新民團隊發展AI智慧學校與大數據現況

臺北市私立新民小學 校長 潘良惜

一、人文與科技融合的新民智慧校園

創校逾一甲子的新民教育團隊,本著永續人文教育發展的理念,透過「精緻、活力、創新、卓越」為學校願景, 打造全人教育的教學目標。本校以「閱讀悅讀、快樂幸福」的閱讀學習與認證活動,發展學生開展自我學習的心 窗。並經「一生一專長」,「十項全能」的學習活動認證,開創學生多元智能的全人發展。近年來在「少子化」 的衝擊時空中,新民更積極推廣「精緻而優質的教育」,除了具備 AI智慧校園的「科技化」設施,尤為注重人文 智能的「雙語班」和統整「藝術美感」的音樂與美術課程、國際教育等教學理念,以追求精緻而卓越學校教育理 想。

新科技的浪潮下,新民教育團隊意識到應透過智慧教室的科技,進行翻轉教學與創新教學。因此,行政同仁與導 師們計畫性地參訪與學習,至新北市北新國小觀課學習。之後,也開始儲備種子教師,更委派老師至中國大陸參 加智慧好課堂邀請賽,成為新民王牌種子教師,且不斷儲訓後續種子教師。

新民自 105年,全校開始建置智慧教室,並導入醍摩豆智慧教室系統。一年時間,全校 32個班級,班班都有 80吋 的觸控液晶螢幕,且皆配置有 IRS及 TBL團隊合作學習系統的智慧教室,以及一間錄播教室。到 107年,更建置屬 於自己的雲端平台,包括 clouDAS診斷分析系統、翻轉課堂、AClass ONE智慧學伴。新民團隊更在二個月內,累 績將近800筆以上教師個人的教學錄播資料,成為蘇格拉底分析的最佳資料。

二、透過淬煉 新民教師增權賦能

身為學校的領航者,我始終認為唯有透過教師賦能增權,才得以彰顯教師專業自主、表現專業知能、提昇教師批 判反思能力。故而,在智慧教室使用的教學技巧上歷經一年的研習時間,幾十回的分組研習,讓每位同仁,都成 為新民 TMT(TEAM Model TEACHER)的一份子。

本校同仁歷經漫長的研習後,開始進行課程實務的共備、教材撰寫設計、試教、錄課、觀課、議課、反思與檢討, 歷經艱辛的淬煉,從而建構每位老師專業的素養與能力,終於能夠在智慧教室之中,駕御智慧、展現風華,使新 民教師團隊成為一優質的智慧教師團隊 TMT(Team Model Teacher)。



三、謎霧---蘇格拉底分析系統與翻轉教學的反思

「美國前教育部長表示:現在世界最迫切需要的工作,10年前根本不存在。而台灣至少還有 2/3 老師還在用10年前,甚至是更早以前所學的知識和方法來教學生。拜託,這根本行不通!」(註1)

(一) 翻轉教學的挑戰

承上所述,有專家認為:老師慣用十年前的舊思維和舊的方法教學生,學生上課無精打采,因而,若想要讓學生 「上課不再打哈欠」,未來的教師就必須改變教學的方式,引導學生思維的老師,就必須思索如何翻轉教學;並 且提出翻轉教室的四招:一、Google解放教室(Google Connected Classroom):學習 Google定期進行跨界 的線上互動。二、Google圖書(Google Books):學習 Google進行線上閱讀。三、網路免費公開課程(MOOC, Massive Open Online Course) :透過雲端進行網路教學。四、翻轉教室(Flipped Classroom) :進行線上預 習、課程合作互動(學生也可能當老師)、和課後交流。由此可知,教育的未來無法捨棄雲端有如 Google的影響, 其將如何牽動整個教育的未來是不容小覷的?而教育的翻轉,無非是一場向雲端挑戰的歷程。

The Development of Al Smarter School and the Current State of Big Data in Xinmin

The Principal of Taipei Xinmin Private Elementary School ,Liang-Xi Pan

I. Xinmin Elementary School: A campus where humanities and culture are fused with technologies

The education team of the 60-year-old Xinmin Shocked by the wave of new technologies, the educational team is trying to build its goal of holistic education team of Xinmin came to realize that flipped education with humanities and culture education as its and innovative teaching can only be made possible core, placing emphasis on its visions of "elaboration," with the help of technologies in a smart classroom. To "vitality," "innovation," and "excellence." Here in Xinmin, achieve this, our administrative staff and teachers have we provide students with the "read with joy and grow systematically visited elementary schools in Taipei City with happiness" program, which contains a certification and New Taipei City and learned from them. Xinmin process that promotes the idea of learning through began cultivating its own seeding teachers and sent reading in order to stimulate them to start reading them to mainland China to participate in the Invitational Competition of Smart Classroom. They are now Xinmin's on their own. We have also established two other certification programs for learning called "cultivate mainstay seeding teachers and the school is planning to vour specialty for life" and "an omnipotent student" train a whole slew of seeding teachers in the future. that might open students' mind and lead them to holistic development. In recent years one has seen the Xinmin has begun establishment of smart classrooms impacts of "declining birth rate," and in response to the and introduced the Team Model system since 2016. In predicament, Xinmin is avid to promote "elaborate and a year, the school's 32 classrooms have all gone smart, quality education." In order to achieve our elaborate with their 80-inch touch LED screens, along with IRS and exceptional goal of school education, we not only and LBT systems. By 2018, each classroom has its own convert the school into an AI smart campus and equip cloud platform, including clouDAS the diagnostic and it with "technological" equipment, but also accentuate analytic system, the flipped class, and the AClass ONE the "bilingual class" that focuses on the intellectual smart schoolmate. Remarkably, the Xinmin team has intelligence of humanities and culture, integrating accumulated approximately 800 teaching videos in just music and arts courses that stress "aesthetics" and the two months, which can serve as the best data for the ideas of international education. Sokrates analytic system.

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II. Through endeavors, teachers in Xinmin get the empowerment they deserve

As the steering wheel of the school, it has always been "According to the former deputy secretary of education of America, the most urgent tasks of today's world don't even exist ten years ago. Looking back at Taiwan, there are at my persuasion that empowering teachers will highlight their specialty, sovereignty, and professional knowledge least two-thirds of teachers who still use the knowledge and as well as enhances their ability to think critically. methods they acquired ten years ago to teach students. This is utterly unacceptable!"[1] Therefore, every teacher who teaches in a smart classroom for at least a year and engaged in dozens (i). The challenges of flipped teaching of team workshops will be granted the chance to be a According to the guote, experts think that teachers member of the Xinmin TEAM Model TEACHER (TMT.) are accustomed to teaching their students with the After several time-consuming workshops, teachers outdated mindset and methods they acquired ten year now enter the stage of practical facets of teaching: ago. Students of such teacher often get bored in class. The collective lesson preparation, the design and Therefore, if teachers wish to "hear no yawn during making of teaching material, trial teachings, class class," they will have to change their teaching styles. recording, class observation, lesson discussion, Teachers who wish to guide students' thoughts must reflection, and postmortem. Teachers will, after these think of a way to flip their teaching. Use the following herculean endeavors, be able to construct their own four tips to flip the classroom: I. Google Connected competence and abilities to take over the reins of the Classroom: Students should know how to use Google smart classroom and use their knowledge to show to learn and interact with knowledge from different their teaching styles. They will have the chance to lend disciplines online periodically. II. Google Books: quality to Xinmin's Team Model Teacher (TMT.) Students should know how to use Google to read online, III, MOOC, Massive Open Online Course: Teachers should conduct online teaching via cloud technology.

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III. The mist - A reflection on the Sokrates analytics system and flipped teaching

(二) AI 大數據與教育的未來

思索教育發展的未來,能否脫離雲端有如 Google般的「陰影」嗎?尤其,如「陰魂」或「幽靈」般的 AI大數據時 代,早已經落定人間了。對此挑戰已有不少教育專家指出,必須要有跨界的合作與貢獻,使能真正實現「因材施 教」與「適性發展」的教學理想。尤其,面臨大數據時代的來臨,有專家指出:未來有三種基本能力是學生必須學, 而月用得到的東西,即是:「第一是閱讀,第二是搜索,第三是辨別真偽」(註 2)。這雖是一種簡化的說法,但卻 必須重新思索教育的目的為何?除了必須傳道、授業與解惑之外,如何激發學生思考,將必須面臨更大的挑戰, 尤其是在未來的教師身上。

對於大數據時代的教育問題,一位身兼家長與科技創辦人——孫憶明 (Jim) 建議:必須透過大數據(Big Data) 改變未來教育三種可能的樣貌:一、進行學習歷程的紀錄與分析:透過數位化記錄學生的學習。二、實現教學歷 程的紀錄與分析:以留下老師課堂教課資料,便於邇後有效的教學分析。三、達成評量考試的紀錄與分析:透過 數位化系統,增加評量有效性,與可供分析的大數據。(同上註 2)。

(三)「乘風破浪」的智慧教學課程

對於大數據時代來臨的教育問題,本校自 2016年完成智慧校園的軟硬體設備之建置,新民教育團隊啟動「乘風破 浪」智慧教學課程,進行五階段的智慧教學研習與認證,並透過:共借課程、教課、錄影、觀課和議課等教學歷程。 至 2018年起,學校加裝蘇格拉底分析系統,在全校教師都透過教學錄影所採集的課程與教學資料,並透過個人自 評、互評與專家議課,以進行大數據的分析。

本校為創造翻轉教育,透過智慧教室以體現「乘風破浪」課程旅程模式(整裝、待發、起航、乘風、破浪、定錨、 豐收),以實踐智慧教學的「五力」教學情境――「動力、專注力、向心力、效率、熱力」:―、科技化的「動 力」-透過 IRS、IPAD的使用,營造學生更強的學習動力。二、透過搶權搶分,激發學生的「專注力」。三、營 造團隊合作的「向心力」氛圍一透過小組學習方式,培植學童團隊合作的向心氣氛。四、實作評量即時性回應的 「效率」-運用 IRS、IPAD科技的使用,可隨堂進行練習與實作評量,獲得即時性評量回應,達成隨堂補救教學 的有效性。五、樂於參與和分享的「熱力」——透過團隊的互動、合作與回饋,激發學童勇於分享的熱情和動力。



IV. Flipped Classroom: Students can preview their lesson the one Google provides, is an integral element in future online, work together studying (students can sometimes education. Its impact on the future of education is never be the teacher), and exchange thoughts after class. A to be overlooked. In short, to flip the education as a conclusion can be made that cloud technology, such as whole is to challenge cloud technology.

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(ii). The AI Big Data and the future of education

Ruminating the future of education, I can't help of education? In the future, teachers are slated to wondering whether if it will be free from the "shadow" encounter an even greater challenge and they will have of cloud technology such as Google, especially at a to do more than just teaching, telling, and helping. time that is already filled with the "specter" or "ghost" of the AI big data. Several experts in education point As to solving problems of education in the Big Data Era, out that in the face of the challenge, interdisciplinary Jim Sun, a parent and an entrepreneur of a technology collaboration and contribution are required to start-up, suggests we must use the three possibilities realize the educational ideas of "teaching students of big data to alter the face of education in the future: I. Record and analyze the learning process: Recording in accordance with their aptitude" and the "adaptive development." This is especially true with the advent of students' learning in a digital manner. II. Record and the era of the big data. Some experts claim that there analyze the teaching process: Saving teachers' teaching are three basic abilities that students in the future must in classes to facilitate the following analysis. III. Record learn and will definitely have the chance to use them, and analyze the evaluation and tests: Increase the effectiveness of evaluation via digital system as well as which are "the ability to read, search, and discern."2 This statement may be a simplified version of the truth; the big data that can be analyzed (as referred in note 2). however, it raises the question: What is the purpose

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(iii). Smart curriculums that "ride on the wave"

Tackling the looming problems of education in the Big entails preparing, pending, setting out, riding on wave, Data Era, Xinmin has finished establishing the software breaking wave, anchoring, and harvesting to fulfill teaching scenario with "the five elements (motive, and hardware for the school to transform to a smart school. The education team of Xunmin has also launched focus, coherence, effectiveness, enthusiasm)" in smart "Ride on the Wave: The Smart Curriculums Program," teaching. I. The "motive" of technology: Using IRS and which contains a five-stage smart teaching workshop IPDA to strengthen the learning motive. II. Evoking and certification process. The program encompasses students "focus" with competitions. III. Building a teaching processes such as collective lesson preparation, team collaboration atmosphere for students to stay teaching, class recording, class observation, and lesson "coherent": Employing team learning to build a coherent discussion. From 2018, the school has implemented the atmosphere of teamwork. IV. The "effectiveness" of the Sokrates analytic system that collects teachers' teaching real-time response of performance evaluation: Using content and materials. The collected information will be technologies such as IRS and IPAD to conduct practices put into the big data and analyzed via self-evaluation, and performance evaluations in class to get real-time mutual-evaluation, and lesson discussions by experts. responses and realize the effectiveness of remedial teaching. V. The "enthusiasm" to participate and share: To create the possibilities of implementing flipped Evoke students' passion and drive to share with team education, we use smart classrooms to represent the interaction, collaboration, and feedback.

mode of the "ride on wave" voyage of learning that

(iv). The mist of the Sokrates analysis

To create the possibilities of implementing the flipped videotaping of teaching, class observation, and lesson education, we have implemented the Sokrates analytic discussion in full swing. We hope that we will be able system since August 2018 and started training faculty to record and analyze every detail and keep track of all how to use IES to record the teaching process on the of the students' learning behaviors, including learning, cloud. When school began, we embarked on tasks reciting, taking notes, doing homework, taking tests, such as the lesson design and collective preparation, experimenting, and discussion. In the meanwhile, we'd

(四) 蘇格拉底分析的謎霧

本校為透過智慧教室創造翻轉教育的可能,自2018年8 月安置蘇格拉底分析系統,並自 8月起全校教師同仁诱 過 IES進行雲端錄製教學歷程的練習,開學後,更以緊 鑼密鼓的密集方式進行——課程設計與共備、課程教學 影片錄製、觀課與議課等活動,期能將每一節的學習歷 程,都能一覽無遺的加以記錄與分析,以記錄學生每項 學習動作,包括上課、讀書、寫筆記、作業、考試、實 驗、討論問題等活動的資料。以及進行教師教學歷程完 整的紀錄與分析:並能透過數位化的評量系統,期能增 加學生評量及練習的多樣性與有效性,希望能透過數位 化的操作與記錄,形成全校可供分析的大數據。至 10 月底,全校共收錄近約1000份的資料。

本校理解到全校教師同仁每天、每人、進行錄製教學資 料的辛勞,以及進一步理解如何有效運用蘇格拉底的分 析等問題,歷經多次本人所主持的各年段教師同仁的議 課座談會,經歸納諸多同仁在教學實踐活動反思的結 果,呈現出諸多疑問與一團團謎霧,帶我們去突破與解 決:



經由同仁多次座談與討論的反應聲中,我們發現諸多同 仁對蘇格拉底分析系統,存在著諸多的困惑與不解,如 同一團團的謎霧,正悄悄的的籠罩著新民。我們反思應 如何能使這一團團的「謎霧」煙消雲散?或許,我們必 須重新深究我們所建構的新民課程模式,思索如何在我 們<乘長風>後,必須趨逐<謎霧>,而後我們才能再 次<破浪>而出。最後,期待我們新民團隊共赴艱難, 走出謎霧,再次破浪而出,愉快的邁向<定錨>、<豐 收>的課程旅程。

「本校的課程安排極為緊湊,課堂要準備 IRS或

「IRS或 IPAD科技的使用,太冷冰冰,並無法取代

「針對秩序與常規不易控制的班級,運用 IRS或

「分組的座位排列,使學生必須轉頭看黑板,長期

「私校的課程安排較多,不適合使用智慧教室的錄

IPAD時,常造成班級的騷動與茫亂,干擾上課的進度。」

IPAD給各組學生相當耗時,而影響課程的進度。」

教師人性化的教學溫度。」

造成學生脖子酸痛。」

製與蘇格拉底分析系統。」

註:

- 1. 上課不再打哈欠 用這四種方式一起「翻轉教室」https://www.thenewslens.com/article/1686
- 2. 孫憶明 大數據(Big Data)改變未來教育樣貌的三種可能 2014/02/10 https://www.thenewslens.com/article/197/0

want to record and analyze teachers' complete teaching process and increase the diversity and effectiveness of students' evaluation and practices via a digital evaluation system. We hope to create a big data for the school that can be analyzed by these digital operations and recordings. By the end of October, we have received around 1,000 pieces of information.

We are aware of the efforts and hard work of the faculty as they spend time recording their teaching and as they try to learn how to use the Sokrates system to analyze information. After convening several meetings with teachers from different grades. I have generalized opinions our teachers have when reflecting on the teaching practices. These opinions are, in fact, more like doubts and mists that are waiting for thorough scrutiny and resolution.



"We have a very tight teaching schedule and preparing IRS or IPAD for students is a rather time-consuming process that can delay our teaching progress.

"The IRS and IPAD are just cold and lack the temperature of the actual teaching by a teacher.

"For classes that demand more rules, using IRS or IPAD makes the situation worse. The chaos and agitation sure have their toll on our teaching progress.

"The seat arrangement for the learning group makes some students have to turn their head back to see the blackboard. This will damage their necks in the long run.

"Private schools tend to have a tighter schedule and are not a suitable candidate for smart classroom videotaping and the Sokrates analytic system."

Notes

- 1. No more yawning in class: Four tips to "flip" the classroom. https://www.thenewslens.com/article/1686
- 10/02/2014 https://www.thenewslens.com/article/197/0

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Judging from the responses we see in the many meetings and discussions, it is clear that doubts and confusion are prevalent among our faculty. They are just like mists stealthily shrouding Xinmin. Our minds should be focusing on how to dissipate this mist. Maybe we have to go back and re-examine our curriculum arrangement and figure out how to expel the "mist" while we "ride on the wave" so that we can "break the wave" and sail smoothly. Finally, it is our hope that our team will face the ordeal together, navigate the ship out of the mist, find a wonderful harbor to "anchor," and finally "harvest" the fruit of this educational voyage.

2. The Three Possibilities that Big Data is going to Alter the Face of Education in the Future by Jim Sun