

臺北市立大學附設實驗國民小學 ~ 思考力智慧學校

【研究思維促進精緻化教學，教師專業社群蓬勃發展】

臺北市立大學附設實驗國民小學是一所研究型小學，學校本身肩負著配合教育政策與趨勢，進行相關實驗研究的任務，秉持「教學即是研究」的探究精神，以真實教學現場的情境研究來實踐美好的教育理念。

附小教學團隊以「雁行理論」與「學習型組織」為基礎，以「附小研究特色」為核心，創造獨特的「雁行金三角學習型動力」團隊發展模式，透過「研發、實踐、省思、再創新」的執行歷程，創造「精緻化教學與學習」持續的循環與擴散。



同儕共同激盪，
透過研究使教學更有系統。
Brainstorming with peers and conduct
research to make teaching more systematic.



典範教師分享教學，
提升教師教學效能。
Model teachers share their teaching skills to
enhance teachers' teaching effectiveness.



發展教師專業學習社群，
共同研發創新教材與課程。
Develop a community of teachers dedicated
to professional learning to develop novel
materials and curriculums together.

【思考力智慧學校】

「思考力」是所有學習的基礎，更是提升學生學習力的重要關鍵。北市大附小以「啟發學生思考力」為核心發展課程與教學，善用科技創造最佳學習成效，發展架構如下：

圖 2／北市大附小「思考力智慧學校」發展架構圖

Figure 2 - The developmental structure of the Affiliated Experimental Elementary School of Taipei University: "A Smarter School Encouraging Thinking"



一、以「深度互動」為核心之教師教學

思考力智慧學校中，發展以「深度互動」為核心之教師教學，科技為「為學習需求而用」，善用「智慧化科技」，發展智慧化教學模組。



電子書包智慧教室模式
Model of a 1-to-1 TEAM Model Smarter
Classroom



雙白板電子書包智慧教室模式
Model of a 1-to-1 TEAM Model Smarter
Classroom with two Haboard Interactive
Whiteboards



TBL團隊合作學習模式
Model of TBL (Team-Based Learning)

The Affiliated Experimental Elementary School of Taipei University: A Smart School Encouraging Thinking

A researcher's mindset is conducive to elaborate teaching; the community of professional teachers embraces prosperous development

As a research school, the mission of the school is to conduct relevant experiments and researches with the principle "teaching is researching" in its mind and fulfill the exalted idea of education with researches on actual teaching scenarios.

With the "flying-geese model" and "learning organization" as its base and "the research attribute of

the affiliated school" as its core, the teaching team of the school conceives a unique team development model called the "flying-geese golden triangle learning dynamics," which creates a perpetual cycle and dissemination of "elaborate teaching and learning" via "research and develop," "practice," "reflection," and "re-innovation."



A smarter school encouraging thinking

The cornerstone of all learning is the "ability to think," which is also the crux of elevating the students' ability to learn. The school develops its courses and teaching around the core of "enlightening the students' ability to think" and uses technologies to create the best learning results. Figure 2 shown on the left is our developmental structure.

The meaning of the developmental structure of the smarter school encouraging thinking is elaborated as follows:

I. "High interaction" as the core of teaching

We develop a teaching that resorts to the core of "deep interaction" in the smart school encouraging thinking, use technologies only to "fulfill the needs of leaning," make judicious use of "smart technologies," and develop smart teaching models.

II. "High-level thinking" as learning targets for students

In the smarter school encouraging thinking, "students" are the main part of learning, and we are trying to create learning that targets "high-level thinking". Starting from this perspective, technologies should only be used to "create meaning" and become one of the best tools for students to practice "organization," "representation," and "re-innovation." An example of

this is that when the school develops a curriculum that involves an interdisciplinary theme, we ask the students to play the role of the "ambassador of the historic Taipei City." They are required to conduct investigations to find out what backpackers really need and be the real problem solvers. To resolve these hassles for the real subjects, they have to integrate knowledge and abilities they acquired from different subjects and wisely use new technologies such as "AR and 3D printing" to try to design and create things. In the end, we put together their creations and come up with "the e-map of the historic Taipei City: Easy Go" that can be used by backpackers in real scenarios.

Echoing with the spirits of Taiwan's 12-year compulsory education that entail "taking the initiative," "engaging the public," and "seeking the common good," we allow students to integrate the abilities of "diverse thinking," "systematic organization," "innovative application," and "real life practice" in real scenarios via interdisciplinary themed learning, the use of new technologies, and teamwork. Our goal is to cultivate a world citizen who is "initiative in learning, capable of deep thinking, a great team worker, brave enough to take actions, and equipped with knowledge of humanities and culture."

二、以「高層次思考」為目標之學生學習

以「學生」為學習主體，創造以「高層次思考」為目標之學生學習，是思考力智慧學校發展架構的重要內涵。從這個角度出發，對學生來說，科技是為「創造意義而用」，成為學生「組織、展現與再創造」的最佳工具之一。以本校發展主題跨域課程為例，由學生透過統計調查發現自由旅行旅客之需求，進而扮演真實的問題解決者，跨域整合不同領域的學習能力與素養，善用「AR與3D列印」等新興科技，應用學科知識與新興科技為真實使用者進行設計與創作。最後，整合學生創作作品，發展「臺北古城Easy Go旅行e地圖」，提供真實情境之自由旅行旅客使用。

呼應臺灣十二年國教「自發、互動、共好」的課程精神，讓學生透過主題跨域學習、新興科技應用以及團隊合作學習，在真實情境中統整「多元思考」、「系統組織」、「創新應用」以及「生活實踐」能力，培育「自主學習、深度思考、合作分享、勇於行動，且富有人文素養」的世界公民。

三、思考力智慧學校「三層式智慧化教學」推動策略

北市大附小創造思考力智慧學校的推動策略，區分為三個層次，從「簡易的無線科技應用」、「高互動啟發思考模式」到「適性化自主探究模式」，讓不同需求、不同科技接受度、不同教學取向的教師，均能善用智慧化科技，提升學生學習成效，具體內涵如下圖：



圖 3／應用新興科技發展之「臺北古城小玩家主題跨域系列課程」
Figure 3 - "Serial course in the little traveler of the historic Taipei City" that entails new technologies



圖 4／思考力智慧學校三層式「智慧化教學」推動架構

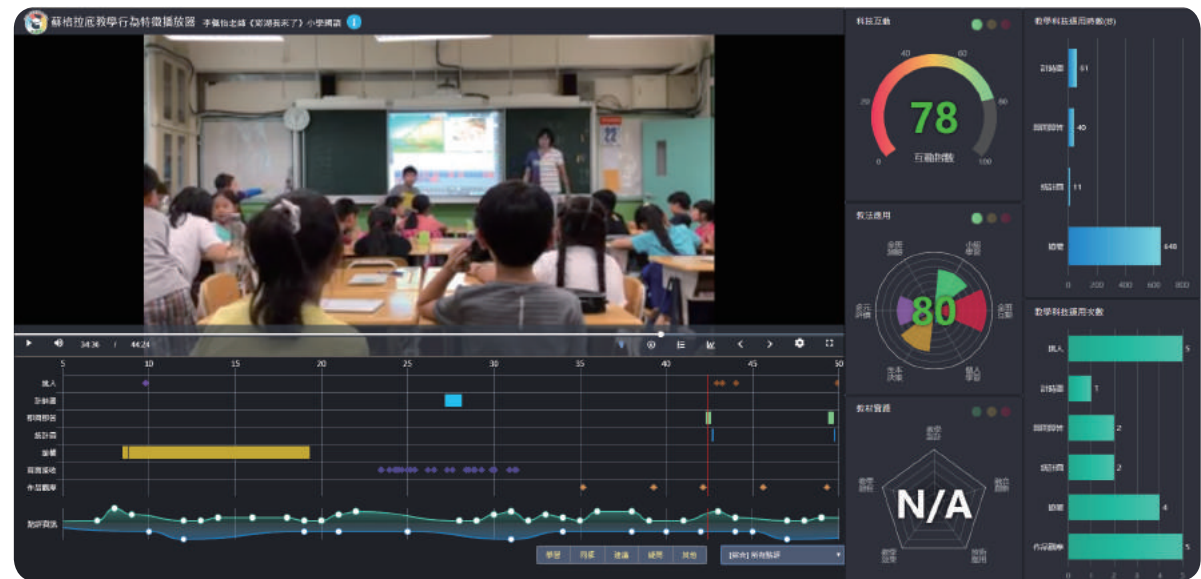
【2018 創新研究—AI 蘇格拉底系統在智慧觀議課上的應用】

2018年，北市大附小與網奕科技產學合作，建置本校之教學實驗室為智慧型議課廳，結合 AI大數據理念，轉型傳統觀議課模式。現階段相關研究正在進行中，將於本次智慧學校發表中提出初步成果。



教師專業社群常態性的公開課與議課討論，結合 AI蘇格拉底系統，提升專業成長效益。

AI Sokrates Analysis System: Smarter class observation and lesson discussion



Under Principal Fang, Hui-Qin's technological leadership, the school has gradually metamorphosed into a "smart school encouraging thinking." Integration is made possible with the school's "technology cloud" and teachers can collaborate and share stuff with each other by "developing the teachers' platform for lesson preparation." There is also a "model comprising highly interactive classroom scenarios combined with TBL" in place that will add vibrancy to teachers' teaching and make it more elaborate. We, teachers, are now capable of precisely and quickly tracking students' learning results with the auxiliary, systematic, and analytic help form the "multifaceted evaluation system" and "analytic and diagnostic system."

With the upcoming promotion of the program called "a thousand teachers make millions of talents", the school will spread the seed of "using technologies judiciously to increase students' ability to think" to every corner of the campus.

