



Challenge

- Education inequality between rural areas and urban areas in Beijing, China.
- One-size-fits-all? How to provide personalized learning in the Artificial Intelligence Era?

Solution

In order to address the challenges, cooperating with Advanced Innovation Center for Future Education (AICFE) at Beijing Normal University, Beijing Municipal Commission of Education introduces Expert-based Collective Advising Mechanism (ECAM), aiming to provide individualized supports for students online. ECAM employs prominent in-service teachers at public middle schools and high schools across all districts to make up for the shortage of teachers and learning resources in less developed districts in Beijing. ECAM is operated on the Smart Learning Partner (SLP), which is an educational public service platform designed and developed by AICFE.

AI plays important roles at three components in ECAM:

- Students' competencies tracking: Through assessment and prediction, ECAM constructs personalized knowledge graph with each learner's knowledge status, and then recommends learning materials correspondingly.
- Student-teacher matching: ECAM profiles each teacher's expertise; when a student makes a tutoring request, SLP can automatically recommend teachers to the student to maximize the effectiveness of each online one-on-one tutoring session.
- Tutoring session assistance: Teachers use advanced digital pens in tutoring, both

handwriting notes and tutoring audio are recorded for researchers to explore what are effective online tutoring strategies.

Learning Impact Outcomes

- Ensure equitable and quality education for students in rural areas. Students can assess to more learning resources and have better learning outcomes:
 - Cover 57,247 students from 6 districts in rural areas;
 - Involve 10,871 prominent in-service teachers from 17 districts in Beijing;
 - Provide 324,829 sessions (amount to 66,748.62 hours) of one-on-one online tutoring;
 - Give 458,210 answers to 145,641 questions raised by students in Q&A Center;
 - Aggregate 14,617 micro-lectures;
 - Provide 7,112 live classes.
- Prepare teachers for AI-powered education. Teachers can learn new digital skills in a pedagogical and meaningful way in participation.

Return on Investment

Through research, development and application, ECAM personalizes learning and improves opportunities for students with the help of online teachers. Teachers as intellectual resources are constantly allocated and reallocated online, alleviating education inequity due to geographically unequal distribution of teachers. Moreover, new regulations can be generated to secure the use of AI and big data by private sector, toward evidence-based policymaking in the education ecosystem of governments, companies, universities and schools.