



# ILLUMINATED TRAINERS' TOOLKIT

Version 1.0 (2019)

**Includes a Facilitator's Guide**



Co-funded by the  
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## - PROJECT ILLUMINATED EXECUTIVE SUMMARY –

Project illuminatED empowers teachers with cognitive neuroscience informed educational practices. The objective of the project is to raise the quality of teaching and learning in school education through focusing on the practical skill development of teachers through in-service training activities that are informed by cognitive neuroscience and strategies supported by empirical studies.

### THE CHALLENGE

A gap exists between teaching practice and cognitive neuroscience-supported teaching and learning practices [2, 3] despite the identification of “proven practices that promote learning for all students” and continued efforts by the scientific community to disseminate such knowledge [3]. A cause of this gap can be attributed to inadequate teacher training – “aspiring teachers are not being taught — in textbooks or in their coursework and training — the foundational knowledge about cognitive strategies that can help ensure children will learn” [2].

A study published in 2016 reviewing teacher training programs concluded that there was a “near total absence of emphasis on research-driven strategies in any of the reviewed textbooks” and equally concerning was the finding that “many of the topics featured prominently have little research support or have been found to have little effect” [2]. This finding highlights a potential obstacle to the statement by the Council of the European Union that “initial teacher education should provide prospective teachers with the core competences required to deliver high quality teaching” [5]. Yet teachers have expressed their desire to have interventions based on neuroscience in their teaching toolkits [4] and, recently, the value of short modules for improving the understanding of teachers’ knowledge about the brain and learning has been demonstrated [5].



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## THE APPROACH

Project illuminatED narrows the above mentioned gap by delivering training activities for educators that will empower them with knowledge, informed by cognitive neuroscience, on how durable knowledge is constructed so that they can better design learning, evaluate various teaching approaches, and guide students towards the selection of effective study strategies.

The project outputs are directed toward school teachers and trainers who will benefit with access to Continuing Professional Development with regard to innovative teaching methods and access to a MOOC and workshops by Educational Trainers to reinforce what they have learned.

The key outputs are:

### 1) illuminatED Teaching Trainers' Toolkit

A toolkit for educational trainers comprised of two continuing professional development workshops resulting from the transnational collaboration between experts in the fields of education technology, teacher development and cognitive neuroscience.

### 2) illuminatED Teaching MOOC

A MOOC, based on the workshop content, that serves to reach teachers across Europe and to ensure the content remains accessible beyond the life of the project through its open-access videos.

In sum, Project illuminatED includes the direct delivery of training to in-service and pre-service teachers through pilot workshops and a MOOC; and facilitates the continued delivery of indirect teacher training by educational trainers by providing trainers with Open Educational Resources that can be reused without restrictions. Finally, the project includes an event, The illuminatED Teaching Symposium, that brings together teachers, educational trainers and experts in the fields



of research featured in the project to help establish long-term collaborative relationships (May 2020).

[1] Council conclusions on effective teacher education (2014):

[http://www.consilium.europa.eu/uedocs/cms\\_data/docs/pressdata/en/educ/14269\\_0.pdf](http://www.consilium.europa.eu/uedocs/cms_data/docs/pressdata/en/educ/14269_0.pdf)

[2] Pomerance et al. (2016). Learning about learning: What every new teacher needs to know. Washington, DC: The National Council of Teacher Quality.

[3] Roediger et al. (2012). Inexpensive techniques to improve education: Applying cognitive psychology to enhance educational practice. *Journal of Applied Research in Memory and Cognition*

[4] Simmonds, A. (2014). How neuroscience is affecting education: Report of teacher and parent surveys. Wellcome Trust.

[5] Dekker, S., & Jolles, J. (2015). Teaching about "brain and learning" in high school biology classes: Effects on teachers' knowledge and students' theory of intelligence. *Frontiers in psychology*.



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# ILLUMINATED TRAINERS' TOOLKIT

## - INTRODUCTION -

*IlluminatED: illuminating effective teaching strategies with the science of learning.*

Project IlluminatED (PROJ: 2017-1-ES01-KA201-038220) is a project funded by the ERASMUS+ Programme that strives to empower **school education teachers** with cognitive neuroscience informed practices in an effort to facilitate more **durable student learning**. A key output of the project is **continuing professional development workshops** for school educators that **introduce educators to the Science of Learning** and provides them with tips on how to align their teaching practices with the science on how student learning happens.

The project brings together experts in education technology, teacher development and cognitive neuroscience and runs from December 2017 to June 2020. The IlluminatED partnership is led by Universitat Pompeu Fabra and comprises 6 institutions: Universitat Pompeu Fabra, Barcelona (Spain); CICERO Learning ([www.cicero.fi](http://www.cicero.fi)), University of Helsinki (Finland); Metropolia University of Applied Sciences (Finland); University of Western Macedonia (Greece); and Advancis Business Services and Boon (Portugal).

IlluminatED key objectives are:

- to support the improvement in quality of teaching and learning in school education,
- to foster collaboration among teachers,
- to facilitate the use of pedagogy matching technology,
- to contribute to the formation of professional expertise in teaching and learning.

More about IlluminatED can be found on the official website and Facebook page:

- <http://www.illuminatedproject.eu/>
- <https://www.facebook.com/illuminatedproject/>



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## What is the IlluminatED Trainers' Toolkit? (Who is it for?)

The IlluminatED Trainers' Toolkit is a resource kit **for anyone wanting to deliver the IlluminatED workshops to school education teachers**. Whether you are an educational trainer, school teacher, or researcher, the toolkit has been built to support your delivery of the workshops. The content is geared toward secondary school teachers but is also useful for primary school teachers, and educators at vocational, higher education, and professional institutions. The main sections of the toolkit are:

- Two continuing professional development workshops for school education teachers
  - **Workshop A:** *A Science of Learning Primer for Educators – The cognitive processes underlying student learning*
  - **Workshop B:** *Designing Learning with the Science of Learning – Cognitive principles applied to the design of learning'*
- A Facilitator's Guide:
  1. **Slides:** Google Slides and PowerPoint files for the workshops.
  2. **Student activity sheets:** paper-based worksheets for workshop participants
  3. **Script:** An example script to guide explanation of the slides
  4. **Activity materials:** Spaced learning activity materials, group activity sheets
  5. **Questionnaires:** pre- and post- knowledge measures and workshop quality evaluations
  6. **Poster/abstract:** promotional materials for the workshops
  7. **Attendance sheets & Certificates:** templates for attendance and completion certificates
  8. **Venue requirements:** Letter to venue for required equipment and ideal room and seating arrangements
  9. **Resources:** articles, references related to the toolkit content



## **How was the IlluminatED Trainers' Toolkit developed?**

The initial workshop content is based on multi-disciplinary research in cognitive neuroscience and was evaluated by domain experts to ensure its quality. The content of the workshops was tested and validated in teacher pilot workshops that were delivered in Finland, Portugal, Spain, Greece, and Egypt. Nine sets of pilots were held with over 400 participants from the start of 2018 to the middle of 2019. The holding of pilots allowed the project team to collect direct and continuous feedback from experts (cognitive neuroscience: Cicero Learning, University of Helsinki; and for teacher development Universitat Pompeu Fabra, Barcelona and the Faculty of Educational Sciences, University of Helsinki); and from both in-service and pre-service educators.

Key contributors to the IlluminatED Trainer's Toolkit are:

- Marc Beardsley, Universitat Pompeu Fabra, Barcelona:  
Content creation, Learning design, Pilot lead (Spain)
- Mari Tervaniemi, CICERO Learning, University of Helsinki:  
Content validation, Pilot lead (Finland)
- Tanja Linnavalli, CICERO Learning, University of Helsinki:  
Content validation, Pilot lead, Translations (Finland)
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- Dr Tharrenos Bratitsis, University of Western Macedonia:  
Pilot lead, Translations (Greece)



- Michalis Ioannou, University of Western Macedonia:  
Pilot lead, Translations (Greece)

### **Why become an IlluminatED Trainer?**

We cherish educators. We believe they work very hard to do what's best for students. However, there are some gaps in teacher training that makes their jobs more difficult. One of these gaps is related to the Science of Learning. Despite a growing consensus in the scientific community on how learning happens and the biology that underlies learning, this knowledge is not being conveyed to educators. As a result, many educators, despite their best efforts and intentions, make use of outdated teaching practices that can undermine durable learning and result in students adopting ineffective learning habits – the opposite of what educators are striving for.

We want to enable teachers to design learning that aligns with the cognitive processes that underlie durable learning and help teachers identify the practices that are misaligned with such processes – because misaligned practices can often result in frustrated students who struggle to pay attention, understand, remember, recall, and transfer the taught material. Through the workshops, teachers will better understand the importance of determining and connecting to prior knowledge, managing the attention of students, considering the bottlenecks in working memory such as the amount of information that can be held at one time and the duration such information can be held, and facilitating the transfer from working memory to long-term memory through spaced repetition and retrieval activities.

We want to support teacher understanding of the fundamental processes that underlie learning so that teachers can better evaluate their own practices and more objectively determine which innovative pedagogy and approaches best meet the learning needs of 21st century students. We hope that you also share our desire to support educators.

The toolkit is designed to enable you to implement the 2 workshops developed during the IlluminatEd Project on the topics of '*A Science of Learning Primer for Educators – The cognitive*



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*processes underlying student learning'* - Workshop A - and *'Designing Learning with the Science of Learning – Cognitive principles applied to the design of learning'* - Workshop B.

In each workshop you have access to presentation slides, activities, worksheets for students, additional resources and achievement certificates.

<b>Presentation slides</b>	Ready to use detailed presentations with the core content of the workshops.
<b>Activities</b>	Set of activities to implement during the workshops.
<b>Worksheets for students</b>	Printable worksheets for students to use during the workshops.
<b>Additional Resources</b>	Background research articles for you to further explore the topic of the science of learning.
<b>Achievement Certificates</b>	Ready to print achievement certificates for the students who complete the workshops.

The Facilitator's Guide provides general directions and comments to the facilitator, with step by step instructional guidance on how to run the workshops and to support the preparation and delivery of the workshops.

