# 12th Changpa International Conference

Theme: Response to Challenges of Inclusive Education and Rehabilitation Science in the New Normal Era: Exploration of Global Trends

Date: December 18, 2020
Time: 10:00 ~ 16:30 Korea Standard Time (UTC+9)
Venue: Main Building of Daegu University and Zoom Meeting Room

| Time | Events | | | |
|---|---|---|---|---|
| 10:00~10:20 | Opening Ceremony (Moderator: M.Ok) | | | |
| 10:20~12:00 | (Presider: K.Kang)<br>■ Keynote Ⅰ: Lee (National Institute of Special Education, Korea)<br>■ Keynote Ⅱ: Takano & Yuichi (Toyo University & Kita School for Special Needs Education for the Physically Disabled, Japan)<br>■ Keynote Ⅲ: Zulkarnain (SEAMEO SEN, Malaysia)<br>■ Keynote Ⅳ: Sözbilir (Atatürk University, Turkey)<br>■ Discussion | | | |
| 12:00~13:00 | Global Lounge for Networking (Moderator: J.Cha) | | | Lunch |
| 13:00~14:20 | Oral 1-1<br>[*Global: English*] | Oral 1-2<br>[*Special Education*] | Oral 1-3<br>[*Rehabilitation*] | Workshop 1<br>[*Science Education*] |
| | (Presider: M.Ok)<br>■ O-01 Salmah<br>■ O-02 Ngadirin<br>■ O-03 Sharifah | (Presider: Y.Park)<br>■ O-08 H.Park<br>■ O-09 E.Kang<br>■ O-10 Y.Kim | (Presider: M.Kong)<br>■ O-14 S.Yim<br>■ O-15 J.Jung<br>■ O-16 J.Lee<br>■ O-17 W.Choi | (Presider: S.Im)<br>■ W-01 Martin<br>■ W-02 Y.Cho<br>■ W-03 O.Kim<br>■ W-04 H.Kim |
| 14:20~14:40 | Break | | | |
| 14:40~16:00 | Oral 2-1<br>[*Global: English*] | Oral 2-2<br>[*Special Education*] | | Workshop 2<br>[*Special Education*] |
| | (Presider: J.Cha)<br>■ O-04 Petilla<br>■ O-05 Kulnuchit<br>■ O-06 Routier<br>■ O-07 H.Y.Wang | (Presider: J.Hong)<br>■ O-11 K.Park<br>■ O-12 J.Kong<br>■ O-13 S.Lee | | (Presider: S.Kwon)<br>■ W-05 D.Lee<br>■ W-06 Y.Park<br>■ W-07 J.Choi |
| 16:00~16:30 | Closing Ceremonry (Moderator: S.Im) | | | |

# 제12회 창파국제학술대회 프로그램

주제: 뉴노멀 시대 통합교육과 재활과학의 도전과 대응: 국제 동향 탐색

날짜: 2020년 12월 18일 금요일
시간: 오전 10시 ~ 오후 4:30
장소: 대구대학교 성산홀 5층 및 Zoom 회의실

<table>
<tr><th>시 간</th><th colspan="4">내 용</th></tr>
<tr><td>10:00~10:20</td><td colspan="4">개회식 (사회: 옥민욱)</td></tr>
<tr><td>10:20~12:00</td><td colspan="4">(좌장: 강경숙/원광대)<br>■ 주제 강연 Ⅰ: 이동원(국립특수교육원, 한국)<br>■ 주제 강연 Ⅱ: Takano & Yuichi (Toyo University & Kita School for Special Needs Education for the Physically Disabled, 일본)<br>■ 주제 강연 Ⅲ: Zulkarnain (SEAMEO SEN, 말레이시아)<br>■ 주제 강연 Ⅳ: Sözbilir (Atatürk, 터키)<br>■ 1부 종합토론</td></tr>
<tr><td>12:00~13:00</td><td colspan="2">온라인 접견실 (사회: 차정호)</td><td colspan="2">점심 시간</td></tr>
<tr><td rowspan="2">13:00~14:20</td><td>Oral 1-1<br>[국제동향: 영어]</td><td>분과발표 1-2<br>[특수교육]</td><td>분과발표 1-3<br>[재활과학]</td><td>워크숍 1<br>[과학교육]</td></tr>
<tr><td>(좌장: 옥민욱)<br>■ O-01 Salmah<br>■ O-02 Ngadirin<br>■ O-03 Sharifah</td><td>(좌장: 박윤정/용인대)<br>■ O-08 박혜숙<br>■ O-09 강은영<br>■ O-10 김용성</td><td>(좌장: 공마리아)<br>■ O-14 임성빈<br>■ O-15 정장훈<br>■ O-16 이재영<br>■ O-17 최우형</td><td>(좌장: 임성민)<br>■ W-01 Martin<br>■ W-02 조영민<br>■ W-03 김옥자<br>■ W-04 김홍정</td></tr>
<tr><td>14:20~14:40</td><td colspan="4">휴식</td></tr>
<tr><td rowspan="2">14:40~16:00</td><td>분과발표 2-1<br>[국제동향: 영어]</td><td>분과발표 2-2<br>[특수교육]</td><td></td><td>워크숍 2<br>[특수교육]</td></tr>
<tr><td>(좌장: 차정호)<br>■ O-04 Petilla<br>■ O-05 Kulnuchit<br>■ O-06 Routier<br>■ O-07 Wang</td><td>(좌장: 홍정숙)<br>■ O-11 박경옥<br>■ O-12 공진용<br>■ O-13 이신영</td><td></td><td>(좌장: 권순우)<br>■ W-05 이대송<br>■ W-06 박윤경<br>■ W-07 최지혜</td></tr>
<tr><td>16:00~16:30</td><td colspan="4">우수 발표상(구두 발표, 포스터 발표) 시상 및 폐회식 (사회: 임성민)</td></tr>
</table>

# ◎ 구두 발표 목록

## 1. Keynote Speech 기조 강연

[K-01] **The Current Status and Future Directions of Online Instruction Support for Students with Disabilities in Korea**
Dongwon Lee (National Institute of Special Education, SOUTH KOREA)

[K-02] **Current Status and Future Issues of Special Needs Education in Japan during COVID-19: Schools for Special Needs Education for the Physically Disabled**
Satoko Takano (Toyo University, JAPAN) & Yuichi Matsui (Kita School for Special Needs Education, JAPAN)

[K-03] **Emotional and Psychosocial Support for Teachers during Covid-19**
Mohd Zulkarnain bin Abdul Wahab (SEAMEO SEN, MALAYSIA)

[K-04] **Making Science and Chemistry Accessible to Students with Blindness or Low Vision**
Mustafa Sözbilir (Atatürk University, TURKEY)

## 2. Pararell Session 분과 발표 *Invited Speech

[O-01] ***Continuing Education for Children with Special Educational Needs amidst Covid-19: The Malaysia Experience**
Salmah binti Jopri (Ministry of Education Malaysia, MALAYSIA)

[O-02] ***Continuing Education for Children with Special Educational Needs amidst Covid-19: The Indonesia Experience**
Ngadirin (Ministry of Education and Culture, INDONESIA)

[O-03] ***Continuing Education for Children with Special Educational Needs amidst Covid-19: The Singapore Experience**
Sharifah Mariam Aljunied (Ministry of Education, SINGAPORE)

[O-04] ***Continuing Education for Children with Special Educational Needs amidst Covid-19: The Philippines Experience**
Jupiter L. Petilla (Mangaldan Integrated School Special Education Center, PHILIPPINES)

[O-05] ***Continuing Education for Children with Special Educational Needs amidst Covid-19: The Thailand Experience**

Pitchayanan Kulnuchit (The Northern Region School for the Blind, THAILAND)

[O-06] **∗Hearing Their Voices**
Wanda J. Routier, Carol J. Burns (Concordia University Wisconsin, USA)

[O-07] **∗The Current Role Perception and Role Performance of University Faculty in Terms of Curriculum Adaptation of Inclusive Education in Taiwan**
Hsin-Yi Wang (Natonal Taichung University of Education, TAIWAN)

[O-08] **∗Transition from School to Adulthood: For Individuals with Intellectual & Developmental Disabilities**
Hae Sook Park (Former Facilitator of Clearbrook, USA)

[O-09] **∗Inclusive Education Realized Through UDL**
Eun Young Kang (Joongbu University, SOUTH KOREA)

[O-10] **Direction of Informal Inclusive Science Education Program Based on UDL Principles**
Yongseong Kim, Hakjun Lee, Jongwoon Lee (Daegu University, SOUTH KOREA)

[O-11] **∗Analysis Of Differences in Perceptions of Special Teachers on the Importance and Execution of the Online Instructional Design**
Kyoungock Park, Jung-Sook Oh (Daegu University, SOUTH KOREA)

[O-12] **A Study on Assistive Technology Analysis and Evaluation Methods in Special Education for Students with Disabilities**
Jinyong Kong, Kyungyang Kim, and Nayeon An

[O-13] **An actual condition on the Global Trends of Educational Services Provided by Schools for the Blind: 15 Countries Participated in ELP of Perkins School for the Blind**
Shin-Young Lee (Daegu Cyber University, SOUTH KOREA)

[O-14] **Introduction to a Case Study of Customized Assistive Device Services through 3D Printing**
Sung Bin Yim, Jin Hyun Lee, Kun Min Rhee (Daegu Assistive Technology Center & Daegu University, SOUTH KOREA)

[O-15] **The Impact of Language Rehabilitation Applications on Language and Social Communication of Long-aged children with Language Development**
Jang-Hoon Jung, Wha-Soo Kim (Daegu University, SOUTH KOREA)

[O-16] 자폐스펙트럼장애 아동의 사회적 기술 증진을 위한 협동중심 소집단 미술치료 사례연구
이재영, 공마리아 (대구대학교)

[O-17] 4차 산업혁명과 장애인 직업재활에서의 과제: 장애인 직업재활 시설을 중심으로
최우형 (한국장애인개발원)

# Keynote

[K-04]

# Teaching Science to Students with Blindness or Low Vision (BLV) During COVID-19 Pandemic

**Mustafa Sözbilir**

*Atatürk University, Turkey*

*(E-Mail: sozbilir@atauni.edu.tr)*

Science education provides essential knowledge and skills necessary in everyday life for everybody including students with blindness and low vision (BLV). The mission of science education is to prepare individuals who would develop a certain level of scientific understanding and basic scientific process skills via practical tasks in and out of school. However, due to the barriers created unintentionally in learning spaces in school environments, BLV students have difficulties in learning science and mathematics. If educational settings are adapted to the needs of BLV students, they may develop not only a sound understanding of everyday science concepts but also develop positive attitudes towards science and mathematics. Therefore, it is important to focus on making science accessible to students with BLV via inclusive educational environments.

Learning science requires intensive use of our senses, particularly vision. However, some individuals have difficulty using their eyes due to visual impairment. Although there are different definitions, visual impairment is as an overall term that encompasses all people with decreased vision, regardless of the severity of their vision loss. For educational purposes, children with visual impairment are defined as children whose visual condition is such that special provisions are necessary for their successful education.

The COVID-19 pandemic has forced school closures in 188 countries, heavily disrupting the learning process of more than 1.7 billion children, youth, and their families. During this time, distance-learning solutions were implemented to ensure education continuity, and much of the current debate focuses on how much students have learnt during school closures. For students with BLV, accessibility is likely the most prominent hurdle during distance education. Students with BLV present with a range of needs regarding access to print media, instructional materials, and communications. Many students who are blind or visually impaired require instructional materials presented in a tactile manner through braille or other tactile methods. While engaged in distance learning, students may not have access to supports such as on-site braille transcribing, assistive technology, or support from an intervener. It is up to schools and educators to seek out methods and avenues for the provision of supports typically available to students.

In this presentation, visually impaired students' needs in learning science will be discussed. In addition, sample learning materials which were developed to meet those students' needs will be presented and discussed. Recommendations will be made how to make science education accessible to students with BLV.

**Keywords**: Science, teaching, students with visual impairments, COVID-19 pandemic

# Teaching Science to Students with Blindness or Low Vision (BLV) during Covid-19 Pandemic



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Erzurum, Turkey
Email: sozbilir@atauni.edu.tr

This study is a part of large scale research project funded by TÜBİTAK (The Scientific and Technological Research Council of Turkey) under the contract number 114K725.

## Outline

- Impairments & Disability
- Research & Instructional Design
- Materials & Activities
- Teaching Science to Students with BLV
- Conclusions



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## Impairments & Disability

- **Impairments** are problems in body function or alterations in body structures such as blindness (WHO, 2011)
- **Disability** is defined as the loss or limitation of opportunities to take part in society on an equal level with others due to social and environmental barriers (Northern Officer Group Report, 2002)
- WHO states that disability is not an attribute of the person, but inaccessible environments create disability by creating barriers to participation and inclusion.



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## Visual Impairment (VI)

- **Visual impairment (VI)**, also known as vision impairment or vision loss, is a decreased ability to see to a degree that causes problems not fixable by usual means, such as glasses (WHO, 2011).
- **Blind** refers to individuals with **no vision** or **only light perception.**



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## Research in teaching science to students with BLV is scarce

- Current research is focussed on
  - Instructional design and adaptation of available methods
  - Instructional material development
  - ICT integration
  - Studies on affective dimensions



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## BLV vs Sighted Students

- Students with BLV are required to follow and achieve the same curriculum as sighted peers.
- The resources and instructional methods are mainly based on the use of vision but hardly accessible by the students with BLV.
- What is the solution?



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## What is the solution?

Solution is making science accessible via

**modification, adaptation** or **intervention**

in the educational resources and methods according to the needs of individuals with BLV



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## Research aims

- This study is aimed to provide a broad aspect to the questions:
  - What are the needs of students with BLV in learning concepts and skills relevant to science?
  - Can students with BLV be effectively taught basic science concepts, critical thinking and scientific process skills?
  - If so, which methods or adaptations of methods and materials have been seen to be the most effective in delivering science education?



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# Research questions

- What are the needs of students with BLV in learning science?
- How these needs could be met in designing instructional materials and activities?



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# Research & Instructional Design

Needs Analysis

Design & Development

Implementation & Evaluation

**ADDIE Model** of Instructional Design

**DBR** Design-based Research Approach



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# Need analysis

- **Observations** made in classrooms during science teaching, **interviews** carried out with students and their science teacher, as well as **curriculum analysis**.
- Unstructured observations were conducted in classrooms from a special middle school based in Erzurum city center.



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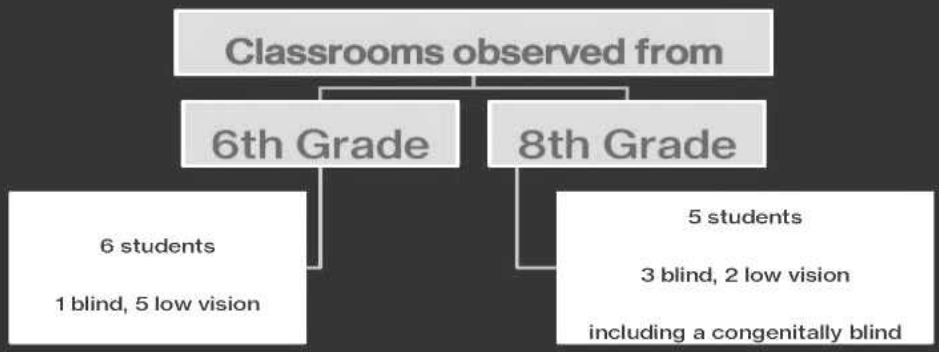
# The students



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## The teachers

- Worked with two different teachers
  - Need analysis stage: a female teacher with more than 10 years of experience in science teaching but only less than 3 years of experience working with VI students.
  - Implication stage: a male teacher, temporary replacement teacher, with no teaching experience.
  - None of the teachers has any training for teacing students with BLV



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## Topics (lower secondary science)

- Three different topics in 6th grade science covered:
  - Reproduction, growth and development in plants and animals from life sciences,
  - Matter and heat from matter and change,
  - Conduction of electricity from physical phenomenon,



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## Findings

- Teaching based on;
  - Lecturing with not much adaptation of materials or instructional settings
  - Some adaptation made based on experience not knowledge based on research!
- One of the main problem was teacher's lack of knowledge in teaching science to students with BLV and lack of facilities.



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## Sample tactile print documents










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## Sample tactile print documents (cont.)




**Two types of the same working paper. The one on the *left* is printed by braille and color in embosser for *blind* students, while the one on the *right* is printed a color printer for *low vision* students. Both materials printed in enlarged fonts.**

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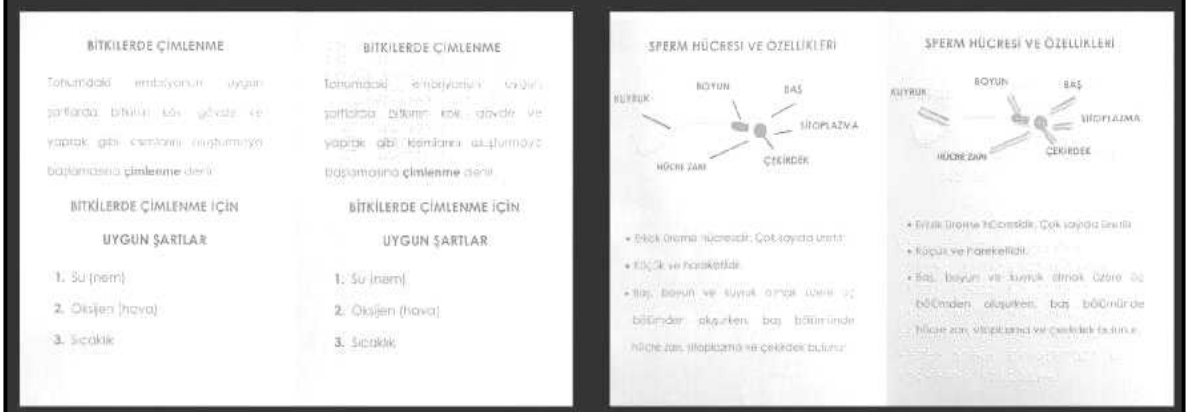
## Sample tactile print documents (cont)




**Two types of the same working paper. The one on the *left* is printed by braille and color in embosser for *blind* students, while the one on the *right* is printed for *low vision* students. Both materials printed in enlarged fonts.**

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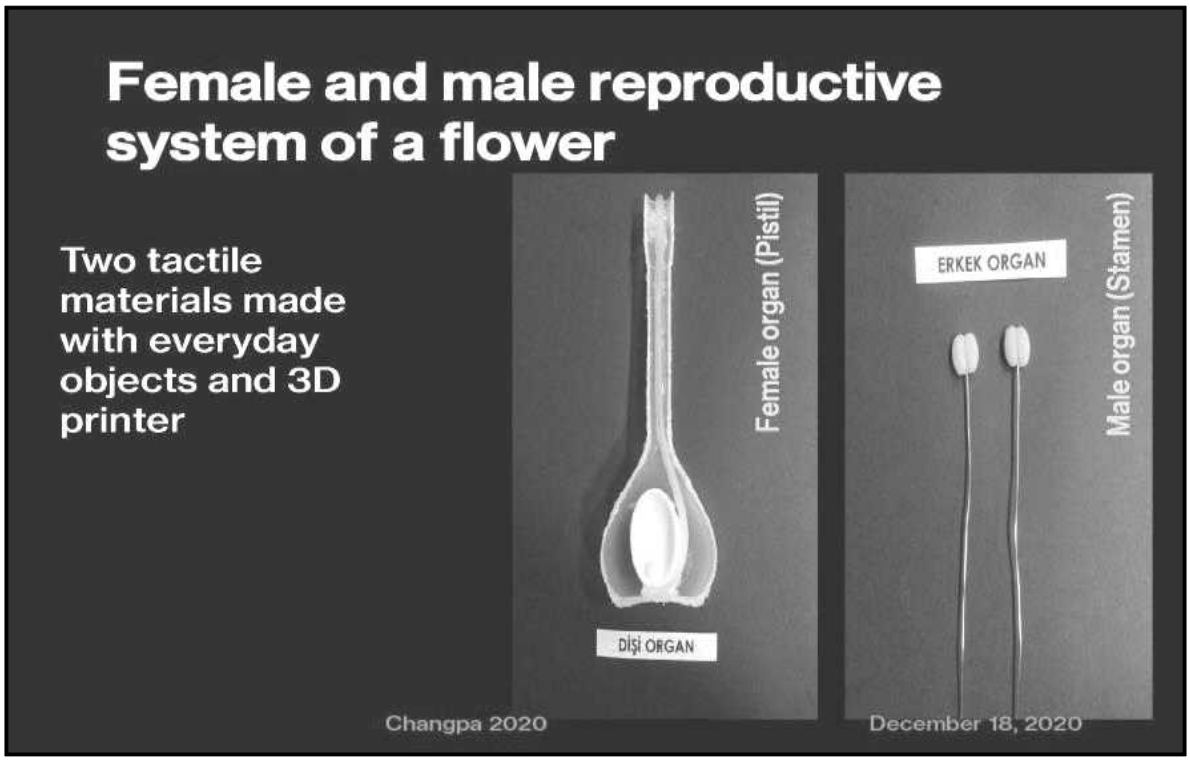
Female and male reproductive system of a flower
Two tactile materials made with everyday objects and 3D printer
Female organ (Pistil)
DİŞİ ORGAN
ERKEK ORGAN
Male organ (Stamen)
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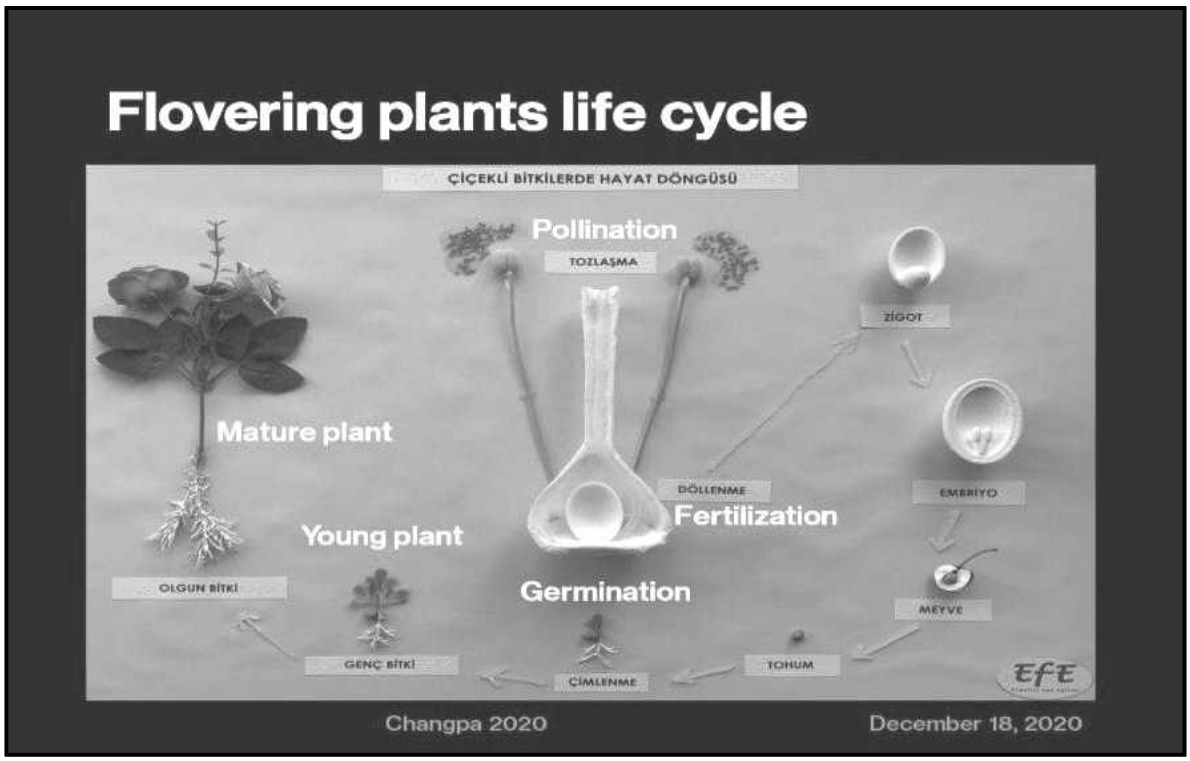
Flovering plants life cycle
ÇİÇEKLİ BİTKİLERDE HAYAT DÖNGÜSÜ
Pollination
TOZLAŞMA
ZİGOT
Mature plant
DÖLLENME
Fertilization
EMBRİYO
Young plant
OLGUN BİTKİ
Germination
MEYVE
GENÇ BİTKİ
TOHUM
ÇİMLENME
EfE
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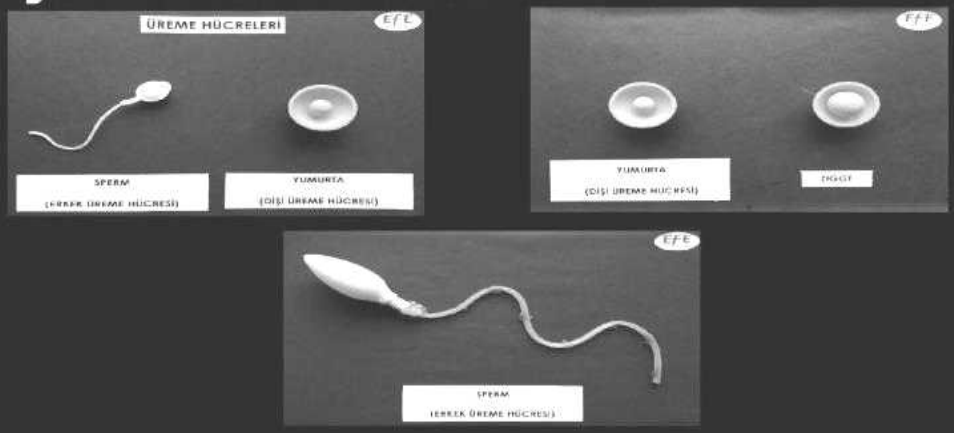
# Female and male reproductive system for human




Tactile materials made with everyday objects and 3D printer.

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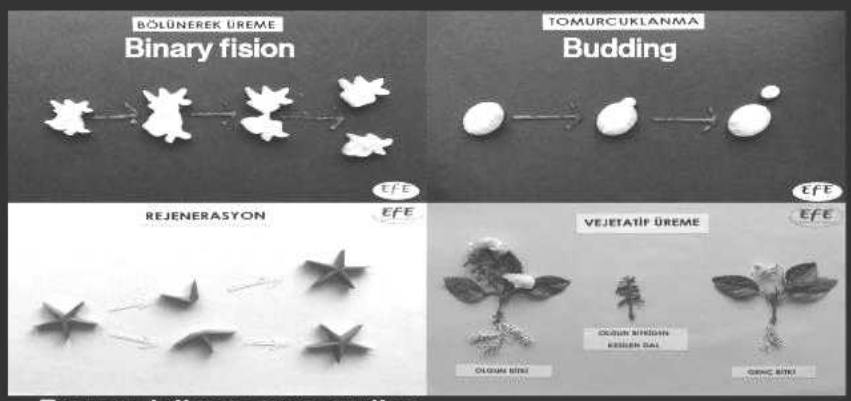
# Vegetative reproduction




Fragmentation or regeneration

Tactile materials made with everyday objects and 3D printer

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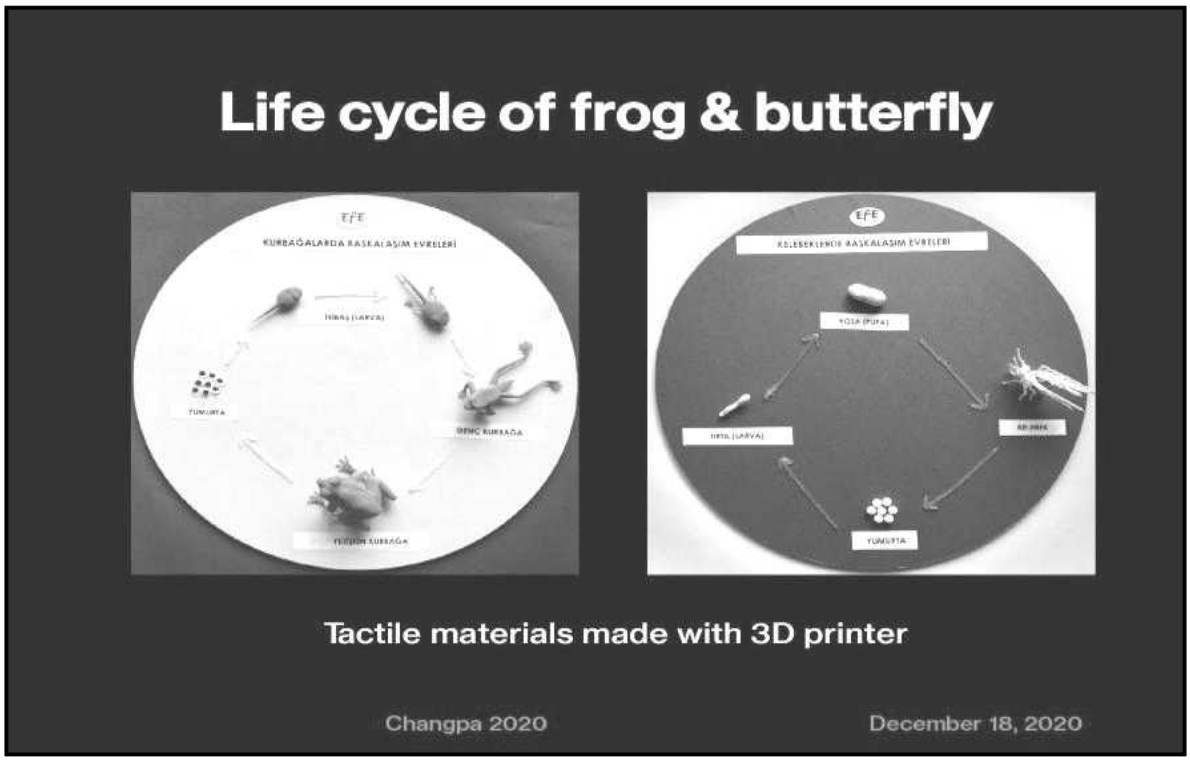
Life cycle of frog & butterfly
EFE
KURBAĞALARDA BAŞKALAŞIM EVRELERİ
YUMURTA
EFE
YUMURTA
Tactile materials made with 3D printer
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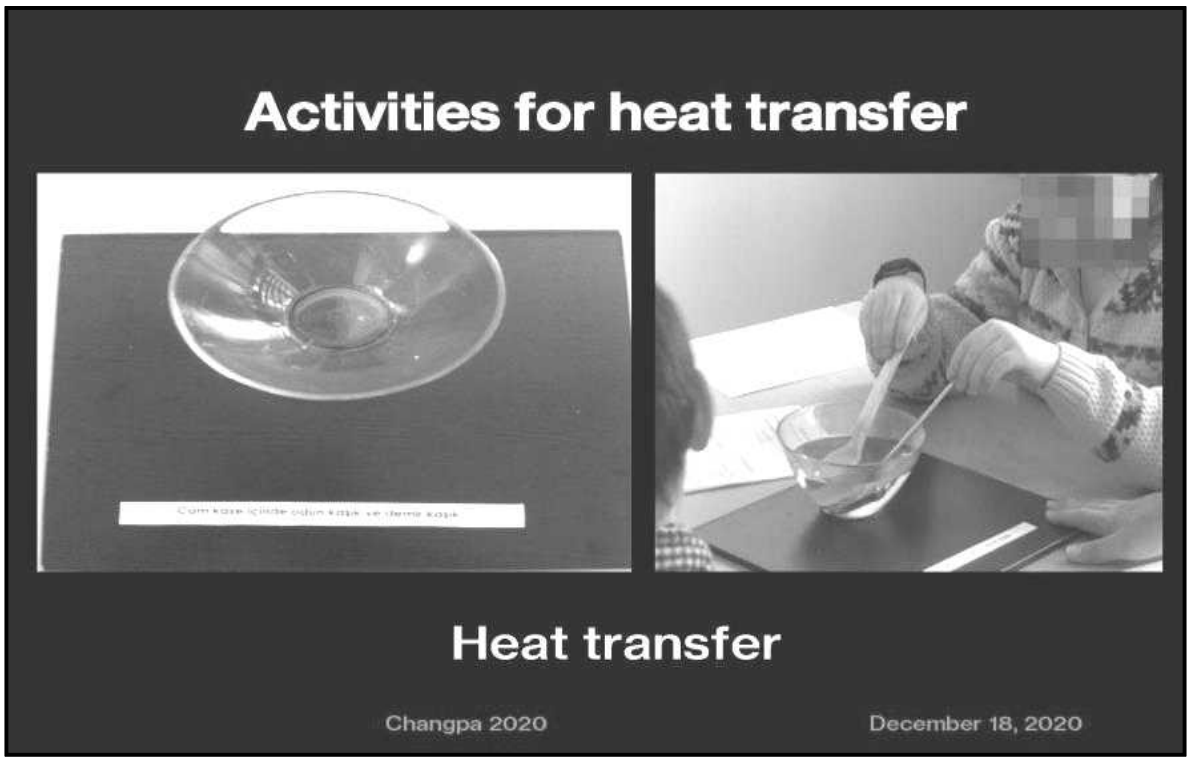
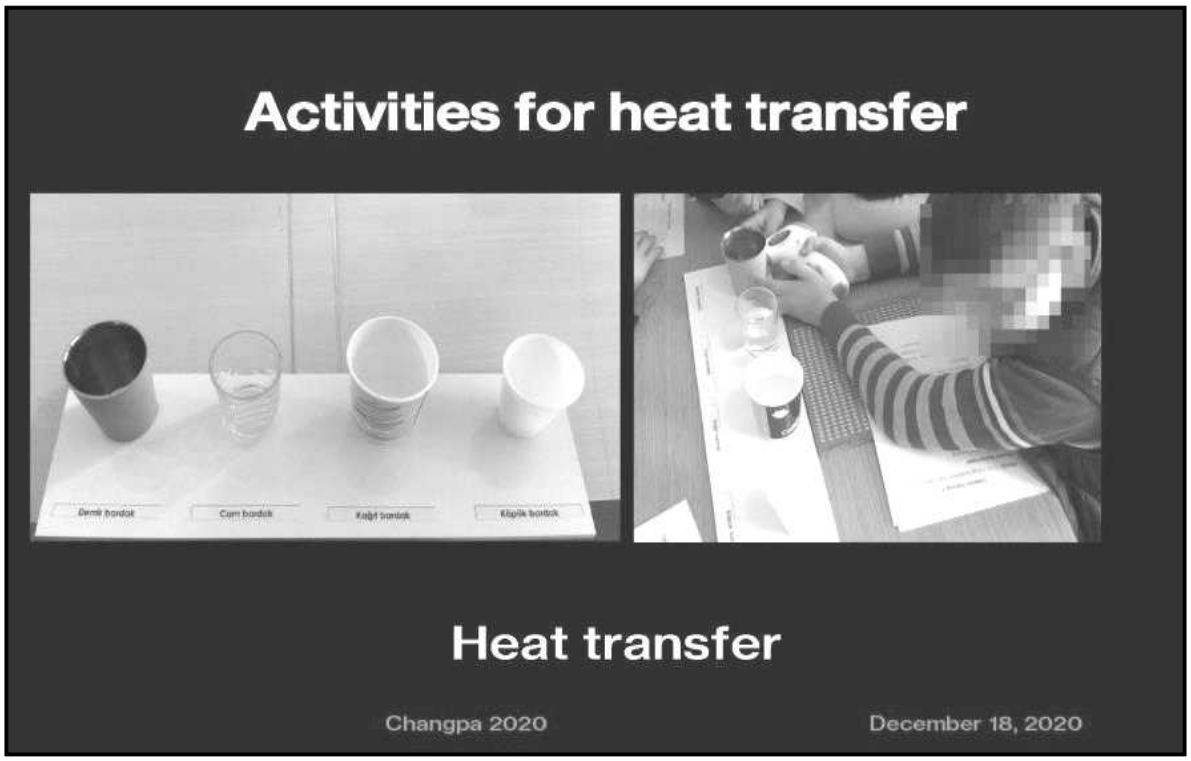
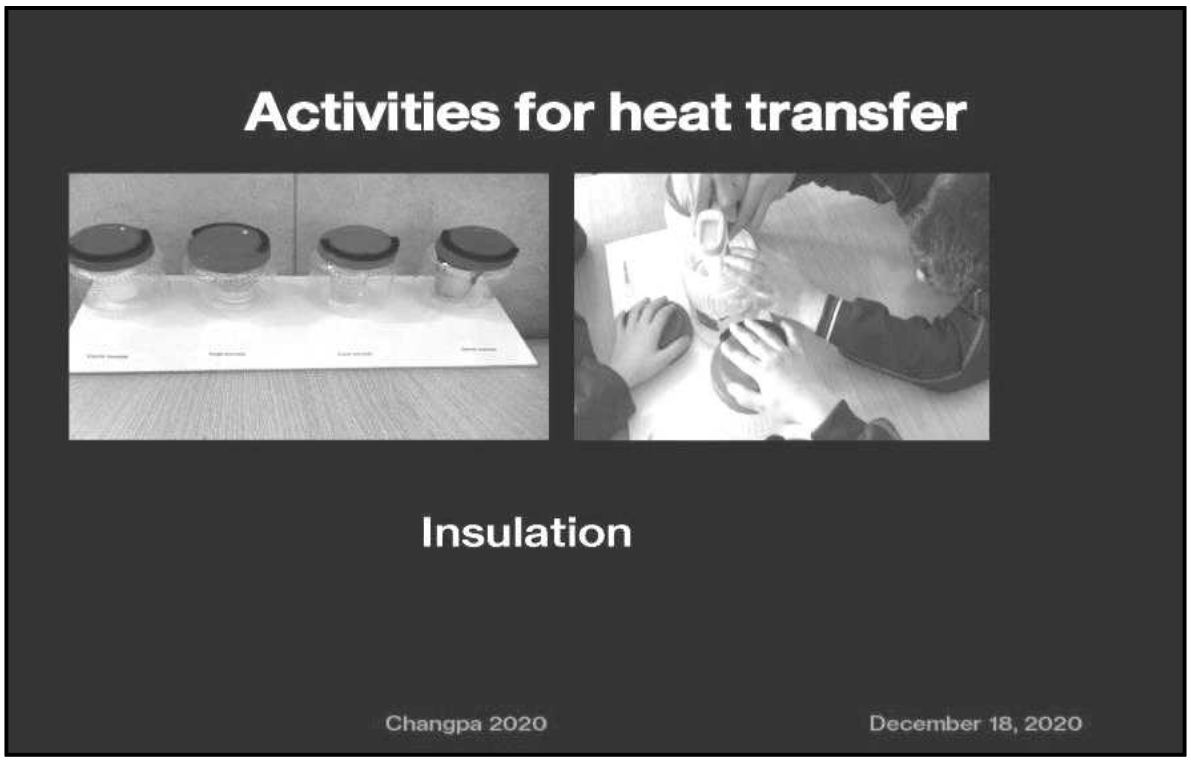

Activities for heat transfer
Heat transfer
Changpa 2020
December 18, 2020


Activities for heat transfer
Heat transfer
Changpa 2020
December 18, 2020


Activities for heat transfer
Insulation
Changpa 2020
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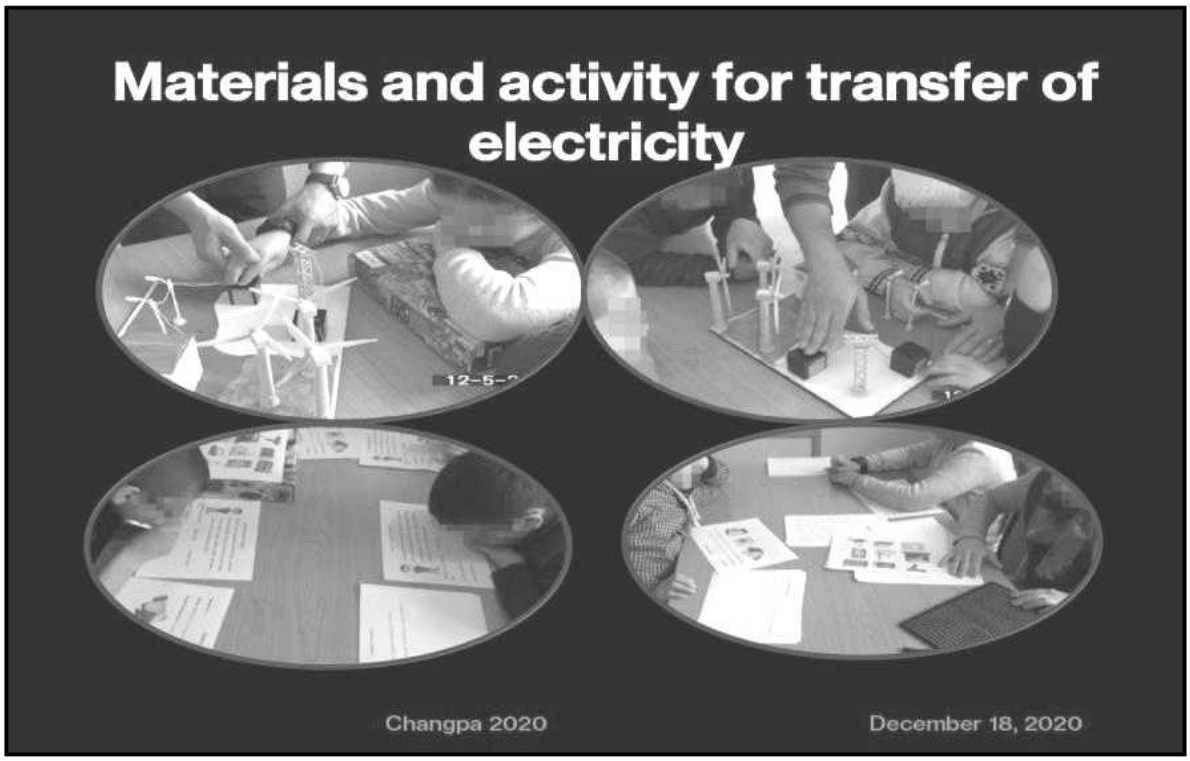
Materials and activity for transfer of electricity
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Materials and activity for resistance
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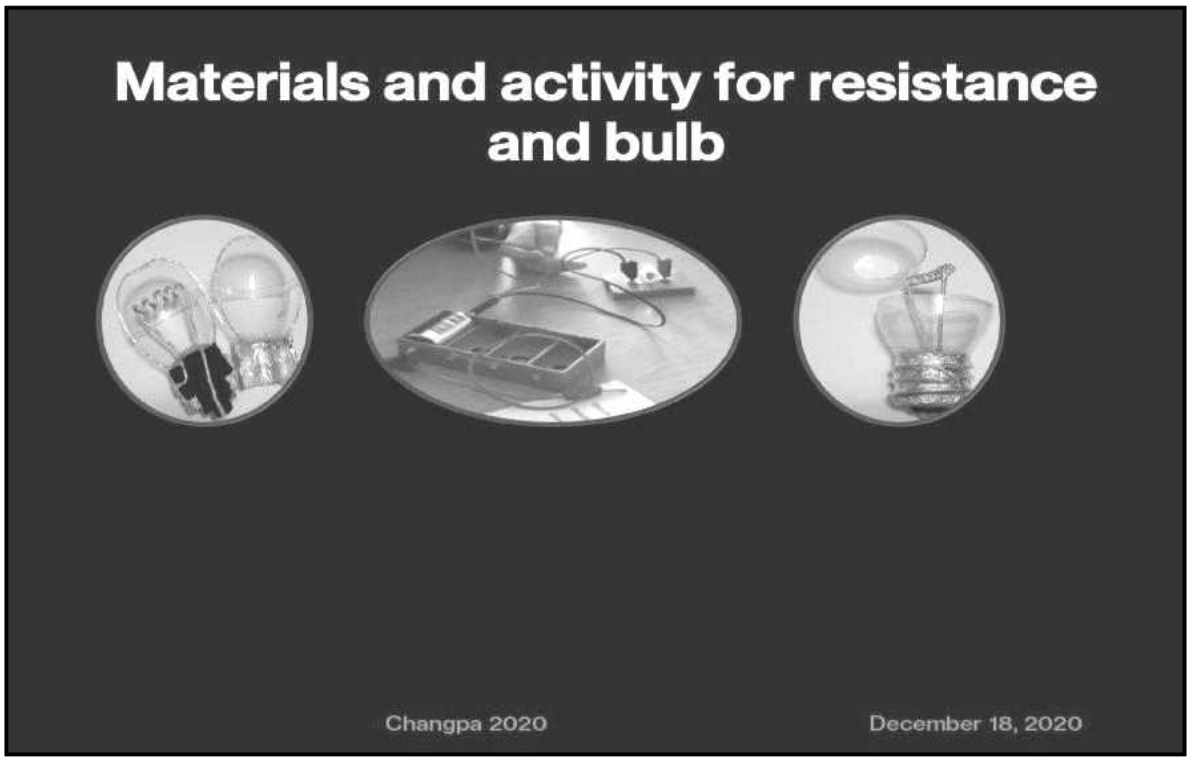
Materials and activity for resistance and bulb
Changpa 2020
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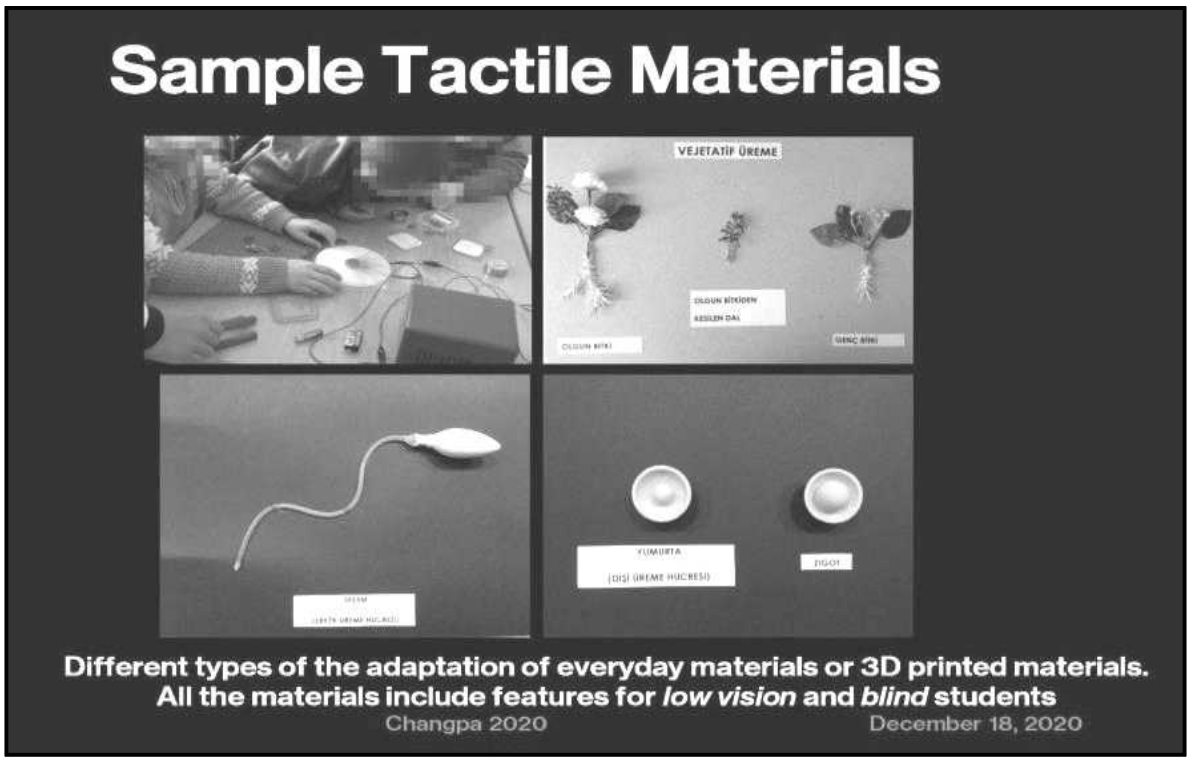
Sample Tactile Materials
VEJETATİF ÜREME
Different types of the adaptation of everyday materials or 3D printed materials.
All the materials include features for low vision and blind students
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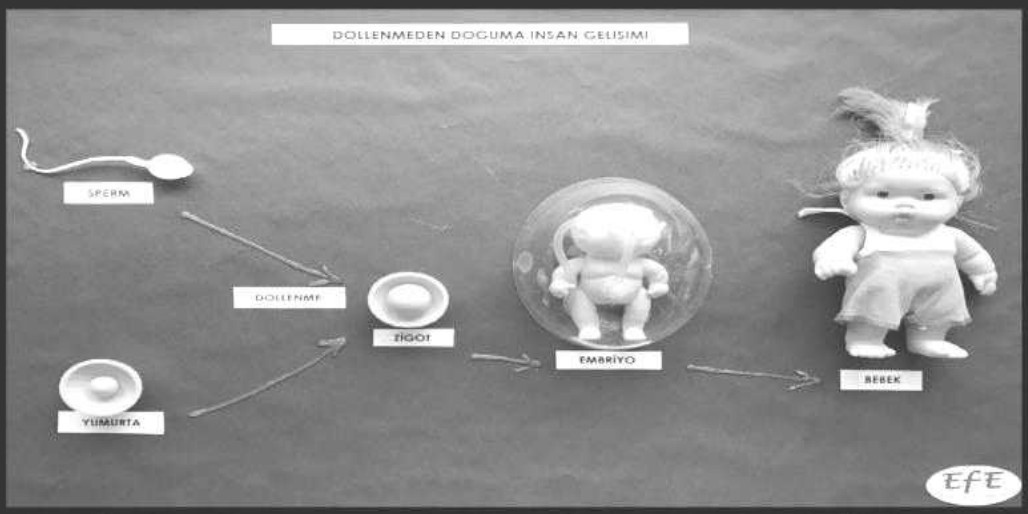
## Human development




Combination of everyday materials or 3D printed materials. All the materials include features for *low vision* and *blind* students

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## Designing tactile materials for students with BLV

- Adapt current materials for sighted students
- Develop with everyday materials.
  - Everyday materials are cheap and easily available but not durable always.
- Use emerging 3D printing technology.
  - Expensive, not available for everybody but versatile & durable



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## Results (Positive aspects)

- Motivation & interest towards science was increased
- Positive attitudes developed
- Students developed practical works skills
- Learning & understanding was improvement.



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## Results (Drawbacks)

- Time management is difficult due to too much time devoted to the understanding the materials and activities,
- Lack of scientific process skills to carry out the activities
- Analysing the results
- Writing reports
- Overcoming the understanding that practical activities are for understanding the science not just for play!



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## Covid-19 Pandemic and Challenges

- Making science accessible for students with BLV via distance education is challenging.
  - Access to stable internet and necessary IT infrastructure
  - Screen reading is the main challenge for BLV students. Therefore extensive description is essential.
  - Coping with heavy workload from home with limited help from the family.
  - Access to the printed tactile materials.
  - Developing scientific process skills are difficult.
  - Measurements and evaluation is challenging.
  - School closures creates inequality between the students and mostly hit disadvantaged groups.



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## Some publications in English



EUROPEAN JOURNAL OF SPECIAL NEEDS EDUCATION
https://doi.org/10.1080/08856257.2020.1732110

Routledge
Taylor & Francis Group

ARTICLE

Improve learning with hands-on classroom activities: science instruction for students with visual impairments

Aydın Kizilaslan, S. Levent Zorluoglu and Mustafa Sozbilir

[a]Department of Special Education, Agri Ibrahim Cecen University, Agri, Turkey; [b]Department of Mathematics & Science Education, SDU University, Isparta, Turkey; [c]Department of Mathematics & Science Education, Ataturk University, Erzurum, Turkey

ABSTRACT
The preponderance of visually oriented and visually complex con-

KEYWORDS
Hands-on science; students

Journal Paper:

Kizilaslan, A., Zorluoglu, S.L., & Sözbilir, M. (2020). Improve learning with hands-on classroom activities: science instruction for students with visual impairments. *European Journal of Special Needs Education*, Advance online publication. https://doi.org/10.1080/08856257.2020.1732110.



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# Some publications in English



SCIENCE ACTIVITIES
2019, VOL. 56, NO. 4, 130–138
https://doi.org/10.1080/00368121.2020.1724860

Routledge

A hands-on classroom activity to teach science concepts for students with visual impairment

Aydın Kızılaslan[a], S. Levent Zorluoğlu[b], and Mustafa Sözbilir[c]

[a]Department of Special Education, Ağrı İbrahim Çeçen University, Ağrı, Turkey; [b]Department of Mathematics & Science Education, SDÜ University, Isparta, Turkey; [c]Department of Mathematics & Science Education, Atatürk University, Erzurum, Turkey

ABSTRACT
Students with visual impairments have the same span of cognitive abilities as their peers, but science instruction typically relies very heavily on vision. The preponderance of visually oriented and visually complex science concepts poses significant challenges to learning among students

KEYWORDS
Students with visual impairment; science; activity material; thermal insulation

Journal Paper:

**Kizilaslan, A., Zorluoglu, S.L., & Sözbilir, M. (2019). A hands-on classroom activity to teach science concepts for students with visual impairment. *Science Activities*, *56*(4), 130-138. https://doi.org/10.1080/00368121.2020.1724860.**



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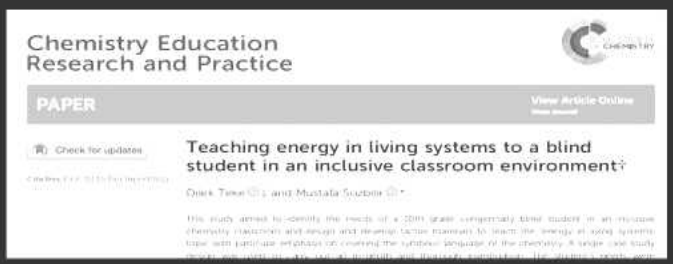

Chemistry Education Research and Practice

PAPER View Article Online

Check for updates

Teaching energy in living systems to a blind student in an inclusive classroom environment†

Journal Paper:

**Teke, D., & Sozbilir, M. (2019). Teaching energy in living systems to a blind student in an inclusive classroom environment. *Chemistry Education Research and Practice*, *20*(4), 890-901. doi.10.1039/C9RP00002J**



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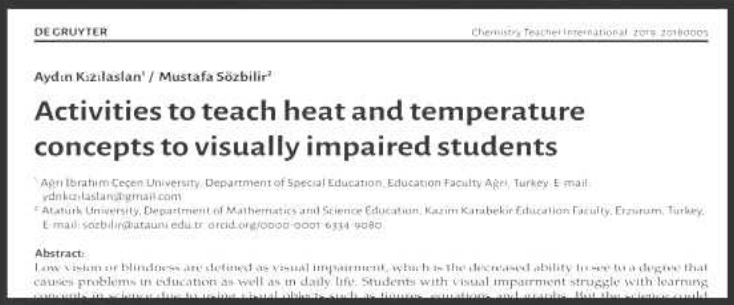

DE GRUYTER

Chemistry Teacher International 2019; 20180005

Aydın Kızılaslan[1] / Mustafa Sözbilir[2]

## Activities to teach heat and temperature concepts to visually impaired students

[1] Ağrı İbrahim Çeçen University, Department of Special Education, Education Faculty Ağrı, Turkey E-mail: ydnkzlaslan@gmail.com
[2] Atatürk University, Department of Mathematics and Science Education, Kazım Karabekir Education Faculty, Erzurum, Turkey, E-mail: sozbilir@atauni.edu.tr orcid.org/0000-0001-6334-9080

Abstract:
Low vision or blindness are defined as visual impairment, which is the decreased ability to see to a degree that causes problems in education as well as in daily life. Students with visual impairment struggle with learning

Journal Paper:

Kızılaslan, A., & Sözbilir, M. (2019). Activities to teach heat and temperature concepts to visually impaired students. *Chemistry Teacher International*, Advance online publication. doi.10.1515/cti-2018-0005.



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# Some publications in English



JOURNAL OF CHEMICAL EDUCATION

Article

pubs.acs.org/jchemeduc

## Making Science Accessible to Students with Visual Impairments: Insulation-Materials Investigation

Aydın Kızılaslan,[†] Mustafa Sözbilir,[‡] and Seraceddin Levent Zorluoglu

[†]Department of Special Education, Ağrı İbrahim Çeçen University, 04000 Ağrı, Turkey
[‡]Department of Mathematics and Science Education, Atatürk University, 25030 Erzurum, Turkey
[§]Department of Mathematics and Science Education, Süleyman Demirel University, 32260 Isparta, Turkey

Supporting Information

ABSTRACT: Science education could be made more accessible to students with visual impairments through collaboration and specific adaptation in both the science classrooms and laboratories. For example, by providing simple adaptations or doing some essential modifications, students can gain experience with measuring, balancing, and weighing a variety of materials. Unfortunately, many concepts in science have been found inaccessible to students with visual impairment because of the use of figures, equations, and graphs. An activity was designed to teach the insulation properties of different

Journal Paper:

Kizilaslan, A., Sozbilir, M., & Zorluoglu, S.L. (2019). Making science accessible to students with visual impairments: insulation-materials investigation. *Journal of Chemical Education, 96* (7), 1383-1388. doi:10.1021/acs.jchemed.8b00772.



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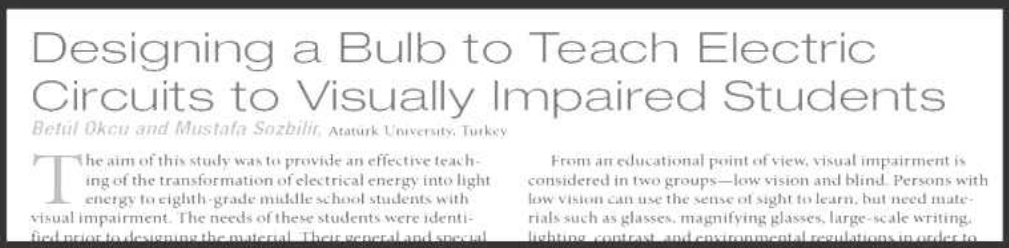

Designing a Bulb to Teach Electric Circuits to Visually Impaired Students

*Betül Okcu and Mustafa Sozbilir,* Ataturk University, Turkey

The aim of this study was to provide an effective teaching of the transformation of electrical energy into light energy to eighth-grade middle school students with visual impairment. The needs of these students were identified prior to designing the material. Their general and special

From an educational point of view, visual impairment is considered in two groups—low vision and blind. Persons with low vision can use the sense of sight to learn, but need materials such as glasses, magnifying glasses, large-scale writing, lighting, contrast, and environmental regulations in order to

Journal Paper:

**Okcu, B., & Sozbilir, M. (2019). Designing a bulb to teach electric circuits to visually impaired students. *The Physics Teacher*, *57* (2), 99-101. doi.10.1119/1.5088470**



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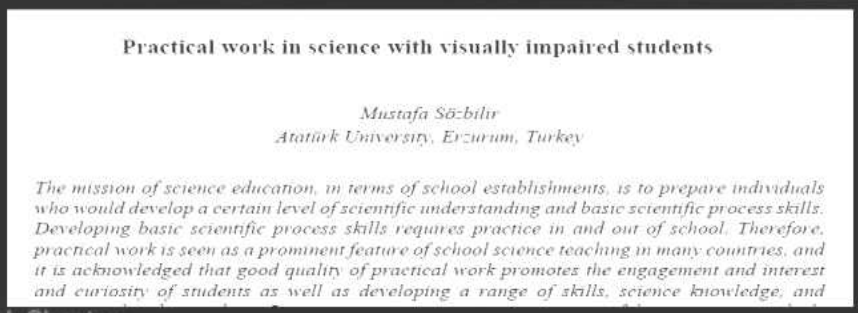

Practical work in science with visually impaired students

*Mustafa Sözbilir*
*Atatürk University, Erzurum, Turkey*

*The mission of science education, in terms of school establishments, is to prepare individuals who would develop a certain level of scientific understanding and basic scientific process skills. Developing basic scientific process skills requires practice in and out of school. Therefore, practical work is seen as a prominent feature of school science teaching in many countries, and it is acknowledged that good quality of practical work promotes the engagement and interest and curiosity of students as well as developing a range of skills, science knowledge, and*

Book Chapter:

**Sözbilir, M. (2016). Practical work in science with visually impaired students. In I. Eilks, S. Markic, & B. Ralle (Eds.), *Science education research and practical work* (pp. 169-179), Aachen: Shaker Verlag.**



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## Acces to other publications

- For full list of the publications and the materials you may visit http://efe.atauni.edu.tr
- More papers to come in the future ...



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## Thank You

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- This work is funded by the Scientific and Technological Research Council of Turkey by the Grant #114K725.
- I would like to thank the teachers and students who voluntarily participated in this study.



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# Project Team







This work could not be done without the help of my colleagues and my students. I thank all of them.

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# Q & A

- Questions?
- Contact: sozbilir@atauni.edu.tr



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