the use of error VPs in the PBL sessions engaging.	○	○	○	○	○
The error VPs cases met all the required learning objectives.	○	○	○	○	○
The use of error VPs made tutoring the PBL session difficult.	○	○	○	○	○
The technology used to support the use of error VPs in the PBL sessions was effective.	○	○	○	○	○
The technology used to support the use of error VPs in the PBL sessions was easy to use and reliable.	○	○	○	○	○
I was provided with all the resources I needed to tutor the PBL sessions based on error VPs effectively.	○	○	○	○	○
I have received appropriate levels of training and support to be able to tutor the PBL sessions based on error VPs effectively.	○	○	○	○	○
I would be happy to tutor further PBL sessions based on error VPs in the future.	○	○	○	○	○

* 5. Do you have any additional comments or suggestions for improvements that could be made to the use of use of error VPs? (У вас есть комментарии или предложения по улучшению интерактивного ПОО?)

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APPENDIX 11 - TUTOR TRAINER WRITTEN INTERVIEW QUESTIONS

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TAME Project
Tutor trainer Interview

Instructions:

Thank you for agreeing to participate in this project evaluation. The questions below are designed to capture your experiences of training staff to facilitate Error Virtual Patient (VP) tutorials.
Please provide as much detail as possible and describe any issues or points that you think are relevant.

Basic information:

Name:

Institution:

Job title:

Questions:

1. Please describe the process of training tutors in your institution to teach using error VP-based cases.

2. What documentation or materials did you use to support the training that you delivered?

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3. How would you change your approach to training tutors in future?

4. Other comments:

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APPENDIX 12 - CASE WRITER (ADAPTER AND CREATOR) WRITTEN INTERVIEW QUESTIONS

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TAME Project
Case writer Interview (adaptor)

Instructions:

Thank you for agreeing to participate in this project study. The questions below are designed to capture your experiences of adapting Error Virtual Patients (VPs) at your institution. Please provide as much detail as possible and describe any issues or points that you think are relevant.

Basic information:

Name:

Institution:

Job title:

Questions:

1. What have been the biggest challenges you have faced when adapting the Error VP cases and how have you approached these challenges?

2. What skills and resources do you think a case adaptor needs to write good Error VP cases?

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3. What additional support and resources do you think a case adaptor might require to write effective cases?

4. Other comments:

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TAME Project
Case writer Interview (creator)

Instructions:

Thank you for agreeing to participate in this project study. The questions below are designed to capture your experiences of creating Error Virtual Patients (VPs) at your institution. Please provide as much detail as possible and describe any issues or points that you think are relevant.

Basic information:

Name:

Institution:

Job title:

Questions:

1. What have been the biggest challenges you have faced when creating the Error VP cases and how have you approached these challenges?

2. What skills and resources do you think a case creator needs to write good Error VP cases?

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3. What additional support and resources do you think a case creator might require to write effective cases?

4. Other comments:

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APPENDIX 13 - CASE IMPLEMENTATION – WRITTEN INTERVIEW QUESTIONS

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TAME Project
Course team Interview

Instructions:

Thank you for agreeing to participate in this project evaluation. The questions below are designed to capture your experiences of implementing VP cases at your institution. Please provide as much detail as possible and describe any issues or points that you think are relevant. Please provide your responses in English.

Basic information:

Name:

Institution:

Job title:

Questions:

1. What was your main role in the process of implementing the error VP cases at your university?

2. What were the biggest difficulties/challenges you have had to overcome when implementing the cases?

   What did you do to overcome these challenges?

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3. What resources or support have you required, either from the TAME project team or your institution, in order to deliver the error VP cases effectively?

4. What additional changes, either expected or unexpected, did you need to make to your curriculum in order to integrate the error VP cases?

5. Other comments: