

An exploration into Innovative Practices of Targeted Poverty Reduction Through Education using Information Technology

- Taking the “AI Teacher” Programme as an Example

Zhang Xinxin: Doctoral Student of China Institute for Poverty Reduction, Beijing Normal University; Shi Zhile: PhD, Lecturer of College of Marxism, China Agricultural University; Zhang Qi: PhD, Professor, Doctoral Supervisor, Dean of China Institute for Poverty Reduction, Beijing Normal University

Education goes first in poverty reduction. Providing high-quality education for the children in poverty-stricken areas is an essential means of lifting the people in such areas out of poverty for good. In the era of Education Informatization 2.0, information technology has shown its unique advantages in enhancing the supply capacity of fundamental public services for education, expanding the coverage of high-quality education resources, and other aspects.

Hence it should shoulder the historical mission of remedying the shortcomings of poverty reduction for poverty-stricken areas and breaking through the bottlenecks in poverty reduction through education. Focusing on the impoverished people, information technology has become a significant force to promote targeted poverty reduction through education in poverty-stricken areas. Because of the low popularization rate of Mandarin and the shortage of competent teachers in Liangshan Yi Autonomous Prefecture, TAL online school has developed a low-cost and easy-to-use “AI Teacher Mandarin Teaching” system in response to the policy context of encouraging preschool children to learn Mandarin. The system has been widely used in Zhaojue County and has produced remarkable poverty reduction effects, providing a successful

experience for targeted poverty reduction through education utilizing information technology.

I. The Value of Targeted Poverty Reduction through Education in the Times

Targeted poverty reduction through education plays a fundamental and leading role in poverty reduction for poverty-stricken areas by improving the primary education level of the impoverished population, blocking the intergenerational transmission of poverty, and eventually lifting the impoverished people out of poverty for good.

As a fundamental measure to block the intergenerational transmission of poverty targeted poverty reduction through education has broken the traditional “blood transfusion” mode of poverty reduction that gives money and materials to the poor. Instead, it endows the impoverished population in the poverty-stricken areas with the endogenous and long-term momentum to shake off poverty. The “blood transfusion” mode of poverty reduction can only solve difficulties temporarily. The key to poverty reduction, however, lies in improving the abilities of the impoverished population, including not only the ability to earn their livelihood but also their overall quality for

self-development and adaptability to the development of the market economy. The particular advantage of targeted poverty reduction through education lies in helping people increase confidence in their ability to lift themselves out of poverty and see that they can access the education they need to do so.

The idea is to, through literate, technical and vocational training, change the mindset of “waiting for support, dependence on others, and asking for help” of the impoverished population, inspire their endogenous motivation, and enhance their individual initiative to shake off poverty and increase income, thus achieving sustainable development. Aimed at improving the scientific and cultural knowledge and overall quality of the impoverished population, targeted poverty reduction through education has ensured the sustainability and fundamentally improved the quality of poverty reduction, and at the same time reduced the cases of returning to poverty.

II. Logical Alignment between Information Technology and Targeted Poverty Reduction through Education

As an advanced productive force, information technology has gradually become an effective means of implementing targeted poverty reduction through education in the “intelligent era.” It has shown unique advantages in enlarging the coverage of basic public services for education, promoting education equity, increasing the supply of high-quality education resources, and facilitating targeted poverty reduction through education with low cost and high efficiency.

(1) Technology contributes to education equity and the popularization and sharing of education resources.

Firstly, in the aspects of expanding the coverage of primary public services for education and promoting educational equality, information technology meets the requirements of schools and learners for the learning environment, ensures the balanced allocation of resources and data accessibility, and promotes the popularization and sharing of education resources.

As early as 2012, China launched the project of Full Coverage of Digital Education Resources in Teaching Sites, aiming to provide equipment, resources and teaching applications by means of information technology, thus breaking through regional differences. Secondly, technology may help expand the sources and increase the availability of quality education, thus addressing common problems faced by poverty-stricken areas such as the shortage of competent teachers and teaching resources. The advantages of information technology in terms of ubiquitous and all-time availability, reproduction of digital resources at zero cost and support for individuality have led to increasing possibilities of meeting the need for educational equality at different levels.

(2) Quality education resources are made available anytime and anywhere, helping students and teachers improve simultaneously.

The role of information technology in targeted poverty reduction through high-quality education is manifested in the two aspects of giving students access to high-quality education resources and helping teachers improve their professional competence. First, high-quality online education resources have brought about the shift from making “school education” available to making “quality education” available to students.

For example, the ongoing “double-teacher class” amplifies quality education resources by means of synchronous lesson preparation, synchronous teaching, synchronous testing, synchronous tutoring, and synchronous management, giving students in remote areas access to the educational resources of famous schools. Second, teachers are taken as the direct target of assistance to address the issue of endogenous development of educational assistance. The knowledge accomplishment and professional level of teachers are essential factors that determine the quality of education. Teachers in poverty-stricken areas show a certain degree of inadequacy in general knowledge, subject knowledge, and teaching knowledge.

In addition, the lack of language knowledge also represents the shackles of education in ethnic areas. With the arrival of various learning resources in the poverty-stricken areas, teachers may learn and teach using new media technology, which has improved their subject competence and teaching ability and thus activated the existing educational resources.

III. Innovative Practices of the “AI Teaching Smart Education” Programme

The “AI Teaching Smart Education” programme is an educational aid programme launched by TAL online school of TAL Education Group, relying on its advantages in teaching research and technology and aimed at providing Mandarin teaching service and quality course resources free-of-charge for 72 schools and 70,462 students in Zhaojue County. The programme features a specially developed “AI Teacher Mandarin Teaching” system.

(1) Programme Background

Due to geographical, historical, cultural, and ethnic reasons, a complicated mix of languages is being used in ethnic minority areas, which has greatly restricted the poverty reduction efforts and development in poverty-stricken areas. The *Outline for Poverty Reduction and Development of China's Rural Areas (2011-2010)* explicitly requires that “the national common spoken and the written language shall be popularized in ethnic minority areas.” Besides, the *Action Plan for Mandarin Popularization and Poverty Reduction (2018-2020)* proposes that “education should go first in poverty reduction, and language should go first in education” and that “by 2020, all the new working population of impoverished families should have the ability to communicate in and apply the national common spoken and written language”.

In February 2018, when General Secretary Xi Jinping visited Liangshan Yi Autonomous Prefecture, he stressed in particular that efforts should be made to strengthen education and never let children lose at the starting line. In May 2018, with the strong support of the State Council Leading Group Office of Poverty Alleviation and Development, the Ministry of Education and all sectors of society, the pilot of the “Preschool Mandarin Learning” Initiative was launched, and the *General Implementation Plan for the “Preschool Mandarin Learning” Initiative in Liangshan Prefecture* was issued, which set forth a clear three-year objective that preschool children aged 3 to 6 with normal learning ability should be able to communicate in the common national language before receiving compulsory education, form a habit of thinking by the national common language, and achieve the proficiency of “understanding, speaking, daring to speak, and applying” Mandarin.

(2) Program Implementation

With the continuous advancement of education informatization, TAL online school's "AI Teaching Smart Education" programme was implemented in Zhaojue County, Liangshan Prefecture, in September 2018, aiming to provide an "AI Teacher" for each child of Yi nationality. Zhaojue County is locating in an extremely impoverished area of Liangshan Yi Autonomous Prefecture, Sichuan Province. The county, which is a crucial target of the national poverty reduction work, has a Yi nationality population that accounts for 98.1% of its total population, hence a meager low popularization rate of Mandarin. As such, the county made the first choice for the "AI Teacher" pilot.

1. Highly customized Yi-Mandarin bilingual learning module provides high-quality Mandarin teaching resources.

Based on the actual needs of Zhaojue County and the characteristics of preschool children in learning Mandarin (they are illiterate, can only read pictures, and need Yi-Mandarin bilingual learning material), the "AI Teacher Mandarin Teaching" intelligent system has thoroughly localized the vocabulary used in the Yi-Mandarin bilingual learning module. TAL online school, together with the local education bureau and language commission, combed through the commonly used local vocabulary, including appellations, animals, plants, food, Yi costumes, polite language, and others, and invited the local teachers in Zhaojue County to draw related pictures and record Yi-Han bilingual audio. Finally, the commonly used vocabulary was displayed in the form of "picture+Yi-Han bilingual pronunciation," which was concise and easy to understand, intriguing, and suitable for preschool children.

2. Technology facilitates intelligent evaluation and pronunciation correction; personalized services enable precise Mandarin teaching.

Different from the general bilingual teaching software, TAL online school's "AI Teacher Mandarin Teaching" system, relying on its technological advantages and in-depth integration of speech recognition, speech evaluation, and other technologies, can not only carry out the intelligent evaluation of child's pronunciation in real-time, but also correct it in time. After the child completes the "repeat after," the "AI Teacher" will also generate a learning report for the child, giving accurate feedback on the accuracy and fluency of his/her pronunciation and correcting wrong or missing syllables in a timely manner. Besides, the child may also learn Pinyin, vocabulary, and grammar.

The personalized intelligent feedback service gives real-time feedback on the learning result of each child based on their proficiency in listening, reading, and comprehension of Mandarin, thus providing targeted help for preschool children to improve their proficiency in Mandarin.

3. AI teaching system finds extensive application as an off-line system that has loose requirements for the hardware and software environment.

The lack of systems, applications, and resources is still a common problem in the process of educational informatization in counties of poverty-stricken areas, while the shortage of personnel, funds, and resources remains a constraint on educational informatization in such counties. (Ren Youqun, 2017)

Therefore, promoting education informatization in poverty-stricken areas requires a set of low-cost, low-threshold, and highly effective solutions, and the “AI Teacher Mandarin Teaching” system developed by TAL online school fully meets these requirements. In terms of hardware facilities, the system is an off-line application that requires only an electronic screen for projection. In the context of the project aimed at establishing “one nursery school in each village” and “one kindergarten in each township” in Liangshan Yi Autonomous Prefecture, all preschool teaching points in Zhaojue County meet the hardware requirements. In terms of software, “AI Teacher” guides children’s learning intelligently, with the preschool teacher (tutor) only playing a supporting role in this process. Thus, the system has a low requirement for their professional competence in teaching. For teachers who are not proficient in Mandarin, they can also learn and improve their Mandarin with their students.

(3) Programme Evaluation

Over the past year, since the “AI Teaching Smart Education” programme implement, it has covered 252 preschool teaching points and 72 primary schools in Zhaojue County, benefiting 70,000 primary and secondary school students. The Education Bureau of Zhaojue County conducted a questionnaire survey among 2,417 teachers as uses of the “AI Teacher Mandarin Teaching” system and collected 847 valid questionnaires. The survey results showed that the programme had played a significant role in improving the Mandarin level of preschool children, alleviating the shortage of teachers, and promoting poverty reduction and sustainable development for women and children.

1. High-quality teaching resources help preschool children improve their overall Mandarin level

The “AI Teacher Mandarin Teaching” system has been widely used in Zhaojue County, producing a significant effects for targeted poverty reduction through education. In terms of the content and form of teaching, more than 95% of teachers think that the illustrated content and edutainment form of “AI Teacher” is helpful to improve the students’ comprehension, innovate the routine form of Mandarin teaching, and protect and inherit the culture of the Yi nationality through bilingual teaching. As for teaching results, the preschool teaching points use the “AI Teacher Mandarin Teaching” system five days a week, where the children learn 20 Chinese phrases and master 4-5 phrases a week.

The overall Mandarin level of preschool children in the county has significantly improved. Based on the results of Chinese study of all students in the county, the first-grade students of the academic year 2019 who have used the “AI Teacher Mandarin Teaching” system reached an average score of 67.6 points in their First Semester Chinese Exam, outperforming the first-grade students of the academic year 2018 (40 points) and those of the academic year 2017 (39 points) who hadn’t used this system for Mandarin learning.

2. The popularization of preschool Mandarin helps to solve problems in compulsory education during the process of poverty reduction in ethnic areas.

Compulsory education has always been a challenge for poverty reduction and development in Liangshan Yi Autonomous Prefecture. Presently, the average duration of education for people in this region is only six years, and that

for people in Zhaojue County is only four years. The reason behind this is that the local students of Yi nationality were unable to speak Mandarin before school, and when they attended primary school, most of them found it extremely difficult to learn. These reasons would quickly cause frustration and give rise to drop-outs.

Therefore, it is indispensable to learn Mandarin before school. In addition, the preschool period is the golden period for learning Mandarin. Relevant studies show that the critical period of language acquisition is usually the period from birth to puberty, in which the years from 1-5 is even more critical. Through systematic Mandarin learning and contact with an intensive Mandarin environment, the children may effectively improve their Mandarin listening, speaking, reading and writing abilities. But if they have missed the golden period for the development of language ability, the later they start to learn, the worse the effect will be. The “AI Teaching Smart Education” programme focuses on the critical period for language learning and aims to improve the Mandarin listening, speaking and cognitive skills of preschool children in the form of engaging learning.

The benefits thereof are not only reflected in the improvement of their Chinese achievements but also in the enhancement of their cognitive ability for mathematics, nature, and other disciplines. The questionnaires showed that more than 89% of the students indirectly improved their performance in other subjects thanks to their better learning ability acquired through improved language proficiency. Enhancing the Mandarin level of preschool children is conducive to educational continuity. It may improve their overall academic level, hence

stimulate their interest and endogenous motivation in learning, fundamentally prevent them from getting tired of learning and dropping out of school, and thus enhance the effect of targeted poverty reduction through education in the region.

3. The intelligent teaching form alleviates the plight of insufficient teachers in poverty-stricken areas

Different from other subjects, Mandarin education and popularization have higher requirements for teachers in standard and interactive pronunciation. Given the reality of a shortage of teachers, the application of AI technology has more advantages in language popularization. First, the “AI Teacher Mandarin Teaching” system is easy to operate and has low skill requirements for the users. The questionnaires showed that more than 90% of teachers believed that the system was very convenient to use and welcomed by both the teachers and the students.

Second, from “repeat after,” evaluation to the correction of Mandarin pronunciation, the students may learn directly on the system, without the need of professional training for teachers, thus significantly reducing the cost and improving the efficiency. Finally, given the high turnover and low professional level of local preschool teachers (tutors), the “AI Teacher Mandarin Teaching” system may gradually ensure that each child of Yi nationality has his/her own “AI Teacher,” from whom they may learn mandarin anytime and anywhere. Besides, preschool teachers (tutors) may also improve their Mandarin level by using the “AI Teacher Mandarin Teaching” system, which has effectively alleviated the shortage of teachers in extremely impoverished areas.

4. Intelligent information technology plays a particularly

significant role in poverty reduction for women in poverty-stricken areas.

Due to the low educational level, conservative and outdated mindset, and other traits of rural women, the poverty reduction work for women in poverty-stricken areas is facing enormous challenges. There is a large amount of idle labor force, particularly women, in Zhaojue County, Sichuan Province. Influenced by their families, gender, and traditional concepts, they suffer from natural disadvantages in social employment and can hardly go out of the mountains and shake off poverty. Impoverished women pose a particularly outstanding problem.

The “AI Teacher Mandarin Teaching” system has, to some extent, alleviated this problem. Since the convenient and straightforward operating system has relatively low professional requirements for preschool teachers (tutors) and the working hours and locations are relatively flexible, women in extremely impoverished areas in Liangshan Yi Autonomous Prefecture can master the skills of operating and applying the “AI Teacher Mandarin Teaching” system after receiving some training. According to statistics, female teachers account for 73.1% of the 581 preschool tutors who use the “AI Teacher Mandarin Teaching” system. The statistics also show that the programme has indeed added a large number of employment opportunities for local women and has played a significant role in reducing poverty among women.

5. Language learning helps people in ethnic minority areas integrate into the big market and society.

The popularization of Mandarin serves as a fundamental bridge for poverty reduction and for the impoverished population to integrate into the overall economic and social development of the nation. People in ethnic areas are

gradually marginalized in the modern economic and social development because they do not know Mandarin. On the one hand, the local people in Linagshan Yi Autonomous Prefecture have limited access to modern knowledge and information through the Yi language.

Their lack of proficiency in Mandarin means they cannot acquire knowledge and skills through this smooth channel, thus being gradually marginalized in the fierce market competition. On the other hand, because they cannot speak Mandarin well, they may encounter cultural barriers and suffer social exclusion and employment discrimination that would make it difficult for them to earn legal income and access public services. Therefore, learning Mandarin, especially doing so from early childhood, can not only facilitate external communication and learning but also help the children improve the ability to accept and understand new knowledge and form a habit of thinking in Mandarin.

The system will help people in ethnic minority areas to go out of the closed environment, gradually interact with the external society, actively integrate into the mainstream society, and share the opportunities and achievements of China’s rapid economic growth. This will fundamentally help ethnic minority areas to meet the requirements of the United Nations’ Sustainable Development Goals to eradicate poverty, achieve economic growth, and ensure job security.

6. Targeted poverty reduction through intelligent education makes positive contributions to sustainable development

The “AI Teaching Smart Education” has presented the China solution for global poverty reduction in the aspect of

promoting targeted poverty reduction through education. Besides, these innovative practices have led to good results in terms of concept, operation, and effect, contributing positively to the realization of the United Nations Sustainable Development Goals. With the further popularization and application of the “AI Teaching Smart Education” programme, the social and economic situations in the extremely impoverished areas of Liangshan Yi Autonomous Prefecture have also greatly improved.

Thanks to the programme, many impoverished people have obtained

sustainable employment opportunities and seen a significant increase in their family income. In addition, the “AI Teaching Smart Education” programme itself can be easily copied and popularized. Immediately after the “AI Teacher Mandarin Teaching” system is ready to provide free resources for all teaching points. Moreover, the features of diverse teaching content, quick and straightforward update, one-off investment, and long-term benefits have further highlighted the value of sustainable development.

References:

- [1] Xiong Caiping, Ding Jihong, Ge Jun, Hu Ping. The Transfer Logic of the Strategy to Promote Educational Equity by Information Technology [J]. Educational Research, 2016, 37 (11): 39-46.
- [2] Ren Youqun, Feng Yangcun, Xu Feng. The Direction and Logic of Promoting Targeted Poverty Reduction through Educational Informatization in China [J]. Modern Distance Education Research, 2017 (04): 11-19+49.
- Shi Zhile. Poverty Reduction through Education and Social Stratification: Also on the Possibility of Blocking Intergenerational Transmission of Poverty [J]. Theory and Practice of Education, 2019, 39 (04): 16-19.
- [4] Wang Chunhui. Seventy Years of Poverty Reduction through Language Education in the People’s Republic of China [J]. Journal of Yunnan Normal University (Humanities and Social Sciences Edition), 2019, 51 (04): 33-39.
- [5] Zhao Junchao, Zhang Yunhua. Preschool Mandarin Popularization Is a Strategic Measure for the Development of Ethnic Minority Areas [J]. China Opening Journal, 2019 (04): 45-47.
- [6] Wang Wenjun, Li Yihua, Wang Jianming. Analysis of the Path of Targeted Poverty Reduction through Education from the Perspective of Information Technology [J]. e-Education Research, 2017, 38 (11): 32-37.

信息技术助力教育精准扶贫的创新实践探索

——以“AI老师智慧教育”项目为例

张欣欣 北京师范大学中国扶贫研究院

史志乐 中国农业大学马克思主义学院

张琦 北京师范大学中国扶贫研究院

“扶贫先扶智”，让贫困地区的孩子接受优质的知识教育，是贫困地区稳定而长久脱贫的重要路径之一。在教育信息化转段升级的2.0时代，信息技术手段在增强教育基本公共服务供给能力、扩大优质教育资源覆盖面等方面展现了独特优势，理应肩负弥补贫困地区扶贫短板、突破教育扶贫瓶颈制约的历史使命。聚焦贫困群体，借助信息技术手段，成为贫困地区促进教育精准扶贫可行路径的重要力量。

● 教育精准扶贫的时代价值

教育精准扶贫通过弥补贫困地区教育短板以提高贫困人口基本文化素质，阻断贫困代际传递，并最终实现贫困地区稳定而长久的脱贫，在贫困地区的脱贫攻坚中发挥着基础性和先导性的作用。

教育精准扶贫作为阻断贫困代际传递的根本之策，打破了传统给钱给物的“输血式”扶贫模式，赋

予贫困地区贫困人口脱贫的内生动力和长久动力，其特殊优势是将扶贫与“扶志”“扶智”相结合，通过文化素质、科技水平、职业技能等的培训，转变贫困人群的“等、靠、要”观念，激发贫困主体的内生动力，增强贫困人口脱贫增收的主观能动性，从而实现可持续发展。

● 信息技术与教育精准扶贫的逻辑契合

1. 科技助力教育公平，实现教育资源普及共享

在增强教育基本公共服务覆盖面、促进教育公平方面，信息技术首先实现了学校和学习者对学习环境建设的诉求，保证了资源的均衡配置与数据的可达性，促进教育资源的普及共享。其次，贫困地区往往面临师资力量薄弱、教学资源匮乏等问题，而科技助力优质教育来源更广、获取性增强。信息技术在时空不限、数字资源零成本复制、支持个性差异等方面的优

势，使它在满足不同层面教育公平的需求方面呈现出越来越多的可能性。

2. 优质教育资源突破时空局限，学生教师同步提高

信息技术助力高质量教育精准扶贫同时表现在学生获取优质教育资源和教师提升专业素养两个方面。其一，优质在线教育资源保证了学生从“有学上”到“上好学”的转变。其二，把教师作为直接帮扶对象，解决教育帮扶内生发展问题。教师的知识素养和专业水平是影响教育质量的前提性因素，决定着教育的品质。贫困地区教师在通识性知识、学科知识、教学知识等方面表现出一定程度的匮乏，此外，语言知识还是民族地区教育的桎梏所在。在各类学习资源抵达贫困地区时，教师借助新媒体技术通过知识输入学习和教学输出提升了学科素质和教学能力，同时也盘活教育存量资源。

● “AI老师智慧教育”项目的创新实践

“AI老师智慧教育”项目是好未来集团学而思网校结合自身在教研、技术方面的优势,针对贫困地区的现实困境,专项研发了“AI老师普通话教学”系统,为四川省凉山州昭觉县72所学校、70462名在校学生免费提供普通话教学服务和优质课程资源的教育帮扶项目。

1.项目背景

由于地理、历史、文化、民族等原因,少数民族聚居区形成了语言使用情况比较复杂的局面,极大地制约了贫困地区扶贫开发。《中国农村扶贫开发纲要(2011—2020年)》明确要求“在民族地区全面推广国家通用语言文字”,《推普脱贫攻坚行动计划(2018—2020年)》更是提出了“扶贫先扶智,扶智先通语”“到2020年,贫困家庭新增劳动力人口应全部具有国家通用语言文字沟通交流和应用能力”。2018年2月,习近平总书记亲临大凉山彝区视察时特别强调,要抓好抓实教育工作,决不让孩子输在起跑线。2018年5月在国务院扶贫办、教育部以及社会各界的大力支持下,凉山州启动“学前学会普通话”行动试点,出台《凉山州“学前学会普通话”行动总体实施方案》,明确通过三年时间,实现具有正常学习能力的3至6岁学前儿童能够在接受义务教育前使用国家通用语言进行沟通交流,形成国家通用语言思维,

达到“听懂、会说、敢说、会用”普通话的目标。

2.项目实施

“AI老师智慧教育”项目于2018年9月在凉山州昭觉县落地,旨在为每个彝族孩子打造自己的“AI老师”。昭觉县位于四川省凉山彝族自治州深度贫困地区,是国家级扶贫工作的重点县,彝族人口占总人口的98.1%,普通话普及率极低,成为“AI老师”试点的首选地。

(1) 深度定制彝汉双语学习模块,提供高质量普通话教学资源

针对昭觉县的实际需求,以及学前儿童学习普通话的特点(不识字、只能看图、需要彝汉双语对照),“AI老师普通话教学”系统对学前儿童彝汉双语学习模块中所使用的词汇内容均进行了深度本地化。系统梳理了当地常用词汇,包括称谓、动物、植物、彝族美食、彝族服饰、礼貌用语等,并加上相关图片,录制彝汉双语音频,最终将常用词汇以“图片+彝汉双语发音”的模式进行展示,简洁易懂,趣味十足,非常适合学前儿童学习。

(2) 科技助力智能测评和发音纠正,个性化服务助力普通话精准教学

“AI老师普通话教学”系统借助科技优势,深度融合语音识别、语音测评等技术,不仅能实时对儿童的发音进行智能评测,还能进行及时纠正。在儿童跟读完成后,“AI

老师”还会为其生成专属的学习报告,从发音准确度、流畅度等多个维度进行精准的反馈,对错音、漏音进行及时纠正。在此基础上,儿童还能开展拼音、词汇、语法等多方面的学习。智能反馈的个性化服务根据每个儿童对普通话听读认知掌握的不同程度,实时反馈儿童学习普通话的反馈结果,促进了学前儿童普通话水平的精准提升。

(3) 离线系统对软硬件环境要求低, AI教学系统广泛应用

贫困地区县域的教育信息化建设缺系统、少应用、少资源现象仍然常见,人员、资金、资源匮乏仍是贫困地区县域教育信息化发展的掣肘。因此,贫困地区教育信息化推进需要一套低成本、低门槛和高成效的解决方案。硬件设施方面,“AI老师普通话教学”系统是一套离线应用系统,仅需一个电子屏幕即可投放。软件方面,“AI老师普通话教学”系统智能引导儿童学习,幼教(辅导员)在此过程中仅起到辅助作用,因而对其教学专业素质要求低。对于普通话水平不高的教师来说,还可以跟随学生一起学习提升。

3.项目评价

“AI老师智慧教育”项目实施一年来,在昭觉县已覆盖252所学前教学点和72所小学,共7万名小学生从中受益。昭觉县教育局针对使用“AI老师普通话教学”系统的2417名教师开展调查问卷,回收有效问卷847份。调查结果显示,该项

旨在提升学前儿童普通话水平、缓解师资力量不足问题、促进妇女儿童减贫和可持续发展等方面发挥了显著作用。

(1) 高质量教学资源助力学前儿童普通话水平整体提升

在教学内容和形式上,超过95%的教师认为“AI老师普通话教学”系统中图文并茂的教学内容有助于提高学生的理解能力,创新日常普通话教学形式,在寓教于乐的同时,也保护和传承了彝族民族文化。在教学成果上,学前教学点每周5天使用“AI老师普通话教学”系统,每周学习20个汉语词汇,儿童熟练掌握词汇4~5个,全县学前儿童普通话整体水平得到显著提升。以全县的语文成绩为依据,使用了“AI老师普通话教学”系统学习的2019级学生,上学期的语文平均成绩为67.6分,同期成绩远优于没有在学前使用“AI老师普通话教学”系统进行普通话学习的2018级学生(40分)和2017级学生(30分)。

(2) 学前普通话推广有利于弥补民族地区减贫进程中的义务教育短板

义务教育一直是凉山州扶贫开发的短板,目前,凉山全州平均受教育年限只有6年,其中昭觉县只有4年。究其原因发现,当地彝族学生过去由于学前不会说普通话,“一步慢步步慢”,进入小学后普遍存在“读望天书”现象,从而极易造成积极性、自信心受挫,滋生厌学辍学

现象。因此,学前学习普通话非常有必要。此外,学前时期是学习普通话的黄金时期。相关研究表明,语言习得的关键期一般是指从出生到青春期前,其中1~5岁较为关键,儿童通过进行系统的普通话学习,以及接触较多的普通话语言环境,能够高效地提升普通话的听说读写能力。“AI老师智慧教育”项目把握语言学习关键期,以趣味学习的形式,提升学前儿童普通话的听说认知能力,这不仅仅是指语文成绩的提升,还增强了学生对数学、自然等学科的认知。问卷结果显示,超过89%的学生因为语言水平的提高获得了更好的学习能力而间接提高了其他科目的成绩。增强学前儿童普通话水平有助于教育接续,提升整体学业水平,进而激发学生学习兴趣和内生动力,从根本上改善厌学辍学情况,提升当地教育精准扶贫效果。

(3) 智能化教学形式缓解贫困地区师资力量不足的困境

与其他科目的学习不同,普通话的教育和推广对教师发音的准确性、互动性要求更高。在师资力量不足的现实情况下,AI技术的应用在语言推广上更具优势。首先,“AI老师普通话教学”系统操作简单,门槛低。问卷结果显示,超过90%的教师认为系统操作对于教师及学生都十分便捷,也愿意使用该系统。其次,从普通话跟读、测评到纠正,学生均可直接面对系统学

习,不需要对教师投入专业培训,成本大大降低,效率显著提升。最后,当地幼教(辅导员)流动性大,专业水平偏低,但是在“AI老师普通话教学”系统的帮助下,逐渐保证了每个彝族孩子拥有自己的“AI老师”,并且可以随时随地跟老师学习普通话。幼教(辅导员)也可以通过使用“AI老师普通话教学”系统提升自身的普通话水平,有效缓解了深度贫困地区师资力量不足的问题。

(4) 智能信息技术对贫困地区妇女的减贫作用尤为显著

昭觉县当地存在大量的闲置劳动力,尤其是女性,受家庭、性别和传统观念的影响,在社会就业中存在天然劣势,很难走出大山,走出贫困,女性贫困问题尤为突出。而“AI老师普通话教学”系统在一定程度上缓解了这个问题。由于便捷、简单的智能操作系统对幼教(辅导员)的专业要求相对较低,工作时间和地点相对灵活,凉山州深度贫困地区妇女通过一定的培训之后便可以掌握“AI老师普通话教学”系统的操作和应用。据统计,在使用“AI老师普通话教学”系统教学的581名幼教点辅导员中,女性教师占比73.1%,数据还表明该项目为当地妇女增加了大量就业机会,带动妇女减贫作用显著。

(5) 语言学习助力民族地区群众融入大市场、大社会

普通话普及是脱贫攻坚、推动贫困人群融入全国经济社会发展

大局的一座基础桥梁。因为不懂普通话,民族地区的群众在现代经济和社会发展中被逐渐边缘化。一方面,凉山州当地人民通过彝语获取现代知识和信息有限,不懂普通话也就意味着他们不能通过这个畅通的渠道获取知识和技能,从而逐渐在激烈的市场竞争中被边缘化。另一方面,因为说不好普通话,可能会存在文化障碍而遭受社会排斥和就业歧视,难以获得合法收入和公共服务。因此,通过普通话学习,尤其是从儿童时代就学习普通话,不仅可以方便对外的交流和学习,还有利于提升儿童接受和理解新知识的能力,使其形成使用普通话进行思考的习惯。这将有利于民族地区群众走出封闭的环境,逐渐与


外部社会接轨,并主动融入主流社会,分享国家经济高速增长带来的机会和成果,这将从根本上助力民族地区实现联合国可持续发展目标中消除贫困、经济增长与保障就业的要求。

(6) 智慧教育精准扶贫为实现可持续发展作出积极贡献

“AI老师智慧教育”项目在助力教育精准扶贫方面为全球减贫工作提供了中国方案,而且这些创新性的实践在理念上、操作上、效果上都取得了良好的成绩,为实现联合国可持续发展目标贡献了积极的力量。随着“AI老师智慧教育”项目的进一步推广和应用,凉山州深度贫困地区社会经济面貌也得到了较大程度的改善,受到该项目的辐

射和影响,不少贫困人口获得了可持续的就业机会,家庭收入水平也有了大幅度的提升。此外,“AI老师智慧教育”项目本身具有较强的可复制和可推广性,“AI老师普通话教学”系统可为所有教学点提供免费资源,且教学内容丰富,迭代升级简单快捷,一次投入,长久受益,进一步凸显了可持续发展的价值。

参考文献:

- [1]熊才平,丁继红,葛军,等.信息技术促进教育公平整体推进策略的转移逻辑[J].教育研究,2016,37(11):39-46.
- [2]任友群,冯仰存,徐峰.我国教育信息化推进精准扶贫的行动方向与逻辑[J].现代远程教育研究,2017(04):11-19+49.
- [3]史志乐.教育扶贫与社会分层:兼论阻断贫困代际传递的可能性[J].教育理论与实践,2019,39(04):16-19.
- [4]王春辉.中华人民共和国语言扶贫事业七十年[J].云南师范大学学报:哲学社会科学版,2019,51(04):33-39.
- [5]赵俊超,张云华.学前推广普通话是民族地区发展的战略举措[J].开放导报,2019(04):45-47.
- [6]王文君,李艺华,王建明.信息技术视域下教育精准扶贫路径探析[J].电化教育研究,2017,38(11):32-37. 

作者简介:张欣欣,北京师范大学中国扶贫研究院博士生;史志乐,博士,中国农业大学马克思主义学院讲师;张琦,博士,北京师范大学中国扶贫研究院院长,教授,博士生导师。