Developing, implementing, and disseminating an adaptive clinical reasoning curriculum for healthcare students and educators

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D6.3 Monitoring of the working process

Deliverable number	D6.3
Delivery date	continuously, until end of project
Status	continuously, M36 update
License	BY-NC-ND
Authors	Instruct
Reviewed by	All partners

Overview

Deliverable D6.3 runs throughout the project and checks whether all deliverables, tasks and milestones are fulfilled and monitors project outcomes.

Every 6 months an update is generated, which will include a summary of the past 6 months and recommendations for the next monitoring period. In addition, we implemented an external review of the DID-ACT learning units for students and teachers at the end of year 3.

External Review of the DID-ACT learning units

During October and November 2022 we implemented an external review of the DID-ACT learning units that are available in our learning management platform Moodle. Based on the evaluation tools developed in work package 5, we designed a short questionnaire with a focus on open-ended questions, to get as much qualitative feedback as possible. The survey consisted of 15 questions, which were divided into 7 categories: personal data, objectives, technology, impact, learning activities, assessment/feedback, and comments.
We contacted educators and students from our network and asked them to assess learning units of their choice and complete the anonymous questionnaire afterwards.

Results

The survey was available from mid-October until the end of November 2022 (6 weeks). A total of 32 participants took part in the survey, 19 participants completed the survey and some also left comments. The responses came from a variety of countries such as Turkey, Ukraine and the United Kingdom.The majority of respondents indicated that they work in the

field of medicine (18), 1 participant indicated their professional field as "other" and 11 participants chose not to indicate their profession.

Overall, the feedback received was very positive. The majority of participants evaluated the objectives and expectations of the learning units as being clearly stated and that sufficient instructions were provided to work with and through the learning units. Most participants were able to navigate through the website and viewed the technology and media provided as playing a supporting role to the learning units. The question "*I had significant computer / technical problems during this learning unit. (negative answer is better; if agree, please explain in the following comment)*" received mixed results, with 11 strongly disagreeing and 18 strongly agreeing. This may be due to a misunderstanding of the question, in which "strongly disagree" would be the correct choice if you did not experience technical difficulties. A large number of respondents (19) agreed that these learning units will improve students'/learners' clinical reasoning skills. The same number of respondents also agreed that these learning units will improve the way educators teach clinical reasoning. The learning activities were seen as aiding in engaging in and achieving the objectives set forth in the learning units. The different forms of assessment and feedback were considered appropriate and allowed learners to assess their progress.

The survey also provided free-text boxes, where participants could leave their comments. A few respondents used this opportunity to leave valuable feedback:
- Reviewers found the platform to be interesting, and the VP cases "entertaining", which indicates that these educational resources were captivating and encouraged learner interaction.
- Other reviewers commented on the excellent quality of the work created, and how important and novel the curriculum is to fill the gap of clinical reasoning knowledge in medical education. They also appealed to the importance of disseminating the curriculum, to both students and educators alike.
- Comments about the objectives included that they were clear and indicated that there would be no issues in understanding the process of the learning units.
- Some reviewers found the interface a bit "old-fashioned" and would have preferred a more convenient, modern interface, but one also mentioned that they didn't experience any technical issues and still managed to follow the LU with interest.
- A recommendation was given to allow video speed alteration, as this is a feature students look for.
- A reviewer mentioned that the curriculum teaches an important understanding of the nature of clinical reasoning, which will allow students a greater capacity to improve their clinical reasoning skills. It was also mentioned that clinical reasoning skills can be learned through patient cases, including the virtual patients in the DID-ACT curriculum, but also mentioned the importance of real-life clinical scenarios in improving clinical reasoning skills.
- The same reviewer stressed the importance of the TTT curriculum to educate tutors, since the reviewer also noticed a gap in clinical reasoning knowledge

in medical educators, and believes all medical educators should take up these learning units.

- Another reviewer mentioned that the curriculum should focus its improvements on a more convenient interface, and the addition of educational resources. Relating to the learning activities, a reviewer mentioned that the cases on CASUS are important tools, and that the asynchronous phases also help with the engagement of the students in the synchronous sessions. This reviewer recommended the addition of "tricky" questions as an improvement.
- A recommendation was made that more attention be given to the assessment of clinical reasoning, and that it may ideally be expanded; recommending exploration of more scalable methods to create clinical reasoning assessments.

Conclusions

The external review was important for receiving valuable feedback on the curriculum and the learning units from outside sources. We were very pleased with the number of participants, who tested the learning units and answered the questionnaire.

The positive responses lead us to the conclusion that the learning units are user-friendly and that the intended objectives are met. The technology seems adequate, but could be modernized to adhere to a wider spectrum of users. The assessment and feedback options were also rated positively and considered a vital part of the learning process, which could be expanded to encourage self-reflection.

The general consensus was that a clinical reasoning curriculum is an important part of medical and health profession education, which needs to be implemented and taught to introduce and improve clinical reasoning skills. This positive feedback in the impact questions and in the comments underscores the importance and necessity of the DID-ACT curriculum.

Report M6

Deliverables

Work Package 1

The main focus of the project in the first half of the year was Work Package 1, which consisted of an analysis phase with the purpose of identifying barriers and proposing solutions.

Main deliverables were:
- D1.1 Report on specific needs, preoccupations of stakeholders, and barriers
- D1.2 Report on solutions for the needs described in D1.1 and consequences for the curriculum development process

The COVID-19 pandemic and the inherent difficulties that universities faced in planning the 2020 summer term made conducting interviews more difficult than we initially expected. We therefore we decided to ask for an additional month for this piece of the deliverable and split D1.1 into two parts:
- a) Summary of survey results
- b) Summary of interviews

Details on both deliverables were made public and can be found in the reports listed on the project website results tab http://did-act.eu/?page_id=230, and here:
- D1.1a Report on specific needs, preoccupations of stakeholders, and barriers - Results of the survey
- D1.1b Report on specific needs, preoccupations of stakeholders, and barriers - Interviews
- D1.2 Curricular solutions for the needs described in D1.1

Our design thinking workshop was scheduled to take place during the face-to-face meeting in Kraków in May 2020. However, in order to start the discussion on solutions for identified barriers was held virtually. Some additional preparation was necessary to familiarize everyone with the features of the communication tool Zoom. Using this tool, we were able to do the workshop and had small group discussions in breakout sessions. The Zoom interaction features were used to draw virtual whiteboards and include the participants' input. Overall, the workshop went quite well, even though it was more demanding and potentially less interactive than a face-to-face meeting.

Work Package 1 started at the beginning of the project and was already under considerable time pressure even before the pandemic started. During the pandemic, there was even more time pressure, because of intervening other tasks. Nevertheless, we are proud that we were able to manage all tasks on time (with only one deadline postponed for one part of report D1.1). The following aspects have overall been proven to be helpful and should be taken into account also in the other work packages:
- WP leads should pay attention to report timelines to provide enough time for joint review
- WP leads should calculate backwards from the due dates to make realistic schedules and save time for extra tasks. Timelines should be discussed early on during project meetings
- WP leads should give partners enough time to read and send reminders, otherwise they cannot expect any input
- WP leads do NOT have to do all the work themselves, but should coordinate and delegate the work and make plans
- All partners should contribute to all tasks, priorities make sense though to allow for specific knowledge and capabilities

Work Package 5

Work in progress: Work Package 5 started February 1st. Throughout the first 3 months (until May) its activities focused on supporting WP1 in conducting the needs analysis (e.g. development of the web survey to collect necessary data). Since then its activities concentrated on building an inventory of evaluation methods/tools based on literature review. This will culminate with the D5.1 deliverable,due by the end of 2020.

Work Package 6

The main deliverable for this WP was D6.1, which was due by the end of January 2020. During the kick-off meeting in Augsburg on January 13th and 14th, 2020, Instruct introduced Trello as the main agile project management tool. We additionally worked on a tutorial and documentation, which was made accessible to all project partners by the end of January 2020. The task was delivered on time during the meeting and later as a project report:

- [D6.1 Planning and introducing the agile project management](#)

Work Package 7

The main deliverables for this WP were setting up the project website by April 2020 and performing a social network analysis by March 2020. Both deliverables were completed on time: the project website was launched in March in close collaboration with the project coordinator Augsburg, EDU and Instruct, based on a WordPress content management system and theme.
- [D7.1 Social media strategy based on social network analysis](#)
- [D7.2 Website and learning management platform](#)

On the results tab of the website www.did-act.eu, the project team will continuously update the main list of project deliverables and their current status to provide a brief overview. All partners are responsible for updating the news/blog entries.

Work Package 8

The main deliverables were the kick-off meeting and the grant agreement: both deliverables were completed on time. Additional tasks of WP8 will be reporting and monitoring timesheets and financial reports, which will continue throughout the project and culminate in the final report.

- [Kick-Off meeting in Augsburg](#)

Fortunately, our project started in January 2020, so we were able to have our kick-off meeting face-to-face and were not yet affected by the Covid-19 pandemic.

Quality criteria and the use of Trello

The use of the proposed platform, Trello, was heterogeneous during the first 6 months. Reasons could include:
- Overhead
- Uncertainty what to put in
- Usability / Confusion regarding expected granularity of documented tasks

All deliverables and major milestones for all work packages were documented with quality criteria and due dates in Trello. Our bi-weekly team meetings were also documented with due dates and short meeting minutes. However, the tasks which are part of deliverables could be documented in a more consistent way.

We experienced a similar challenge with the definition of quality criteria for each deliverable. In some instances, it was not easy to finalize the quality criteria at the beginning of the project, but instead they had to be refined and adapted (e.g. to be more specific) while working on the deliverable, which is completely fine and reasonable in an agile approach.

In an extra online project meeting, we reflected on the first 6 months based on a short overview and consequences for the next project period were discussed.

Summary and Outlook

Even with the hard impact of the COVID-19 pandemic, we kept to our original schedules and delivered on time. We came to the conclusion that the use of Trello and setting quality criteria can be done in an even more consistent way. The proposals that we discussed during a meeting at the end of June are as follows:
- All work package leads are responsible for their Trello board and should make sure that all major tasks are up to date including due dates, responsible members, and all relevant links.
- All work package leads are responsible for writing a first draft for their quality criteria at the beginning of the work packages and/or deliverables. As an addition to the original plan, we agreed that in a next step this draft version is discussed with the WP6 lead, Instruct. The quality criteria will then be reviewed and discussed within regular project meetings with all partners.

Report M12

Deliverables

Work Package 2

The second half of 2020 focused on creating the framework for the clinical reasoning curriculum that will be developed in the next phase of the project. This included postulating the learning objectives that the curriculum will address and facilitate and the methods that are to be used in the framework. Another important aspect of this WP was to create a list of open educational resources, which can be accessed and referenced throughout the curriculum development stages.

Main deliverables were:
- D2.1 Set of agreed learning goals and objectives
- D2.2 Curricular framework with teaching/assessment methods for the student curriculum and the train-the-trainer course
- D2.3 Collection of available open educational resources (OERs)
- D2.4 Publication of recommendations for learning objectives of a clinical reasoning curriculum

All deliverables in this work package were delivered on time. Details on all deliverables were made public on the project website (http://did-act.eu/?page_id=230), as well as on the official DID-ACT social media channels. The following results can also be accessed through the DID-ACT Moodle platform, which is open to the public:
- D2.1 Set of agreed learning goals and objectives
- D2.3 Collection of available open educational resources (OERs)

Work Package 5

WP5 started in the first half of 2020 and continues through 2021 and 2022. The first deliverable for this WP consisted of developing a set of evaluation and learning analytics tools and exploring dashboard capabilities of our learning management system Moodle for the student curriculum and the train-the-trainer course and has been completed and delivered on time.

Main deliverables were:
- D5.1 Set of evaluation and analysis tools

Details on this deliverable were made public on the project website (http://did-act.eu/?page_id=230), as well as on the official DID-ACT social media channels:
- D5.1 Set of evaluation and analysis tools

Work Package 6

WP6 focuses on project and quality management throughout the course of the DID-ACT project. It is on-going and monitors the working process and evaluates how these processes can be improved. In order to investigate the quality of work, an end-of-year-one evaluation took place among all project partners, who were willing to participate, in the form of an anonymous survey using LimeSurvey. The results of the survey were presented at a team meeting on January 27, 2021.

End-of-year-one survey results

The results were discussed among all project partners present at the meeting and the following suggestions on improving the quality and distribution of work were decided upon:

Collaboration & Communication
- Everyone is an important part of the team
- Try using the chat function to allow lowering the barrier to contribute
- Small groups: Will be part of WP3.1/4.1, keeping in mind for team meetings for suitable topics.

Resources (Time/Budget)
- We will be more explicit with working days/ deliverables in WP3/4
- Brief overview of deliverable at the beginning of the deliverable
- Planning a meeting of WP leads end of Feb to discuss workload
- More time for reflection → Hopefully better for WP3/4
- Keeping in mind to think back from the deadlines for planning

Project Management
- Trello training offered by WP6 team
- Each WP lead, please take a look at your google folder (using an archive folder)
- Continue linking to google docs in Trello
- Making decisions more explicit during team meetings

New people should be familiarized with the project by local leads, a team member from UAU has offered to provide an intro meeting into tools/workflows

Work Package 7

The deliverables D7.1 and D7.2, which were completed in the first half of 2020, are continuously being updated. On the results tab of the website www.did-act.eu, the project team has been updating the results of the project deliverables and their current status to provide a brief overview. All partners are involved in providing news/blog entries and take turns writing these. Details on this deliverable were made public on the project website (http://did-act.eu/?page_id=230), as well as on the official DID-ACT social media channels:
- D7.1 & D7.2 Updates

Quality criteria and the use of Trello

The documentation of quality criteria and due dates for all deliverables and major milestones for all work packages in Trello. These were continued as reported in M6 and the bi-weekly team meetings were also documented with due dates and short meeting minutes.

The frequency of use of Trello was quite low and most partners agreed that they experienced difficulty regarding its usability. In order to assist and familiarize those partners with Trello, the WP6 project management team will offer a training meeting (online) to review the basics and main features of Trello.

Summary and Outlook

As the Covid-19 pandemic continues globally and restricts the possibility of having face-to-face meetings, we have continued working on the DID-ACT project in an online setting. The bi-weekly team meetings are the main communication interface and provide an arena for all project partners to report on the progress of their work and the status of their deliverables. It also provides a place to voice any concerns or difficulties that project partners may be experiencing and provides an opportunity to collectively reassess the distribution of work.

We were able to stay on track with our original schedule and all deliverables were delivered on time.

Report M18

Deliverables

No deliverables were due in the first 6 months of 2021, however the implementation of the curriculum started.

Work packages 3 and 4

The actual curriculum development process was performed within small teams, creating the outline of learning units (LU), then reviews were done during regular or extended team meetings.

We did the reviews of the learning units in the following way:
- Short presentation of the LU by a team member of small LU teams
- Split into 2 breakout rooms with discussion about the defined criteria
- Back in plenum presentation of breakout sessions and final discussion.

After the review, the small team incorporated the review results in the LUs and implementation of the LU was done in the DID-ACT learning management platform Moodle together with the University of Augsburg.

As additional tasks we planned the pilots for the 2nd half of 2021, we started the coordination with participating universities, and tested the technical prerequisites in our LMS Moodle.

Work package 5

A main task in WP5 was the preparation of the D5.2 (Evaluation of the train-the-trainer pilots) which will start in M19.

Work package 7

In the first half of 2021 we focused on submitting abstracts to the upcoming educational conferences in 2021 and members of the consortium participated in the virtual Medical Education Forum in Krakow, Poland in May 2021.

Work package 6 and 8

A major task for our team on WP6 and 8 was the coordination of the interim report submission. Several team meetings were dedicated to the report drafting which was coordinated by Instruct and UAU.

Quality criteria and the use of Trello

Quality criteria were defined for all actual deliverables and more granular for all learning units.

Summary and Outlook

No face to face meeting was possible due to continuing Covid-19 restrictions, the planned meeting attached to a conference in May 2021 in Krakow had to be canceled, only the virtual dissemination event was attended by project partners. All activities of the projects were implemented as planned, the process of creating the learning units (LUs) was established and small teams started to work online, meeting in small groups and working asynchronously in between. The main focus was to develop the LUs defined for pilots starting in September 2021. The development process works very well, only the implementation of the LUs in Moodle takes sometimes a bit more time than anticipated. We were able to stay on track with our original schedule, it will be possible to start the pilots in the next project period as planned and we plan a face-to-face meeting in September in Bern, Switzerland, to discuss the ongoing and upcoming deliverables.

Report M24

Deliverables

Work packages 3 and 4

During the past six month our focus was mainly on the development of the learning units (LUs) (D3.1 and D4.1) and implementation of the pilots (D3.2 and D4.2). The creation of the LUs was slightly changed from the initial process. We established small teams and shifted the review from the main project meetings to small group reviews.
At the end of 2021 we completed the development of the eight train-the-trainer courses and a summary report was published on the website.

The pilots of the train-the-trainer courses were done until October 2021, additional pilots will be implemented also after the official end of the deliverable. This was the first deliverable due. The student curriculum pilots already started; these will be finished with deliverable D4.1 in M25 (Jan 2022).

Work package 5

The evaluation of the train-the-trainer and student course pilots were mains tasks of D5.2 and D5.3 in the second half of 2021. D5.2 was completed on time at the end of the year and the report with all evaluation results and the surveys published on our website. D5.3 is still running and the report will be due at the end of M27 (March 2022).

Work package 7

Apart from ongoing dissemination activities including presentations at the AMEE and the GMA conferences as part of D7.4 we started the development of the curricular integration guideline (D7.3).

Work package 6 and 8

A major task of these work packages until the end of 2021 was the analysis of the feedback we received for our interim report we submitted on time. We discussed suggestions for implementing the feedback during our hybrid project meeting in Bern, Switzerland in September and subsequently implemented changes to our processes. For example, we decided to include an easy-to-understand summary to each deliverable report, conduct an external review of our learning management platform and the learning units in 2022, and increase the visibility of the contributions of our associate partners who are actively engaged in all deliverables.

Quality criteria and the use of Trello

Quality criteria were defined for all actual deliverables and more granular for all learning units. We also improved the visibility of our quality criteria which are now documented on the website in the results section.

Summary and Outlook

Fortunately, and although not all partners could come due to institutional restrictions, the planned September face to face meeting was held. Thanks to the excellent technical support provided by Bern, the hybrid approach worked very well. The LU creation process had to be speeded up a little bit, because of upcoming pilot needs and overall number of defined learning units. Also the transfer of the units from concept to Moodle content had to be optimized. Overall in this project timeframe all deliverables could be finished as planned. Due to the ongoing pandemic, we are not yet sure whether the face-to-face meeting planned for January/ February in Maribor can be done.

Report M30

Deliverables

Work packages 3 and 4

During the past six month our focus was mainly on refining the learning units (D3.3) based on our pilot implementations, which was completed in M29, i.e., the refinements were implemented in Moodle and a summary of these published on our website. We also completed the development of learning units for the student curriculum in M27 (D4.1, extended deadline) and in parallel the piloting of student learning units (D4.2) and published the results at the end of M25. Based on these results we started refining the student learning units in M28. At the end of M30, we started planning the upcoming D4.4 - the long-term integration plans of learning units at our partner institutions.

Work package 5

As planned, we completed the evaluation and analysis of results of our student pilots (D5.3) in M27.

Work package 7

During M25 - 30 we continued the development of our integration guideline (D7.3) and published the first results on our website. We also continued our dissemination activities (D7.4) by submitting abstracts for several conferences, such as the AMEE, the Medical Education Forum, and the Annual meeting of the Association for Medical Education in Germany (gma). Notifications for acceptance of presentations and E-Posters will be sent out later this year, but we already received the acceptance notification for our pre-conference workshop. Additionally, the publishing of blog and social media posts continued and we increased the number of followers. In M30 we started the planning and discussing our sustainability model (D7.5), which will continue until the end of the project period.

Work package 6 and 8

With M30 and the last deliverables starting in M31, we closed the development of quality criteria and published the remaining on our website and in Trello. At the end of May we organized a hybrid project meeting in Maribor, Slovenia with all partners participating in-person or online.

Quality criteria and the use of Trello

Quality criteria are now defined for all deliverables and we continue using Trello for documenting the project progress. Especially for documenting the progress in developing the learning units (D3.1 /4.1) and refining them (D3.3 / 4.3) we found the documentation in Trello extremely helpful to monitor progress, responsibilities, and any deviations from the original plan.

Summary and Outlook

Fortunately, and although still not all partners could come due to institutional restrictions, we were able to organize our project meeting in Maribor in a hybrid format. Originally planned in February, we postponed it to May to enable most partners to travel. Thanks to the excellent technical support provided by the Maribor tem, the hybrid approach worked very well. Overall in this project timeframe all deliverables could be finished or progressed as planned and we are already planning our next face-to-face project meeting for September 2022.

Report M36

Deliverables

Work packages 3 and 4

During the last six month of our project, we completed the development of a course certificate for the train-the-trainer courses in M32 (D3.4). The certificates are available for download in partner languages in the Moodle train-the-trainer area. Also, in M32 we finished the refinements of student learning units (D4.3) and all resources have been updated in Moodle accordingly. The development of long-term integration plans at our partner institutions (D3.4) started in M31 and was completed at the end of the project (M36).

Work package 5

Work package 5 closed in M34 and the last activities were implemented by EDU, who organized another pilot evaluation of selected student learning units in M33 and M34.

Work package 7

During the last six months of DID-ACT we continued the development of our sustainability plans applying a business canvas model. We published the agreed model in M36 on our website (D7.5). During M30 - 36 we also continued our dissemination activities (D7.4) by providing a pre-conference workshop at AMEE in Lyon, France, presenting short communications and E Posters at AMEE, the Medical Education Forum in Kraków, Poland, the Annual meeting of the Association for Medical Education in Germany (gma) in Halle, Germany, and the conference on clinical reasoning in Montreal, Canada. In M33 we completed our integration guideline (D7.3) and published in addition to the resources on our website a summary report. Additionally, the publishing of blog and social media posts continued until the end of M36 and we again increased the number of followers. At the end of the project in M36 we repeated as planned our social network analysis (part of D7.1) and published the update on our website.

Work package 6 and 8

At the end of September our partner JU organized our last hybrid project meeting in Kraków, Poland prior to the Medical Education Forum in which some partners participated. All partners attended in-person or online. During this meeting and the following online meetings we discussed aspects of our final report, which was drafted by all partners and agreed upon at the end of December. We also published the M36 updates on quality management (this report) and project management (D8.3). We also discussed the remaining deliverables D4.4 and aspects of sustainability of our project.

Quality criteria and the use of Trello

We closed the documentation of all open deliverables in Trello and archived cards no longer needed after the projects end. However, we kept cards indicating major milestones and achievements and we will continue to use Trello for our future online meetings.

Summary and Outlook

Despite the challenges we experienced due to the pandemic situation, we managed to complete all work packages and deliverables within the project period and thanks to our quality measures defined in WP6, we believe that we have achieved a high standard of quality for all our outputs.