

APEC-TSUKUBA International Conference XVI

Online Workshops for Lesson Study 2.0: Artificial Intelligence (AI)
and Data Science for Education in APEC Economies

Lesson Study and Data Science, AI, and Computational Thinking in the Philippines

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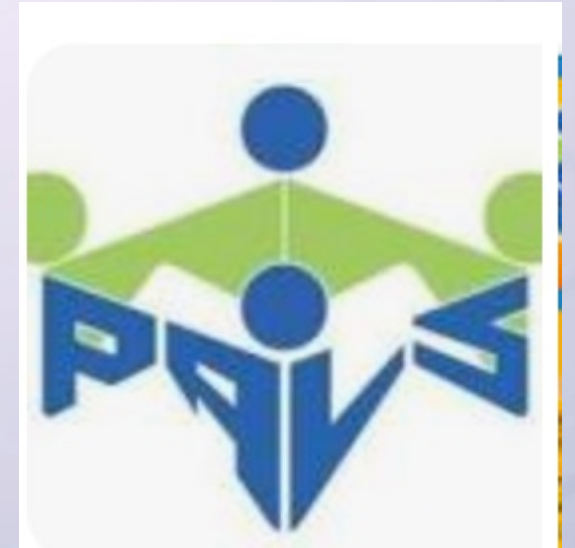
Outline of Presentation

- The Philippine Association of Lesson and Learning Studies, Inc.
Other Lesson Capacity Building Programs of UP NISMED
- UP NISMED's initiatives on Data Science, AI, and Computational Thinking

THE PHILIPPINE ASSOCIATION OF LESSON AND LEARNING STUDIES (PALS), INC.

palsnet.org

- PALS is a non-profit organization of stakeholders in education that was established in 2016. It is an offshoot of the Lesson Study Program of UP NISMED. It is a local version of the World Association of Lesson Studies (WALS).
- Its main goal is to support the development of lesson study in the Philippines through research, development of resources, and organizing fora not only in science and mathematics but in other subject areas as well,



THE PHILIPPINE ASSOCIATION OF LESSON AND LEARNING STUDIES (PALS), INC.

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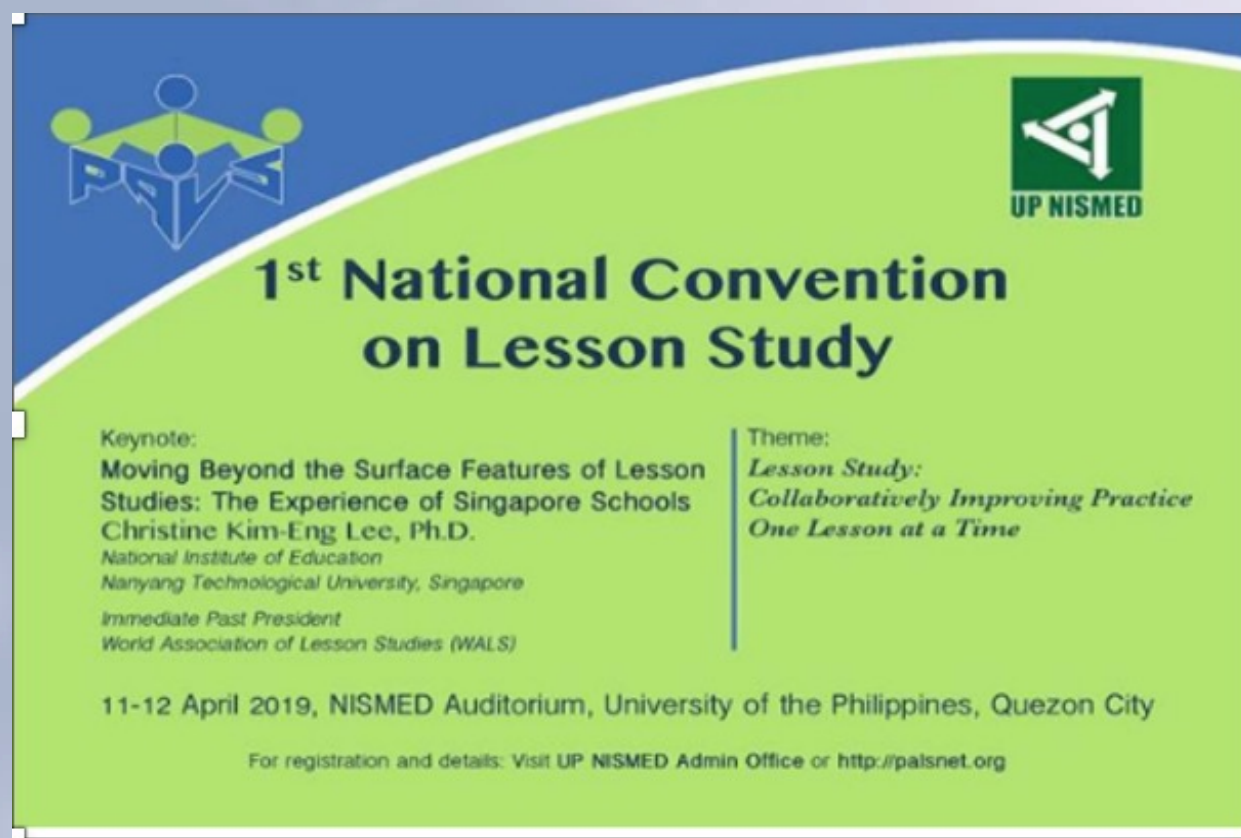
- Since 2016, PALS has been partnering with public and private schools to explain and promote lesson study and support teachers in their conduct of lesson study through trainings and seminars.



THE PHILIPPINE ASSOCIATION OF LESSON AND LEARNING STUDIES (PALS), INC.

palsnet.org


First National Convention on Lesson Study in April 2019



THE PHILIPPINE ASSOCIATION OF LESSON AND LEARNING STUDIES (PALS), INC.

palsnet.org

Second National Convention on Lesson Study in May 2020 (Postponed due to the pandemic)



**PHILIPPINE ASSOCIATION OF LESSON
AND LEARNING STUDIES (PALS), INC.**

**2nd National Convention
on Lesson Study**

Theme: Opportunities for Learning in Lesson Study Practice


7-9 May 2020, Quirino Provincial Gymnasium
San Marcos, Cabarroguis, Quirino

VITAL INFORMATION

Registration Link:
<http://bit.ly/2ndPALScnreg>

Call for Paper and Poster Presentations :
Submit abstract until March 15, 2020
at <http://palsnet.org>

in partnership with



Other Lesson Study Capacity Building Programs of UP NISMED

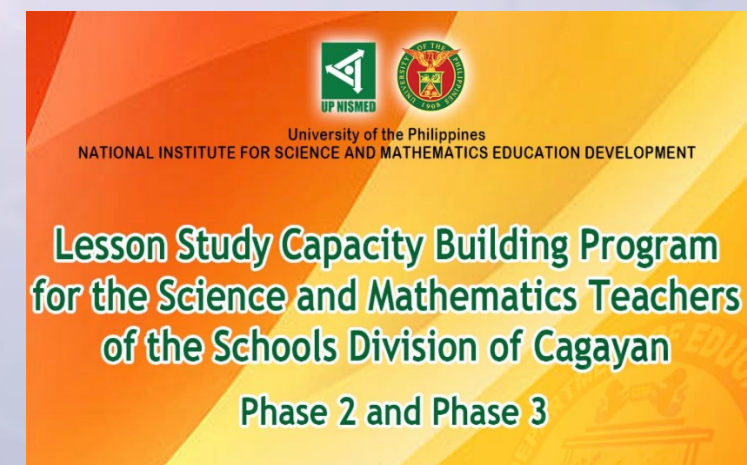
- Department of Education (DepEd) Schools Division Office (SDO) of Cagayan - 120 junior high school teachers trained

Phase 1: Laying the Foundation (Dec 2021 and Feb 2022)

Phase 2: Laying the Foundation on Content and Pedagogy (Sep 2022)

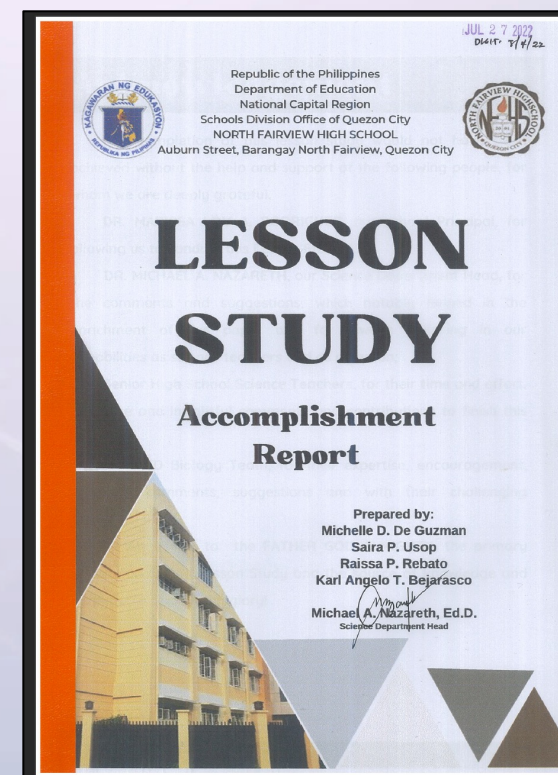
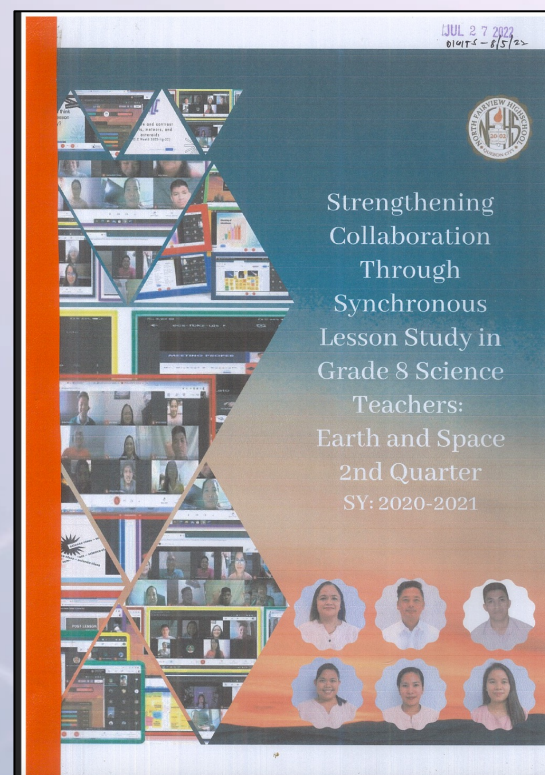
Phase 3: Introducing the Lesson Study Process (Sep-Nov 2022)

Phase 4: Implementation of Research Lessons (Sep 2023)



Other Lesson Study Capacity Building Programs of UP NISMED

- North Fairview High School
Quezon City, Metro Manila



APEC-TSUKUBA International Conference XVI

Online Workshops for Lesson Study 2.0: Artificial Intelligence (AI)
and Data Science for Education in APEC Economies

**UP NISMED's Initiatives on Data Science,
AI, and Computational Thinking**



UP NISMED's Current Projects and Activities

DATA SCIENCE FOR EDUCATORS



National Institute for Science and
Mathematics Education Development

Data Science for Educators

Data Science in Our Everyday Lives



Slides on data science
courtesy of Ms. DAL Colades

UP NISMED's Current Projects and Activities

DATA SCIENCE FOR EDUCATORS

MODULES

- MODULE 1**
6 hrs
Data and Data Science in Our Daily Lives
- MODULE 2**
9 hrs
Data Visualization
- MODULE 3**
12 hrs
Exploratory Data Analysis
- MODULE 4**
18 hrs
Machine Learning
- MODULE 5**
18 hrs
Natural Language Processing

UNIVERSITY OF THE PHILIPPINES
NATIONAL INSTITUTE FOR SCIENCE AND MATHEMATICS EDUCATION DEVELOPMENT

Module 1: Data Science and Data in our Everyday Lives

- An introductory module for Data Science that discusses the ubiquity of data in our daily lives and in teaching and how it relates to various fields.
- Covers skill sets that are needed for engaging in Data Science and how processing leads to useful information.

UP NISMED's Current Projects and Activities

DATA SCIENCE FOR EDUCATORS

MODULES

MODULE 1
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Data and Data Science in Our Daily Lives

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UNIVERSITY OF THE PHILIPPINES
NATIONAL INSTITUTE FOR SCIENCE AND MATHEMATICS EDUCATION DEVELOPMENT

N

Module 2: Data Visualization

- Presents different ways that data can be visualized based on the kind and nature of data – to enable meaningful interpretations.
- Participants become familiar with tools for data visualization.

UP NISMED's Current Projects and Activities

DATA SCIENCE FOR EDUCATORS

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UNIVERSITY OF THE PHILIPPINES
NATIONAL INSTITUTE FOR SCIENCE AND MATHEMATICS EDUCATION DEVELOPMENT

Module 3: Exploratory Data Analysis

- Provides practical discussions and hands-on activities for preparing data for exploratory data analysis.
- Covers handling different sources of data and missing data as well as common ways for evaluating whether data are useful for further analysis

UP NISMED's Current Projects and Activities

DATA SCIENCE FOR EDUCATORS

MODULES

MODULE 1
6 hrs
Data and Data Science in Our Daily Lives

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9 hrs
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UNIVERSITY OF THE PHILIPPINES
NATIONAL INSTITUTE FOR SCIENCE AND MATHEMATICS EDUCATION DEVELOPMENT

N

Module 4: Machine Learning

- Covers some supervised and unsupervised learning techniques for classification, prediction, and clustering.
- Discusses different methods for evaluating the performance of a machine learning model.

UP NISMED's Current Projects and Activities

DATA SCIENCE FOR EDUCATORS

MODULES

MODULE 1
6 hrs
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UNIVERSITY OF THE PHILIPPINES
NATIONAL INSTITUTE FOR SCIENCE AND MATHEMATICS EDUCATION DEVELOPMENT

N

Module 5: Natural Language Processing

- Discusses some text processing techniques and the application of machine learning algorithms to the processed data

UP NISMED's Current Projects and Activities

DATA SCIENCE FOR EDUCATORS

Activities

Orange

Mon Feb 20 8:22 AM

Handout1橙* - Orange

55%

Participants (28)

Find a participant

Joe Reyes (Host, me)

Ceril Maramag (Co-host)

Deborah Anne Lu... (Co-host)

Abigail Gonzales

Aldrin Nazareno (Guest)

Cherry Velasco-UP NISMED

Datch Tapalla (Guest)

Dennis Danipog

Emily Roble (Guest)

Invite

Mute All

File

Data Table

Text Mining

Time Series

Spectroscopy

Unsupervised

Image Analytics

Bioinformatics

Educational

Explain

Network

Text Mining

Time Series

Spectroscopy

PHL

Data Table

Concatenate

Select Columns

Data Table (5)

Feature Statistics

Data Table (6)

USA

Data Table (1)

Data Table (2)

PCA

Scatter Plot

Data Table (3)

Transpose

Data Table (4)

Info

52 instances

6 features (5.1 % missing data)

No target variable

2 meta attributes

Variables

✓ Show variable labels (if present)

Visualize numeric values

✓ Color by instance classes

Selection

✓ Select full rows

Feature

Mode

Mean

Median

Dispersion

Min.

Max.

Missing

1 How much eff... 10 30.0998 10 1.28255 1 99 10

2 How much eff... 10 31.5464 10 1.23346 1 99 10

3 Highest Educa... 6 5.21946 5 1.8845 0 99 0

4 Duration in ear... 2 25.9197 2 1.57742 0 99 0

5 Learning time... 999999999 1.72873e+07 275 2.18888 0 1e+08 0

6 Learning time... 999999999 1.71017e+07 275 2.20166 0 1e+08 0

7 Learning time... 999999999 1.72873e+07 275 2.18888 0 1e+08 0

8 Index of econ... 7 -0.831052 -0.8479 -1.56923 5.4634 3.2321 16

9 Meta-cognitio... -1.64 -0.322489 -0.25 -2.89132 -1.64 1.5 141

10 Meta-cognitio... -1.72 -0.347203 -0.18 -2.81446 -1.72 1.36 131

11 Meta-cognitio... -1.41 -0.425884 -0.5 -2.17184 -1.41 1.33 163

12 Home posses... 99.0000 -0.796678 -1.2593 -8.28485 -8.9811 99 0

13 Home educati... 1.1793 2.03031 -0.6927 7.9019 -4.411 99 0

14 Family wealth... 99.0000 -0.222411 -1.0856 -44.484 -7.5183 99 0

15 ICT resources... -2.9116 0.837279 -0.8794 15.8769 -3.9677 99 0

16 Disciplinary cl... -0.0424 1.83535 -0.0424 7.39661 -2.7124 99 0

17 Teacher supp... 1.3140 2.33916 0.4294 5.95947 -2.7106 99 0

18 Teacher-direct... 1.8202 3.08486 0.4301 5.14015 -2.9425 99 0

19 Perceived fee... -0.3253 3.50511 0.3993 4.95176 -1.6391 99 0

20 Parents' emoti... 1.0346 7.90785 0.3622 3.9708 -2.4468 99 0

21 Teacher's str... 2.0871 2.89713 0.4798 5.35061 -2.3003 99 0

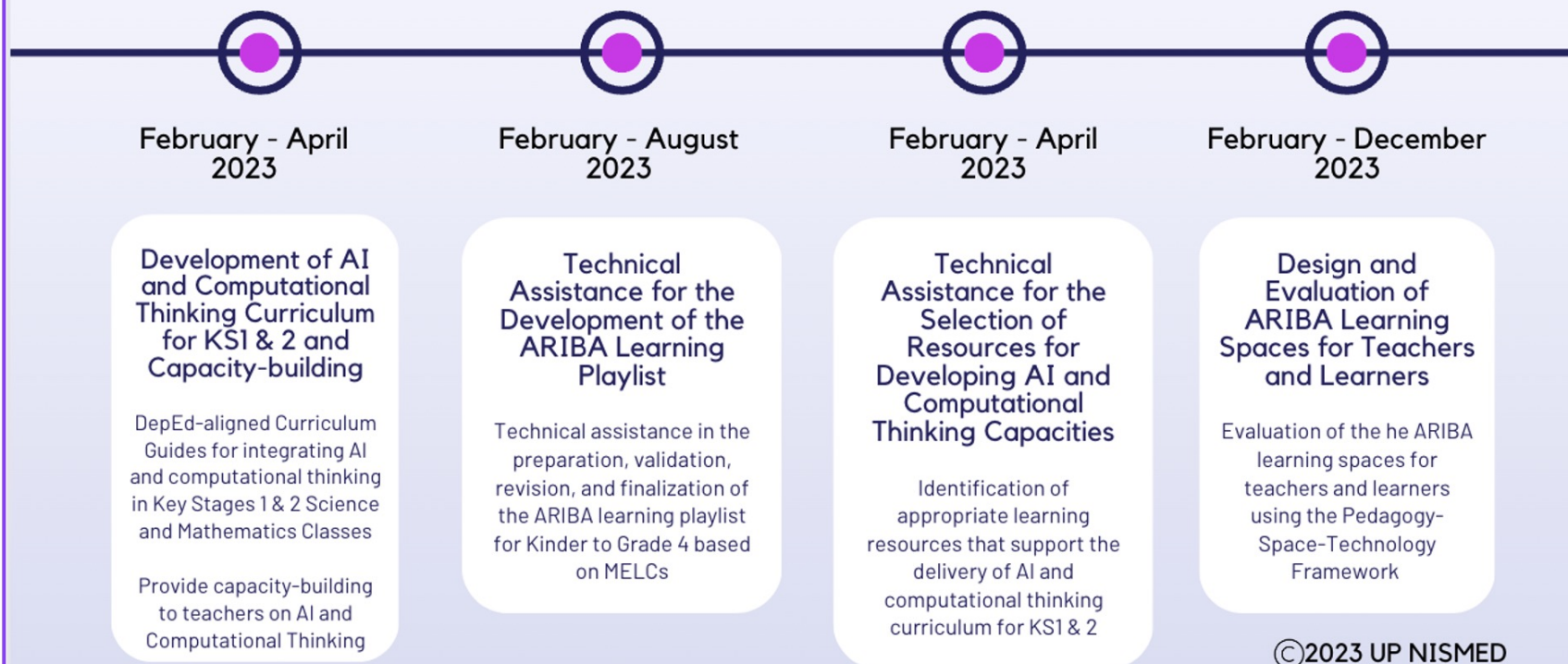
22 Adaptation of... -0.576 3.35891 0.1889 5.21096 -0.2452 99 0

Seminar-Workshop
on Data Science

UP NISMED's Current Projects and Activities

AI and COMPUTATIONAL THINKING

Project Components and Timeline



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Slides on AI and CT courtesy of Dr. SLC Monterola

UP NISMED's Current Projects and Activities

AI and COMPUTATIONAL THINKING

COMPONENT 1



Development of AI and Computational Thinking Curriculum for KS1 & 2

February - April 2023

- Scope international curriculum frameworks for AI and computational thinking
- Align with National AI Roadmap, DepEd BEDP and BER
- Identify entry/integration points in existing DepEd curricula
- Develop and validate curriculum guides for KS1 and 2 - Science, Mathematics, Literacy/Language

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UP NISMED's Current Projects and Activities

AI and COMPUTATIONAL THINKING

COMPONENT 1



Capacity-building of Teachers on AI and Computational Thinking

April 2023

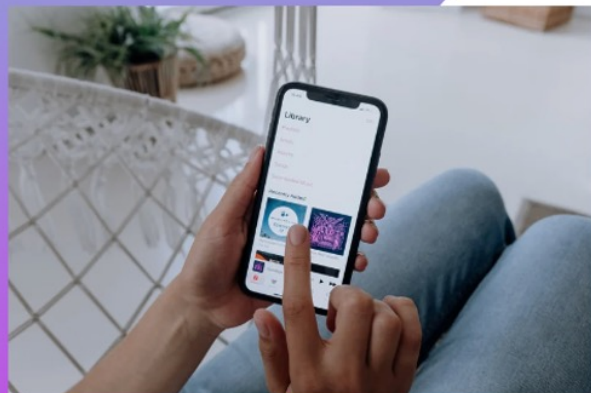
- Capacitate teachers on AI and computational thinking
- Raise their awareness and appreciation of AI and its applications in education
- Guide teachers in planning how to use AI-based tools in teaching more effectively

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UP NISMED's Current Projects and Activities

AI and COMPUTATIONAL THINKING

COMPONENT 2



Technical Assistance for the Development of the ARIBA Learning Playlist

February - August 2023



Preparation

Ideation sessions with resource developers (alignment with DepEd curriculum; selection of competencies and corresponding pedagogy/approach; agreement on development and submission process)



Validation

Experts' review of resources that have been developed



Revision and Finalization

Experts' review of revised resources

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UP NISMED's Current Projects and Activities

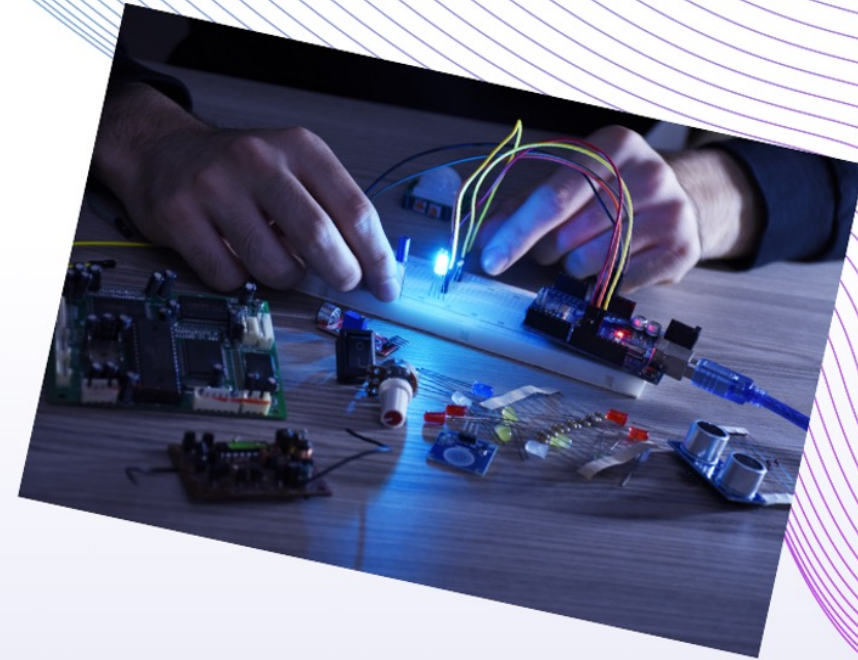
AI and COMPUTATIONAL THINKING

COMPONENT 3

Technical Assistance for the Selection of Resources for Developing AI and Computational Thinking Capacities

February - April 2023

Identification of developmentally-appropriate learning resources that support the delivery of AI and computational thinking curriculum for KS1 & 2 (including the MakerSpace and Wellness Corner of ARIBA Learning Spaces)



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UP NISMED's Current Projects and Activities

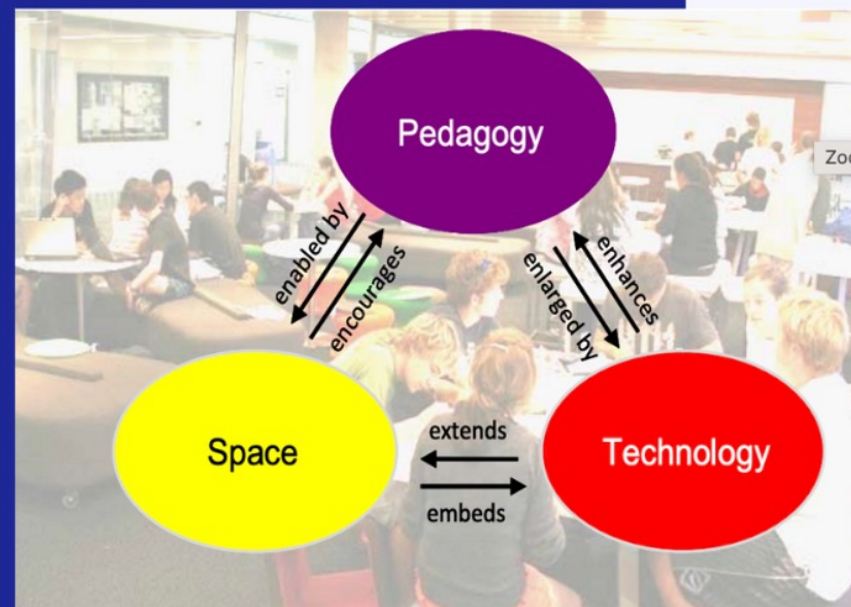
AI and COMPUTATIONAL THINKING

COMPONENT 4

Design and Evaluation of ARIBA Learning Spaces for Teachers and Learners

February - December 2023

- Ocular Inspection
- Design Proposal with Equipment/Device/Tool Specifications
- Class Observation
- FGDs with Teachers and Students
- Evaluation Report
- Presentation to Stakeholder



Pedagogy-Space-Technology Framework for Designing and Evaluating Learning Spaces (Radcliffe, 2009)

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UP NISMED's Current Projects and Activities

AI and COMPUTATIONAL THINKING

- ❑ Hosting a Day of AI in June 2023
- ❑ Conduct of Training
 - Invent an App
 - IoT (Internet of Things) and 3D printing



Thank you for your attention!

Maraming salamat po!