Recontextualized Teacher ICT Capability for Geographically Isolated Areas: A Paradigm for Use of ICT in Education at Crisis Situations

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Teacher ICT Capability

GIDA

Geographically isolated and disadvantaged areas

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New Concept of Teacher ICT Capability in GIDA at the time of COVID-19

Challenges of remote learning approach:

1) poor Internet access
2) lack of gadgets and devices
3) inadequate supply of instructional resources
4) low readiness of students to online learning; and
5) unpreparedness of teachers to teach in an online setting
(Alea, Fabrea, Roldan & Farooqi, 2020).

These problems are most prevalent in geographically isolated and disadvantaged areas (GIDA), even before pandemic.

Unstable supply of electricity, stress of community quarantine, and unpreparedness of the parents or guardians of students to take on the role of teaching while at home.

Geographically Isolated and Disadvantaged Areas

GIDA ⇨ Communities physically and socio-economically separated from the cities and town proper

⇩

characterized by isolation due to distance, weather conditions and transportation difficulties

Why did this research for GIDA?

⇨ GIDA teachers as any teachers in the Philippines are not equipped to implement lessons remotely.

⇨ But GIDA teachers have another layer of difficulty that teachers in the cities and town proper do not experience as much.

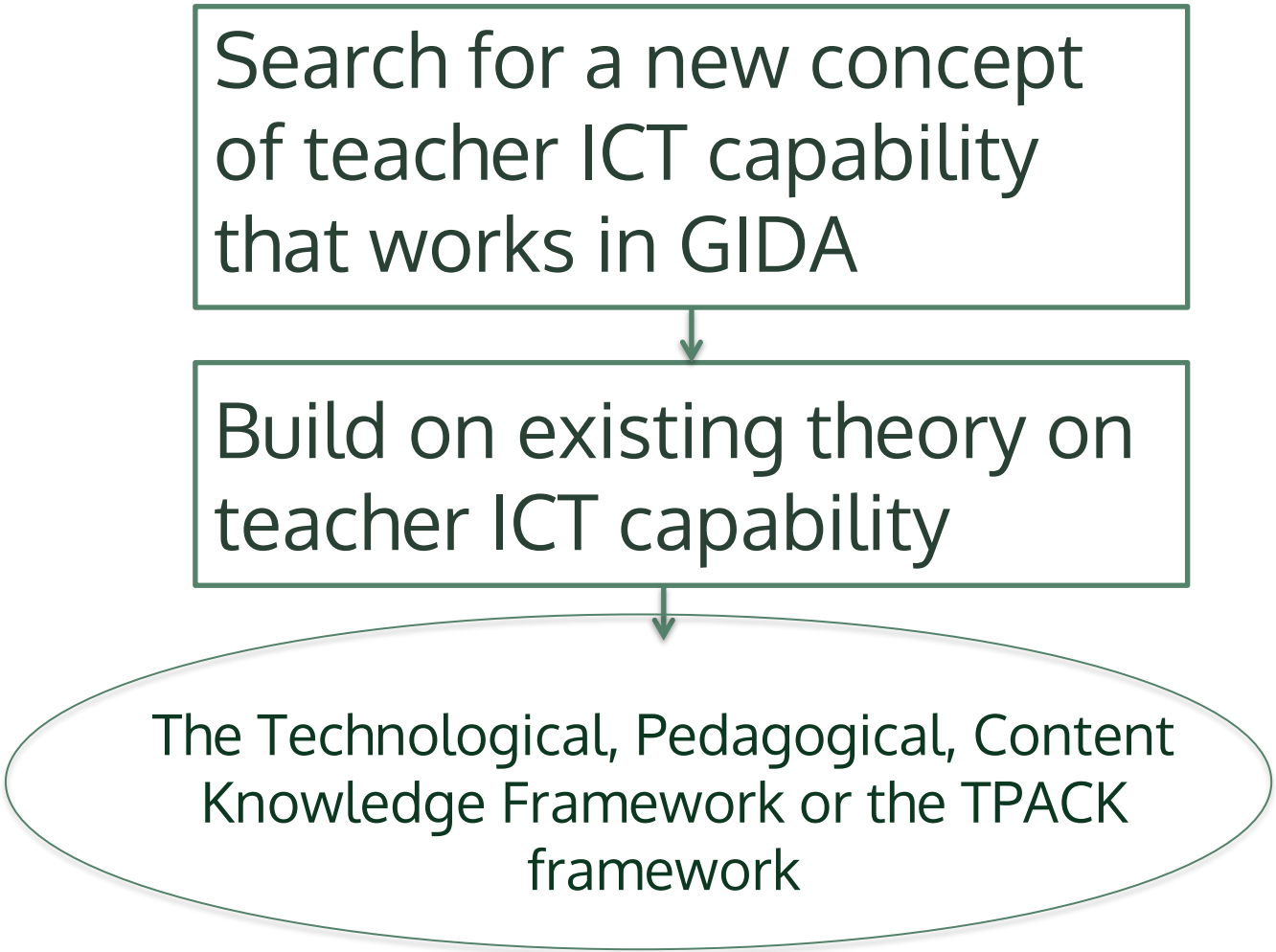
⇨ Difficult terrain, poor Internet connection, lack of technological devices, inadequate ICT-related training, and poor telecommunications signal

Recontextualization

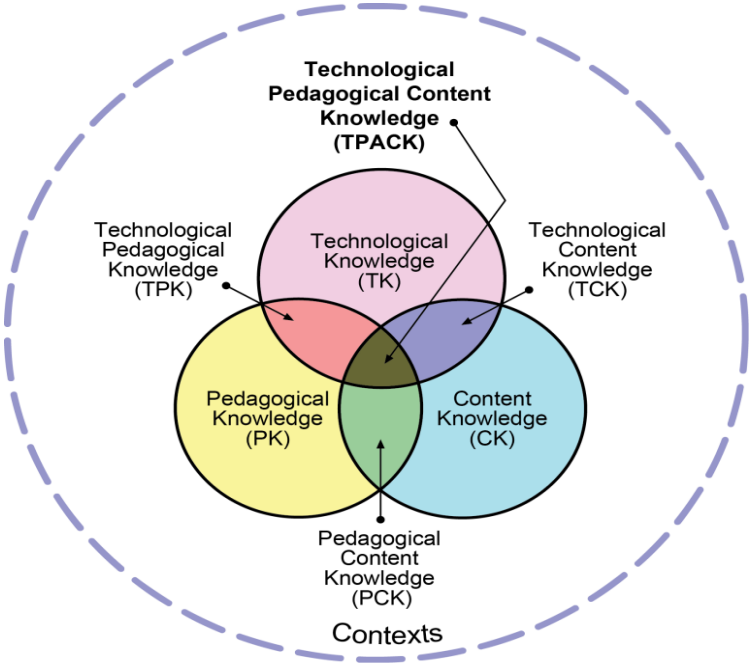
⇨ COVID-19 placed teaching and learning in a situation where teachers' existing knowledge is reconfigured and reordered to "cohere with different space, time and power relationships that exist within school boundaries"

Yet, teachers have to continue teaching.

- How are the teachers in GIDA equipped for this kind of teaching and learning environment?
- How are they coping with the use of ICT in providing education to Filipino schoolchildren in a remote teaching-learning setting?


Search for a new concept of teacher ICT capability that works in GIDA
Build on existing theory on teacher ICT capability
The Technological, Pedagogical, Content Knowledge Framework or the TPACK framework

Why TPACK?



⇨ TPACK is one of the leading theories or a dominant theory on ICT integration since its publication in 2006.

⇨ 1,246 journal articles
293 book chapters
404 doctoral dissertations
(Harris and Wildman, 2020)

TPACK model found

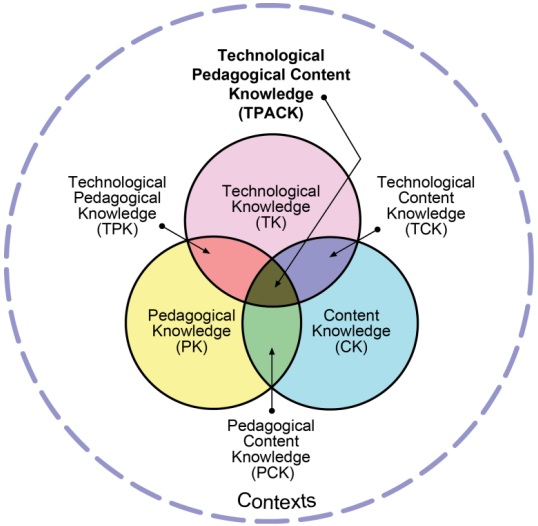
not clear on how the knowledge components could work in difficult situations like in GIDA.

does not encompass the unique challenges of GIDA teacher in implementing ICT-mediated lessons

Modified the TPACK model

- knowledge components could aptly be the competency that each teacher must have to successfully integrate ICT into their teaching

- identify factors that could be the force in ensuring flexibility and responsiveness of teacher ICT capability to the changing learning environment



Research Design

Mixed methods

descriptive case study and quantitative

Research participants

BEFORE COVID-19

19 Junior High School Science teachers

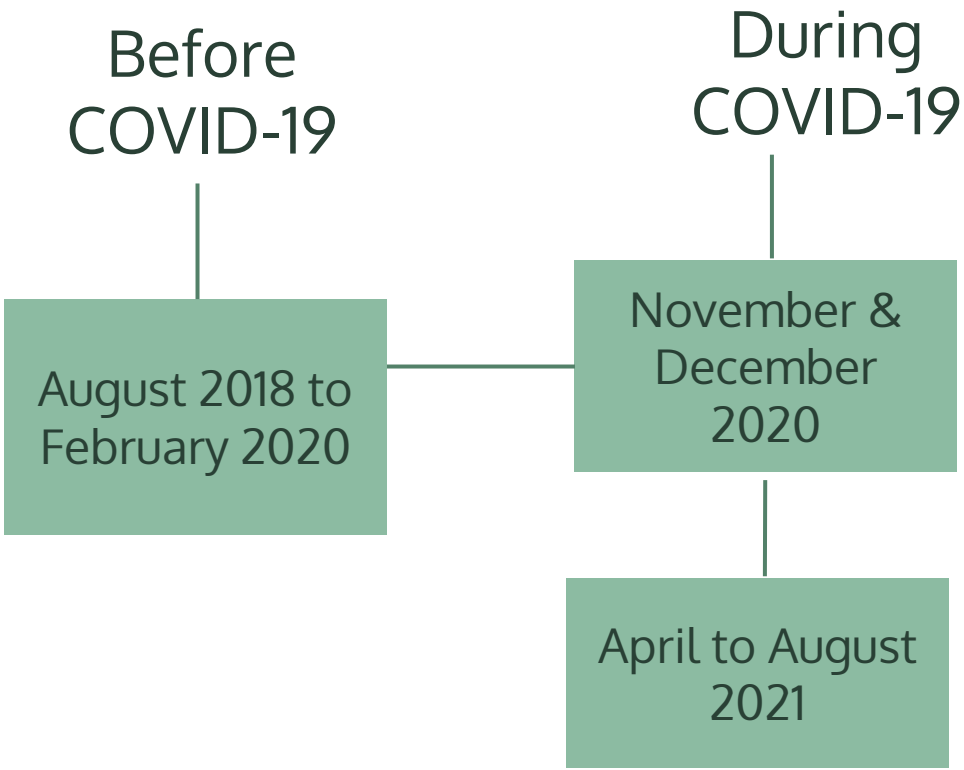
301 Junior High School Students

DURING COVID-19

14 Junior High School Science teachers

409 Junior High School Students

Schedule


Before COVID-19
During COVID-19
August 2018 to February 2020
November & December 2020
April to August 2021

Criteria for selecting participant-schools

1. located in remote, rural villages

2. technology (digital and traditional) technology is evident

3. with Science teachers teaching in Junior High School

Why Science Teaching?

Science concepts have their own intrinsic complexity. It has been a challenge to many students to see the relevance of the abstract Science concepts to their day-to-day life (McFarlane & Sakellariou, 2002).

Use of ICT as a mode of delivery has enhanced students' learning of Science (Aldous, 2008; Craciun & Binoiu, 2015; Donnelly et al., 2011; Leite, 2016)

Been involved in research on use of technology in Science teaching, training of Science teachers on ICT integration, and evaluation of ICT-mediated instructional materials on Science concepts (This researcher)

Data Collection

Before COVID-19

Qualitative:
Interview responses, Focus group discussions
FB chat messages
Classroom observations

Quantitative:
Questionnaire on Teacher ICT utilization and competencies

Pre-post test scores

DURING COVID-19

Qualitative:
Interview responses, Focus group discussions
FB chat messages

Quantitative
1st and second quarter grades of students

Data Analysis

Qualitative:
Interviews
Field Notes
FB chat messages

Quantitative:
Descriptive Statistics (frequency, weighted means) of responses from the ICT utilization and competency questionnaire

t-test, frequency, percentages for pre-post-test scores and 1st and 2nd quarter grades

Weighted mean for student perception

Factors identified to explain response of GIDA teachers at the time of COVID-19

1. existing ICT capability
2. difficult experiences
3. teachers' mindset
4. support system

1. Existing ICT capability

Even before the pandemic, GIDA teachers have high ICT utilization and competency.

Default Competency

2. Difficult, challenging experiences

GIDA1

the issue of poverty and presence of Indigenous Peoples that influenced the design of their instruction.

GIDA2

teachers were exposed to the devastation caused by natural calamities, in November 2013.

GIDA3

teachers experienced civil unrest in September 2013, and exposed to unstable peace and order condition.

3. Teacher's mindset: Committed to educate the school children

Help their students cope with the COVID-19 pandemic by constantly connecting with them, and instituting changes that would better their present condition to keep them learning.

It will be also us who will suffer ... if we do not adjust in the situation, our students will suffer more

4. Support system

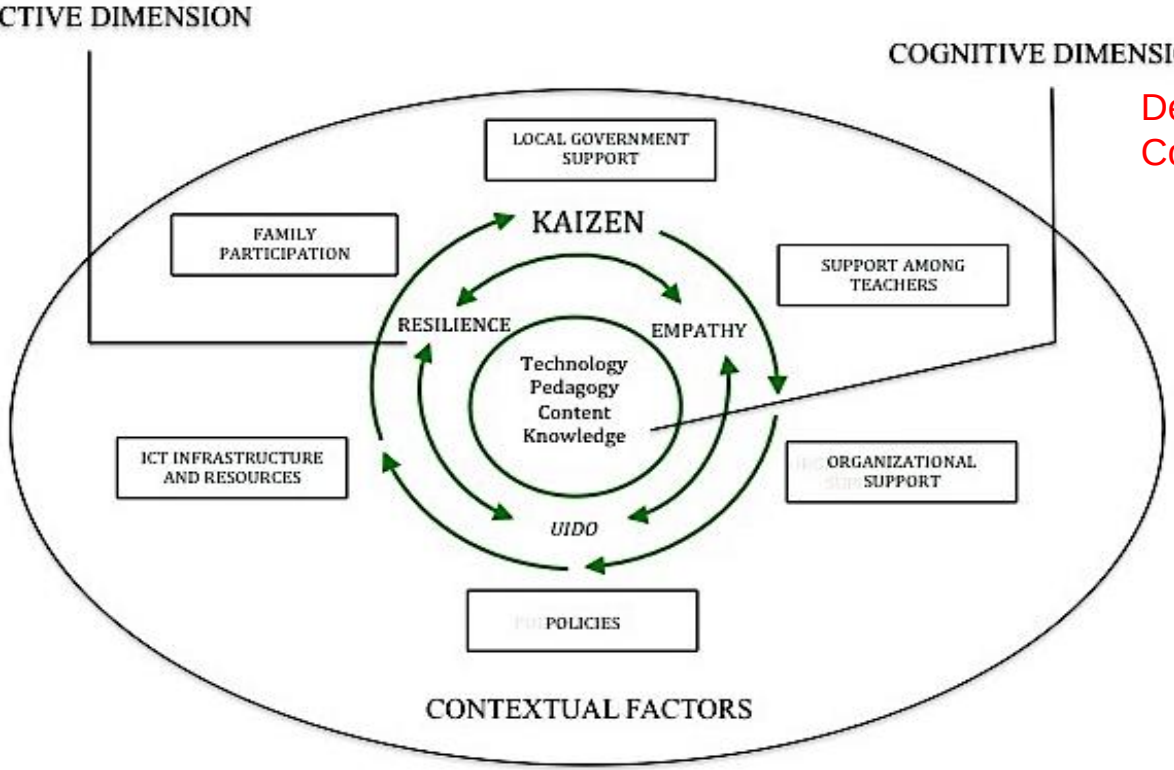
- National government In terms of funding, policies on protection against COVID-19, professional development programs, human and physical resources
- Local government in terms of provision of funding, physical and material resources, and security.
- School administrators in sustaining quality education amid the present crisis
- Peers in implementing tasks at the time of pandemic families of schoolchildren

Recontextualized Teacher ICT Capability in GIDA

utilized findings on teacher ICT capability before COVID-19 and during COVID-19

adapted the concept of recontextualization to best describe the transformation of teacher ICT capability

Reconstructed the TPACK model to align it to the new concept of teacher ICT capability that works in GIDA

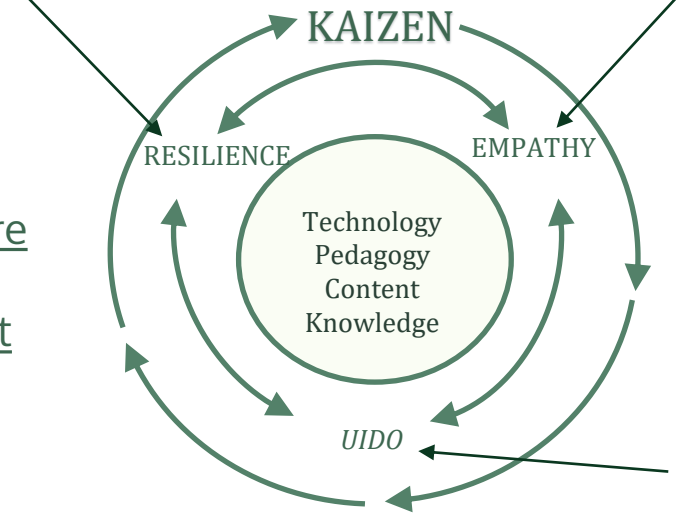


Default Competency

Teacher ICT Capability in GIDA

Que, 2022

Resilience. Ability to use their physical, mental, emotional abilities to adapt well to difficult situations and be able to quickly recover after adverse events; ability to ensure that the instructional processes are resilient against disruptions brought about by crisis.



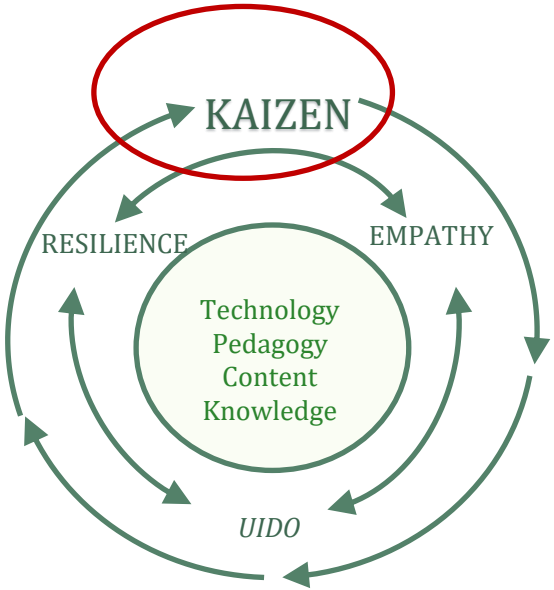
Empathy. Ability to understand the situations. Foresee the challenges the students may face, and take actions to prevent further problems

Uido (innate talent). Ability to apply their instinct and intuition to improvise and innovate given the limited resources in GIDA

Affective Dimension

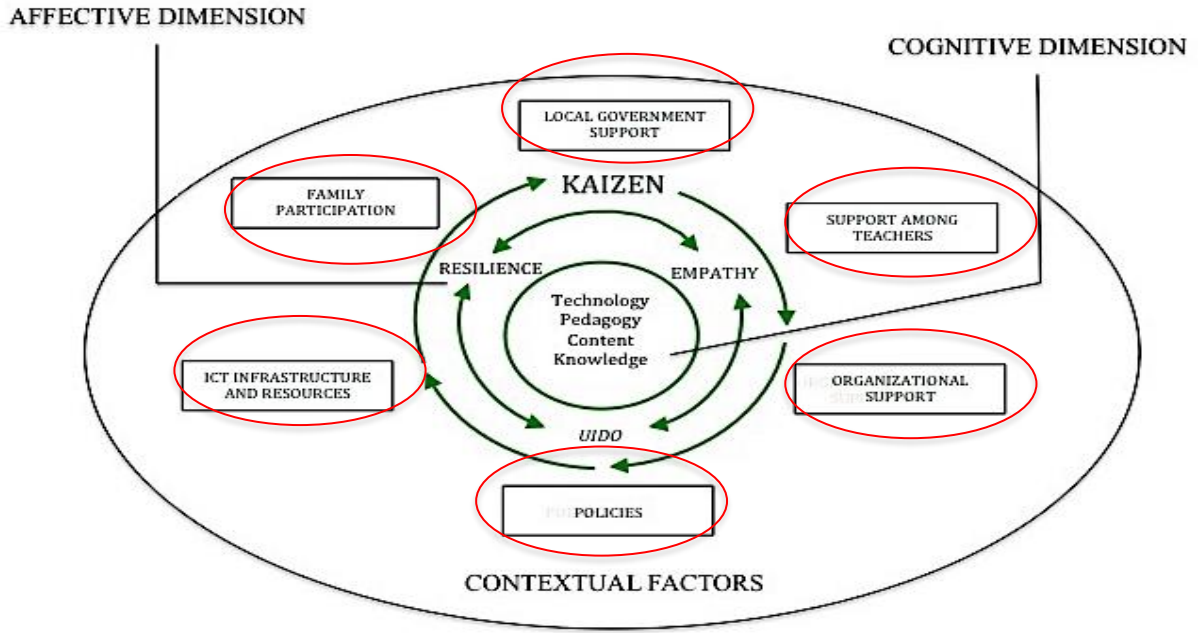
Kaizen, (*kai*-change, *zen*-good), a Japanese term that suggests continuous change.

In the context of ICT-enabled instruction, *kaizen* ensures that teaching strategies are operationalized, evaluated, and modified toward constant improvement



In the process, it instills and strengthens the values, attitudes, and skills for resilience, empathy and Uido

Contextual factors that influence the use of ICT in GIDA at the time of COVID; propels *kaizen* to institute changes to the cognitive and affective dimensions



Conclusions, Recommendations

⇨ Having high ICT capability benefits not only the teachers but also the students.

⇨ Use of appropriate ICT tools could help facilitate understanding of complex and abstract concepts such as in Science.

⇨ The difficulties of teaching in GIDA made teachers more resilient

⇨ Their high competence and positive attitude towards the use of ICT enabled them to be flexible in the design of their ICT-mediated instruction

⇨ Strong support from relevant institutions enabled to cope with the new set-up.

Recommendations

⇨ Could also be applied for refugees education, and in other Asian and African countries where education systems are likewise challenged by technological, socio-economic, health, environmental, and armed conflict issues.

⇨ Research applying the new form of ICT capability to instructors of tertiary education could also provide different context in using ICT to expand human capabilities at the time of national or global crisis

⇨

- Digital transformation must leave no one behind

Thank you!!!