



TRIZ education method suitable for elementary school students

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Situation of Elementary school in Jeju island, countryside

- ▶ Decrease in number of students
 - ▶ Low quality of after school class in countryside
 - ▶ Crisis of Shut-down school
 - ▶ If the **total** number of school students is less than 60 the school is to be closed
 - ▶ Heung - San elementary school (expected to be closed)
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- ▶ methods to prevent shutting-down school (which is) used by countryside villages
 - There are some cases of offering free rental houses for parents with elementary school students living outside of the region (to attract elementary school students)
 - establishment of an autonomous school

An autonomous Elementary School

- ▶ Regular curriculum can be replaced by principal's discretion

Music class : a person who majored in music in a foreign university
or a orchestra member can teach the class even if he/she has not a teacher's license

Fine art class : painter or fine art expert

English : English native-speaking instructor

Science : an outside expert

Invention education (applied) by invention technique is being taught (nowadays)

↳ An autonomous elementary school is way to attract students in downtown area

- ▶ An autonomous elementary school is trying to inform the parents about the school

where they don't have to pay a lot of private education expenses
that it can offer better education without any burden of private education expenses

Method to save school in shut-down Crisis

- ▶ Invention elementary school
- ▶ Can we make an elementary school where many parents want to send their children with effective invention education through TRIZ?
- ▶ What I'm saying is if we can teach students invention education effectively through TRIZ , can we make an elementary school where many parents want to send their children ?

 What do you think is the best way?

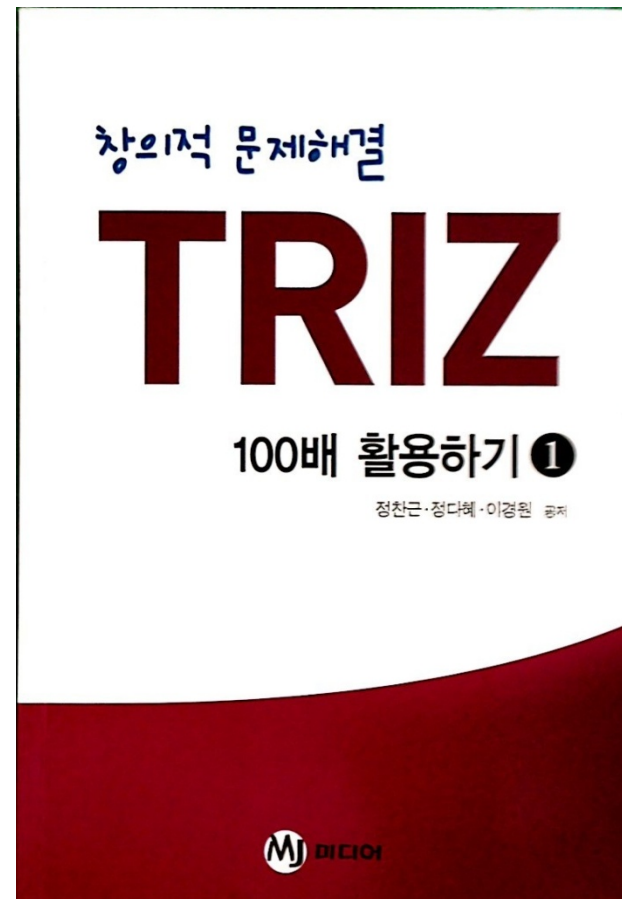
 What about education contents, tools, and materials?

TRIZ materials in *Heung - San Elementary School*

▶ TRIZ material

“창의적 문제해결
TRIZ 100배 활용하기”
사용함

We used “창의적인 과학자,
엔지니어를 위한 발명의
과학,트리즈 (알츠슐러 씀)”



Teaching materials in Heung – San Elementary School

- ▶ Those are materials for adults not for young students
- ▶ It takes much time for students to understand the teaching material and there are examples that students can not understand

▶ Conclusion

- There is no TRIZ material for elementary school students
Low level TRIZ materials are needed

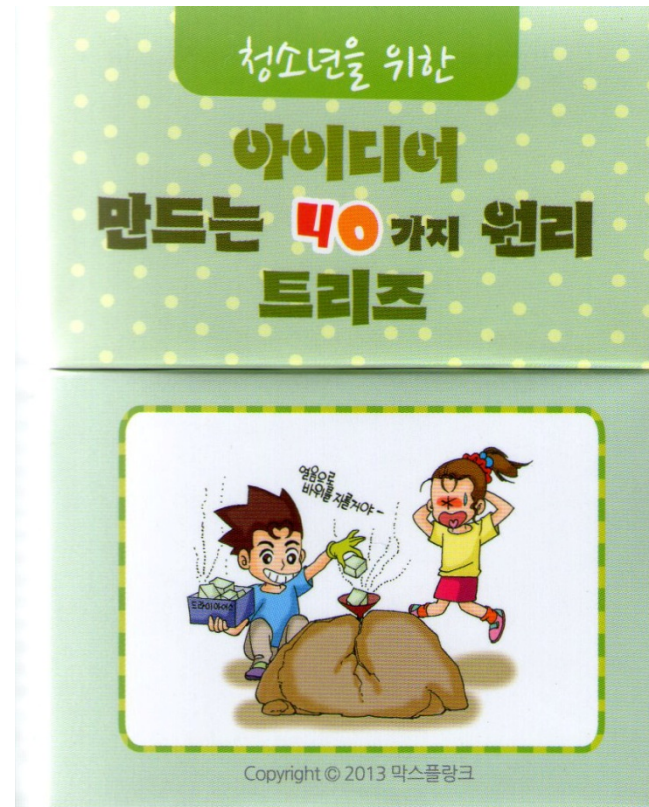
☞ In case of Heung-San Elementary School even though it provided various types of education including TRIZ it couldn't prevent shutting down the school meaning, providing various types of education including TRIZ didn't help prevent shutting down the school)

Challenge

- ▶ Gwi-Deok elementary school
- ▶ the total number of the school students is 73
- ▶ Objective
 - We give TRIZ education to fourth, fifth grade students – and we try to make them to be one of the winners in invention contest
- ▶ Education method
 - activity using invention card
 - Education using traditional fairy tale

TRIZ Education in *Gwi-Deok elementary school*

- ▶ TRIZ invention cards are being used to arouse students' concentration and interest
- ▶ It(Triz education using the invention cards) helps a lot in students' education



제공 : 막스플랑크

Triz education in *Gwi-Deok elementary school*

- ▶ There are difficult invention principles for elementary school students
- ▶ There are difficult sentences in cards for elementary school students
- ▶ Students need better concentration (to understand TRIZ education)
We need better study materials to make students have better concentration

Education in *Gwi-Deok elementary school*

► Methods to make good use of Invention Cards

- ☞ make 2 groups, conduct games using cards
(After making 2 groups a teacher conducts games using invention cards)
 - If one group get a card difficult to understand, they have to give it to the other group and have them infer the principles and examples)
 - If one group get a card easy to understand, they have to infer the principle and examples by themselves
- ☞ In other words we used cards in Gwi-Duck elementary school but not in Heung -San elementary school)

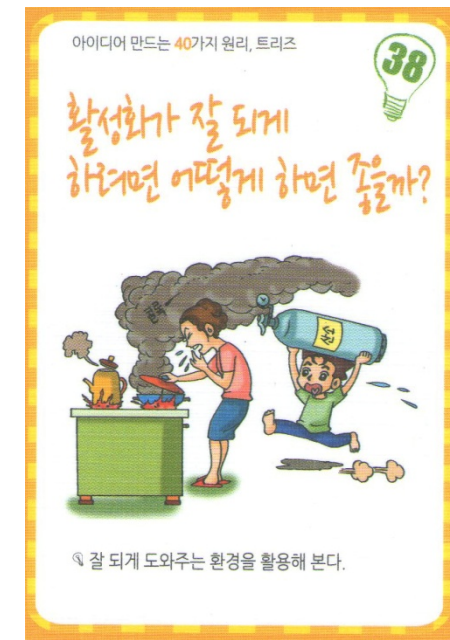
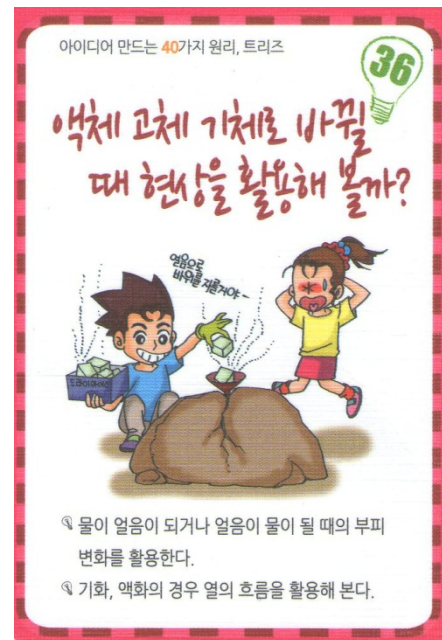
► result

- ☞ Gwi-Deok elementary school students learned faster than Heung - San students
- ☞ Students could actively participate the class through games
- ☞ I realized that there are invention principles that students can understand and the opposite case
(meaning there are invention principles that students can not understand)

Education in *Gwi-Deok elementary school*

▶ lingering problems

☞ Examples of cards students can not understand



Education in *Gwi-Deok elementary school*

▶ To use traditional fairy tale to understand contradiction map

☞ contradiction of “A fairy and a woodman”

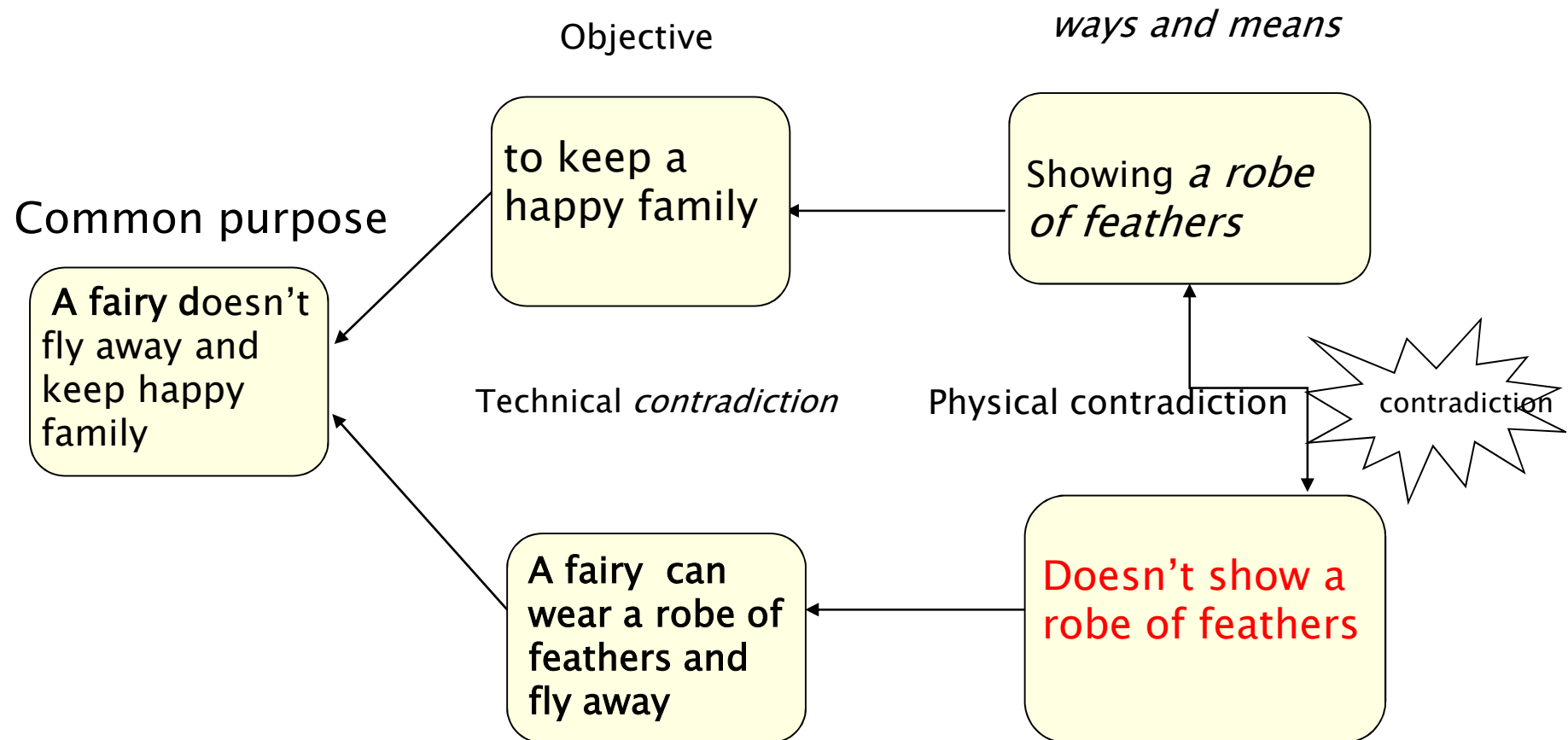
- A woodman hesitates to hide the roe deer or not
- A woodman hesitates to give *a robe of feathers* or not
- A woodman hesitates to steal a fairy’s robe of feathers or not



Education in *Gwi-Deok* *elementary school*

- ▶ Advantages to use Korean traditional fairy tale
 - ☞ Students can easily make contradiction map
 - ☞ Even elementary school students can easily find the structure of the contradiction

Education in *Gwi-Deok elementary school*



Result

- ▶ When we investigated Gwi-Deok elementary school students' study achievement compared with that of Heung-San elementary school students
 - ☞ Gwi-Deok elementary school students can make contradiction map more easily
(than Heung-san elementary school students)
 - ☞ can understand invention principles two times faster
(than Heung-san elementary school students)
 - ☞ use invention card – better concentration

Conclusion and proposal

- ▶ We need appropriate TRIZ study materials for elementary school students
 - ☞ Necessary conditions of study materials for elementary school students
 - ☞ Those should be formed in appropriate word level for elementary school students
 - ☞ Examples (should be) appropriate (for elementary school students)
 - ☞ Examples that students have already known should be used

- ▶ There is a need to find a method that TRIZ can contribute for vitalization of schools in crisis of shut-down in countryside
 - ☞ The long-term goal : to make specialized education institute e.g. invention elementary school