

Evidence for the Effectiveness of Cerego

We also have a number of case studies at <https://www.cerego.com/customer-stories>

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Usage guide (when all caps, click for source)

- “How does Cerego help with **understanding** beyond memorization?”
 - UH MANOA (2019)
 - QUEENSLAND UNIVERSITY OF TECHNOLOGY STUDY (2022)
 - FORBES (2019)
- “Do you have **third party** and/or **peer reviewed** studies?”
 - QUEENSLAND UNIVERSITY OF TECHNOLOGY STUDY (2022)
 - ACADEMICA PILOT (2013)
 - NYU (2018)
 - PROJECT HOPE (2018)
 - UH MANOA (2019) is peer-reviewed
 - FORBES (2019) articles are both third-party
- “Is Cerego appropriate for **K-12?**”
 - ACADEMICA PILOT (2013)
 - PROJECT HOPE (2018)
 - FORBES (2019)
- “Have you done studies to show effectiveness for college students?”
 - NYU (2018)
 - UH MANOA (2019)
 - QUEENSLAND UNIVERSITY OF TECHNOLOGY STUDY (2022)
 - EDX
- “Can Cerego reduce **training time?**”
 - NYU (2018)
 - TC3 (2018)
 - BAH GTMP (2018)
 - USAWC (2019)
- “Does Cerego help with **engagement?**”
 - EDX

Third-party studies

QUEENSLAND UNIVERSITY OF TECHNOLOGY STUDY (2022). Long-term improved outcomes and learning behavior.

Vincent-Ruz P, Boase NRB (2022). [Activating discipline specific thinking with adaptive learning: A digital tool to enhance learning in chemistry](#). PLoS ONE 17(11): e0276086, 2022.

A rigorous, multi-year assessment of the Cerego adaptive learning technology by researchers at Queensland University of Technology concluded that Cerego promoted both short and long term grade outcomes, student equitability, and learning approach:

- Cerego substantially improved outcomes in the short term, improving grade outcomes by an estimated **+15%** on average, rising to **+21% for highly engaged Cerego users**.
- Benefits were especially strong for students with low incoming grades. The effect of Cerego engagement for this group was dramatic, moving predicted grade outcomes from **25% (fail)** to almost **60% (a passing grade)**.
- Benefits **persisted for at least 9-12 months**, with improvements in outcomes continuing to show up on a course with **different material** the following year.
- Student feedback suggested Cerego prompted domain-general improvements in learning in the students who used it: *“After days of using Cerego I was already restructuring my entire study routine to be more akin to the short, contained, but consistent bursts of study that Cerego provided.”*

ACADEMICA PILOT (2013). Improved outcomes across High School subjects.

Bruce D. Homer and Jan L. Plass (2013). [Summary of Cerego Academica pre-pilot study](#). New York, NY, USA, 2013.

Researchers at City University of New York and New York University measured how Cerego improved knowledge gains for High School students in Florida, across a variety of courses (Algebra, Art History, Biology, Civics, Reading). Modest use of Cerego (**4.5 minutes per day**, for 5 weeks) significantly improved outcomes from 44% on pre-tests to 71% on post-tests (**+27%**).

Cerego learners also significantly outperformed controls on post-test scores (+13%) and instructors reported that students were more engaged and more on task with Cerego.

NYU (2018): Halved instruction time, 100% pass rate, & Distinguished Teaching Award.

Johanna Warshaw, et al. (2018). Mastering anatomy: Using Cerego as a teaching tool. In: San Diego, CA, USA: Proceedings of the American Association of Anatomists.

Professors at New York University used Cerego to prepare 350 students for the National Board Dental Examination. They [cut instructor training by half](#), and at the same time their pass rate jumped from 80% to **100%** (and 99.7% the following year). The year following, Prof. Elena Cunningham received [NYU's Distinguished Teaching award](#) - in part due to her Cerego implementation (but also because she's an excellent professor!). The authors also presented their findings at the 2018 Annual Meeting of the American Association of Anatomists in San Diego.

PROJECT HOPE (2018): Peer-reviewed RCT, improved outcomes for refugee children.

Selcuk Sirin et al. (2018). [Digital game-based education for Syrian refugee children: Project Hope](#). In: Vulnerable Children and Youth Studies 13.1, pp. 7– 18.

Researchers from New York University, the City University of New York, and Turkey's Bahcesehir University [used Cerego to teach Turkish](#), as part of a pilot program supporting the integration of Syrian refugee children in Turkey. In a randomized controlled trial, language outcomes for the Cerego group were **31%** higher than controls and **83%** recommended the use of Cerego (the highest rating for any of the interventions tried).

Perhaps most encouragingly, hopelessness scores for the treatment group decreased significantly (by **55%**; control group did not change), indicating a substantial improvement in the children's outlook following the intervention.

Government Pilots

TC3 (2018): Halved training time and strong user feedback

David Vergun (2018, May 21). [User-friendly combat care medical app gets positive feedback from soldiers.](#) In: Army News Service. Retrieved from <https://www.army.mil>

PEO STRI piloted the use of Cerego to train soldiers in Tactical Combat Casualty Care training (critical lifesaving skills such as airway management and tourniquet application). Training time was reduced by **56%**, and **96%** of soldiers reported that it was easy to learn using Cerego.

Soldier's Greenbook (2018): 4x learning with 3 mins Cerego per day

Todd South (2018, August 10). [Ditching PowerPoint: Here's how these experts are looking to transform the way soldiers learn.](#) In: Army Times. Retrieved from <https://www.armytimes.com>

USARPAC used Cerego to teach combat and lifesaving skills from the Soldier's Green Book to two rifle companies at Fort Shafter, Hawaii. Modest use of Cerego (**3 minutes per day**) improved training retention substantially (**+27%**, 4x the improvement seen in controls). [Report stored here.](#)

BAH GTMP (2018): +50% training retention, 48% lower training time

BAH used Cerego to teach two Global Threat Mitigation Program courses (Minehound and COIST) at 3 different army bases. Compared to controls, Cerego learners retained much more of their training material five weeks after the training week (up to **+50.4%** more), and required less training time (**33-48%** less).

Instructors (**100%**) and soldiers (**88%**) reported that they would like to use Cerego for future training, while Cerego's insights metrics **predicted training retention much more accurately** than training week post-tests did. [Report stored here.](#)

USAWC (2019): Knowledge doubled with only 5 mins study per day

The US Army War College used Cerego in a 6 week course covering Planning, Programming, Budgeting & Execution (PPBE). Students almost doubled their pre-test scores by the post-test **from 42% to 81%** and those who completed the Cerego assignments did even better (**86%**).

Learning gains came from very modest workload, just **5.4 minutes** per day in Cerego.

Survey respondents unanimously (**100%**) reported that they would like to use Cerego for future courses. [Report stored here.](#)

DAU (2019): Knowledge doubled with only 5 mins study per day

Defense Acquisition University (DAU) piloted Cerego between October-November 2018 in a 5-week cybersecurity awareness course. A majority of Cerego learners (**73%**) retained their training after **80 days**, compared to **29%** of students in the traditional training group.

Learners using Cerego **engaged 3x more** than controls and reported that they learned more using Cerego (by 12 to 1) and would like to use Cerego for future training (11 to 1).

Retention and agility provided accurate insight into whether students would actually retain the material: 85% of Cerego learners with above average retention, and 100% of Cerego learners with above average retention and agility, retained their training, compared to 29% of the control group. [Report stored here.](#)

Pilot Training Next (2020): Knowledge retained beyond 3 months with 10 minutes learning per day

US PTN Detachment evaluated Cerego in a Strategic and Operational Art course at Joint Base San Antonio-Randolph between January 6th-31st 2020. Officers' test scores increased from **50% to 80%**, and remained at **76%** on the retention test **107 days later**. Officers who reached their

Cerego retention goal outscored their peers 85% - 78% and 82% - 73% on the post-test and retention-test, respectively.

Cerego's learning **agility** metric accurately predicted **post-test** performance: above-average agility officers outscored peers 86% - 76%. Cerego's **retention level** metric was such a reliable predictor of training retention (R = .88) that it made a post-test unnecessary to conduct.

The median officer studied for 10 minutes per day. [Report stored here.](#)

AETC ATETA CRADA (2020): 30% reduction in course creation time, 56% reduction in training time, and 99% pass rate.

AETC piloted Cerego in a 6-week Basic Military Training (BMT) course at JBSA-Lackland Air Force Base, TX.

Content creation took **30% less time** than scheduled, saving 9 instructional designers almost 3 weeks, and instructional designers agreed (100% v 0%) that Cerego **saved them time** and was **easier to use** than other tools. The median Cerego user studied for 26 minutes per day, a **56%** reduction in allocated training time.

99% of airmen in the Cerego group passed the final assessment. Cerego made **recall of the material quicker and more automatic** for airmen, with high-retention learners answering questions 33% faster (and more accurately) on the final assessment.

Cerego's agility metric accurately identified at-risk learners within the first 2 weeks of the course. [Report stored here.](#)

Studies with Cerego Involvement

University of Hawaii at Manoa (2019): Improved analytical question scores on exam (+16% per level)

[Harlow, I., Fischer, L. & Wang, L. \(2019\)](#). Beyond the Foundations: Improving Higher-Order Understanding Through Foundational Knowledge. In S. Carliner (Ed.), *Proceedings of E-Learn: World Conference on E-Learning in Corporate, Government, Healthcare, and Higher Education* (pp. 628-633). New Orleans, Louisiana, United States: Association for the Advancement of Computing in Education (AACE).

Cerego was used to support college students studying Macroeconomics at the University of Hawai'i, Manoa. After controlling for student ability (using GPA), the use of Cerego improved final exam scores by **+12%**, with a larger **+16%** improvement for more complex analytical questions designed to measure a learner's higher level understanding.

The advantage for Cerego learners compounded throughout the 15-week course, with small gaps in attainment in early tests growing to much larger gaps by the end of the semester.

[Slide deck](#) / [Peer-reviewed paper](#) (also available at <https://www.learntechlib.org/p/212797/>)

TORONTO (2019): Study of ego-depletion and self-control using data from Cerego

Daniel Randles, Iain M. Harlow & Michael Inzlicht (2017). A pre-registered naturalistic observation of within domain mental fatigue and domain-general depletion of self-control. In: PLOS One, doi: <https://doi.org/10.1371/journal.pone.0182980>

Cerego allowed researchers at the University of Toronto to analyze anonymized data to better understand how ego depletion and self control affected the ability to begin tasks and perform them successfully at different times during the day.

This was not an efficacy study of Cerego, but an example of Cerego's unique dataset providing value for public research.

EDX: A case study course on Jazz Appreciation

A case study of Cerego being used to enhance engagement and learning in a MOOC (massive open online course).

Completion of the MOOC was 2.4x higher than average, and more than half of those who completed the course scored over 90%.

Performance was correlated with Cerego use - the highest performers tended to use Cerego more.

https://cerego.com/pdf/Edx_Infographic.pdf

Other Articles and Summaries

FORBES (2019): Why memorizing stuff can be good for you.

“If you don't know anything about a topic, what makes you think you can have deep or critical thoughts about it?”

In this short article Natalie Wexler (@natwexler) explains why memorization is critical for learning and education, and summarizes two studies involving Cerego.

<https://www.forbes.com/sites/nataliewexler/2019/04/29/why-memorizing-stuff-can-be-good-for-you>
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FORBES (2019): How Education Brings Hope To Refugee Children

“Education is an essential factor that will bring refugee children a sense of purpose, dignity and hope for the future”

In this article Barbara Kurshan explains why education has an impact beyond knowledge-building, including a summary of the Project Hope initiative with Cerego that improved mental health outcomes for Syrian refugee children in Turkey.

<https://www.forbes.com/sites/barbarakurshan/2019/12/03/how-education-brings-hope-to-refugee-children>