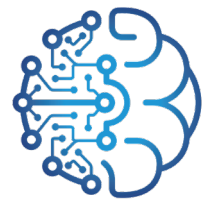


# *New Modes of Teaching and Learning for Digital Transformations*

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Lecture Notes in Educational Technology

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## The New Development of Technology Enhanced Learning

Concept, Research and Best Practices

- *The new concept development of TEL.*
- *A glimpse of emerging technologies to facilitate effective learning.*
- *The best practices of TEL.*

- During the past years, the increased interest for applying digital technologies aiming to improve learning and teaching has led to *the evolution of the research discipline* of TEL.
- In early stage, TEL refers to a *transformative movement in learning and teaching* that exploits technological advances for offering learning experiences.
- Nowadays, TEL focuses on *deploying technologies as mediating devices to support student learning* including assessment, tutoring, and instruction, and encompasses web-based and computer-based learning, virtual classrooms and learning environments, and digital collaboration.

Ronghuai Huang, Kinshuk, Nian-Shing Chen, *The New Development of Technology Enhanced Learning: Concept, Research and Best Practices*, Springer (2014)



## *Transforming Education, Building our Future.*

### Five Thematic Action Tracks

1. Inclusive, equitable, safe and healthy schools
2. Teachers, teaching and the teaching profession
3. Learning and skills for life, work and sustainable development
- 4. Digital learning and transformation**
5. Financing of education

### Gateways to Public Digital Learning initiative

Three keys to unlock the potential of digital learning



#### *Content*

*High quality, curriculum-relevant digital teaching and learning content must be made available and accessible to all learners, teachers and caregivers through digital learning platforms.*



#### *Capacity*

*Capacity to use digital technology to improve learning must be strengthened to ensure teachers, learners and other education stakeholders have the skills and knowledge needed to leverage digital tools for learning using evidence-based approaches.*



#### *Connectivity*

*Digital connectivity ensures that all schools and individuals have the ability to benefit from the educational advantages that come with good quality internet connections.*

<https://www.un.org/en/transforming-education-summit/action-tracks>



## The new 2023 GEM Report on Technology in education: A tool on whose terms?

addresses the use of technology in education around the world through the lenses of relevance, equity, scalability and sustainability.

- 1. Can technology help solve the most important challenges in education?*
- 2. How do we know whether technology works in education?*
- 3. What do countries focus on when they invest in education technology?*

### Key Takeaways

- Good, impartial evidence on the impact of education technology is in short supply.
- Technology offers an education lifeline for millions but excludes many more.
- Some education technology can improve some types of learning in some contexts.
- The fast pace of change in technology is putting strain on education systems to adapt.
- Online content has grown without enough regulation of quality control or diversity.
- Technology is often bought to plug a gap, with no view to the long-term costs.



GLOBAL EDUCATION MONITORING REPORT

2023

## Technology in education: A TOOL ON WHOSE TERMS?



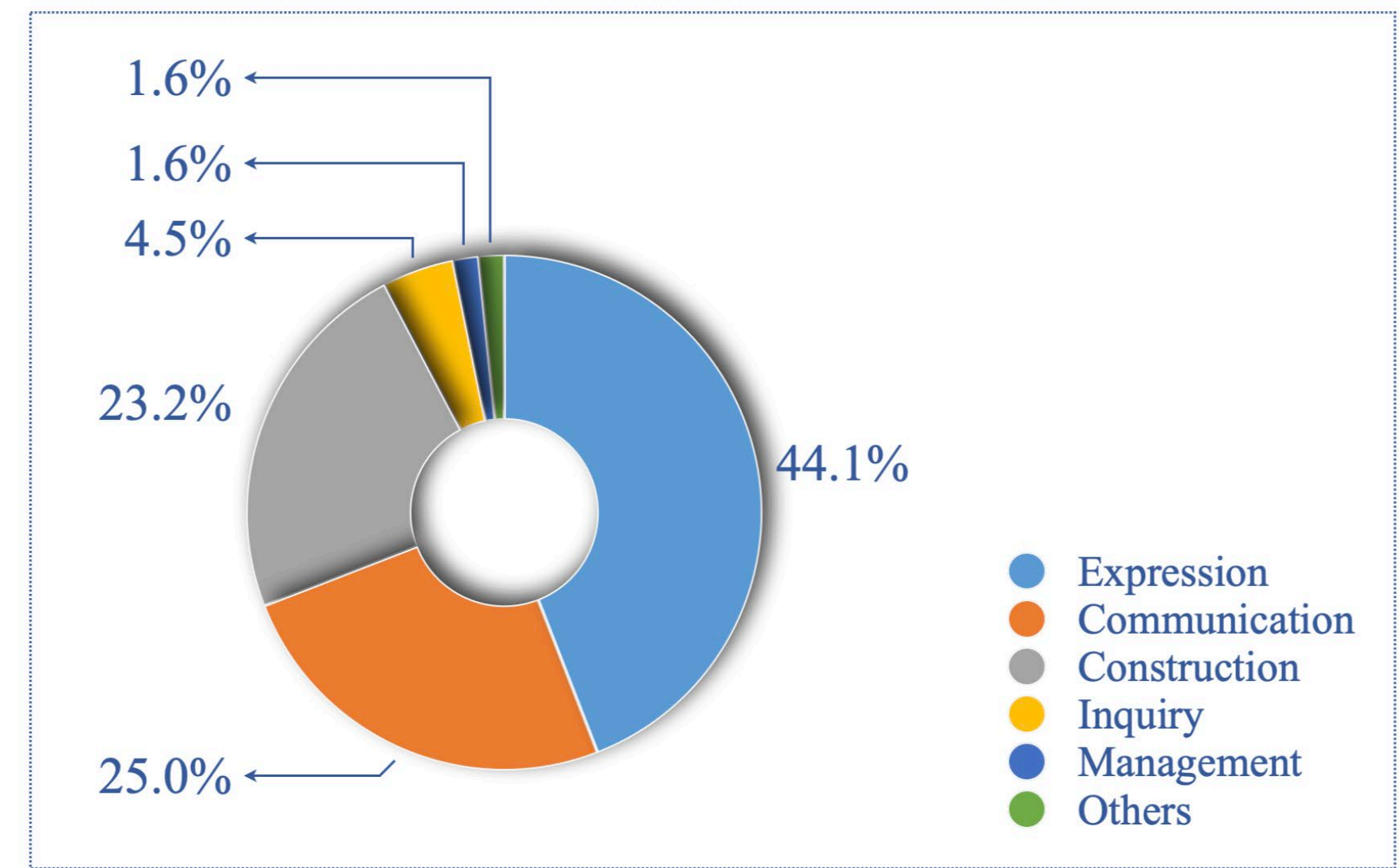
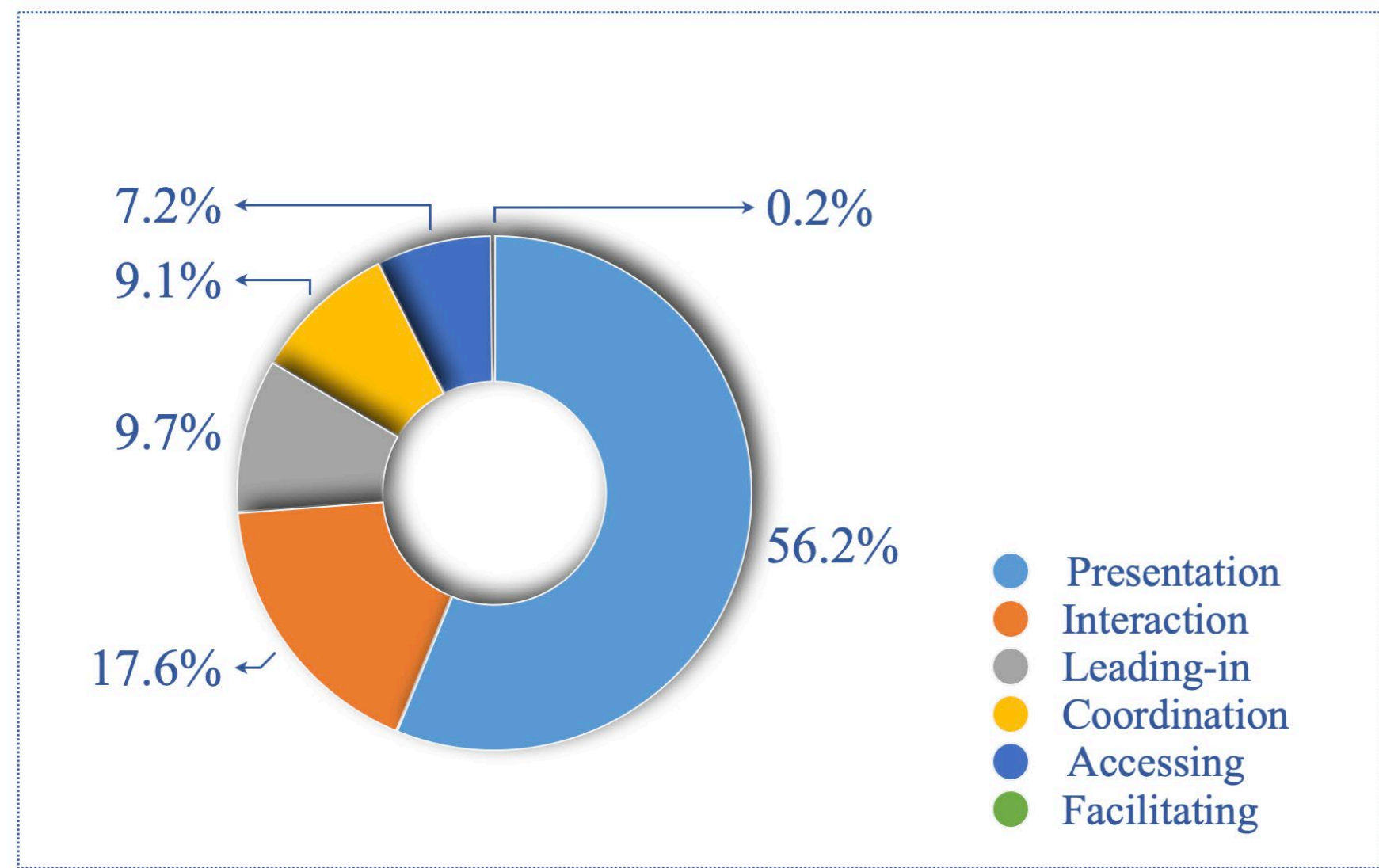
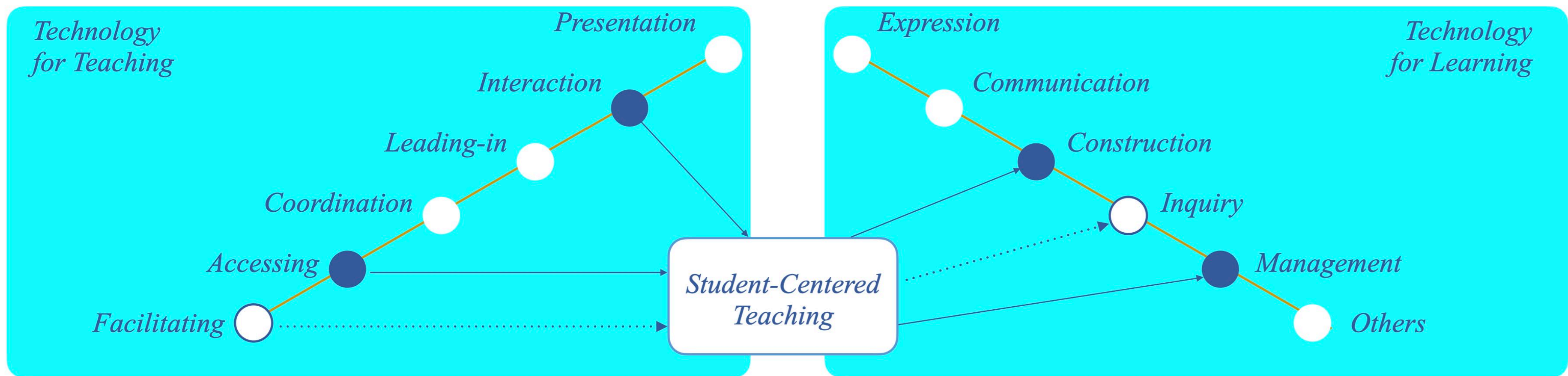
<https://www.unesco.org/gem-report/en/technology>



# 1 Behavior Analysis of Technology Usage in Technology-Rich Classrooms



A report on Learning and Teaching Behavior Analysis in Chinese digitalized classrooms (2021), which is based on a survey of technology usage in 20 thousand+ K12 schools.



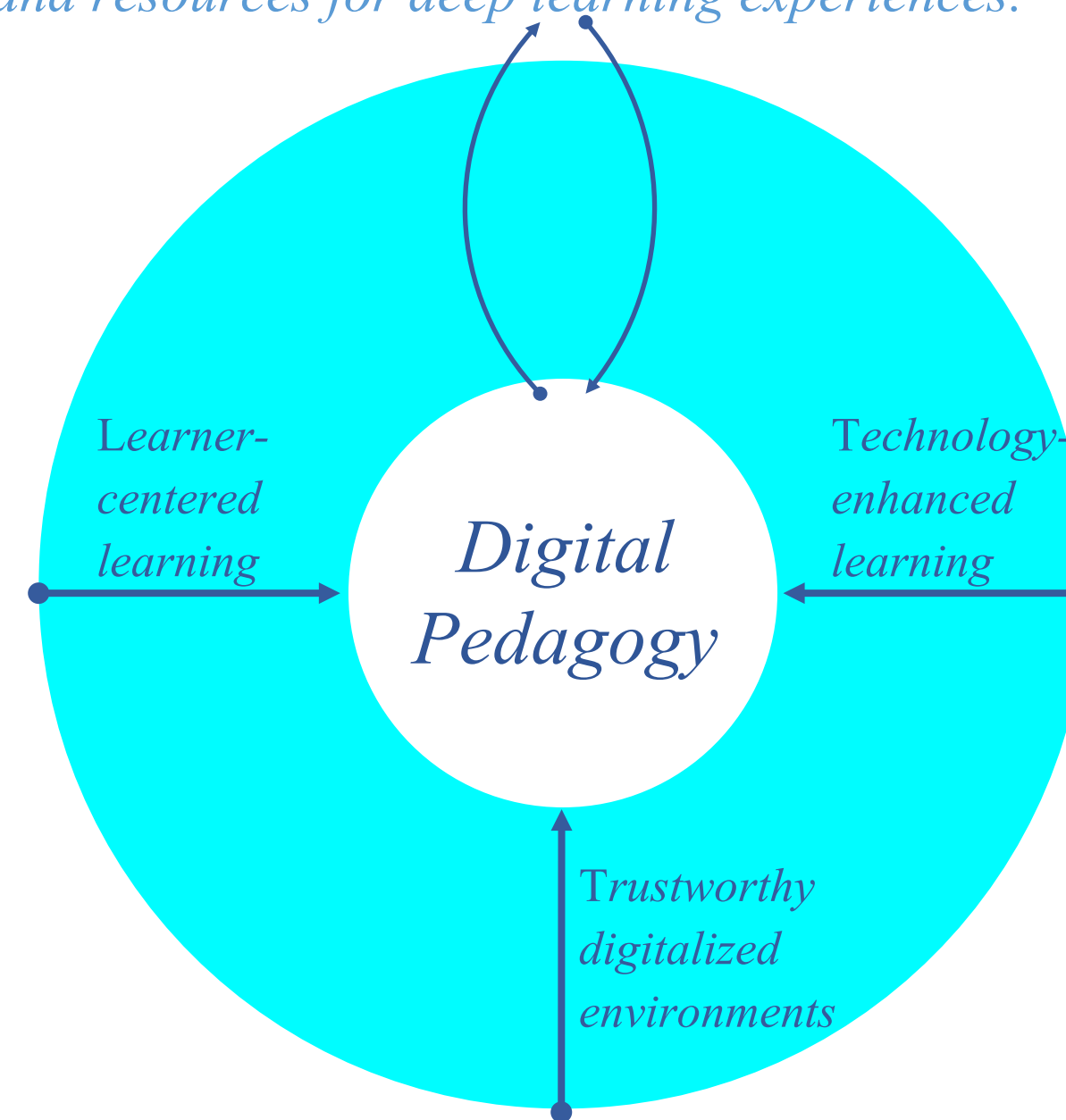


## Digital Competence for Accessing Deep Learning:

*Foster digital competence among students, enabling them to effectively navigate digital tools and resources for deep learning experiences.*

## Evidence-Based Practice with Quality Digital Resources:

*Both teaching and learning practices on evidence-based approaches and utilize high-quality digital resources to support effective learning outcomes.*



## Synergy Between Human Teachers and Trustworthy Artificial Intelligence:

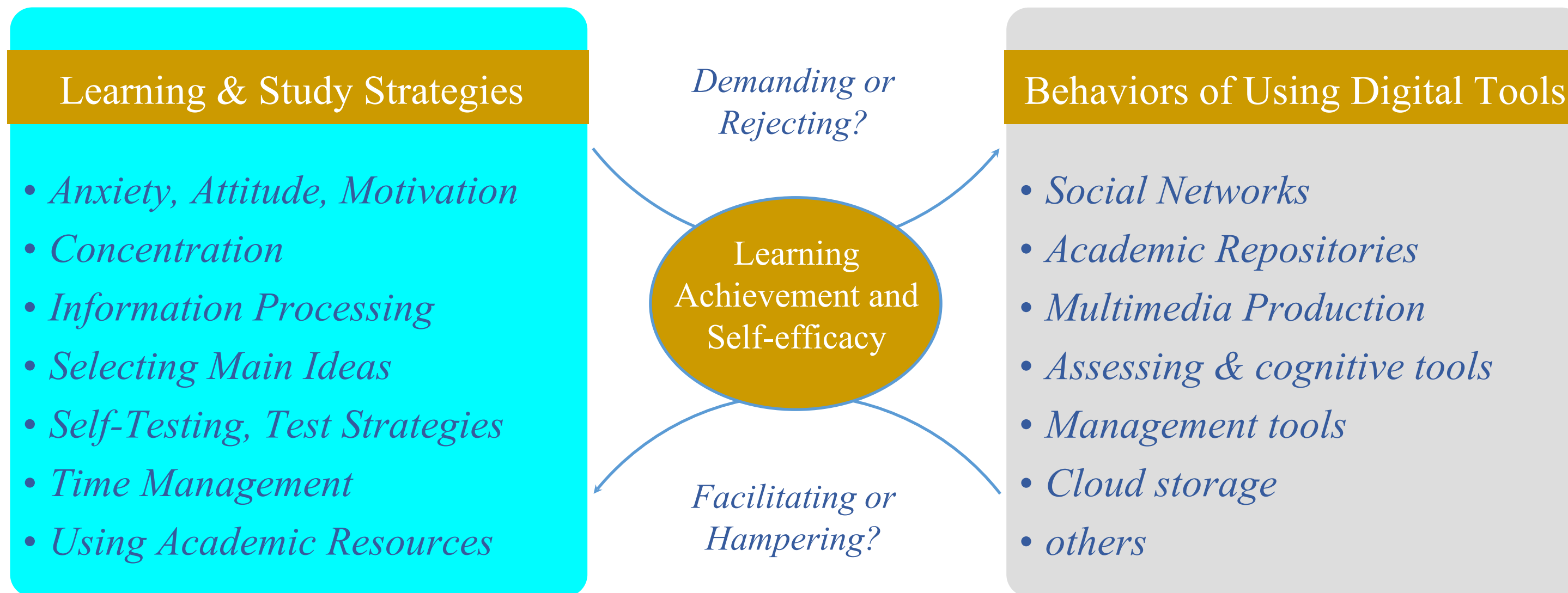
*Encourage collaboration and interaction between human teachers and trustworthy artificial intelligence systems to optimize the learning process.*

## Learning Environments with Applicable Digital Technology:

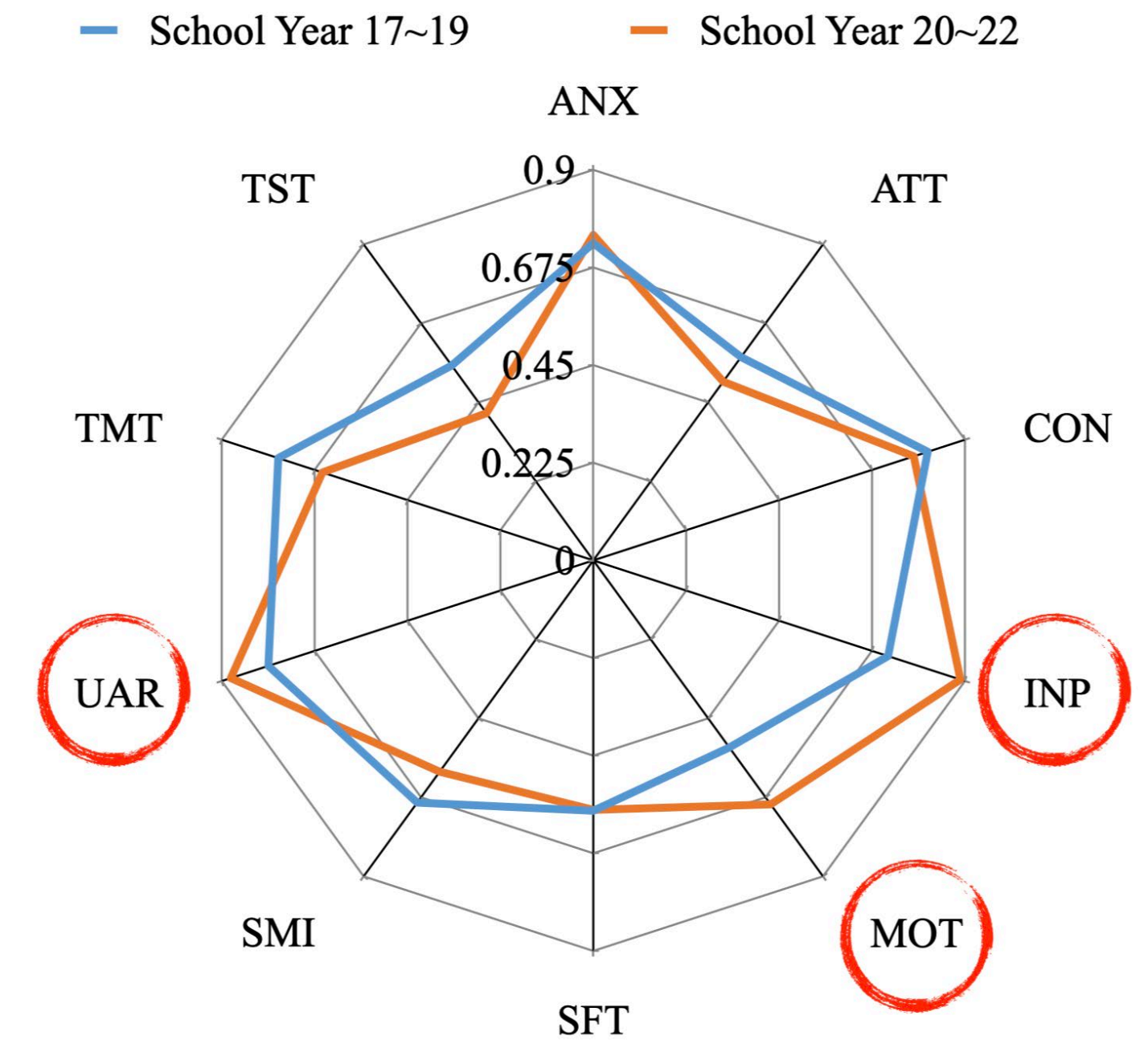
*Create learning environments that incorporate relevant digital technologies to enhance the teaching and learning experience.*

## 2 The Impact of Technology on Learning Strategies for University Freshmen

To help newcomers adjust to university study in Beijing Normal University, we offer the relevant learning tools, scaffolding methods and facilitating strategies in last 15 years, with the assessment of *freshmen students*' awareness about and use of learning and study strategies related to skill, will and self-regulation components of strategic learning by using the Weinstein's *Learning and Study Strategies Inventory (LASSI)*.



The 3-year Comparison of LASSI Scores between the pandemic and previous ones.



Computational thinking describes the mental activity in formulating a problem to admit a computational solution. It help students to understand the techniques of decomposition, pattern recognition , abstraction, and algorithms, and then solve a complex problem carried out by a human or/and machine.

## Computational Thinking

## Technologies for Communication

The use of various digital tools and platforms that facilitate communication, collaboration, and information sharing among students, teachers, and experts in different fields (e.g. document preparation, instant messaging, video conferencing, and other forms of synchronous and asynchronous communication or collaboration tools).

## Technology for Expression

The use of digital tools to create, edit, and share multimedia content such as drawings, paintings, music, videos, and animations to enable students to express themselves creatively and to communicate their ideas in a variety of formats (e.g. visual art, music composing or editing, and multimedia composition tools).

## Technologies for Inquiry

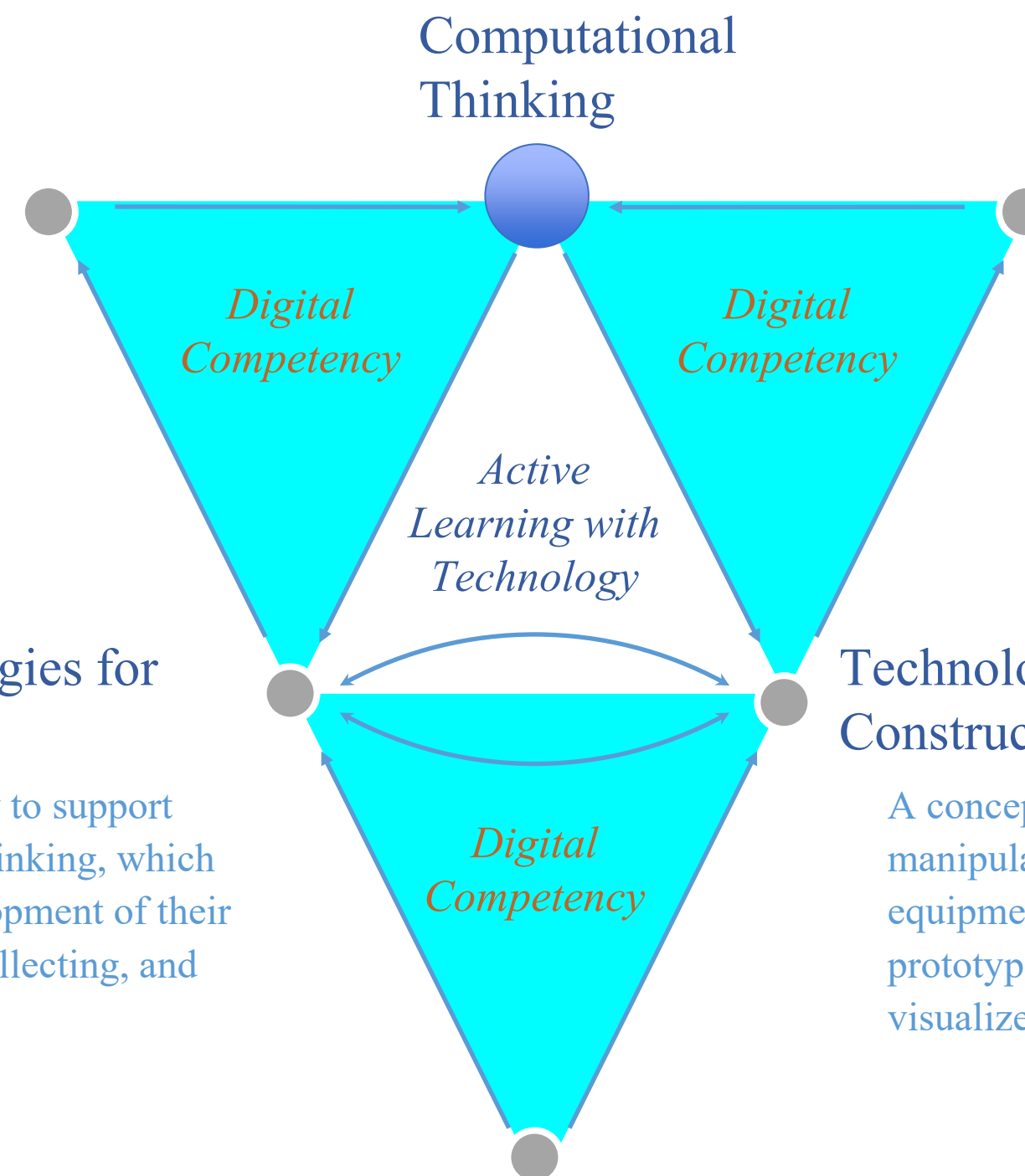
An approach to learning that emphasizes the use of technology to support students' abilities to engage in scientific inquiry and critical thinking, which involves using digital tools and resources to support the development of their own understanding of scientific concepts, building theories, collecting, and analyzing data, and making evidence-based arguments.

## Technology for Construction

A concept in student-centered learning that involves the use of technology to manipulate the physical world, including control systems, robotics, and equipment control (e.g. using Computer Aided Design to create models and prototypes of objects, as well as the construction of graphs and charts to visualize data).

## Technology for Management

The use of digital tools, systems and resources for managing the learning process, and to help students manage their time, organize their work, and improve their own overall learning management (e.g. timers and reminders, learning management systems, and learning analytics).





# 3 A pilot study of visible learning in Qinghai Plateau' K12 schools

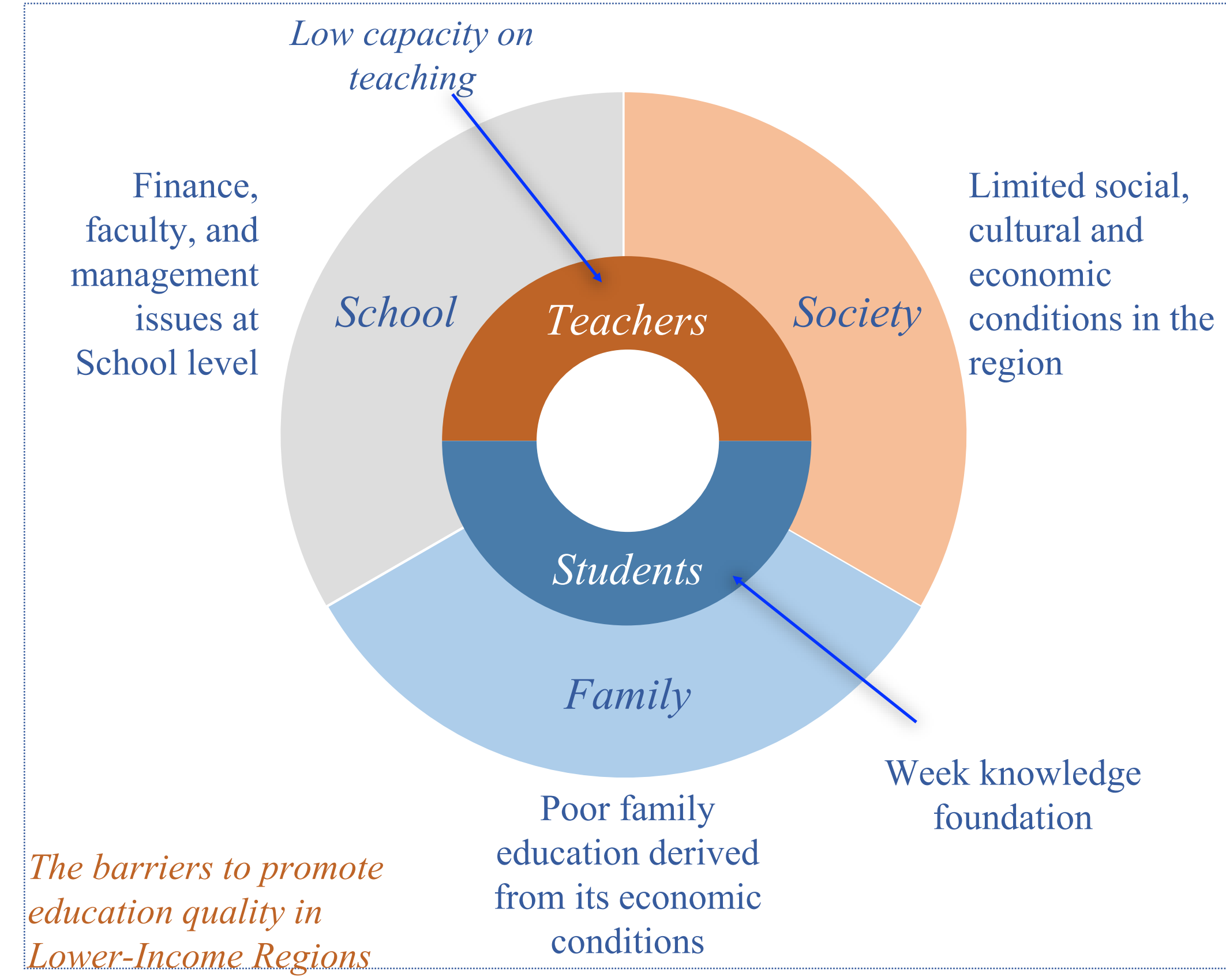


**Qinghai Plateau:** *The northeastern part of the Qinghai-Tibet Plateau in northwest China*

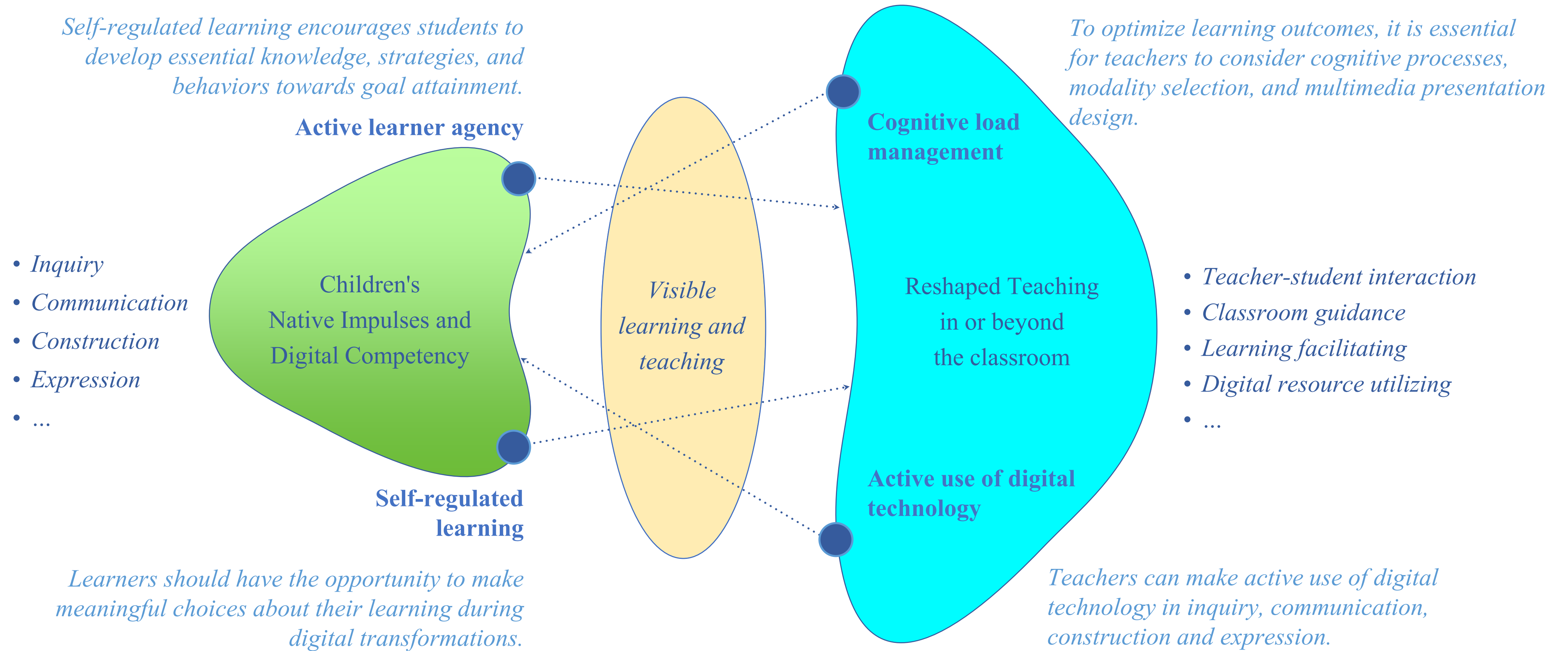
## Typical Modes of Technology Enhanced Rural Education

Class <b>Delivered</b> remotely	Class <b>Guided</b> remotely	Class <b>Shared</b> remotely
<p>The local teacher works as an assistant while another is lecturing online.</p>	<p>The local teacher learns teaching with guidance by model teacher online.</p>	<p>The local teacher learns teaching from the Model Lecture online.</p>

Based on a *pilot study* of **visible learning** in 12 **Qinghai Plateau** rural schools conducted during the COVID-19 pandemic, we can see the importance of **reshaping teaching** in or beyond the classroom.











Thanks for your attention!