

Transformation in Education: Teacher Role in the Era of Intelligence

Yujie Zhang^{1,a,*}

¹Canglian Primary School, Guangzhou, China

^azhahexi@163.com

*Corresponding author

Abstract: *The era of intelligence has had a profound impact on the role of teachers, and the evolution of teaching systems and educational objects has led to changes in current classroom forms, teaching methods, etc. Teachers, as the main body of educational reform, are also facing a crisis of role transformation. In this regard, teachers must reshape their role positioning, identify the core competencies that support role transformation, and achieve the transition from a teacher to a guide.*

Keywords: *Intelligence Education, Teacher Role, Role Crisis, Transformation and Challenge*

1. Introduction

Intelligence technology is driving social change and education reform at an unprecedented rate, and the role of primary and secondary school teachers as the main driving force in the transformation of basic education is also changing with the changes in social development and giving new role implications.^[1] Teacher team building needs to focus on the opportunities and challenges faced by teachers in the era of intelligence, so as to explore the new path of Intelligence to change teaching, empower teachers and promote the upgrading of teaching. In conclusion, AI is driving changes in education and has become an inevitable trend in the development of education, which puts forward new requirements for the role of primary and secondary school teachers.

2. Characteristic of Traditional Teacher Role

2.1. One-way knowledge transmitters

Since ancient times, teachers have been regarded as the main source of knowledge for students, and their main duty is to transmit knowledge. With the development of society and the advancement of science and technology, people's desire for knowledge has become stronger and stronger, and for a long time in the past, teachers have played the role of "the only source of knowledge". Han Yu in the "teacher said" mentioned: "teacher, so the preaching, teaching and puzzling also", can be seen in our country scholars are accustomed to the teacher's primary role is positioned as "preacher", the teacher by virtue of their "known" knowledge advantage to the unknown. Teachers rely on their "known" knowledge advantage to teach knowledge to unknown "students", which is actually a kind of unidirectional training activities of teachers to students. However, in the era of intelligence, the role of primary and secondary school teachers as "knowledge authority" has ushered in the challenge, and now we have entered an era of "human-computer co-teaching", and "the machine does not leave the hand" has become the life of the majority of students.

Nowadays, we have entered an era of "human-computer co-teaching", where "the machine does not leave the hand" has become a typical feature of the life of the majority of students, and a huge amount of learning resources have appeared in the media such as smart phones, tablets and computers, and the online education modes such as open courses, catechism courses and micro-courses have entered the campus, and online and blended learning have become the trend of education in the new era. The massive nature of Intelligence expands the scope of knowledge exposure, and students can not only learn in school, but also get training in thinking outside the campus. Intelligence also breaks through the limitations of spatial and geographical areas, so that high-quality educational resources in different regions can be captured on online platforms, which teachers are unable to do because of their time and energy. In addition, the development of knowledge is very fast, teachers only stick to the original knowledge will

lag behind the development of the times, and the absorption of new knowledge requires a certain amount of time, but Intelligence can meet the students' pursuit of new and interesting knowledge, in short, teachers in the era of intelligence is no longer the only spokesman for knowledge.

2.2. *Reliable information owners*

In traditional teaching, teachers are overly "deified" often in terms of the authority of the information they possess. Usually, the public believes that teachers should be knowledgeable, at least in their professional fields, and that the information they convey is true and reliable, and the knowledge they convey is objective and universal, so primary and secondary school teachers will focus on conveying accurate knowledge to their students. Teachers as authoritative information owners are mainly embodied in two aspects: firstly, the authoritative status of teachers; secondly, teachers teach accurate knowledge. In the Era of Intelligence, people's understanding of the connotation and extension of the meaning of "teacher" has changed, and teachers no longer only refer to those who are highly respected and experienced scholars, but also those who can help others grow. On the one hand, the role of teachers is not limited to human beings; smart machines, AI tools, and virtual teachers can all be called teachers, even though students may not have a teacher and the authority of the teacher is being challenged, and on the other hand, the knowledge taught by "virtual teachers" in the age of AI is passed on to the learner after repeated comparisons, although there may be multiple answers to a question. Although there may be multiple answers to a question, the accuracy of the knowledge is better reflected, so on the whole, the "authority" of the teacher is in crisis.

2.3. *Faithful evaluators of teaching*

Teaching evaluation is also an important part of the teaching process, and it is meaningful to evaluate the teaching process and students' behaviour correctly and effectively. In specific teaching situations, traditional primary and secondary school teachers tend to analyse the learning process of students based on their own teaching experience, find the gap between students' learning situation and the ideal educational goals, analyse the causes of the gap, and use appropriate teaching methods to carry out targeted teaching to constantly narrow the distance between the ideal educational goals, and finally realise the integration of teaching-learning-evaluation, so that teaching evaluation can be carried out throughout the whole teaching process. Finally, the integration of "teaching-learning-evaluation" is realised, so that teaching evaluation can be carried out throughout the whole teaching process. However, this kind of experience is often based on teachers' own practice or the accumulated experience of their predecessors, so this kind of experience is in itself vague, and the teaching evaluation carried out by using this kind of experience as a criterion is also unreliable.

Relying on what the teacher observes with the naked eye and hears with the ear is limited, and the teacher's memory and energy are also limited, so in order to make up for the teacher's shortcomings, the relevant Intelligence technology has come into being. First of all, in the era of intelligence, various big data software, learning analysis technology, algorithmic diagnosis represented by educational robots and so on break the physiological limitations of teachers, like collecting data, storing data, analysing data and other steps of teaching and evaluation, AI is able to reach or even exceed the level of teachers, providing help for primary and secondary school teachers to comprehensively and systematically acquire and analyse the learning data of students in different stages and in different fields. It has impacted the behavioural patterns of primary and secondary school teachers who deal with learning data vaguely. Secondly, it also enables primary and secondary school teachers to eliminate complicated and repetitive assessment tasks, such as correcting written assignments, assigning practice questions, explaining test questions, etc., so that primary and secondary school teachers can have more time to prepare for classes. Finally, AI can also help to provide appropriate learning resources for different learners, carry out precise and individualised teaching evaluation, automatically conduct intelligent analysis of student performance, and make horizontal or vertical comparisons of different students' learning.

3. Formation Mechanism of Teacher Role Crisis

3.1. *Update of intelligent technology*

Under the background of the dual promotion of national policy support and industry, Intelligence technology has been more and more widely used in the field of education, with intelligent technologies that facilitate the teaching end, such as virtual teaching; and also the learning end, such as machine

translation, photo search, adaptive question bank and so on. However, the updating of media technology has brought about the convenience of teaching resources and provided technical support for teachers, and at the same time created a sense of crisis among teachers.

Firstly, AI breaks the order in which the teacher must be the first transmitter of knowledge. So far, the "history of technology" in teaching and learning has gone through five phases: in the oral period, the teacher was considered the "master of knowledge" and the only source of knowledge. In the handwriting era, the invention of writing brought books, such as textbooks, through which written knowledge could be preserved, and teachers were the primary owners of books. To the printing age, the appearance of a large number of books, so that teachers are no longer the sole owner of books, students can also have, some students with strong learning ability can obtain knowledge through self-study textbooks, at this time the order of the teacher as the disseminator of knowledge has begun to change, to the later electronic age and the intelligent age, the Internet and other electronic media on the teacher's body of knowledge to put forward higher requirements, but also change the path of communication of the spatial and temporal equilibrium. Secondly, the stereotype of the teacher as the stereotypical "monopolist" of knowledge has been broken, and since students do not necessarily acquire knowledge later than the teacher, it means that students do not have to get knowledge only from the teacher, and that any tool in the Era of Intelligence can become our teacher. Finally, intelligent media technology is also challenging the authority of teachers. While traditional machines are characterised by a low error rate and high speed, AI has gone beyond the positioning of traditional machines, and even though it still can't completely replace teachers, it can still be comparable to teachers in terms of creating teaching situations, evaluating students and explaining exercises.

3.2. Change in application scenarios

Educational scenarios are generally composed of four elements: educators, educated people, learning space and educational resources, which are in an interactive relationship. In the traditional education scene, the teacher is in the core position in education, and the students are in the passive knowledge receiver position, which is why the "teacher-centred" viewpoint with Hurlbut as the representative figure prevailed in the 19th century, and the learning space mainly includes classrooms, laboratories, libraries and so on in the physical sense, and the learning resources are mainly teaching materials and other book-like indirect experiences. The learning space mainly includes physical classrooms, laboratories, libraries, etc., and the learning resources are mainly textbooks and other book-like indirect experiences.

Entering the age of Intelligence, the four components of the education scene have changed dramatically.^[2] Firstly, primary and secondary school teachers are no longer just the transmitters of knowledge; instead, they have become learners, learning information technology knowledge, and they need to tap into the characteristics of intelligent technology to adapt to the changes of the intelligent age; primary and secondary school teachers are no longer the main evaluators of students, and the intelligent technology can automatically generate evaluations of all students, and even give Students can also monitor their own learning through self-assessment and peer assessment. Secondly, students take the initiative to use intelligent technology to broaden the depth and breadth of knowledge, and can also teach others, and even with the assistance of intelligent technology, primary and secondary school teachers will consciously leave the classroom to students. Furthermore, the learning space breaks through the physical limitations of education time and space out of the classroom from a single offline teaching to online teaching or offline-online hybrid teaching methods, and finally educational resources are also expanded from written materials to virtual reality and augmented reality technology, digital twins and holographic projection technology, and other assisted multi-modal teaching resources, so that students can also enjoy different quality educational resources, break the reality of barriers, and promote educational Equity in education.

3.3. Transformation of the subject of behaviour

The subject expertise possessed by primary and secondary school teachers determines the path of information flow mainly from teachers to students, so in the teaching process teachers are in the dominant position of education and students are in the main position. In the era of intelligence, due to the limitations of the information flow mode of "lecture mode", it is no longer able to keep pace with the times, so the information flow mode is now in transition to the "consumption mode", which allows the digital educational resources to be shared through the dissemination or consumption path. This mode allows digital educational resources to be shared through the path of dissemination or consumption, and the role of resource providers and sharers can be changed. Firstly, the development of the Internet has not only

accelerated the development of the economy, science and technology, and culture, but also benefited the education sector. Owners of educational resources are willing to upload their resources to some online platforms and enter the dissemination field, so that those who share them can enjoy these high-quality educational resources. Secondly, intelligent media blurs the boundaries of the various stages of socialization, which means that the leading role in education is not necessarily played by respected teachers.^[3] The media scene theory mentions that "new behaviour" are manifested in the same behaviour of adults and children, which also means that some things that adults can do can be done by children, and that students can choose their own interests or want to continue to learn more about the world with the help of intelligent media. Students use the intelligent media to choose the knowledge they are interested in or want to continue to learn in-depth knowledge, which may also be the blind spot of the teacher, so to a certain extent, they can also become the "little teacher" in this field, lecturing for the teacher.

4. Reposition of Teacher Role in the Era of Intelligence

4.1. Builder of course knowledge

In traditional education, primary and secondary school teachers are more of a one-way knowledge lecturer role, because to adapt to the characteristics of slow social change, slow update of information, but in the era of intelligence, the speed and quantity of knowledge growth has been a blowout growth, although there is a tendency of fragmentation of knowledge, but access to knowledge has also become easier and easier, if primary and secondary school teachers are still obsessed with traditional classroom will be the knowledge of books copied and taught behaviour, forcing students to learn knowledge by "rote memorisation" and "sea of questions" without making any adaptations, then sooner or later, it will be difficult to learn knowledge. If primary and secondary school teachers are still obsessed with the traditional classroom to copy the knowledge from the books, forcing students to use "rote memorisation" and "sea of questions" way of learning knowledge, without making any changes, then sooner or later will be drowned by Intelligence. Teachers in primary and secondary schools need to realise that knowledge itself cannot be learnt, that all existing knowledge is not the goal of learning, and that the essence of education lies in analysing the connotation of knowledge, understanding the environment in which knowledge is generated, finding the fuzzy points of knowledge, exploring the potential of knowledge development, and cultivating the individual student's ability to integrate and apply knowledge.

In the Era of Intelligence, the acquisition of knowledge is a process of continuous discovery and construction, and teachers need to do the following to be good constructors of curriculum knowledge. Firstly, teachers have their own unique insights into the way the curriculum is structured based on their own cognitive and curricular knowledge. Intelligence is certainly powerful, but there are also insurmountable shortcomings, such as Intelligence can never have a human mind, because it is based on data-driven principles, lack of sufficient knowledge of the principles and rules behind the data, but also a serious nonsense, if the long-term Intelligence to solve the problem of education, the creativity and innovation of the human being will decline. In contrast teachers, as individuals with subjective initiative, can take the initiative to improve and develop their ability to understand knowledge, establish and continuously improve the curriculum system, and provide an all-round, in-depth interpretation of the problems that arise in teaching. For example, English teaching nowadays advocates a holistic view of unit teaching, which can better cultivate students' language ability and thinking quality by finding the intrinsic connection of each section of the teaching materials and making appropriate adjustments and additions to the teaching content. Secondly, teachers also need to help students construct knowledge. Knowledge can be divided into explicit knowledge, which is mainly expressed in written text, diagrams and mathematical formulas, and tacit knowledge, which is unexpressed and unexplained. When teaching explicit knowledge, AI may be able to do a better job than teachers due to its large reserve and lack of fear of repetition, but tacit knowledge can only be taught by teachers, who have a unique understanding of the curriculum and have to dissect it if necessary.

4.2. Promoter of intelligent education

Intelligence and teachers learn together to achieve human-machine collaboration, which is an inevitable trend in the era of intelligence, according to the law of human social development, human beings are from learning how to use the tools, to create tools, and finally the process of invention of the machine, the development of Intelligence is due to the use of intelligent tools, these innovation drives reflect the wisdom and creativity of mankind, and also become the key to human beings to transform the world. With the deepening of education reform and the continuous development of intelligent technology,

not only the front-line educators, but also more and more ordinary teachers and social personnel have realised that our education needs to be adjusted to meet the development of the information age, and that the modern society needs talents with the ability to learn, practice, and innovate, and that AI technology provides rich learning resources to achieve this goal.

Teachers can refer to the following suggestions for becoming enablers of collaborative human-computer education. Firstly, teachers should be able to become active applicators of AI technology.^[4] In the context of Intelligence technology, teachers learn to use Intelligence technology to become the first prerequisite for optimising teaching, they should deepen their understanding of Intelligence, master the relevant knowledge and principles of Intelligence, and then combine it with specific subject knowledge to become an applicator of Intelligence technology, for example, teachers can realise distance teaching through intelligent technology, establish an "ecosystem" of learning, and form a collective teaching mode. For example, teachers can achieve distance teaching through intelligent technology, establish an "ecosphere" of learning, and form a collective teaching mode. Secondly, to carry out personalised teaching, the traditional large class teaching is difficult to take into account the needs of each student's development, it is also difficult to provide accurate solutions, and the teacher's energy is limited, it is impossible to accurately grasp the development of each student, standardised education by the limitations of technology and rationality, the pursuit of normative, cultivating the commonality of students, rather than the students' comprehensive and free development, while the Intelligence complements the strengths of humans and machines, and can provide students with flexible, personalised learning services. For example, teachers can use the external support of Intelligence and other technologies to collect each student's learning data, establish an individual electronic "growth portfolio" for personalised analysis, and then provide students with large-scale learning support based on mutual collaboration. The concept of tailor-made teaching is then implemented in practice.

4.3. Guide for student learning

Teachers usually use testing to judge students' learning results, in traditional teaching, the evaluation tools and evaluation methods are single, teachers can only judge students' knowledge mastery through the high and low test scores, while students are also accustomed to take the test scores as a standard for judging themselves, and parents are usually only concerned about the scores on the test paper, so there is actually a lack of reflection on the teaching and learning evaluation between teachers and students, which is not conducive to the teachers' teaching work and students' long-term development. in the Era of Intelligence, teachers should not only maintain their role as "referees" and "test paper correctors" in teaching, but also use more accurate and comprehensive evaluation tools to understand the development of students, not only to give students summative evaluation after a long period of time, but also to pay attention to the formative evaluation in each period of time.^[5] They should not only give students summative evaluation after a long period of time, but also pay attention to the formative evaluation in each period of time. Teachers should make it clear that teaching evaluation under quality education must focus on students' subjectivity and development, and must formulate new teaching objectives and teaching strategies on the basis of summarising students' past experience and knowledge.

In the era of intelligence, teachers should do the following if they want to play the role of "companion of students' growth". First of all, teachers should carry out reasonable process evaluation, to be able to evaluate the learning status of students in the process of development, for example, teachers use intelligent learning technology to build a dynamic database of student growth, which is designed to adjust the learning status of students in a timely manner, and the teacher to provide guidance and predict the next learning progress. Secondly, teachers should be able to achieve open evaluation, so that the power of education evaluation is not exclusively belonging to a certain group of people, and truly achieve the openness and transparency of the evaluation, such as teachers can through the evaluation website established by the school, to make comments or suggestions on the school's educational resources, campus construction, etc. Students can also access this website to evaluate the teacher's teaching situation. Finally, teachers should make all-round evaluation of students, for example, in the stage of lesson preparation for the analysis of the learning situation, not only to consider the knowledge base of students, but also to pay more attention to the character characteristics of students, then teachers can be issued electronic questionnaires to understand the learning situation of students, Intelligence will be objective statistics of these data, analyse the students' existing knowledge and interest, to find out the teaching of the key and difficult points to achieve the purpose of optimising learning. The purpose of optimising learning. In short, the use of intelligent technology, teachers can be more comprehensive and clear evaluation of students, to promote the development.

5. Conclusions

The arrival of Intelligence has had a great impact on the field of education, such as the deconstruction and restructuring of teaching relationships, innovation and change in teaching form and teaching organisation, etc. Primary and secondary school teachers, as the core of basic education and teaching, have been affected by the impact of Intelligence, and the roles they play in traditional education are facing a serious challenge. Primary and secondary school teachers who don't adapt to the changes of the Intelligent Era will be gradually eliminated from the field of education, and those who adapt will be given a new roles, new positioning and new functions. In conclusion, in order to adapt to the educational changes in the Era of Intelligence, primary and secondary school teachers should speed up their pace of progress, make up for their shortcomings, identify their role in the new era, improve their information literacy, and actively promote the integration of intelligent technology and subject education, so as to better realise the educational goal of "making people moral".

References

- [1] Chenrui Wang .*Research on the Transformation of Teacher Roles and Professional Development in the Era of Smart Education [J]. Advances in Vocational and Technical Education, 2024, 6(04): 26-31.*
- [2] Lingyan Meng .*The Changes and Challenges of Educational Technology Innovation on the Role of Teachers [J].Advances in Educational Technology and Psychology, 2024, 8(05): 57-65.*
- [3] Xue Y ,Zhou J .*The Social Role of Elementary School Teachers in the Era of Artificial Intelligence: Challenges and Responses[J].International Journal of Frontiers in Sociology,2021,3(18):31-37.*
- [4] Kshetri N ,Kshetri N .*The Future of Education: Generative Artificial Intelligence ' s Collaborative Role With Teachers[J].IT Professional Magazine,2023,25(6):8-12.*
- [5] Cai Z .*Research on Teachers' Role Orientation and Strategies in the Age of Artificial Intelligence[J].Advances in Educational Technology and Psychology,2024,8(4):64-72.*