

# BREAKTHROUGH in EDUCATION for SCHOOL, FAMILY, and WORKPLACE

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Director, TOC for Education

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*PRESENT:* BUILDING ON SUCCESS 2017

**BREAKTHROUGH RESULTS FOR  
GOVERNMENT AND BUSINESS**

# Motoi Tobita

A scientist aimed to be an astronaut. Got his Ph. D at University of Florida and published more than a dozen of papers/patents in nano-tech and bio related areas through his career at Hitachi advanced research laboratory. Has strength in modeling, computer simulation, machine learning and numerical algorithm.

Joined Goldratt group in 2009 and experienced a number of international TOC implementation projects. One of top experts in retail and supply chain management (DBM) and project management (CCPM) software through various implementations and software localization. Supported a 100M USD IT project and its success stories were published in many magazines and in online business sites.



Also, one of initiators to introduce TOC for education (TOCfE) to Japan and one of key members of TOCfE international community. Coached an almost dropping-out high-school student to bring his math score from the bottom in the class to the average in just 6 weeks. Developed TOC-based tennis coaching program. A high-school tennis team used to lost in the 1<sup>st</sup> round in the tournament, but proceeded to 4<sup>th</sup> round after 3 visits. Now, coaches a tennis world ranker and Olympic athletes. His skill to transferring TOC concepts without using TOC jargons is acclaimed by veteran educators.

# Contents

- Analysis of a nation (Japan)
- A TOC for Education case study addressing motivation, relevance, and dropout problem
- TOC for Education (Japan) rolling out toward nation-wide impact

# About 8 years ago...

- A nation can be considered as a **SYSTEM**
- Two key questions:
  1. Is the system 'Japan' efficient?
  2. Can we make 'Japan' better in 20 years?

# The Core Cloud, system JAPAN

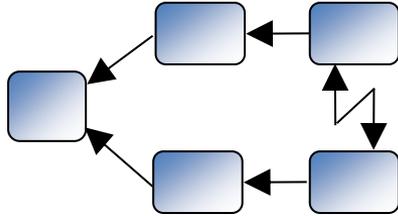
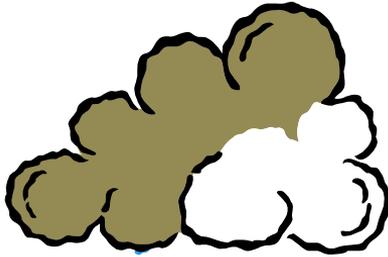


# Our solution for “system JAPAN”

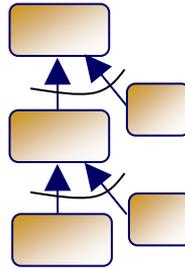
- Solutions:
  - Teach “TOC for Education”(TOCfE) program
  - Put the TOC success stories into public domain
  - Test TOC in government



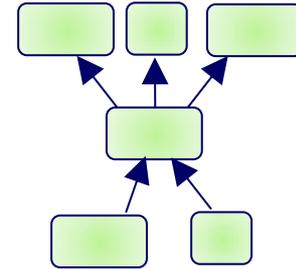
# The 3 TOC tools to think clearly



CLOUD



BRANCH



AMBITIOUS  
TARGET TREE

# Applications

## Curriculum



## Behavior



**BRANCH**



**CLOUD**



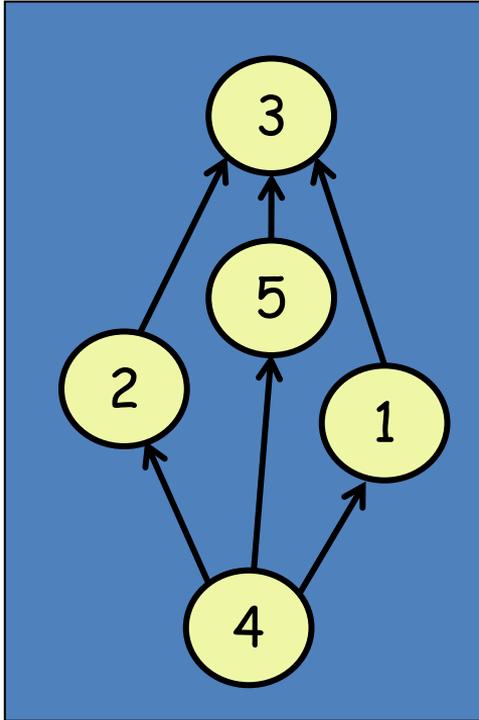
**AMBITIOUS  
TARGET TREE**



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# Simplicity in the education problem

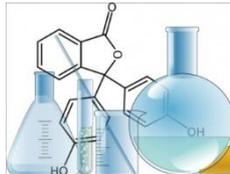
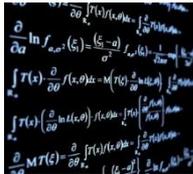


1. Some students don't do homework.
2. Some students drop out of school.
3. Some students have low academic achievement.
4. Many times students don't see what they learn as interesting or relevant to real life.
5. There are discipline problems.

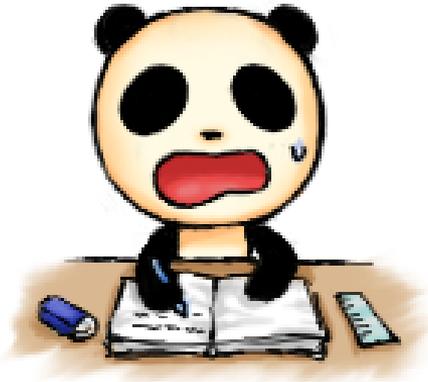
By Kathy Suerken, the President of TOC for Education, Inc.

# A story of a high-school student

- Loves dance and act
- Low academic performance
- Math score, 4 out of 100, the worst in the class
- In failing 2 subjects in the coming exam, he has to repeat the school year
- The exam is in 6 weeks



# What are problems in Math?



I don't know what I don't know

# Obstacles and intermediate goals

Obstacles	Intermed. goals	Actions
<ul style="list-style-type: none"><li>▪ There is not enough time</li></ul>	<ul style="list-style-type: none"><li>▪ Be able to answer questions at the exam</li></ul>	<ul style="list-style-type: none"><li>▪ Plan how we are going to use given time</li><li>▪ Teach how to write answer sheet</li></ul>
<ul style="list-style-type: none"><li>▪ <b>No motivation (If allowed, I don't want to study)</b></li></ul>	<ul style="list-style-type: none"><li>▪ <b>I know why I have to study</b></li><li>▪ <b>I balance study and what I want to do</b></li><li>▪ <b>Studying becomes a fun</b></li></ul>	<ul style="list-style-type: none"><li>▪ <b>Show how what he studies at school and his life is connected and relevant</b></li></ul>
<ul style="list-style-type: none"><li>▪ I've been behind since long time back</li></ul>	<ul style="list-style-type: none"><li>▪ I understand the subjects completely</li></ul>	<ul style="list-style-type: none"><li>▪ Teach how to organize information as a story</li></ul>
<ul style="list-style-type: none"><li>▪ It's a pain to memorize</li></ul>	<ul style="list-style-type: none"><li>▪ Knowledge stays in my brain spontaneously</li></ul>	

# The initial time allocation for Math exam

- 50 pages
- 1 page = 1 hour
- Repeating the material takes more time

**Needed Time**

50 hours

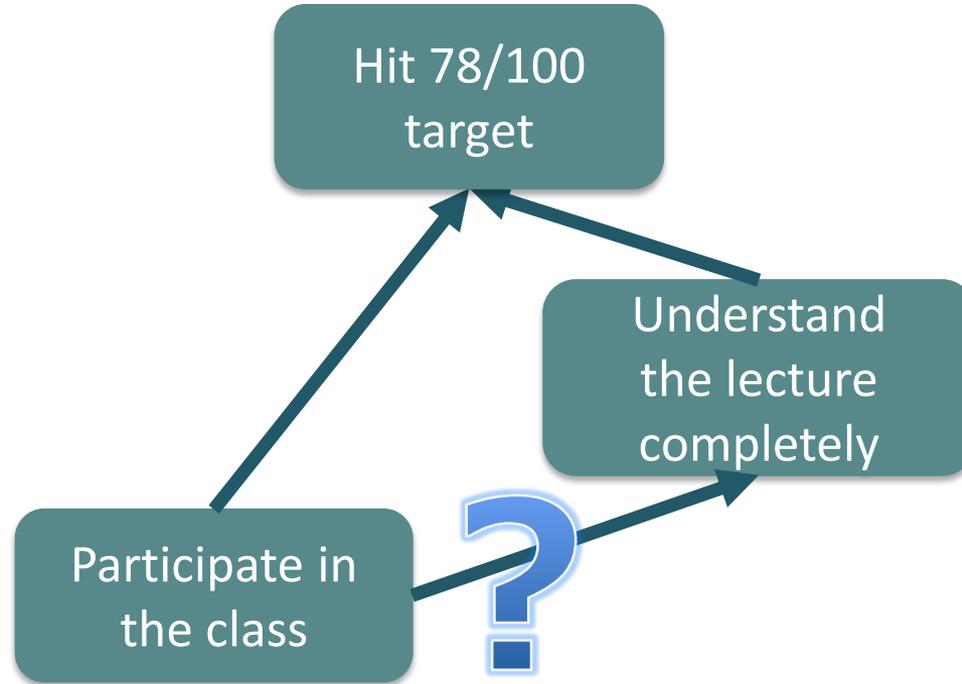
50 hours

**Allocated Time**

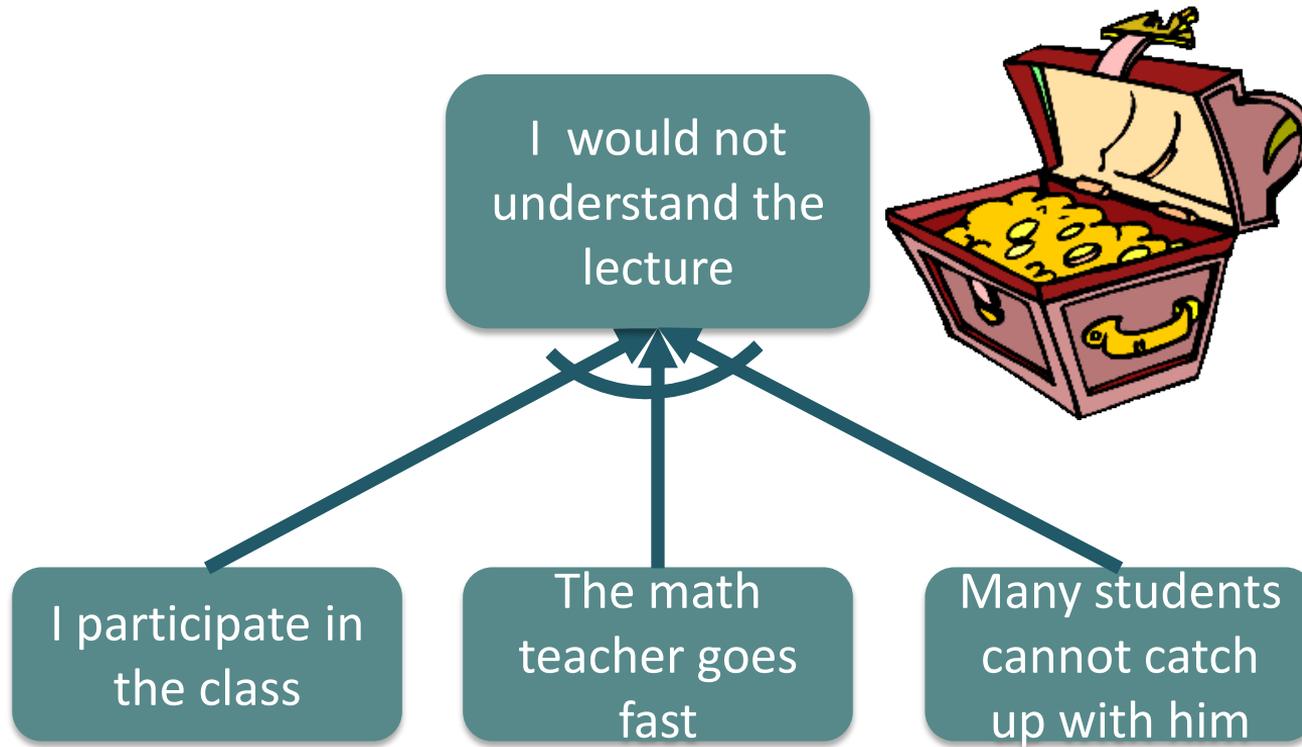
12

- 6 weeks
- 10 hours/week (He spends time on dancing and acting)
- 4 subjects in danger and the others (Total : 5)

# His own idea + sufficiency check = confidence



# Predicted problem



# Logical structure of hard sciences

- Conclusion
- New knowledge

Something else is derived

- Definition
- Number
- Condition

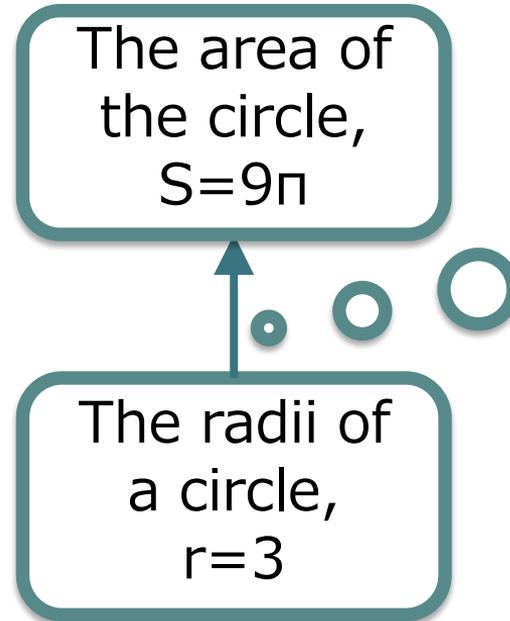
Something is given



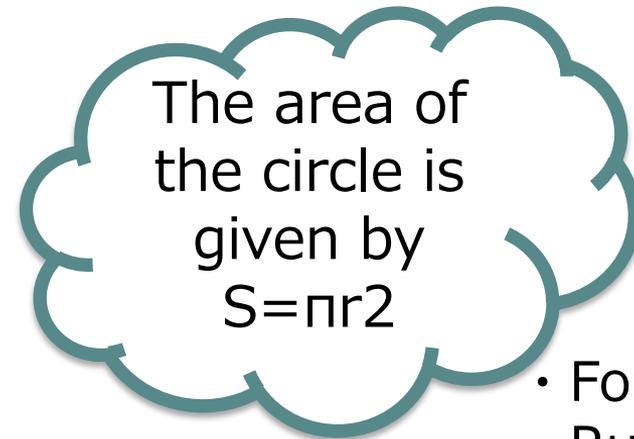
- Formula
- Rule

# Logical structure of hard sciences

- Conclusion
- New knowledge



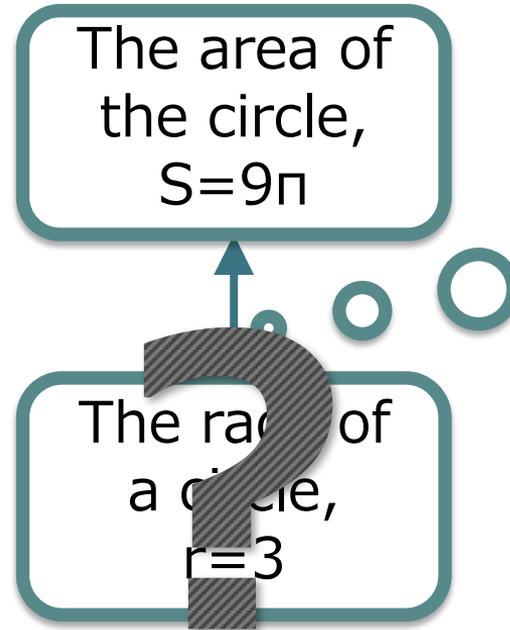
- Definition
- Number
- Condition



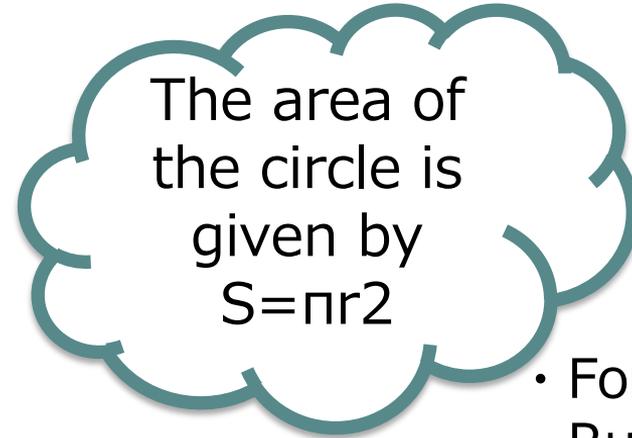
- Formula
- Rule

# Take note and ask a question

- Conclusion
- New knowledge



- Definition
- Number
- Condition

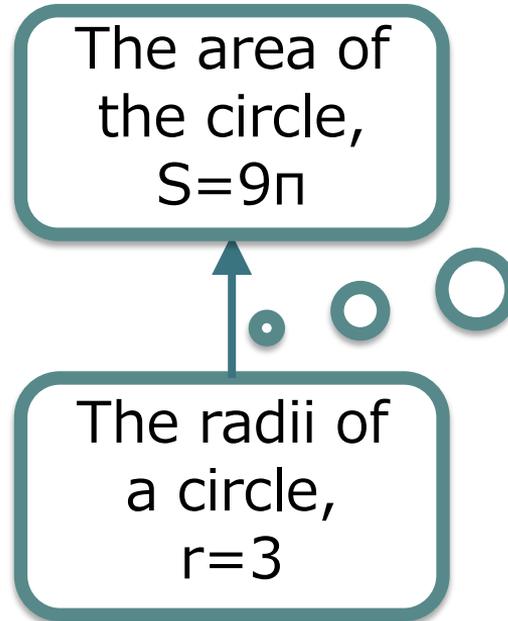


- Formula
- Rule

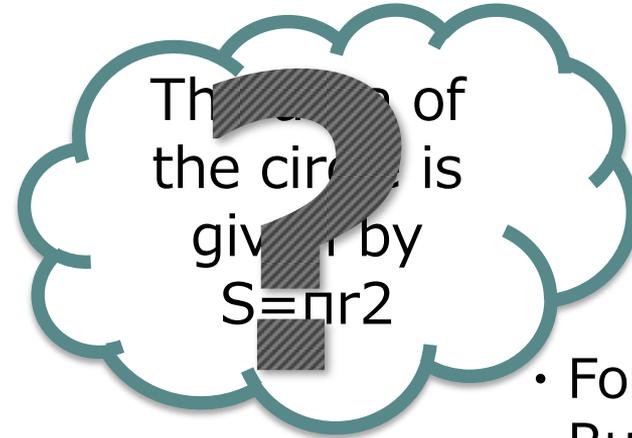
**“What do you mean by ‘radii’?”**

# Take note and ask a question

- Conclusion
- New knowledge



- Definition
- Number
- Condition



- Formula
- Rule

**“Why the area can be calculated by this formula?”**

# Take note and ask a question

- Conclusion
- New knowledge

**“Why putting  $r=3$  would give the area of  $9\pi$ ?”**

The area of the circle,



The radii of a circle,  
 $r=3$

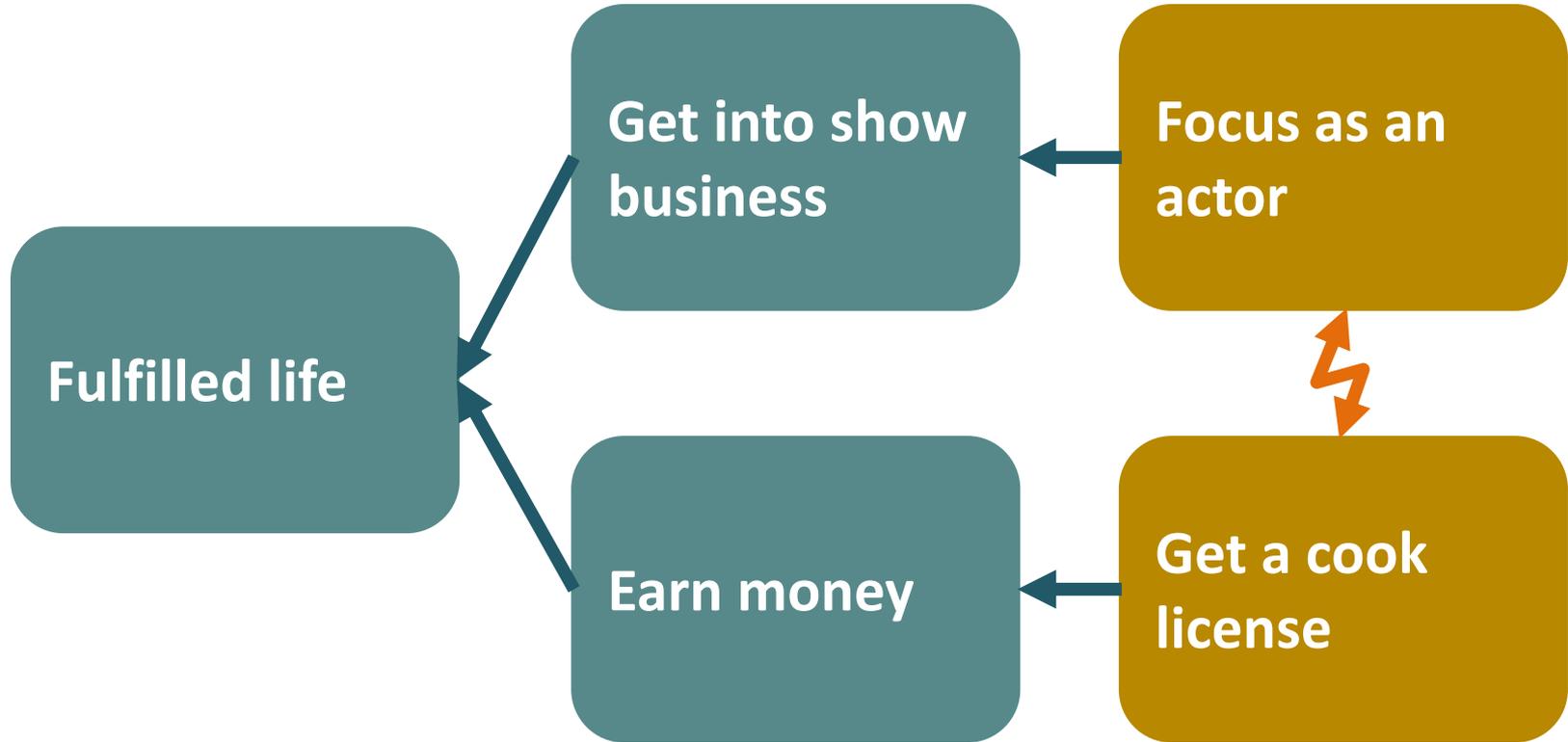
- Definition
- Number
- Condition

The area of the circle is given by  
 $S=\pi r^2$

- Formula
- Rule

**“I KNOW what I don't**

# Should he have “PLAN B”?



# Reproducible?

- After you get into show business....

Fail

Success  
further

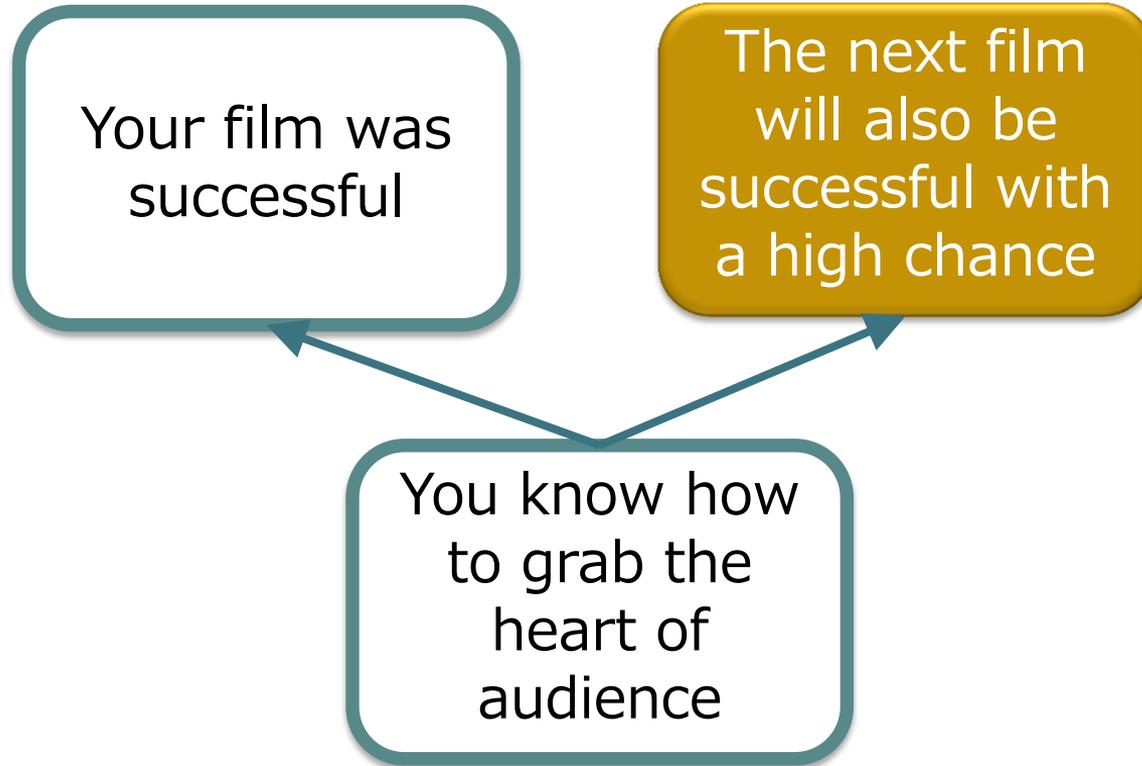
# One-film wonder

Your film was  
successful

It's not certain  
if the next film  
will be  
successful

WHY ?

# An accomplished actor



The area of the  
circle  
 $S = 9\pi$

The radius of a  
circle  
 $r = 3$

The area of  
a circle  
 $S = \pi r^2$

MATH

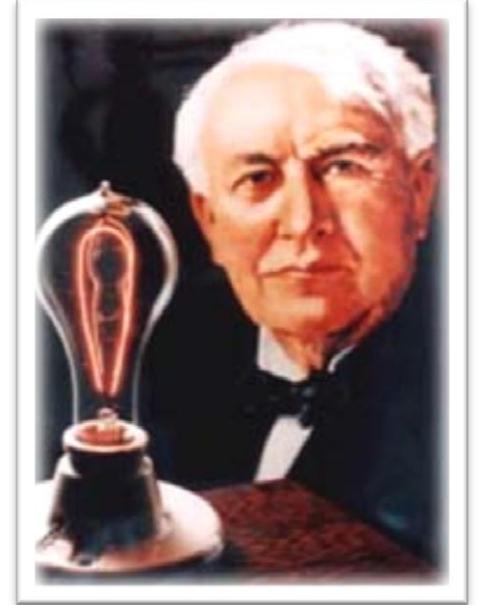
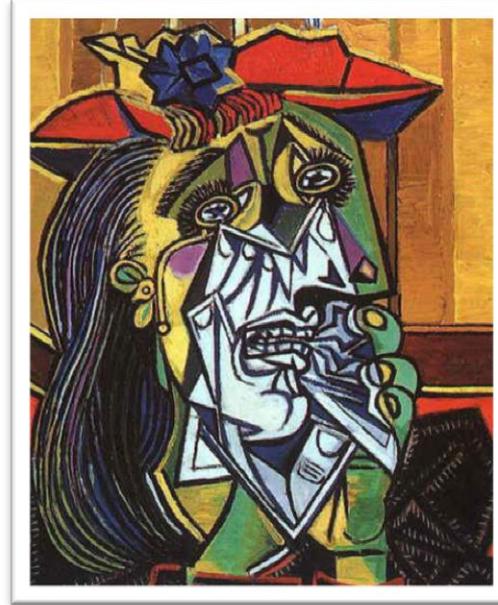
LIFE

Audiences get  
fascinated with  
it

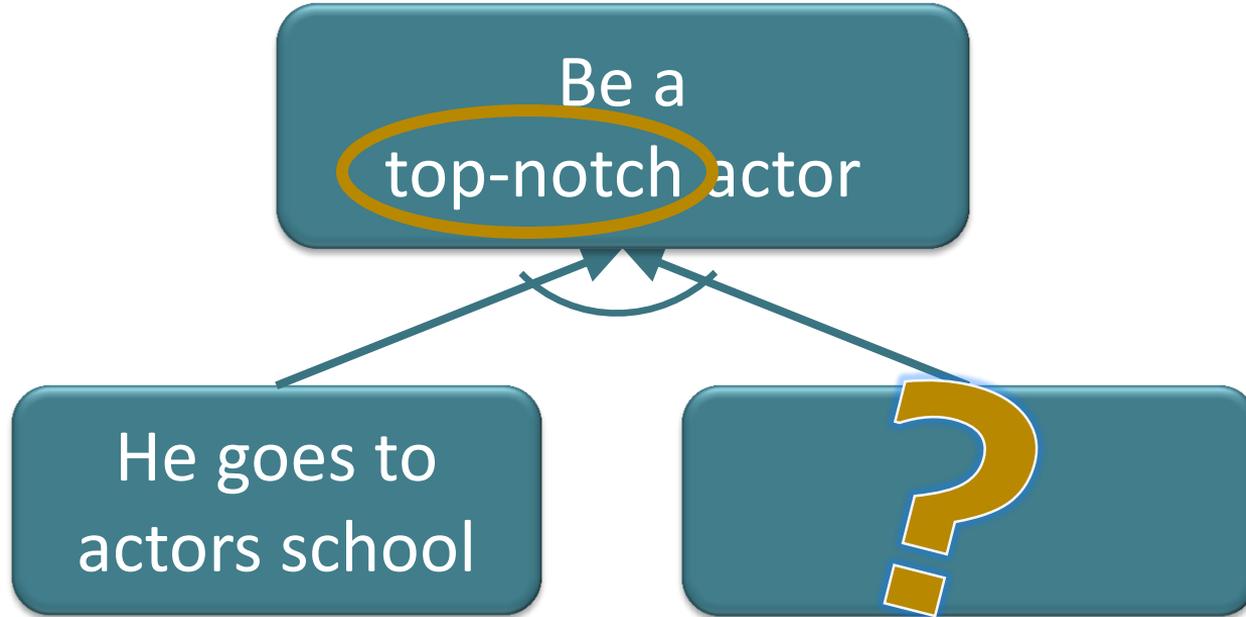
I know  
audience  
likes this

I act like  
this

# How he can be a top-notch?



# Going to a school is not a full solution



# Textbook = Collection of top notch work



You will have better chance to be a top-notch in the area you choose

Gain knowledge

Master how to think

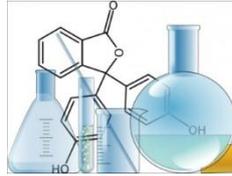
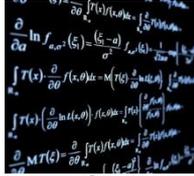
Understand how to become a top-notch

Study textbooks that are filled with top-notch works



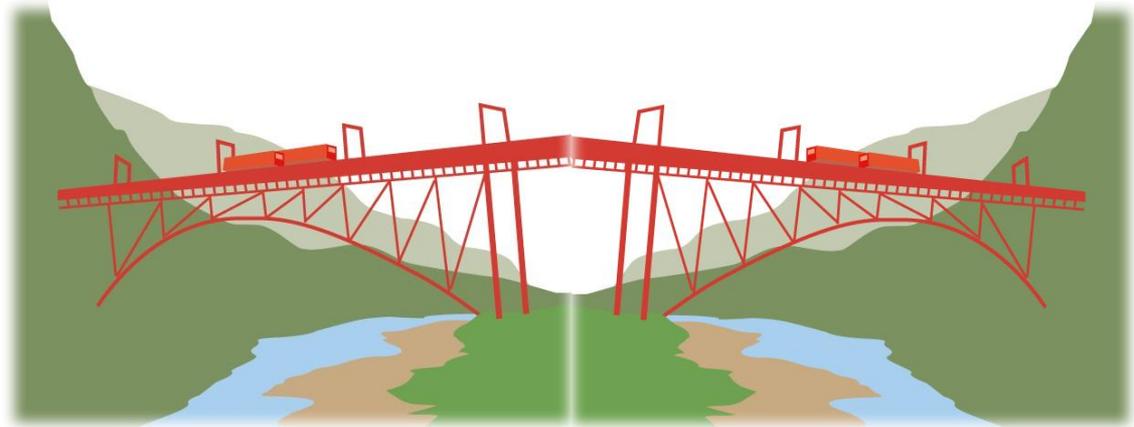
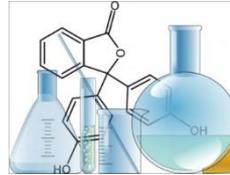
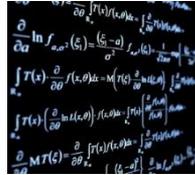
Study contents deeply by organizing information by logic

# Why we study in school?



# Why you study at school?

What I learn is  
NOT so much about  
calculus or chemistry,  
but,  
**Ways of thinking**  
to prepare for life



# To become a top notch actor

Obstacles	Intermed. Objectives	Actions
<ul style="list-style-type: none"><li>▪ Don't get enough attention</li></ul>	<ul style="list-style-type: none"><li>▪ Be known as actor of extraordinary performance</li></ul>	<ul style="list-style-type: none"><li>▪ Continuously practice to broaden his acting quality</li><li>▪ Spend more time for his fashion</li></ul>
<ul style="list-style-type: none"><li>▪ <b>Don't pass auditions</b></li></ul>	<ul style="list-style-type: none"><li>▪ <b>Get a first chance</b></li></ul>	<ul style="list-style-type: none"><li>▪ <b>Examine the past films made by the same director and past casts to get a feel about what is his/her needs</b></li></ul>
<ul style="list-style-type: none"><li>▪ Cannot act what I'm not good at</li></ul>	<ul style="list-style-type: none"><li>▪ Be able to act wide range of characters</li></ul>	<ul style="list-style-type: none"><li>▪ Continuously practice to be able to act more characters</li></ul>
<ul style="list-style-type: none"><li>▪ Cannot make enough income</li></ul>	<ul style="list-style-type: none"><li>▪ Appointed to a job by his name</li></ul>	<ul style="list-style-type: none"><li>▪ Always act to impress director, staff, and colleagues</li></ul>

# So, this is the movie

まるで出席を取るみたいに、  
先生はみんなを殺し続けたんだ。

ドラマ  
悪ノ教典  
—序章—  
10.15 VIDEOストアで  
独占配信  
【詳しくはこちら】

悪ノ教典  
—序章—  
R15+  
映倫

facebook TOP NEWS INTRODUCTION STORY TRAILER THEATER

原作 貴志祐介 × 監督 三池崇史 × 主演 伊藤英明

11.10 ROADSHOW

伊藤英明  
二階堂ふみ 染谷将太 林 遣都 浅香航大 水野絵梨奈  
山田孝之 平岳大 / 吹越 満

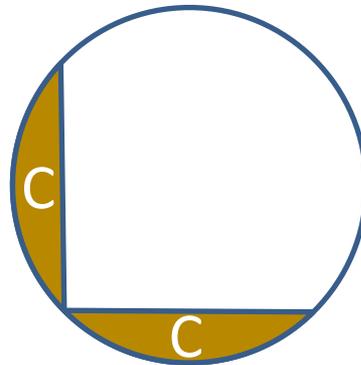
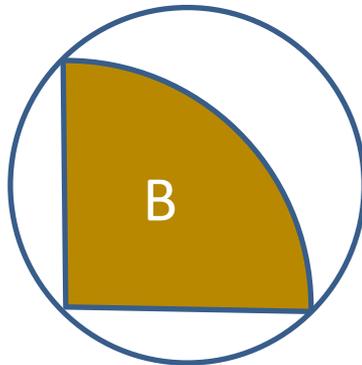
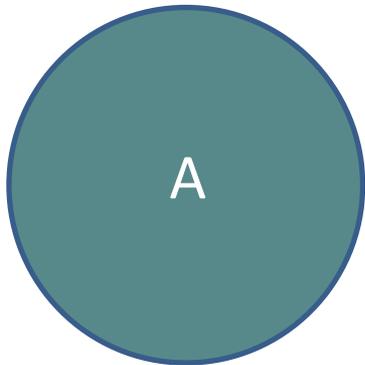
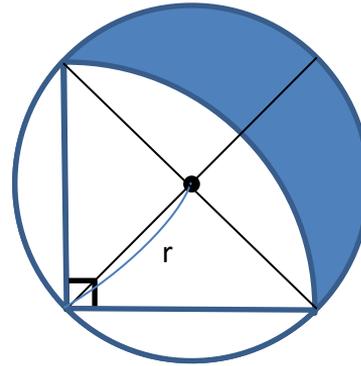
監修 脚本: 三池崇史 原作: 貴志祐介 (文芸春秋) 音楽: 進藤信二  
製作: 市川南 エグゼクティブプロデューサー: 山内章弘 企画: プロデュース: 白井央 プロデューサー: 東幸司 萩美佐子 森徹 ラインプロデューサー: 今井明幸 プロダクション統括: 金澤清美  
撮影: 北信康 美術: 林田祐至 監修: 佐久嶋依里 録音: 中村淳 照明: 渡部嘉 佐藤宗史 装飾: 坂本剛 編集: 山下健治 助監督: 原田健太郎 製作担当: 竹岡実 スタリスタ: 前田勇彦  
音響効果: 柴崎雅治 CGIディレクター: 太田垣香織 特殊造形: 松井祐一 スタジオプロデューサー: 辻井啓嗣 キャスティング: おおずさわか  
製作: 悪ノ教典 製作委員会 製作プロダクション: 東宝映画 OLM 企画協力: 文藝春秋 配給: 東宝



# A sample question

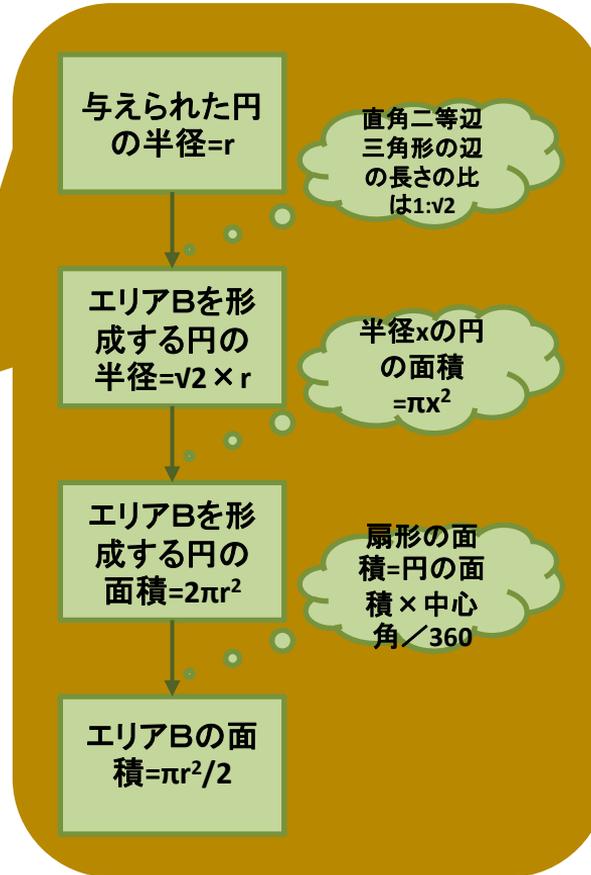
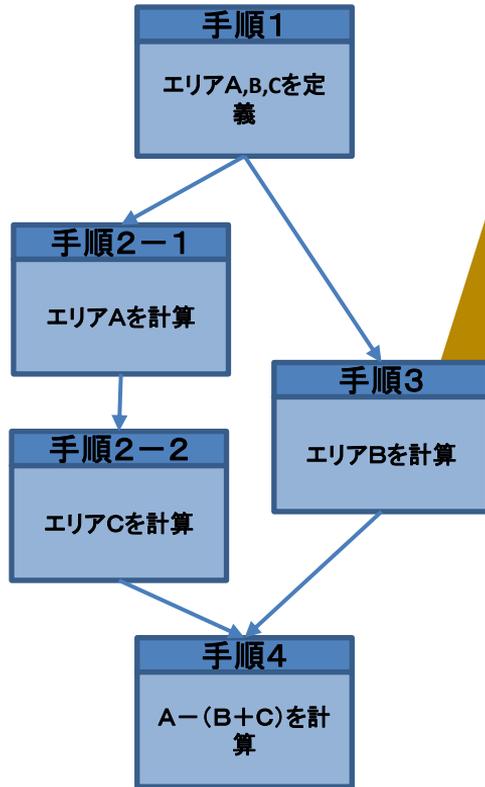
- Calculate the area in blue

$$\text{Area} = A - B - C$$



# An example using the tools for Math

## Main Scenario



A TOC tool developed by Dr. Danilo Sirius

## Sub Scenario

# Common assumptions we challenged



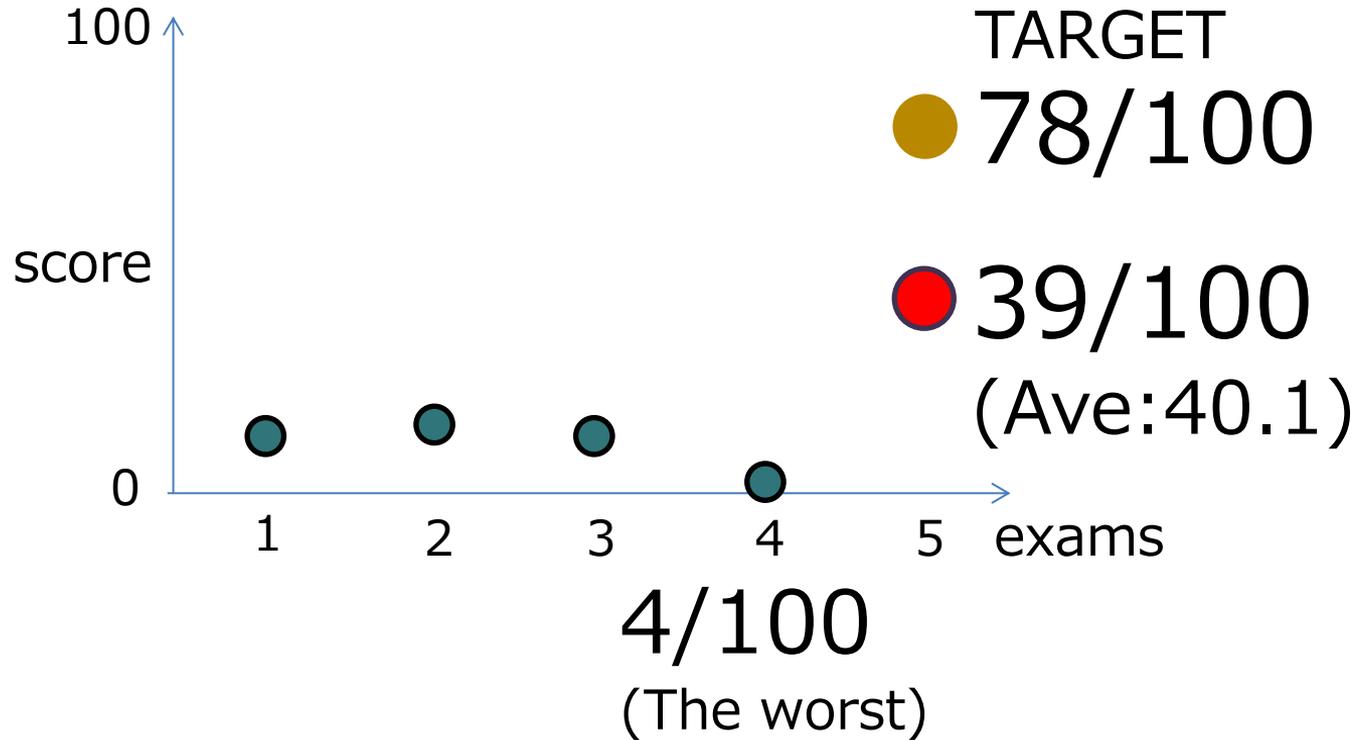
Improving academic performance significantly in 6 weeks is impossible

I don't understand lecture even if I attend classes

There are too much to memorize in order to pass exams

What we learn in school is nothing to do with my life

# The exam result



# Year-end grade

Math



Physics



Chemistry



History



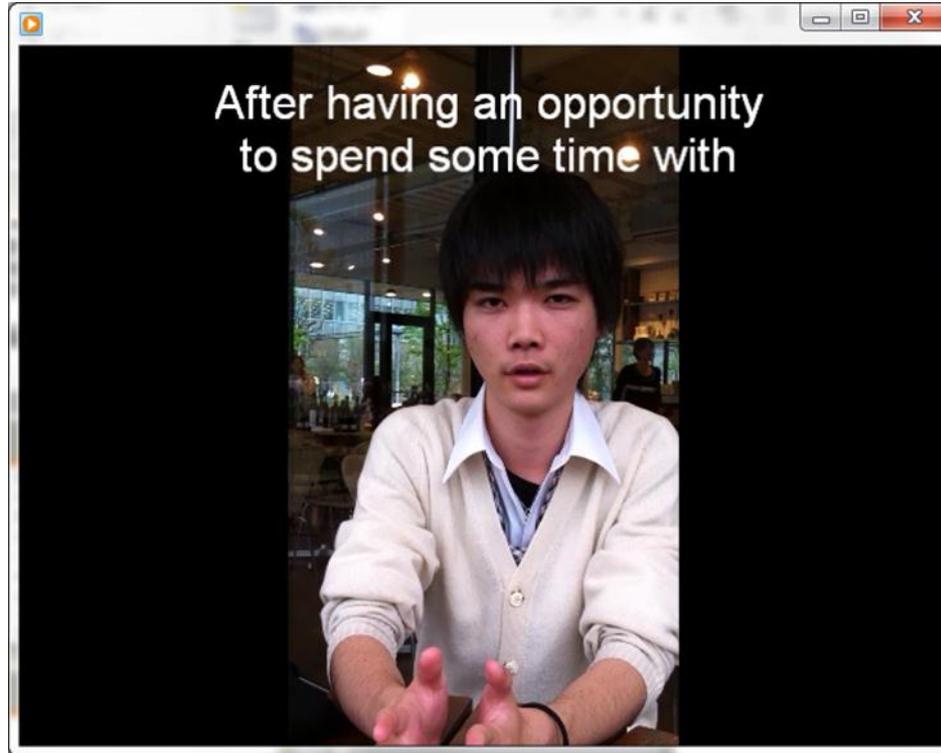
Advanced to senior



# A letter from his mother

Once your lesson started, you taught subjects from his point of view. Because, I guess, you captured his personality very quickly, your lesson fit him repeatedly. There were a few occasions that you gave 3-hour lesson. I was almost sure that he would get bored, but was surprised to see him studying so seriously, which I've never seen. Your lesson doesn't involve memorizing formulas, but emphasizes images and stories.

# Testimony video from the student



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# First TOCfE workshop in Japan, 2011



140 people with broad background attended from all over Japan

- Industry (mainly human resource development)
- Business executives
- IT society (coaching/facilitating society)
- Academia (University professors)
- Kindergarten director
- Medical doctors
- Children Bookstores owner
- PTA(Parents and Teachers Association) chairman
- TOC experts/consultants



# Voices from the program participants

- My solution makes more sense than it did before
- My personality has also changed
- I found that my kids think more logically than I thought
- Various needs are captured by writing
- I will focus on “how” I use the tools
- I will use the tools and materials to train all the company staff
- Become able to find obstacles and to handle them proactively
- I have Less and less concerns and my future is clearer
- So useful! It’s a culture shock
- I would like to use more for the future of children

# TOC for Education Japan, activities



The  
Certification  
program



Annual  
symposium



Volunteer-  
based  
operation



Community  
groups

Source “How to make ordinary people achieve extraordinary performance” by E. Yasuda and M. Tobita, 2016 TOCICO international conference

# TOC for Education communities in Japan

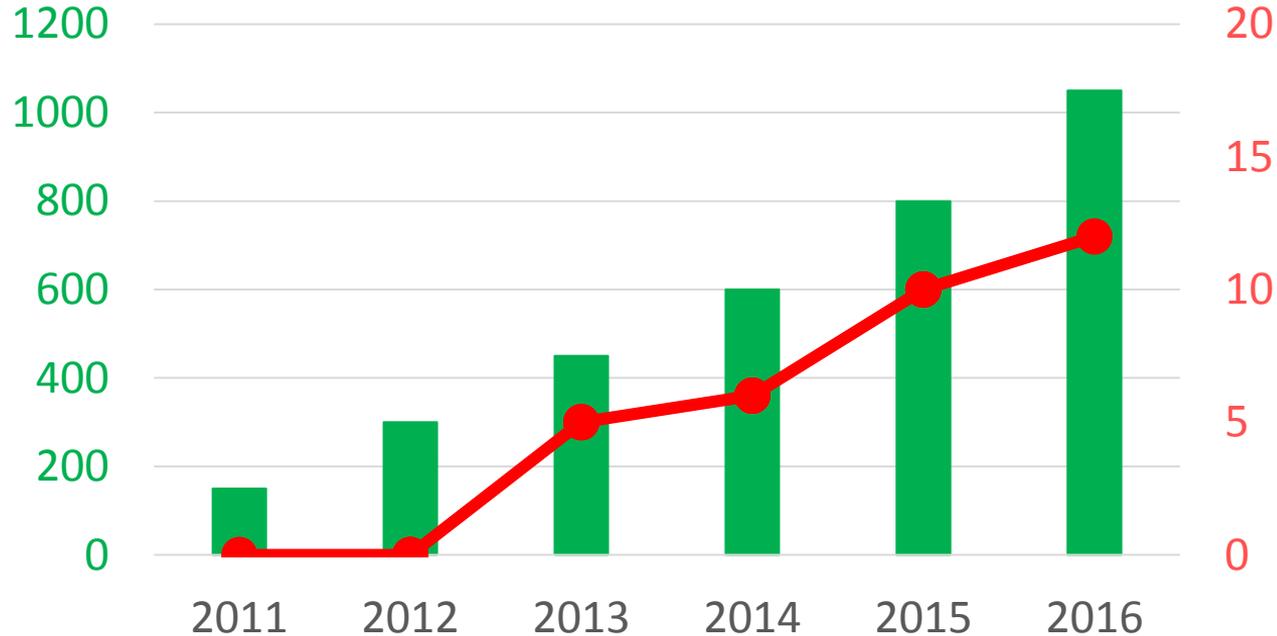


Source “How to make ordinary people achieve extraordinary performance” by E. Yasuda and M. Tobita, 2016 TOCICO international conference

# TOC for Education (Japan) continues to grow

## Certified Learners

## Master Facilitators



Source "How to make ordinary people achieve extraordinary performance" by E. Yasuda and M. Tobita, 2016 TOCICO international conference

# Key assumptions on the effectiveness of TOCfE



- Many of government and business people are parent of children
- Teaching is the best way to learn
- 4 years old kids will be 24 in 20 years

# Solution of “System Japan” summary

**Adults** working at  
schools, companies,  
government etc.  
and **Children**

Business

Government

Holistic thinkers ↑  
Preparation for  
future ↑

Performance ↑  
Tax income ↑

Wisdom ↑  
Wisely used  
tax money ↑

Just published

世界で800万人が実践!

# 考える力の育て方

ものごとを論理的にとらえ、ライフコーチ目標達成できる子になる **飛田 基**

3つの思考ツールで  
自立した子に育つ!  
学力もアップする!

ダイヤモンド社

**世界的ベストセラー**  
『ザ・ゴール』の著者が開発した、  
5歳から使えるシンプルな思考法

Used by 8 Million people worldwide

## How to cultivate the ability to think

Children become mastery of understanding  
things logically and achieving their target