AI Application in English Vocational Education Through 6G Revolution

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Abstract. The advent of 6G is making AI Application in English vocational education in a more profound yet convenient and user-friendly environment. The use of AI will be blended with the online to offline class to boost English teaching and learning efficiency. AI analysis based on the big learning data will also make it possible for English teachers to deliver more personalized English class by distributing aptitude-oriented materials to accelerate real learning via adaptive learning. The language teaching Model will therefore become more flexible to meet the blended class and the adaptive learning. Even the English assessment will be heavily relying on the AI solution and make it more meaningful compared to the traditional final assessment. The new technology may post challenges as well as opportunities to English teachers. Therefore, embracing the current trend in both technology and vocational education reform as well as keeping the right attitude towards life-long learning will be the only way out for English teachers if they want to keep their place in vocational education.

Keywords: 6G · AI application · English vocational education

1 Technological Background and English Vocational Education Needs

1.1 Technological Background

Before 5G Telecommunication got its releasing license in public, 6G had already undergone numerous theoretical assumptions and practical experiments and tests since 2018 [1]. It will at least take another 10 years to finally bring 6G into commercial use though, its speed, capacity and potential revolution in the network will make it possible for more extensive and intensive AI Application in English teaching in Vocational Education.

What 5G can already do but not yet a satisfactory solution to current commercial needs will be finally solved by 6G. These application cases include faster transmitting speed and more accurate positioning, a result of 6G's wider broadband. A key indicator of the 6G Technology lies in its tremendously fast speed, with its peak speed at 100Gbps-1Tbps, which is 10 to 100 times faster than that of 5G [2]. This stunning speed will reduce

in-house positioning deviation to as small as 10 cms and 1-m outdoor, 10 times more precise than that of 5G, with which the likelihood of internet disconnection rate will be decreased to somewhere lower than 1ppm. To most ordinary household users, one does not even notice the break between now and the next second, which is of great importance to English learning in vocational education, where massive internet connection and app applications are requested at fast intervals. Below is a table to compare the key performance indicators of 5G and 6G (Table 1).

Table 1. Comparison of key performance indicators of 5G and 6G [3]

Indicators	5G	6G
Speed rate	10 Gbps–20 Gbps at Peak	100 Gbps–1 Tbps at Peak
Time delay	1 ms	0.1 ms
Mobility	>500 km/h	>1000 km/h
Spectral efficiency	100 bps/Hz	200–300 bps/Hz
Position accuracy	10 m outdoors, <1 m indoors	1 m outdoors, 0.1 m indoors

Another highlight of 6G is its possibility to build a digital twin network. Compared with the 5G coverage which is limited to the land as we are experiencing currently, the 6G network will be able to cover the deep sea as well as the outer space. Although it may take another decade to finally implement its air and sea extension, it is certainly a great leap forward in human telecommunication and even human civilization. This change will definitely bring tremendous impact on future education mode. Below is an
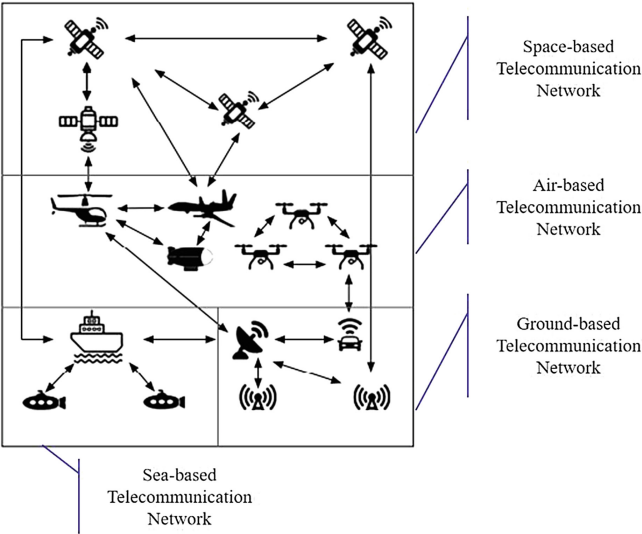

Fig. 1. Space, air, ground and sea telecommunication network [3]

idea of the comprehensive 6G telecommunication system network that will be likely to solve the integration problem of Terrestrial Network (TN) and Non-terrestrial Network (NTN) (Fig. 1).

This data-based network will enable more extensive and intensive use of AI in education and ultimately change the way of English teaching and learning and yield more fruitful results. It is targeted to improve the interaction of 5 components (Student Model, Pedagogical Module, Domain Knowledge, Expert Model and Communication Model) in the intelligent tutoring system beyond 5G limitation [4]. More personalized learning will take place in classrooms, making language learning a more enjoyable and learner-friendly process than ever. This digital twin network will enable learning to be individual-oriented, feedback specific, interaction-sensitive and skill-acquirable under the 6G network.

1.2   English Vocational Education Trend and Limitation with Current 5G Technology

Unlike other school subjects in China, English has been a learning course since one stepped in primary school, not to mention some pre-schools in bigger cities to employ foreign teachers for English enlightenment on toddlers who are still struggling to express themselves in their mother tongue. English is still a compulsory course in post-graduate education. When it comes to non-English majors in the three-year-learning Vocational Program in China, these learners have already been learning the language as a main subject earlier for at least 12 years. Yet this group of learners have achieved a much lower score and consequently lower motivation in English learning compared to their peers who have successfully enrolled in the four-year-learning program in universities. As a result, their English level tends to be lower. Many of them may be rated as the lower-level English learners based on the Cambridge English testing criteria [5, 6].

Therefore, the goal of English Vocational Education in the first place is set to teach no more than necessary, and very often English educators in vocational education have to turn to the more advanced technological inventions to assist teaching in order to retain students' interest in English learning. Moreover, teacher-student relationship in most Chinese classrooms may not be very close due to the deference to teacher power, which may constrain students from enjoying the classroom learning to some extent. However, as most millennial students are born "digital natives" [7], they are by all means supportive to the idea of using an advanced gadget in class. The advent of AI is an important solution.

Since the National Educational Bureau proposed the Action Plan of Educational Informatization 2.0 in 2018, a substantial proportion of capitals have flown into the vocational education industry. According to a vzkoo report [8], China has risen to Top 2 in the world in numbers of AI educational enterprises, and more than 300 billion yuan will be invested to diploma vocational education in the coming two to three years.

With the support of national policy, English teachers in vocational education have been active in applying the already existing AI Technology in course design and teaching. The invention of VR and AR already benefits many other subjects in teaching and learning. For instance, this invention allows students to approach the virtual reality or augmented reality for operational purposes or situational setting. It also helps to dissolve some abstract theories or rules into more visible models or intelligible framework. In

terms of English learning, some popular English learning APPs are able to give simultaneous rating or immediate rectification as soon as the learner produces the utterances. 5G technology has already promoted AI application in English learning to the next level. For instance, English teaching in vocational education program has also benefited much from such software as iFly tech for English pronunciation testing, iWrite for English writing practice, Lexile for English reading practice, EI for personalized adaptive English learning program under 5G network [9]. Yet there are still some practical matters that await a more advanced network system to settle, especially in language learning with lower-level English learners.

First, current AI is not able to carry out more complicated human-computer interaction under the existing 5G technology, which is comparatively essential in English learning. One obstacle is its inability to recognize the subtle changes in the voice in more complicated contexts. The device may only search and provide the information that is previously input in it. This leaves some unsolved areas that only engineers alone cannot code. For instance, 5G AI-assisted tools lack the ability to capture subtle human intonation change, facial expressions or even gestures which are commonplace among lower-level English learning group in the course of a natural interaction. Under this circumstance, the feedback from the device may not appear to be very accurate or human-bond. This will further intimidate most of these learners and prevent them from seeking further help from it. The "insensitiveness" of the current 5G AI will leave an impression on these learners that it cannot really understand their needs. "A machine is a machine" may be their final conclusion and this may disinterest the human side to continue using the tool for language learning or improvement, or at least constrain them from getting the most of it.

Second, the adaptive learning system, which is one of the most effective and productive method to assist English learning, has not been in massive use yet under the 5G network. Most of the APPs in use to serve the purpose of adaptive learning are costly and mostly found in private classes in language training centers or enterprises [10], whereas in vocational education classrooms, such APPs are far beyond the reach of a typical above-40-student language learning environment. One reason may lie in the technical aspect as this type of learning may heavily rely on the costly information assessment and massive cloud computing. Without an open and perhaps low-cost virtual network as the 6G technology is trying build, the expensive service may not be affordable to the mass English learners either in diploma vocational schools or other schools of higher education or public organizations.

Third, 5G signal coverage is limited to only station-built areas, which may also restrain the extensive use of the network, let alone AI application. Many backwater areas in China still find the network signal weak and it will take longer for these areas to adopt it in their daily activities, including education. The coverage of the network needs to be further extended. Otherwise, AI application is even beyond the reach of this group of people.

2   Related Work

In the late 20th century, AI application has drawn vast attention of both the public and scientists. AI application in education (AIEd) is a more complex research field which

involves collaboration between learning scientists, cognitive and linguistic scientists, and computer scientists, which can be traced back only in the recent decade, where multimodal learning analytics was the focal point [11].

Till now, such a powerful and satisfactory utility is yet to be improved, but it does not stop researchers, scholars and educators on their way to explore the subject from different perspectives and various academic results have been yielded. So far, AIEd research has been done in 40 articles in 16 countries, and only 2 of them covered the topic of foreign language learning in higher education [12].

One of them is focusing the on longer-term effects of technology on students' task and course interest by comparing the AI tool- Chatbot and human. It is found that the human wins over the Chatbot in the long-term effects [13]. This research indicates that unnatural talk with Chatbot under the current technology may not be sustainable. Yet the research is done under the existing 5G network, a more advanced 6G network improvement is not taken into consideration.

Another one is exploring the machine learning approach for the assessment of learning style changes, and proves the effectiveness for assessing the changes of learning styles [14]. But the students tested belong to the higher-level learning group who have much greater motivation of learning and better academic performance in general. It is still unknown whether the same effect can be achieved in lower-level learners in the vocational education program.

Moreover, most of the AIEd research articles were outcomes of collaborative work with two or more authors in multiple disciplines [12], but cross-discipline exploration of the topic was relatively few in quantity, and discussion on 6G-based AIEd in the public vocational program has not been conducted yet. Another frequently-discussed AI-related perspective in China is concerning the ethical aspects of the AI application, suggesting to promote ethical education for every stakeholder in AI research and development, application, and management before responsible conduct with AI [15].

Given the complexity of AIEd research and the sensitiveness of ethical matters of AI application, this article tends to shed some lights on AI application in English vocational education in the prospective 6G telecommunication. By observing the current 5G contribution in China and 6G development trend, this article tends to explore 2 questions in discussion: What can 6G do for future English Vocational education? How can English teachers adapt themselves to the new trend and take actions proactively?

3   6G-Based AI Solution in English Vocational Education

Unlike the 5G technology, 6G is tempting to build a ubiquitous virtual network with the use of satellites and digital data, covering land, outer-space and the deep sea [16]. So is the reform it will bring in English teaching in the coming decade. There are at least four aspects of 6G-based AI Solution to English vocational education.

3.1   Blended Learning and Teaching Methods Under 6G Boost Vocational Education

One important feature of the AI-assisted tools under 6G is their ability to capture human's subtle change in facial expressions or voices, which may be an important indicator of

their learning difficulty, especially among lower-English-level students in vocational education program. AI-assisted learning and teaching methods under 6G will give both students and teachers a chance to communicate virtually before their offline classroom meeting and the blended learning and teaching methods will make English vocational classroom learning more efficient. Learner-based flipped class will be widely adopted by English teachers as their focus will shift from traditional lecturing and demonstration to a more meaningful learner-centered guidance of class activities.

On one hand, with the help of AI-assistant as a "walking dictionary" outside the classroom, students will be able to make better use of the fragmented time to undertake the preview or review tasks requested by the language learning target. They get notifications from their assistant, irrespective of the operating system. The broad coverage of 6G network will enable them to assess English learning in tunnels or concealed areas, whenever their learning moment comes. Their preview or review English tasks are just one click away from the web and their AI assistant will be at service. Answers can be found at their fingertip and they will be more likely to turn to their virtual friend for help. More importantly, this friendly tool can interpret the emotion in their faces and facilitate English learning just to meet their personal needs. Students' interest of language learning will be intrigued by AI's non-stop supportive and understanding features.

Blended learning empowers lower-level English learners in vocational education program to get ahead of necessary amount of theory or knowledge thanks to the digital twin network the 6G is building, enabling them to participate in more meaningful exploration of the topic in class just like their intelligent peers in renowned universities. With adequate perception of the task and pre-class preparation, students will be more target-oriented and cooperative in class, pay closer attention to both the teacher's suggestions and other students' opinions and join the discussion with more enthusiasm. They will be more eager to share their opinions or questions with the peers or find out what others think about and how others solve the problem. Class participation rate and learning efficiency will therefore be improved. A well-cycled learning mechanism will be formed among these lower-level English learners.

On the other hand, teachers in vocational education will benefit from their AI helper in that their workload may be partially shared and their sense of accomplishment may be created by their students' improvement in English. They feel more valued and be more dedicated to teaching.

The AI-assisted tools driven by the powerful 6G network are ready to share much workload from the teachers and give them more time to devote themselves to pedagogical improvement and self-development. The teacher may not be involved in students' discussion unless requested, as the AI assistant will act as a counselor and participant to guide them to express their opinions. The smart AI assistant can help to capture students' difficulty in learning and pass it onto their teachers, based on which teachers may be able to focus more on providing personalized guidance to individual students. They can then assign corresponding tasks to individual students and steer the wheel of learning to keep students on the right learning track in class. In the course of teaching, teachers will gain more sense of understanding in their students as well as the sensibility to provide solutions.

The notion of "Learner-centered Education" will not just be a slogan but more an actual description of the teaching and learning phenomenon with the AI-assisted tools under the 6G network. Teachers may find their lower-English-level students in the vocational education program as brilliant or to even outperform their peers who used to take the lead in academic English learning, just in one aspect or another. The blended learning and teaching process in vocational education will boost the learning effect with the application of AI under the 6G network.

3.2   Adaptive Language Learning Materials Build up Student Confidence

Thanks to the big data to keep track of students' learning habits and learning process, the 6G-based AI learning system will be able to provide adaptive English learning materials to individual student based on their aptitude rather than the traditional teaching syllabus and textbooks, and the teachers will also be able to manage a class with more than 40 students with materials of varied levels and provide help accordingly. Students' confidence can be built up more easily with both the teacher and the AI's attentiveness.

For lower-English level learners in the vocational education program, many of them lack interest or confidence in learning the target language just because they have to struggle in many ways in the traditional English class. Their difficulty may range from vocabulary to grammatical sentence structure, from pronunciation to fluent speech, from mother tongue impediment to English thinking logic, even from narrow available handy resource selection to brain-blasting online knowledge exposure.

AI can smartly cater to individual student's conceivable needs in terms of English learning with its capacity to provide adaptive learning materials. With the help of 6G cloud computing, data analysis from blended learning results will provide evidence of students' individual learning strengths and weaknesses and distinguish them according to their aptitude and learning preference respectively. They will get a personalized learning plan that suits their current English levels and learning habits, based on which their teacher may just select the relevant materials for individual students. The adaptive language learning resource will enable students to finish the tasks more easily and gradually their confidence can be built as they are on their own track of learning. Adaptive language material can even combine games and simulated settings to place students in a mimic scenario so that students' engagement in learning will be kept in a longer time span. As a result, the students are more likely to overcome the difficulties when they are given such interesting yet not too demanding learning materials.

The lower English level learners in vocational education program will also feel less stressed in learning and be more likely to accomplish the tasks that are not too far beyond their English levels with the adaptive learning materials. Their confidence of English learning can be enhanced as they achieve their adaptive learning target one by one and their performance can be seen or even encouraged by their teacher. The digital twin network 6G is trying to build will allow students in the vocational education program to emerge in an English environment to acquire what they need in the target language and gain more self-confidence.

3.3 6G-Based AI Application Connects Teachers and Students with Flexibility

Under the 6G network, the 6G-based AI Application Model is proposed to show how AI application can connect teachers and students flexibly. In general, the 6G-based AI application will serve as a mysteries mechanism that undergoes a complicated computing and analysis process, playing a liaison role to-and-fro between the teacher and students, making their connection more frequently and flexibly (Fig. 2).
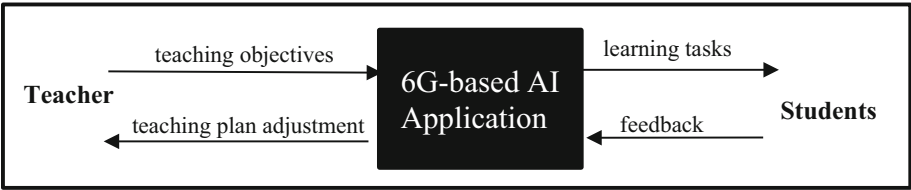

Fig. 2. AI-assisted English teaching and learning model framework

The above English Teaching and Learning Model Framework shows AI's role between the teacher and students in the course of English learning in vocational education. As mentioned earlier, the goal of vocational education is to teach no more than necessary, this Model Framework starts from doing instead of lecturing, followed by explanation or demonstration, and finally gets back to skill practice in varied situations. Therefore, this Model Framework with 6G-based AI application is tailored to vocational English education, where "teaching, learning and doing is done simultaneously" is highlighted and emphasized. Considering the power a teacher exerts on students in traditional
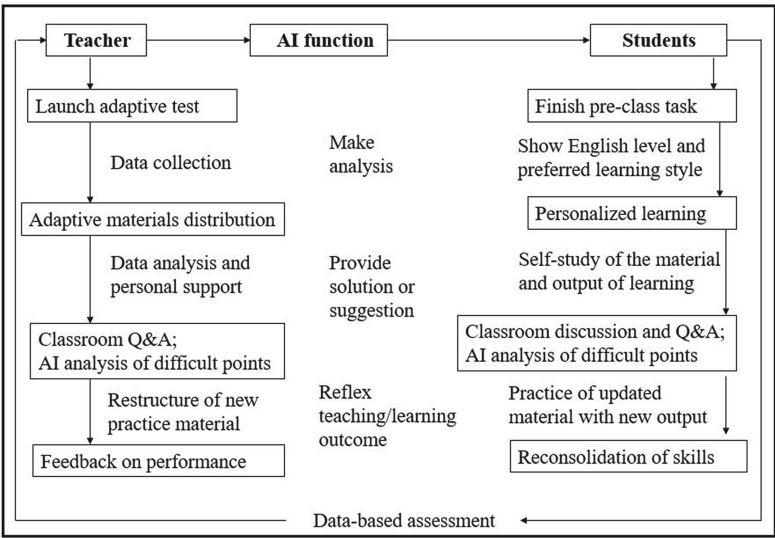

Fig. 3. AI-assisted English teaching and learning model

classrooms, 6G-based AI application can connect the teacher and students more often and flexibly and make English teaching and learning an activity with a mutually trusted medium. Their relationship may be improved as a result.

To understand the Model Framework better, we further extend the following teaching and learning Model to see how AI is applied to lubricate the path of English teaching and learning in vocational education (Fig. 3).

In the above Model, we can see how AI functions as a liaison party between the teacher and the students. The teacher's role is to launch the adaptive test, distribute adaptive materials, hold classroom discussion, make analysis of difficult points, and finally give feedback on students' performance. While on the part of the students, they need to finish pre-class task, then do personalized learning with the adaptive materials, join classroom discussion or watch teacher demonstration of difficult points, and finally have another practice for re-consolidation of skills.

To accelerate the process of teaching and learning as is shown in the Model, the 6G-based AI will perform functions differently in different stages of it, connecting both sides of the English class. When the teacher design and launch the adaptive test, AI first serves as the language reservoir to support the test design; after the students finish the task, it is working as an assistant to make analysis based upon the data. When it comes to the stage of classroom learning, the AI-assisted tools will on one hand distribute adaptive learning material on the part of the teacher, and on the other hand give suggestions or solutions to students who are trying to learn the adaptive materials personally or in groups. Either way, AI is bringing both sides of the English class closer with each other in a more frequent and flexible manner.

The most significant function of AI under 6G is its capacity to capture student emotion such as facial expressions and gestures and respond accordingly. For instance, when the AI assistant spots frowning or hesitations from the students, it will be able to recognize the possible learning difficulty and adjust the difficulty level of the materials. With its tremendously fast computing and analyzing speed, AI will perform as a chatbot to transfer messages between the teacher and each student and ensure more frequent and flexible communication between them. Trust or a sense of intimacy between students and the teacher will be more likely to be built in the process of the frequent communication.

The following two figures further explain AI's roles on both the teacher and the students in English vocational education (Fig. 4).
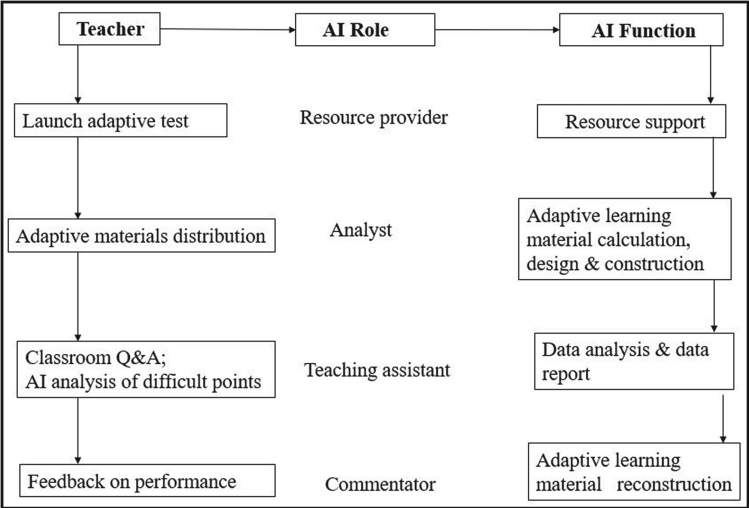
Fig. 4. 6G-based AI English teaching model for teachers

In terms of teacher and AI relationship, we can see from the above chart how AI is serving as a helpful assisting tool to the teacher. It serves as a resource provider at the beginning, including the language resource as well as the virtual environmental resource. It then acts as an analyst to calculate, design and construct adaptive learning materials. In the third stage, it serves as a teaching assistant for data analysis and report, and finally it takes on the role of a commentator based on students' performance and reconstructs adaptive learning materials accordingly. AI's role will be of great help to the teacher in
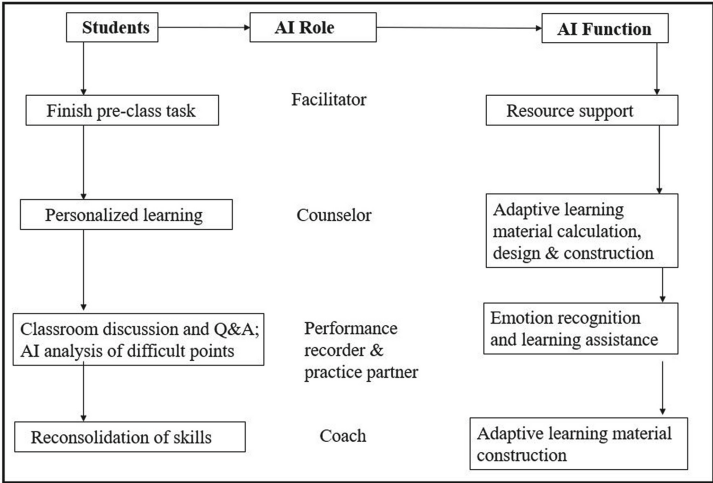
Fig. 5. 6G-based AI English learning model for students

the whole cycle of English vocational teaching procedure. It will help the teachers to form a more correct understanding of their students and thus give their students more caring and support, either online or offline (Fig. 5).

Student-AI intimacy is built on the basis of easy access. Owing to the 6G technology, AI is serving more like a learning partner to the students. In the first step, the AI tool is taking on the role as the facilitator to students so that they can finish the pre-class task on time. This step is especially essential to vocational students as their motivation of learning is comparatively low and a well-designed pre-class task in a simulated setting will be a "bait" to get their attention in the topic. In the second step, AI will put on the role of a counselor, giving students personalized materials for practice based on the result of their aptitude test. Students will be fully engaged in doing the task in a meaningful context created by AI. In the classroom Q&A and discussion section, AI is a performance recorder and practice partner to students. The final step where AI acts as a personal coach is a skill reconsolidation practice for students. A new cycle of English learning will commence. Students are more likely to form trust on their virtual friend, behind which is their English teacher, and be more willing to be approached by their teachers online or offline.

Virtual environmental setting is made throughout the course of English learning where even the lower-English-level students are able to empathize and resonate, and form positive opinion on their teacher. They may be more willing than ever to continue the discussion and exploration of the topic with their teacher outside the classroom with flexible means.

In sum, AI is serving as a smart liaison, bringing closer mental contact and more flexible physical communication between the teacher and the students. Thus, the teacher power is diminished to some extent and the student-teacher relationship may be improved.

3.4   More Justified AI Assessment Based on Individual Progress

With the help of 6G-based data analysis and cloud computing, assessment may no longer be so dependent on final examinations. Everyone will be making progress with the help of AI, and they will just pass the assessment as long as self-improvement is made in English which can meet their learning target and vocational purposes. Without the cruel competition to stand out in their peers, they just need to outperform the old themselves to a particular extent to show progress. Students may even form new perspectives towards English learning instead of just passing CET4 (College English Test Band 4) or CET6 (College English Test Band 6).

Such a new type of assessment based on individual progress rather than standardized test gives individual learners, especially lower-level English learners a chance to just get "fed" with no more than they need, and they will be more likely to get the right "fruit" within one jump. They will get the credits with due efforts. To them, such assessment is more justified and encouraging.

This type of assessment will be in line with the aim of modern vocational education. Students will be encouraged to discover their inner call and their true interest. They can therefore follow their heart to chase for what they need in order to grow into a working person they dream to be with survival English skills in their working field. In the process,

students will be self-motivated to learn English. And they are fully aware that their efforts will be paid off, as they can see progress in themselves and the possibility of using the language skills in their future career. They will have a stronger sense of achievement.

On the part of the teacher, they just need to observe and monitor the process with the ongoing learning data the smart online platform provides, and make more personalized evaluation based on students' learning process. Formative evaluation is more likely to be given by the teachers as their students do perform and learn something with AI assistance. Teachers may be bolder in taking a step forward in the English education reform when they get positive feedback from their students. There is no doubt the 6G-based AI solution may bring the best outcome for both sides of English learning in vocational education.

4   Challenges and Opportunities English Teachers Will Be Confronted

Technology is a two-sided sword. Some English teachers may find it a useful tool, while others regard it as a threatening weapon. They may be stunned by its power and alongside the desperate feeling of losing control of the podium they used to be familiar with. Yet there is no way back. The millennial students, the working people from all walks of life, AI developers, the government and even their younger fellow colleagues are pushing the new technology forward, posting a question to all English teachers - Are we ready? Below are some feasible advice for English teachers in vocational education.

4.1   An Open Mind to Embrace Changes in English Vocational Education

Changes are taking place all the time throughout history in all industries. Language change may not be so obvious, but language teaching methods should be adapted alongside with the development of the modern world. Looking back on previous educational reform in China's history, no one can prevent it from moving forward. So, it is important for English teachers to keep an open mind toward the 6G and AI technology, which will take us to the new era of Industrialization 4.0. When English teachers are aware that educational reform will be taking place in middle school English tests, they should also be ready the embrace changes in their students' latter English learning path.

Since AI application is already on its way to release people's burdens in family chores, it can also be a good partner in teachers' career, as long as they keep an open mind to embrace the change. In fact, many students are already getting ahead of their teachers in using some advanced technological inventions. It is particularly essential for English teachers to upgrade themselves when their students are in the vocational education program. These students may be facing an international working environment where English is the universal communication language. They need to be able to understand and give English instructions in their work and make basic English conversations with technical experts from other countries.

Therefore, all English vocational teachers should integrate the existing knowledge and skills with the modern technology and grow with 6G in order to prepare students with their future work.

4.2   The Resolution to Get Familiar with AI- Assisted Tools in the Short Term

While online education becomes a common practice worldwide in the heavily hit areas of the covid-19 pandemic, the sporadic outbreak of the virus even in a well-controlled city in China is still possible. Therefore, the chance to conduct online English teaching with the AI-assisted tools is an important solution, given that the current online teaching with only videos and live broadcast can be boring.

Offline English teaching with the assistance of AI is also a popular choice to improve learning effect as the AI-assisted tools can make the English learning process more interesting and attractive. It can engage learners like a friend and be helpful to teachers at the same time. To get familiar with the AI tools to make online English teaching easier is not just a future plan, but a task on the recent to-do list for teachers.

4.3   Keep up with Society by Cross-disciplinary Learning in the Long Run

Life-long learning is not just a catchphrase for young people, it should be everyone's ultimate goal towards life - to live and learn. Therefore, in the long run, English teachers should be prepared to learn outside their comfort zone and explore more fields of disciplines. When it comes to a new era that knowledge multiplies at a much faster speed, no one can be exempt from learning if he wants to keep up with the society. Think about how we-chat was firstly designed as another online social media like QQ and then became the most popular virtual communication platform in China that now even the senior citizens are using it to update posts of daily activities. 6G is the trend, and AI is also the trend.

With the advantage of getting to know the trend in advance, English teachers should by all means prepare themselves well before 6G comes. Inter-discipline learning will therefore give them a brand-new horizon to explore more than just language teaching. Further progress is expected to be made with cross-disciplinary learning and even interdisciplinary collaboration with other scholars, researchers and scientists.

5   Conclusion and Future Work

6G is going to bring unprecedented changes in all industries, influencing almost everyone both at work or in their daily life. Whether we like it or not, it is going to be part of the future life. For English vocational education where students' English levels vary substantially, 6G-based AI application is perhaps the optimal solution to integrate teacher pedagogical experience and smart technological invention to the upcoming educational reform.

Unfortunately, the current study is carried out from the perspective of future trend. We are not able to collect instantaneous learning data to prove the significance 6G-based AI application will bring to our students. Therefore, we are calling for cross-disciplinary collaboration among educators, learning scientists, cognitive scientists and computer scientists to shape what we hope from 6G and then more empirical studies can be done when 6G becomes a reality in the future.

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