asymptote

Co-funded by the
Erasmus+ Programme
of the European Union

IO5
Long-Term Curriculum & MOOC

Educational Output

LTC & MOOC: Idea & Concept

Crucial factors influencing the adoption of technology by (student) teachers:

- insufficient access to technology
- lack of time
- lack of technology skills

Research and validation of ASYMPTOTE in authentic situations by following a **mixed methods methodology**, the use of interaction analysis, and the assessment of the adaptive functionality under partial information conditions.

> **Long-Term Curriculum** (LTC) and **MOOC** (Massive Open Online Course) are professional development courses at national and international level, designed and delivered to introduce the ASYMPTOTE system to student and in-service teachers

asymptote

Co-funded by the Erasmus+ Programme of the European Union

LTC & MOOC: Structure

Both, LTC and MOOC, were designed with regard to four different perspectives that can be taken in relation to the ASYMPTOTE system. These are:

	Perspectives	Contents
1	Scientific perspective	Getting to know theoretical perspectives on online pedagogy, teaching and mobile learning, among others
2	Teacher's perspective	Developing own online teaching materials, i.e., tasks & learning graphs, within ASYMPTOTE
3	Student's perspective	Getting to know how to use the ASYMPTOTE app for working on learning graphs
4	Review perspective	Testing of a learning graph and peer reviewing of tasks and learning graphs

asymptote

Co-funded by the Erasmus+ Programme of the European Union

LTC: Design & Delivery

Design and conduct of a university course on the use of the ASYMPTOTE system

Mode	face-to-face course for pre-service teachers, carried out by the universities of Bielefeld, Catania, Frankfurt & Rhodes with 13 participants on average Remark: in Rhodes, the course was carried out in a blended setting, in which also in-service teachers participated.
Aim	• Development of open-available course materials • Starting point for building the ASYMPTOTE user community • Occasion for beta-testing & further development of ASYMPTOTE • Research on the user experience of the beta-version of ASYMPTOTE (see IO6)
Time	Summer Semester 2022 (3 ECTS)

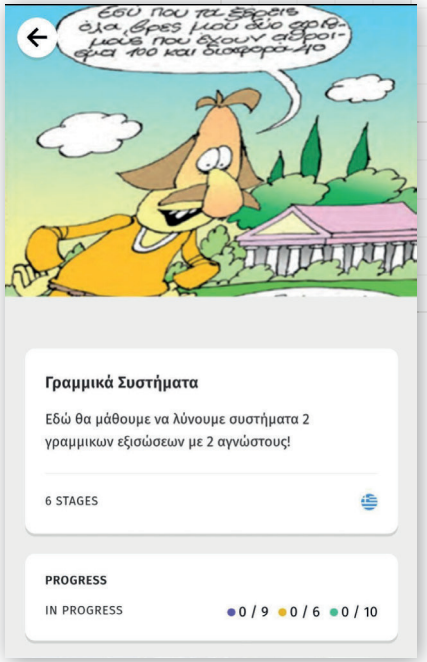
The course materials are freely accessible here and can be used in your teaching practice.

Co-funded by the Erasmus+ Programme of the European Union

LTC: Learning Graph Creation I

	University of the Aegean
Participants	19 pre- and in-service teacher
Contents	78 tasks & 4 LG on the topics
LG access in app via code	• Equations I (code: g46153) • Equations II (code: g12141) • Systems of linear equations (code: g29154) • Vectors (code: g23158)

	University of Catania
Participants	12 pre-service teacher
Contents	42 tasks & 4 LG on the topics
LG access in app via code	• Triangles (code: g78180) • Solids (code: g05192) • Final Exam Preparation (code: g48190) • Powers (code: g29178)



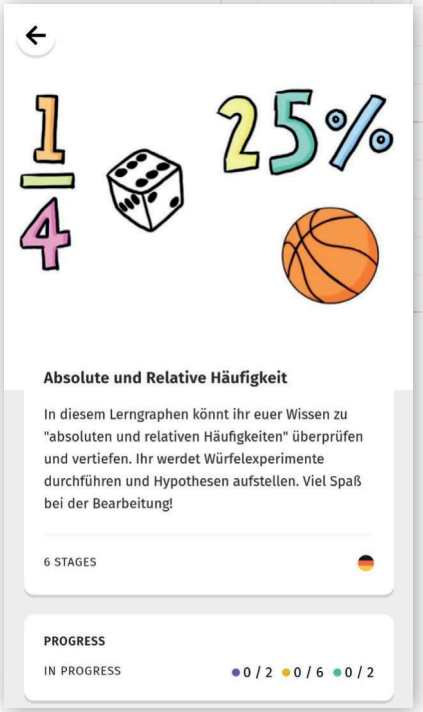
* The LGs can be accessed by entering the given code in the ASYMPTOTE app.

Co-funded by the Erasmus+ Programme of the European Union

LTC: Learning Graph Creation II

	University of the Aegean
Participants	19 pre- and in-service teacher
Contents	78 tasks & 4 LG on the topics
LG access in app via code	• Equations I (code: g46153) • Equations II (code: g12141) • Systems of linear equations (code: g29154) • Vectors (code: g23158)

	University of Catania
Participants	12 pre-service teacher
Contents	42 tasks & 4 LG on the topics
LG access in app via code	• Triangles (code: g78180) • Solids (code: g05192) • Final Exam Preparation (code: g48190) • Powers (code: g29178)



* The LGs can be accessed by entering the given code in the ASYMPTOTE app.

Co-funded by the Erasmus+ Programme of the European Union

MOOC: Design & Delivery

Design and conduct of an online professional development programme on the use of the ASYMPTOTE system

Mode	Fully asynchronous training delivered via DI.MA. Moodle online platform for more than 100 participants
Aim	• Development of open-available self-learn materials in form of video tutorials • Spreading the ASYMPTOTE system & enlarging the ASYMPTOTE user community • Research on the user experience of the first official ASYMPTOTE version (see IO6)
Time	October to December 2022 (1,5 ECTS)

The video tutorials are available on YouTube and are linked on our tutorial webpage.

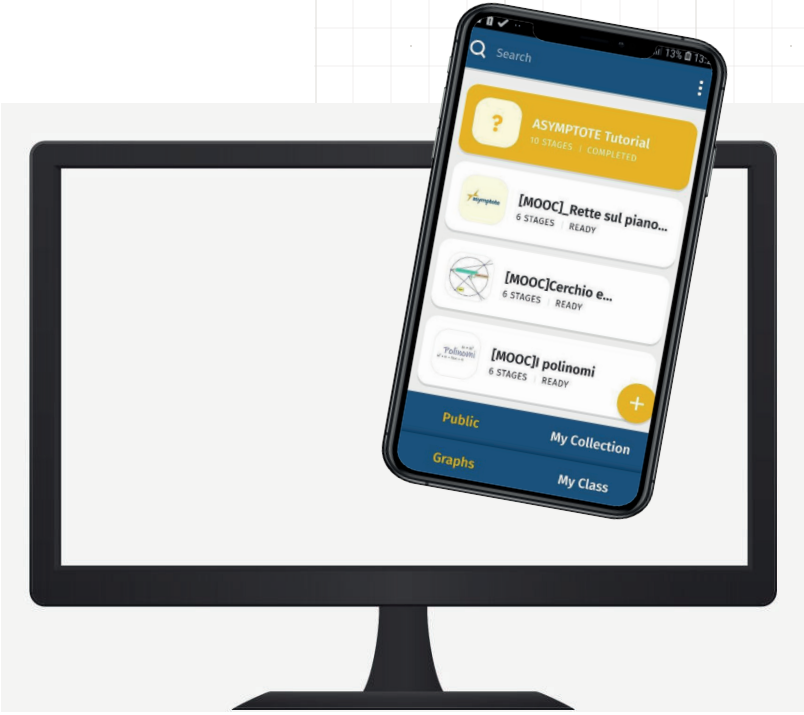
asymptote
Co-funded by the Erasmus+ Programme of the European Union

MOOC: Design & Delivery

In total, 129 participants registered for the MOOC. It was completed by 47 participants in all phases, resulting in a completion rate of more than 36%, which is high for online professional development programs.

> It aimed to provide (student) teachers both theoretical and practical perspectives in online teaching and learning.

> Theoretical: Input on online learning & teaching, mobile learning & e-pedagogy
> Practical: Getting to know ASYMPTOTE as one promising system for online mathematics education & developing an own learning graph.

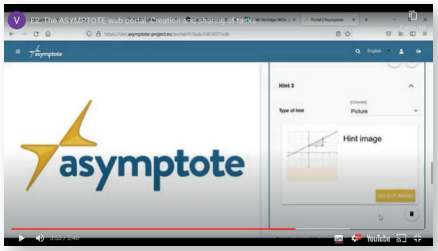


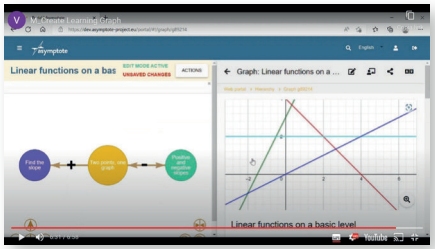
asymptote
Co-funded by the Erasmus+ Programme of the European Union

MOOC: Video Tutorials

In contrast to the Long-Term Curriculum, the MOOC was delivered asynchronously. Therefore, self-learning material in form of **video tutorials** and additional information, such as the ASYMPTOTE Theoretical Backg-round, was offered.

The videos were provided in English. Subtitles were added for each video in the various languages of the partnership (German, Greek, Italian, Portuguese, Spanish). This choice was made to enable also non-English speaking participants to fully participate in the MOOC.





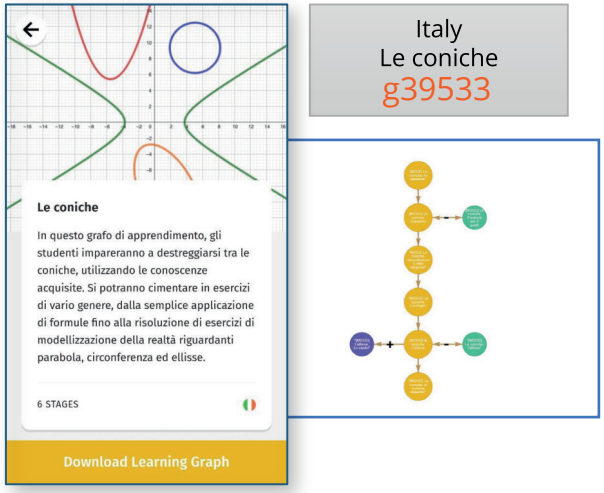
The video tutorials are available on YouTube and are linked on our tutorial webpage.

Co-funded by the Erasmus+ Programme of the European Union

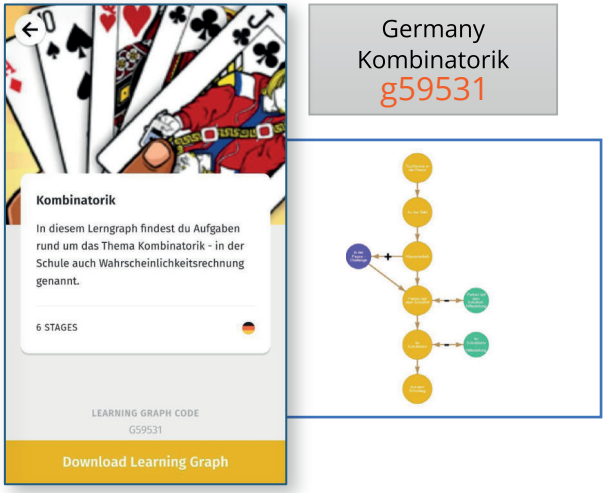
MOOC: Learning Graph Creation

MOOC teachers have created **433 tasks** and **47 learning graphs**. Tasks could be created in one of the five partners' project languages (German, Greek, Italian, Portuguese, Spanish) or in English.

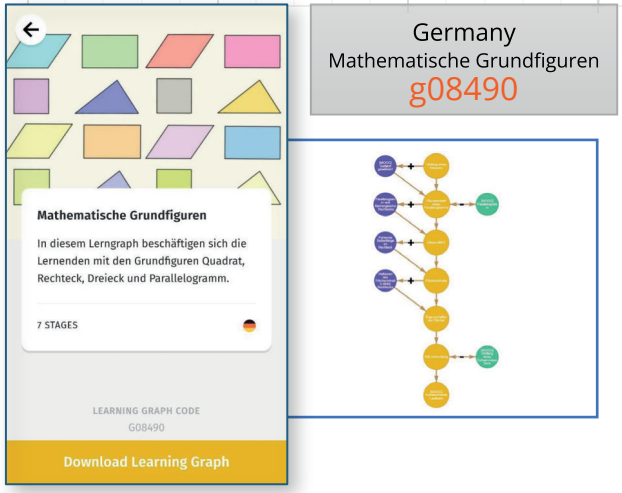
All learning graphs were reviewed by two MOOC participants and by an expert before being published on the web portal. **Three best practice examples**:



Italy
Le coniche
g39533



Germany
Kombinatorik
g59531



Germany
Mathematische Grundfiguren
g08490

*The LGs can be accessed by entering the given code in the ASYMPTOTE app.

asymptote
Co-funded by the Erasmus+ Programme of the European Union

LTC & MOOC: Outcome

Educational purposes:

- Professional teacher development

Material-based purposes:

- Enriching open data base by task & learning graph creation & publication
- Providing materials for professional development programmes: LTC slides
- Providing self-learning materials: video tutorials

Scientific purpose:

- LTC: Beta-testing & further development of ASYMPTOTE
- MOOC: Evaluation of the first version of official app & web portal

Sustainable dissemination purpose:

- Building an active user community using ASYMPTOTE

LTC Slides & Tutorials available on:

asymptote

Co-funded by the Erasmus+ Programme of the European Union