The Development Course of Modern Educational Technology in China

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Abstract: In the late 19th and early 20th centuries, with the progress of science and technology, new media continuously entered the field of education, promoting the development of educational technology. In the Current Educational Technology stage, the theories and practices of educational technology in the United States have significant influence. This article mainly takes China and the United States as examples to briefly describe the development process of modern Educational Technology domestically and internationally. The evolution of Educational Technology in the United States comprises two parallel threads: one is the development of media technology (materialized technology), and the other is the development of intelligent technology (non-materialized technology). The interaction and organic integration of two threads constitute the development history of Educational Technology. Modern Educational Technology in China started with electrified education. It emerged in response to the developmental needs of the country, drawing on foreign technology and experience to address urgent issues related to the public's diathesis at the time. From its inception, it embarked on a different development path from other countries, known as "big electrified education." The development process of modern Educational Technology in China can be divided into five stages in terms of time: newly established, lay a foundation, development, transformation, and in-depth development. This has resulted in the creation of a unique field of Educational Technology in the world, encompassing Educational Technology disciplines (including majors), undertakings, and industries.

Keywords: audiovisual education, audiovisual communication, electrified education, educational technology, development history

During the late 19th and early 20th centuries, the advancements in science and technology ushered in new media into the realm of education, fostering the evolution of Educational Technology. In the Current Educational Technology stage, the theories and practices originating from the United States exert a substantial influence. To illustrate the developmental journey of modern Educational Technology on both domestic and international fronts, this article predominantly focuses on China and the United States as exemplary cases.

1 Evolution of Educational Technology: A Historical Perspective on the United States

The United States, being a nation of immigrants, draws its cultural and educational
foundations primarily from Europe. Hence, American Educational Technology concepts can be traced back to the educational philosophies of ancient Greece, Rome, and the Renaissance during the Middle Ages, forming a cohesive lineage with the evolution of European educational thought. In this article, we will only discuss the development stages of modern Educational Technology in the United States, shaped by modern scientific and technological developments, as shown in Figure 1.

**Figure 1**

*The Development History of Educational Technology in the United States*


Figure 1 illustrates that Educational Technology in the United States unfolds through two parallel development threads: the advancement of media technology (materialized technology), and the progress of intelligent technology (non-materialized technology). The interplay and organic integration of these two threads form the developmental trajectory of Educational Technology.

**1.1 Development of Media (Materialized) Technology**

Prior to the 19th century, teaching primarily depended on oral instruction by teachers, supplemented by media like textbooks, physical objects, and models, along with tools such as blackboards and chalk. It was only in the late 19th and early 20th centuries that teaching witnessed the introduction of photography, lantern slides, and silent films, ushering in a visual dimension that departed from the abstract and formalistic nature of traditional instruction. In 1918, the United States launched a decade-long “Visual Instruction” movement, marking the
inception of its Educational Technology.

In 1920, the introduction of radio broadcasting for educational programs and the subsequent utilization of sound films in teaching expanded the scope beyond the concept of visual instruction. Consequently, visual instruction evolved into “Audiovisual Instruction.”

Since the 1950s, language laboratories (LL) and televisions have been applied in teaching, promoting the development of audiovisual teaching. In February 1963, the Definition and Terminology Committee of the American Association for Audiovisual Education proposed a special report proposing to change audiovisual instruction to audiovisual communication. The advent of satellite educational television broadcasts in 1974 marked the initiation of a new model for distance education.

From the above analysis, it is evident that since the 1920s, an increasing number of media have been applied to the teaching process, expanding the utilization of teaching resources and promoting innovation in teaching methods. Most of these media were utilized within the collective teaching system, thus enriching the connotation of the teaching model based on “teaching.”

In 1925, American psychologist Pressey designed the first automatic teaching machine. In 1954, Skinner published the article “The Science of Learning and the Art of Teaching,” which promoted the development of the “Program Instruction” movement. The late 1950s to early 1960s witnessed rapid development in program instruction, marked by the introduction of various teaching machines and extensive progress in program design.

In the 1970s, interest in teaching machines shifted towards research in “computer-assisted instruction (CAI).” With the emergence of personal computers and the continuous improvement of their performance-to-price ratio, computer-aided teaching experienced rapid development. Especially since the late 1980s and early 1990s, the maturation of multimedia and network technologies laid a solid foundation for the development of Educational Technology in an increasingly digitized environment. The introduction of virtual reality technology in the mid-1990s and the rapid advancement of artificial intelligence technology further opened up broad prospects for the development of Educational Technology.

Due to the strong interactivity of computers and networks, they are well-suited for individualized learning and collaborative group learning, significantly fostering the development of teaching models based on “learning.”

### 1.2 Development of Intelligent (non-materialized) Technology

From Figure 1, it is evident that the analysis and research on teaching elements yielded significant results starting from the mid-1940s. The “Experiential Learning Theory” by Dewey, Bloom’s “Taxonomy of Educational Objectives,” Skinner’s “Program Instruction Theory,” among others, played direct and influential roles in driving the development of Educational Technology.
Starting in the 1960s, the integration of systems theory with education and teaching gave rise to “System Technology,” with instructional design as a representative, leading to a qualitative leap in Educational Technology. Simultaneously, movements such as the “Behavioral Objectives Movement,” “Program Instruction Movement,” and “Reinforcement Theory,” initiated by behaviorists like Watson and Skinner, exerted significant influence on instructional design.

From the 1970s to the 1990s, instructional design predominantly relied on behaviorism and cognitive learning theories, with “teaching” as the dominant approach. Since the mid-1990s, due to the development of constructivist learning theory, instructional design based on “learning” has become an important research direction.

In the 1990s, there was a shift towards not only emphasizing the internal elements of teaching systems but also placing increased importance on the coordinated development among various systems. It was recognized that the overall integrity of a system is ensured by the organic connections between internal elements of the system and the organic connections between the system and the external environment. For instance, when considering the relationship between the teaching system and the social environment, focusing solely on the organic connections among the internal elements of the teaching system while overlooking the organic connections between the teaching system and the external social environment, and concentrating solely on the teaching-related issues in education without addressing non-teaching problems, will not provide a fundamental solution to the issues present in education and teaching. This realization gave rise to the concept of “overall technology,” within which performance technology constitutes a crucial component.

1.3 Formation of the Field of Educational Technology Research

The development of media technology facilitated the development of audiovisual instruction and individualized teaching, while the progress in intelligent technology promoted the application of systematic approaches in education and teaching. The combination of media technology and intelligent technology, namely the integration of audiovisual instruction, individualized learning, and systematic approaches, gave rise to the research field of Educational Technology.

American Educational Technology scholars commonly designated the 50 years from the early 1920s to the late 1960s as the stage of “audiovisual education.” Significant milestones during this period included the founding of the “Department of Visual Instruction” by the American Education Association in 1923, later renamed the “Department of Audio-Visual Instruction” in 1947. This stage was marked by an emphasis on the application of media in teaching, resulting in the rapid development of media technology. While intelligent technology began to attract attention, it had not yet assumed a central role in practice.

In the mid-1950s, influenced by the development of communication theory and early system concepts, the term “Audio-Visual Communication” emerged in the United States, sparking related research. This development signaled the transition from audio-visual teaching to audiovisual communication teaching,
marking a turning point in audio-visual teaching theory. It shifted the focus from studying the display of audio-visual information to designing its dissemination” (Yin et al., 2002, p. 13. However, “due to the deep-rooted influence of traditional media theories in this field, the practical impact of audio-visual communication theory on the domain has been limited. Nevertheless, from the perspective of theoretical evolution, the shift from audio-visual teaching theory to audio-visual communication theory represents a significant paradigm shift in the history of Educational Technology theory, as it marks the first step beyond the realm of media theory” (Zhang, 1994).

American scholars referred to the period after 1970 as the “Educational Technology” stage. A key milestone was the renaming of the “Department of Audio-Visual Instruction” of the American Education Association to the “Association for Educational Communications and Technology (AECT)” in 1970, and separated from the American Education Association, signifying the recognition of Educational Technology as an independent research field. From then on, educational technology entered a period of rapid development. This era witnessed rapid advancements in media technology and intelligent technology, fostering the integration of audio-visual teaching, individualized teaching, and instructional design.

For example, in the field of audio-visual communication teaching, by the late 1980s, the development of new information technology, the creation of new media, and the development and application of new communication methods led to distance education utilizing satellite communication technology; In individualized teaching forms, there have emerged multimedia teaching forms based on multimedia technology, network teaching forms based on network technology, and “virtual reality” teaching forms based on computer simulation technology; In the field of system design teaching, the systematic approach of teaching design, which was originally based on behaviorist learning theory and communication theory, has evolved towards cognitive theory, based information processing design models, constructivist design models, and comprehensive design models (Yin et al., 2002, p. 37).

As highlighted by the 1972 “Definitions and Terminology Committee” of the Association for Educational Communications and Technology (AECT):

Perhaps three successive and important models will best illustrate the characteristics of instructional technology, which have shaped the development of the field over the past fifty years: utilizing a broader range of learning resources, emphasizing individualized and personalized learning, and employing systematic approaches. When these three concepts are integrated into an overall method that facilitates learning, they collectively create the unique field of Educational Technology and, in doing so, establish the fundamental principles of this field (Yin et al., 2002, p. 37).

2. The Development History of China’s Educational Technology (Electrified Education)

Modern educational technology in China started with Electrified education. Its development process can be divided into five stages over time as shown in Table 1.
Table 1

Development Stages of Modern Educational Technology in China

<table>
<thead>
<tr>
<th>Stage</th>
<th>Time Period</th>
<th>Technologies and Methods Adopted</th>
<th>Learning Theory Based On</th>
<th>Characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Newly established stage</td>
<td>Early 20th century to late 1940s</td>
<td>Movies, broadcasts, slides</td>
<td></td>
<td>Birth of Electrified Education with extensive practical activities and the initiation of professional talent cultivation.</td>
</tr>
<tr>
<td>Laying the foundation stage</td>
<td>Late 1940s to late 1960s</td>
<td>Movies, slides, broadcasts, recordings</td>
<td>Behaviorism</td>
<td>Deepening the practice of Electrified Education, laying the foundation for Electrified Education in China.</td>
</tr>
<tr>
<td>Development stage</td>
<td>Early 1970s to early 1990s</td>
<td>Movies, slides, projections, broadcasting, recordings, television, video recording, computers</td>
<td>Behaviorism, Cognitivism</td>
<td>Rapid development of Electrified Education theory and practice with audiovisual technology as the main focus; initial research on Educational Technology theory conducted.</td>
</tr>
<tr>
<td>Transformation stage</td>
<td>Early 1990s to early 21st century</td>
<td>Slides, projection, broadcasting, recordings, television, video recording, multimedia computer, network</td>
<td>System method and overall technology</td>
<td>With computers and networks as the main focus, intelligent technology has received attention. Introduce the basic theories of educational technology from abroad and establish a preliminary discipline system of educational technology.</td>
</tr>
<tr>
<td>In-depth development stage</td>
<td>Early 21st century to present</td>
<td>Computer network, mobile communication, virtual simulation teaching system, intelligent terminals (iPad, mobile phone)</td>
<td>System methods, overall technology, artificial intelligence, big data</td>
<td>Building on the foundation of Internet+, big data and artificial intelligence education applications have rapidly developed, and mobile learning and intelligent learning have fully developed.</td>
</tr>
</tbody>
</table>

This article covers the scope from the early 20th century to the early 21st century, with a focus on reflecting the development process of electrified education over the past century (1915-2015). After the Ministry of Education released the 13th Five Year Plan for Education Informatization in 2016 and the Action Plan for Education Informatization 2.0 in 2018, the content of China’s education technology development will be introduced in another article.

2.1 Newly Established Stage (Early 20th century to Late 1940s)

2.1.1 The birth of electrified education
In 1911, the Xinhai Revolution led by Sun Yat-sen overthrew the rule of the Qing Dynasty, ending thousands of years of feudal society in China. From then on, China entered a period of social transformation. The May Fourth Movement of 1919 spurred the dissemination of new cultural ideas. Influenced by pragmatist educational philosophy, represented by John Dewey, some educators in China advocated connecting education with people’s lives, national economy, and social development. They promoted the development of popular and mass education to enhance the quality of the population and provide cultured labor for economic development.

In this historical backdrop, a cadre of influential educators, including Cai Yuanpei, Chen Yuguang, Yan Yangchu, and Tao Xingzhi, actively championed the cause of national revitalization through science and education. Recognizing the pragmatic needs of the Chinese populace and drawing inspiration from the successful utilization of films for educational purposes in European and American contexts, Cai Yuanpei, during his tenure as the inaugural Minister of Education for the Nationalist Government in 1912, asserted that “social education is an urgent contemporary task” and should involve “beneficial activities presented in the form of films.” He reiterated the importance of “social education” in his address at the National Temporary Education Conference (Wo, 1912). Cai Yuanpei and Chen Yuguang first proposed in 1923 that using films to improve the quality of the Chinese people was a practical and useful method. Thus, at the academic level, it opened up the embryonic form of electrified education academic ideas in China that are different from foreign audio-visual education (Alunna, 2010).

In a society with a high prevalence of illiteracy like China, the swift enhancement of the population’s quality necessitated the adoption of advanced scientific and technological methods, including films and radio. Therefore, electrified education with film education and broadcasting education as its connotations has emerged.

Figure 2

Continuous Spectrum of Important Events in Modern Education Technology in China (Beginning)

1939 The Birth of photogravure  
1941 Introduction of photography to China  
1972 Founding of magazine Record of Chinese and Western Hearings by Ding Weiliang and Joseph Arthur  
1973 Publication of mirror shadow lamp materials in the Record of Chinese and Western Hearings  
1895 Birth of CINEMA in France  
1896 Introduction of CINEMA to China  
1898 Translating CINEMA into a Film by Sun Xisheng  
1902 Nanking Huwai Academy using instructional movies and playing movies on reallands  
1911 The Xinhai Revolution overthrowing the Qing Dynasty  
1912 Cai Yuanpei advocating social education as Minister of Education in the Nationalist Government  
1915 Establishing a dedicated campus movie venue at Jining University  
1918 The Commercial Press began educational video production and Yan Yang initiated literacy education for Chinese workers  
1919 The May Fourth Movement unleashing new culture waves  
1920 Jining University promoted the high-quality cotton cultivation through movies and slides  
1922 Yan Yangchu’s utilizing slides for civilian literacy education  
1928 Central Radio Station establishing and broadcasting educational programs  
1930 The Executive Yuan promulgating the Film Censorship Law  
1931 The National Government establishing Film Inspection Committee  
1932 The China Education Film Association established, headed Cai Yuanpei  
1933 Ministry of Education launching teaching programs for Electrified Education personnel  
1938 Yanan Film Troupe established by the General Political Department of the Eighth Route Army  
1939 Electrified Education collaboration, Joint program by the College of Science at Jining University and Ministry of Education  
1940 Yanan Xinhua Radio Station started broadcasting  
1942 Launching Film and Broadcasting Monthly

According to the three principles defining “Electrified Education Events,” the earliest occurrences depicted in Figure 2 date back to 1903 and 1915. Historical evidence supporting the 1903 event is insufficient. However, for the 1915 incident, information from Sun Jiansan (Son of Sun Mingjing) led to the discovery of an old photo (catalog number ubcn2951) on the Yale Divinity School Library website in the United States. This photo captures the completion of the first teaching building, East Building, at the new site of Jinling University in 1915. Notably, two wooden poles for hanging screens (refer to the circled area in Figure 3) are visible on the flat ground in front of the left side of the building (Yale University Library, 2010). Upon verification, this designated area served as the projection site for “campus films” during that period. Film screenings attracted not only the school’s teachers and students but also nearby residents. Given the silent nature of films at the time, teachers ingeniously utilized “film songs” and radio broadcasts to provide live commentary, simultaneously educating the public on current events. Therefore, the details captured in this photo can be confirmed as a pivotal event marking the inception of Electrified Education in China (Li & Xie, 2012).

Figure 3

The dedicated screening venue for “Campus Movies” at Jinling University

Note. An old photo (catalog number ubcn2951) on the Yale Divinity School Library website in the United States. https://hdl.handle.net/10079/digcoll/1484589

2.1.2 Rise of the electrified education movement

On July 8, 1932, the “China Education Film Association” held its inaugural meeting in Nanjing (Guo, 1934). Under the promotion of the China Education Film Association, electrified education activities with film education and broadcasting education as the main content have rapidly developed.
Starting in 1930, Nanjing Jinling University sequentially established the Film Education Committee and the Education Film Department. In addition to actively participating in the production, translation, and screening of educational films for instructional use, they collaborated with the China Education Film Association, screening educational films for primary and secondary schools along the four railways of Nanjing-Shanghai, Shanghai-Hangzhou, Nanjing-Wuhu, and Huainan, while also serving social education.

In 1933, Shanghai Daxia University inaugurated its own radio station, initiating educational broadcasting. The university offered film education lectures, founded the “China Education Film Society,” and engaged in the production of educational films (Zhao & Jia, 2005, pp. 21-22). Additionally, driven by committed individuals associated with the Shanghai branch of the China Education Film Association, funds were collectively raised to establish the “National Education Film Promotion Office” in Shanghai. This office played a pivotal role in distributing free educational films to diverse regions across the country (China Education Film Association, 1933).

With the advancement of film education and broadcasting education, local governments started recognizing the significance of these activities. With government endorsement, public education centers dedicated to public education work were established nationwide. The Zhenjiang Public Education Center emerged as the most notable and representative among them (Zhao & Jia, 2005, pp. 19-20).

2.1.3 Establishment of the name and academic connotation of electrified education

In March 1936, the Executive Yuan officially approved the “Education Plan during the National Crisis,” drafted by Guo Youshou, which formally included the promotion of “film education” and the popularization of “broadcasting education” as national policies. At that time,
the Ministry of Education established the Film Education Committee and the Broadcasting Education Committee. For the convenience of management and simplicity of writing, Chen Lijiang, the Director of the Social Education Department, simplified the two committees into the “Electrified Education Committee” and further simplified it to “e-Education Committee.” At this point, “Electrified Education” and “e-Education” officially became specialized terms in China, encompassing the two components of “film education and broadcasting education.”

In order to promote “film education” and “broadcasting education” nationwide, the Social Education Department of the Ministry of Education, in collaboration with the School of Science at Jinling University, jointly organized the Ministry of Education’s “Electrified Education Personnel Training Class.” From then, the term “Electrified Education” has been formally and publicly used in official documents for both internal and external public use (Nanjing Daily, 1936).

Figure 5
Report on the Establishment of Training Classes for Electrified Education Personnel by the Ministry of Education (Nanjing Daily, 1936, August 1 P6)

Note. Provided by Sun Jiansan, son of Sun Mingjing.

With the official commencement and completion of the Ministry of Education’s Electrified Education personnel training classes, the academic connotation of Electrified Education was confirmed. After completing their studies, students returned to their respective provinces to carry out work, and the term “Electrified Education” became widely known nationwide.

2.1.4 Development of the electrified education movement

In 1937, the full-scale War of Resistance against Japan broke out. Electrified Education
undertook the important task of mobilizing the masses and arousing the whole nation to “resist aggression and save the nation.” Despite extremely challenging circumstances, Electrified Education persisted in its work and experienced development, thus completing the initial phase of development in China’s Electrified Education.

(1) Production of Educational Movies

During the wartime resistance against Japan, educational filmmaking experienced significant development. Institutions that persevered in producing educational films during this period included the China Film Studio, Central Film Photography Studio, and the China Education Film Studio.

Inspired by Cai Yuanpei’s call for “using a camera to participate in national investigations,” the Education Film Department of the School of Science at Jinling University conducted scientific surveys and studies on local conditions in East China, North China, Northwest, Southwest, and Southeast regions. They produced a large number of educational films with scientific and historical value. After moving westward to Chengdu, under difficult conditions, they not only provided support for their own university’s teaching but also offered Electrified Education services for other universities, primary and secondary schools, public education, and various sectors of society.

(2) Training of Electrified Education Talents

In order to cultivate specialized talents in Electrified Education, higher education institutions made substantial progress from holding short-term training classes to offering majors in Electrified Education. Starting from 1936, institutions such as Jiangsu Provincial College of Education, Jinling University College of Science, and National College of Social Education established an Associate Degree Program in Electrified Education. In 1942, the School of Science at Jinling University launched the monthly magazine “FILM & RADIO电影与播音,” which was the most influential magazine in Electrified Education at that time and served as the primary reference for students in Electrified Education programs.

(3) The Development of the public Electrified Education Movement

After the beginning of the Anti-Japanese War, the Ministry of Education gradually promoted broadcasting education, particularly in secondary schools and public education centers. In October 1939, the Ministry of Education and the Central Radio Station jointly organized a broadcasting education program. The Ministry of Education invites experts from various disciplines to write speeches and broadcasts them regularly (Administration Press, 1947, pp. 1025).

On the basis of the existing 81 educational film touring teaching districts established nationwide, 31 were added in 1938 and 23 in 1939. By 1941, there were a total of 149 mobile teaching areas for Electrified Education throughout the country (Administration Press, 1947). The screening of educational films was mainly carried out by various mobile projection teams. These included the “Film Projection Brigade” of the Political Department of the Kuomintang Military Commission, the “Zhongdian Mobile Projection Team” attached to the Central Film Studio, as well as Electrified Education guidance offices and work teams in various provinces.
Local public education centers were the foundation for promoting film education. According to statistics, in 1928, there were 10,773 public education centers nationwide, and in 1936, this number increased to 121,713 (Peng, 1941). In 1942, the Ministry of Education submitted a proposal to the Cabinet and established the “National Central People’s Education Center” in Chongqing (Peng, 2002). Additionally, Jinling University also engaged in film screening for public education during the Anti-Japanese War.

(4) The Development of Electrified Education after the Victory of the Anti-Japanese War

After the victory of the War of Resistance against Japan, strengthened foreign exchanges were achieved through organizations such as the United Nations and countries like the United Kingdom and the United States. In 1946, Sun Mingjing served as a Chinese member of the United Nations Educational, Scientific and Cultural Organization (UNESCO) Mass Communication Committee. In 1947, UNESCO provided scholarship opportunities for China, specifically for audiovisual education investigations. That year, the Ministry of Education sent Du Weitao to the United States for investigation and equipment purchase, and sent Xiao Shuzi and Bai Zhijie to study audiovisual education in the United States. In 1948, Nan Guonong went to the United States through UK to study comparative education and also studied in the master’s program in audiovisual education. From 1948 to 1949, UNESCO established an audiovisual education institute in Beibei to produce educational and health slides for use in various regions.

With the victory of the War of Resistance against Japan, Electrified Education regained attention for its role in school education, particularly evident in the focus of universities on subject teaching and support for primary and secondary education.

In 1946, the Electrified Education Committee was established at Beiping Normal University. In 1947, a well-equipped Electrified Education centre was completed. The university began shooting 16mm silent instructional videos and educational slides. At the same time, an elective course titled “Electrified Education” was offered in the Education Department, with lectures and guidance provided by educators such as Ge Ze, Qin Yahe, and Zhang Zhaquan. Following the initiative of Chen Heqin, the dean of the Normal College of Central University, a Visual Education course was offered in the Department of Education in November 1947, with Sun Mingjing as the instructor. The course was later changed to an Electrified Education course, taught by Duan Tianyu. Liao Taichu, from the Education Department of Yanjing University, had studied audiovisual education courses at Columbia University in the United States. Upon returning to China in 1948, he offered Audiovisual Education courses in the department (Sun, 1983).

Starting from 1946, the Ministry of Education became involved in the editorial work of the monthly magazine “FILM & RADIO电影与播音,” turning it into the first officially sponsored academic journal on Electrified Education in China. Beginning with Volume 6, Issue 1, the magazine was renamed “FILM & RADIO影音.”

2.1.5 The development of the electrified education movement in liberated areas

With the expansion of the anti-Japanese base areas behind the enemy lines and the victory of the War of Resistance against Japan and the War of Liberation, the radio and film undertakings in the liberated areas also gradually developed and expanded. They played a positive role in the
construction of the Communist Party of China (CPC) and the People’s Liberation Army, and also created conditions for carrying out popular education.

(1) Development of the Broadcasting undertakings

On December 30, 1940, Yan’an Xinhua Radio Station, the first radio station founded by the CPC, began broadcasting. On March 25, 1949, Xinhua Radio Station moved from Pingshan, Hebei to Beiping with the CPC Central Committee, and was renamed as Beijing Xinhua Radio Station. On September 27th, it was renamed as Beijing Xinhua Radio Station.

On October 1, 1949, the founding ceremony of the People’s Republic of China was grandly held in Tiananmen Square. Beijing Xinhua Radio Station provided live broadcasting, which was simultaneously broadcasted by radio stations across the country. On December 5th, Beijing Xinhua Radio Station was renamed as the Central People’s Broadcasting Station.

(2) The Development of the Film undertakings

The film undertakings in the liberated areas originated from the film troupe of the General Political Department of the Eighth Route Army (commonly known as the “Yan’an Film Troupe”), which was established in 1938. It produced documentary films such as “Yan’an and the Eighth Route Army,” “Combining Production with Combat” (affectionately referred to by Yan’an soldiers and civilians as “Nanniwan”), as well as news materials such as Dr. Bethune and the Seventh National Congress of the CPC.

In order to cultivate professionals in the film undertakings, the “Yan’an Film Troupe” held two training sessions, and the participants later became the backbone of the film undertakings in New China (Lu, 2020). The film troupe also had a projection team that, they traveled throughout the entire Shaanxi-Gansu-Ningxia Border Region, even going to the front lines in the Jin Sui Border Region for screenings, receiving a warm welcome from the military and the general public.

In April 1946, the People’s Liberation Army liberated Changchun and took over the pseudo“Manying” (Full name is “Manchukuo Film Association”). On October 1, 1946, the first film production base with relatively complete equipment for the People’s Film was officially established as the Northeast Film Studio.

2.2 Lay a Foundation Stage (Late 1940s to late 1960s)

On October 1, 1949, with the establishment of the New China, social Electrified Education experienced rapid development. Significant progress was made in promoting institutions, infrastructure, personnel allocation, and education. Moreover, the scope and methods of social Electrified Education continued to enrich and expand.

2.2.1 The development of social electrified education

(1) Establishment of the Electrified Education division

In November 1949, the Science Popularization Bureau of the Ministry of Culture of the Central People’s Government established the Electrified Education division, with Liang Zechu as
the director. Upon returning to China, Xiao Shuzi joined the Electrified Education Office of the Ministry of Culture in early 1950, assuming the role as the Director of the Management section.

In 1950, to ensure the availability of necessary equipment and resources for Electrified Education, the Electrified Education division established the Electrified Education Tool Manufacturing Institute. The Electrification Education division and the Electrification Education Tool Manufacturing Institute belong to the same team.

(2) Carrying Out Broadcasting Education and Film Education

In order to meet the needs of social education, the Central People’s Broadcasting Station, as well as local broadcasting stations in Beijing, Shanghai, Tianjin, Shanxi, Jiangsu and other regions, held lectures on Russian, social development history, and political economics. Broadcasting schools were established to facilitate broadcasting education.

In 1950, the Ministry of Culture conducted a training class for film projection personnel in Nanjing, hosted by Sun Mingjing, with over 2000 students. Towards the end of the training class, content on using lantern slides was added, and Xiao Shuzi served as the main lecturer. The Ministry of Culture convened a Slide Workshop Meeting for five provinces and two cities, promoting the use of Slide in various regions for promotional activities. The Ministry of Health of the Northeast People’s Government established the Electrified Education Institute, producing a total of 18 health education films within three years.

In 1953, the Science Education Film Studio of the Central Film Administration was officially established in Shanghai. In 1964, the Beijing Science Education Film Studio was established, along with the establishment of the Preparatory Office of the Central Education Film Studio of the Ministry of Education.

In 1955, Beijing and Tianjin established radio correspondence schools respectively. In July 1958, Tianjin “Red Specialized Red Specialized红专” Radio and Television University was established, later renamed Tianjin Radio Correspondence University in 1959.

(3) Implementation of Radio and Television Education

In 1959, Harbin planned to establish Harbin Broadcasting University and Harbin Television Normal University. In 1960, Shanghai Television University and Beijing Television University were established. Subsequently, Shenyang, Changchun, and Harbin successively established television universities. Additionally, Jilin, Chongqing, and other locations established amateur radio universities, and Guangzhou opened a Radio and Television University.

2.2.2 Advancements in electrified education within primary and secondary schools

In the early days of the establishment of the New China, due to financial constraints and a lack of professional and technical personnel, primary and secondary schools were unable to independently carry out Electrified Education work. In order to promote the development of Electrified Education, some provincial and municipal education departments began to establish Electrified Education centers, with the main responsibilities of promoting Electrified Education in primary and secondary schools, along with service and management functions.

In 1958, the Preparatory Office of the Beijing Electrified Education Center was established,
forming groups dedicated to teaching the use of slides, films, and audio recording (later renamed as audio recording group) for educational purposes. The center boasted a total of 70 Electrified Education professionals. By 1960, the Preparatory Office underwent an official renaming to the Beijing Electrified Education Center, transitioning from promoting broadcast teaching to advocating teaching via audio recording. In 1961, the screening teams for educational films at the Beijing Electrified Education Center increased to 14, shifting from fixed-location screenings to school-based screenings. Post-1963, various districts and counties, leveraging the film screening teams, sequentially established Electrified Education groups (stations) within their respective regions.

In 1959, the Shenyang Education Bureau formed a teaching film directing group, in October 1960; the Shenyang Science Education Film Studio was formed based on this initiative. In 1962, following the central adjustment policy, the film studio was closed. The Shenyang Education Bureau retained personnel and equipment, and with additional equipment subsidized by the Ministry of Education, it established the Shenyang Education Bureau Teaching Film and Slide Group. Finally, in January 1964, the Shenyang Electrified Education Center was officially established on this foundation, with its primary responsibilities being the production and promotion of slides, radio, and film-assisted teaching.

In 1960, Vice Premier Lu Dingyi delivered a report on “The Necessity of Educational Reform” during the Second Session of the Second National People’s Congress. He emphasized the “essential adoption of new educational tools such as records, recordings, slides, movies, radio, and television,” highlighting the use of new educational tools as a crucial aspect of educational reform.

In 1960, Shanghai established the Electrified Education Committee to plan, organize, and guide the development of Electrified Education initiatives throughout the city.

In 1964, the Education Department of Jilin Province formed an Electrified Education Group under its affiliated Teaching Instrument Society. Concurrently, Heilongjiang Province inaugurated an Electrified Education Research Office within the Education College, accompanied by Electrified Education experimental offices in Harbin and Qiqihar. Additionally, Chengdu and Chongqing in Sichuan Province established their respective Electrified Education task forces.

In 1965, Shanghai Education College established the Electrified Education center, responsible for internal Electrified Education initiatives within the college and externally overseeing the overall management of Electrified Education in the city.

2.2.3 The development of electrified education in higher education institutions

(1) Carry out Electrified Education Work

From 1950 to 1965, several universities, including Beijing Foreign Studies University, Northwest University, Beijing Normal University, Guiyang Medical College, Northwest Normal University, Shanghai International Studies University, Shanghai First Medical College, Inner Mongolia Normal University, Nanjing University, Beijing University, Xi’an Jiaotong University, Shanghai Normal University, and Shanghai Institute of Education, and others, successively established Electrified Education institutions to carry out Electrified Education Work.
In 1958, Beijing Normal College established the Capital Education Film Studio.

(2) Training of Electrified Education Talents

In 1950, Suzhou National College of Social Education merged with Jiangsu Provincial College of Education, and was renamed Sunan College of Culture and Education. This new institution introduced a “Specialized Program in Electrified Education,” with Chen Tingsheng serving as the director.

In 1951, the Ministry of Education held a national workshop for curriculum discussions among teacher training higher education universities. During the conference, a decision was made to include Electrified Education as a compulsory course in the Education major. Subsequently, the Education Department of Beijing Furen University offered a course on “Electrified Education Technology,” with Xiao Shuzi as the main lecturer.

In 1952, all faculty members and students of the film and radio Department of Jinling University were merged into the Beijing Central Film School (predecessor to the Beijing Film Academy). In the same year, Beijing Normal University offered the “Electrified Education Technology Course” in the Department of Physics.

In 1954, Xiao Shuzi and Nan Guonong collaborated on the development of “the curriculum outline for Electrified Education.” In 1957, the Education Department of Northwest Normal University offered an elective course on Electrified Education, led by Xiao Shuzi.

In 1963, Inner Mongolia Normal College officially introduced the public elective course on “Radio, Film and Teaching,” lectured by Li Long.

Figure 6

Lecture Notes on “Radio, Film and Teaching”

Note. By Li Long, 1963
By 1965, the national Electrified Education network had essentially taken shape. However, in the summer of 1966, the Cultural Revolution began, resulting in the dissolution of Electrified Education institutions, personnel relocation, and equipment loss. As a result, organized and leadership-driven Electrified Education activities across the country experienced a significant decline. Despite these challenges, educators in the field of Electrified Education persevered and remained dedicated, accumulating strength for the eventual resurgence of Electrified Education.

2.3 Development Stage (Early 1970s to Early 1990s)

In the early 1970s, as the “Cultural Revolution” entered its later stages, primary and secondary schools gradually resumed their classes. Higher education institutions started to recruit college students from workers, farmers, and soldiers, leading to a gradual recovery in Electrified Education during this period.

From 1971 to 1975, several institutions such as Inner Mongolia Normal College, Beijing Institute of Education, Beijing University, Nanjing Teachers College, among others, resumed their Electrified Education initiatives. Harbin Television University resumes enrollment. In Heilongjiang Province, an Electrified Education Office was established in the Correspondence Broadcasting College, known as the Heilongjiang Province Electrified Education Center. Henan Province formed their Electrified Education Group. South China Normal University established a modern Educational Technology Research laboratory, with Li Yunlin serving as the director of the laboratory.

On August 1, 1977, Deng Xiaoping, after receiving a report from Minister of Education Liu Xiyao, approved the establishment of the Central Electrified Education Center.

On February 6, 1978, Deng Xiaoping personally approved the request report from the Ministry of Education and the Central Radio and Television Administration on the preparation of a television university, and agreed to establish a broadcasting and television university for the whole country.

From April 22 to May 16, 1978, the State Council convened the national conference on Education, during which Deng Xiaoping delivered a speech. He emphasized the need to formulate measures to accelerate the development of modern means such as television and radio, stating that it was a crucial avenue for the rapid, effective, and cost-efficient development of the education sector and must receive full attention.

On July 24, 1978, the Ministry of Education submitted a request report to the State Council on the establishment of the Central Electrified Education Center and the Beijing Education Film Studio. On August 23, the National Planning Commission approved the establishment of the Central Electrified Education Center.

The establishment of a National Radio and Television University and a Central Electrified Education Center, approved by the central government and the State Council, became a landmark event for the restart of electronic education. The approval documents are shown in Figure 7.

2.3.1 Establishment of electrified education institutions

(1) Central Electrified Education Institutions

On February 24, 1978, the Ministry of Education established the Electrified Education Group, with Cheng Guang as the team leader.

On January 4, 1979, the State Council approved the Ministry of Education’s proposal to establish the Electrified Education Bureau. The report advocated a dual identity, externally recognized as the Central Electrified Education Center and internally as the Electrified Education Bureau (Ministry of Education, 1979).

In early 1987, the General Office of the National Education Commission decided to adjust the organizational structure, leading to the separation of the Central Electrified Education Center and the Electrified Education Bureau. Xing Chunjie was appointed by the National Education Commission as the Deputy Director of the Electrified Education Bureau, tasked with overseeing its operations. This restructuring also delineated the administrative functions of the Electrified Education Bureau (State Education Commission Office, 1987).

In February 1989, the National Education Commission made internal organizational adjustments, renaming the Electrified Education Bureau to the Electrified Education Department. Xing Chunjie was appointed as the head of the Electrified Education Department (Wu, 1994).

(2) Local Electrified Education Institutions

After the establishment of the Electrified Education Bureau and the Central Electrified Education Center by the Ministry of Education, various provinces, autonomous regions, municipalities directly under the central government, prefectures (cities), counties, and school
systems also successively established their own Electrified Education institutions.

As of 1986, every province in China, excluding Taiwan, had established provincial-level Electrified Education institutions. By 1987, there were 320 independently established prefecture level (city-level) Electrified Education institutions nationwide, constituting 91.1% of the total at that administrative level. Furthermore, 2218 counties had established Electrified Education institutions or assigned dedicated personnel to oversee Electrified Education initiatives.

During this period, various levels and schools also established Electrified Education institutions. According to 1986 statistics, 694 regular higher education institutions in China had established Electrified Education institutions or appointed designated personnel to oversee Electrified Education initiatives, accounting for 65.8% of the total number of regular universities. Additionally, 28,615 regular secondary schools, representing 30.8% of the total, had established such institutions; and 91,279 regular primary schools, constituting 11.1% of the total, had similarly established or appointed personnel for Electrified Education management.

2.3.2 Development of training work

(1) Training for Electrified Education Personnel

① The inaugural Electrified Education Symposium, organized by the Ministry of Education’s Electrified Education bureau and hosted by the Gansu Normal University (predecessor to Northwest Normal University), began on June 13, 1979 in Lanzhou, and concluded in Beijing at the end of July, lasting for nearly two months.

② From September 10, 1982, to January 6, 1983, Northwest Normal University held a four month-long “National Higher Normal University Electrified Education Course Teacher Training Class” for teacher training higher education college teachers. Participants came from various regions across the country, including 45 university teachers from 25 provinces, municipalities, and autonomous regions.

③ From July 13th to 22nd, 1983, the Ministry of Education’s Electrified Education Bureau held the “National Symposium on Electrified Education Courses in Higher Normal Colleges and Universities” at Northeast Normal University.

(2) Television Technology Training

In the spring of 1979, the Electrified Education bureau held five consecutive training sessions on television recording technology at Beijing Normal University, marking the first domestic initiative to provide technical training in color filming and recording equipment.

From 1982 to 1986, the Electrified Education Bureau commissioned Tianjin Normal University to hold four consecutive sessions of the “National Electrified Education Technology Training Class,” each lasting 20 days, and training over 300 people in total.

(3) Training for TV textbook editors and directors
From February 21 to 26, 1979, the Electrified Education Bureau held a “Teaching Film Work Conference.” On the 22nd, the conference was held in Shanghai, and on the 23rd, it moved to Suzhou University. Participate in the “National Seminar on TV Textbook Editing and Directing.”

On May 8 to 26, 1980, the Electrified Education Bureau held a “writer and director Study Class of Film and Video in Universities and Electrified Education Centers” in Beijing.

From October 29 to November 1, 1981, the first preparatory meeting for the “Video Textbook Writing and Directing Workshop” was held in Suzhou. The meeting mainly focused on observing sample films and model films to understand the production process and the role of scripting and directing. The second preparatory meeting occurred from December 24 to 31 in Suzhou, concentrating on the details of curriculum development and class arrangements. Following the meetings, Li Yunlin, Li Kedong, Wang Suixiang, Xu Zhirui, Zhou Junda, and others jointly wrote the training textbook titled “Fundamentals of TV Textbook Writing and Directing.”

In late March 1982, the first session of the “National Workshop on Television Textbook Writing and Directing” was held in Guangzhou, lasting three weeks. On May 31, 1982, the second workshop was held in Nanjing. From June 24 to July 10 of the same year, the third session, commissioned by the Ministry of Education, was organized by Liaoning Provincial Institute of Education in Shenyang. The fourth session occurred from October 11 to 31 in Shanghai, with a parallel class held at the Air Force Political College during the same period. These four sessions of the “National Workshop on Television Textbook Writing and Directing” collectively trained 475 TV textbook writing and directing personnel nationwide. They have become the first batch of backbone talents in education software in our country, greatly promoting the continuous improvement of staffing level (W. Liu, 2016).

From December 1 to 21, 1982, the Central Electrified Education Center held a national training program on the production of educational television programs in Taiyuan. A total of 78 participants from Electrified Education institutions in 28 provinces, municipalities, and autonomous regions, as well as some universities, attended the training.

In January 1983, the Central Electrified Education Center held a training program on teaching film and video materials in Nanjing.

From June 6 to 26, 1988, the Central Electrified Education Center held a TV textbook writing and directing workshop in Beijing, focusing on the general education system.

From September to November 1988, the Central Radio and Television University conducted a training course in Beijing focusing on the standardization of writing and production for instructional materials.

2.3.3 Establishment of collaborative organizations for electrified education

(1) Collaborative Group for the Development of Electrified Education Software

On September 25, 1980, the “Cooperative Group for Electrified Education Software Development of Four Engineering Colleges in Higher Education” was established at Xi’an
Jiaotong University. This initiative later evolved into the National engineering colleges and universities collaborative group.

From November 25 to 29, 1980, Nankai University, Beijing University, Fudan University, Wuhan University, Beijing Normal University, East China Normal University, South China Normal University, and Shaanxi Normal University a collaborative group for the development of Electrified Education software was established of eight universities (Later renamed as “Science colleges and Universitys Collaboration Group”). In May 1983, Nanjing University and Sun Yatsen University absorbed as members of the collaborative group (W. N. Liu, 2016).

(2) Electrified Education Textbook Collaboration Group for Communist Party History

From December 15 to 20, 1980, under the organization and leadership of the Education Ministry’s Political and Legal Theory Education Division and the Electrified Education Bureau, a collaborative group was established by eleven higher education institutions, including Peking University, Beijing Normal University, Renmin University of China, Beijing University of Posts and Telecommunications, Nankai University, Xi’an Jiaotong University, Shaanxi Normal University, East China Normal University, Fudan University, South China Normal University, and Wuhan University. The group was named the “Electrified Education Textbook Cooperation Group for Communist Party History” and collectively developed a series of 30 episodes titled “TV Textbook Series: The History of the Communist Party of China.”

(3) Electrified Education Collaboration Group for Ethical Education

In November 1983, the Electrified Education Collaboration Group for Ethical Education was established at Nanjing Institute of Technology. The group aimed to collectively explore the application of modern educational methods to enhance political and ideological education in universities. After the establishment of the the Electrified Education Collaboration Group for Ethical Education, five institutions collaboratively developed 19 Electrified Education textbooks for ideological and political education, including “The Treasure of World Civilization - Ancient Chinese Science and Technology” (Volumes I, II, and III). The institutions were Xi’an Jiaotong University, Shanghai Jiao Tong University, Zhejiang University, Nanjing Polytechnic Institute, and Dalian Polytechnic Institute.

(4) Discipline Collaboration Group

In 1978, the Ministry of Education’s Electrified Education Group held a symposium on Electrified Education for foreign languages in Guangzhou. During the meeting, it was decided to establish a national collaborative group for Electrified Education for foreign languages in universities. In 1980, the preparatory committee for the National Higher Education Foreign Language Electrified Education Association was formed. From September 15, 1984, it officially operated under the name “China Higher Education Foreign Language Electrified Education Association.” On October 8, 1985, the inaugural conference of the association commenced in Beijing. Throughout this event, attendees deliberated and ratified the association’s constitution, elected board members, and exchanged insights on employing computer-assisted teaching in foreign language education. Commencing from May 1992, the association continued its
initiatives under the appellation of the Foreign Language Professional Committee of the China Association for Electrified Education.

The development of Electrified Education calls for broader exchanges and collaborations. Regional collaborative entities, such as the Southeast Electrified Education Discipline Collaborative Group and the Northern Higher Education Electrified Education Discipline Collaborative Group, have emerged to address this need.

2.3.4 Establishment and development of electrified education discipline

To cultivate professionals in Electrified Education, from 1978 to 1979, Hangzhou University, Zhejiang Normal University, and Fujian Normal University successively established Electrified Education training direction in the Department of Physics.

In October 1979, the Ministry of Education approved the establishment of the Institute of Modern Educational Technology at Beijing Normal University and East China Normal University.

In September 1981, the Electrified Education Bureau of the Ministry of Education held a seminar to discuss the teaching syllabus for the course “Electrified Education.” It laid the initial framework for the establishment of the theoretical system in Electrified Education.

In 1983, with the approval of the Ministry of Education, South China Normal University pioneered the establishment an undergraduate major in Electrified Education. This four-year program set a benchmark for the development of the Electrified Education discipline, becoming a model for subsequent initiatives.

Subsequently, starting from 1984, there was a nationwide surge in the construction of Electrified Education majors. By 1992, a total of 20 undergraduate programs in Electrified Education had received formal approval from the Ministry of Education (National Education Commission).

In March 1984, under the leadership of the Electrified Education Bureau and the Central Electrified Education Center, the Electrified Education Curriculum and Textbook Review Group were established. Nanguo Nong served as the group leader, and Li Yunlin as the deputy group leader.

In 1986, the State Council Academic Degrees Committee approved Beijing Normal University, Hebei University, and South China Normal University to enroll master’s students in Educational Technology. In 1993, the State Council Academic Degrees Committee approved Beijing Normal University to enroll doctoral students in Educational Technology. This marked a significant milestone as the discipline of Educational Technology established a comprehensive talent training system spanning from associate and undergraduate degrees to master’s and doctoral levels.

From October 24 to 29, 1988, at the joint commission of the Normal Education Department of the National Education Commission and the Electrified Education Bureau, a national seminar
on Electrified Education programs in teacher training institutions was held at Beijing Normal University. The conference brought together representatives from 25 teacher training higher education institutions, as well as teacher training centers in Beijing and Wuhan under the National Education Commission, totaling 58 participants. The primary focus of the meeting was on discussing training objectives, curriculum design, textbook development, and teacher training in the field of Electrified Education at teacher training institutions.

In 1990, a “Seminar on the Construction of Electrified Education discipline in Northern Regions” was held at Inner Mongolia Normal University, with the participation of 14 institutions. During the conference, experiences and challenges in the development of electrified education major were shared, leading to the establishment of the “Collaborative groups for electrified education disciplines in some higher education institutions in the northern regions.” At the meeting, Beijing Normal University proposed the formal adoption of “Educational Technology” as the official name for the discipline. They presented a curriculum system that included courses like “Instructional Design,” sparking intense debates among the attendees; it also prompted everyone to think deeply.

In 1991, Hebei University, on behalf of the “Collaborative groups for electrified education disciplines in some higher education institutions in the northern regions” hosted an “Instructional Design Seminar.” This marks the first professional seminar in China with “instructional design” theory as its core, attended by representatives from more than 10 specializing in Electrified Education major. During the workshop, in-depth discussions took place on the meaning, role, value, theoretical framework of instructional design, as well as the content of the course “Instructional Design,” played a role in publicize, sowing, and promoting the development of instructional design in China.

2.3.5 Radio and television universities

In February 1979, Central Radio and Television University and 28 provincial, autonomous region, and municipal radio and television universities nationwide commenced classes simultaneously. On February 8, China Central Television (CCTV officially broadcasted courses from the Radio and TV University, with the first lecture delivered by Professor Hua Luogeng, an academician of the Chinese Academy of Sciences (Central Radio and Television University President’s Office, 1989). By the late 1980s, this system had evolved to encompass one central Radio and TV University, 43 provincial, autonomous region, municipal, and planned cities Radio and TV Universities, 575 local (city-level) Radio and TV Universities (branch campuses), and over 1,500 county-level Radio and TV University stations (branch campuses), forming a comprehensive higher education system in radio and television.

2.3.6 Education television station

After 1980, some provinces and cities, aiming to address issues in education development, independently or in collaboration with the broadcasting and television departments, established various forms of educational television stations.

In 1985, in order to strengthen the leadership in satellite television education, the National
Education Commission established the Television Education Leadership Group to coordinate and manage satellite television education efforts. In December, the National Education Commission established the Satellite Television Education Leadership Group, Zou Shiyuan, Deputy Director of the Education Commission, serves as the team leader, with an office set up to specifically organize and implement.

On July 1, 1986, the trial broadcast of satellite television education programs was successful.

On October 1st, it was officially broadcasted under the name “China Education Television (CETV).”

On July 28, 1987, the National Education Commission decided to establish China Education Television station (State Education Commission, 1987).

The establishment of China Education Television station promoted the development of education television stations across the country. According to statistics in 1990, there were more than 500 education television stations, more than 3,000 receiving stations, and over 30,000 broadcasting points nationwide. This laid the group work for the initial formation of a satellite television education network.

2.3.7 Revitalization of electrified education in primary and secondary schools

On May 11, 1978, the Shenyang Municipal Committee of the Communist Party of China approved the restoration of the Shenyang Electrified Education Center.

In November 1978, the Beijing Electrified Education Center was restored to its original location, and Electrified Education stations in various districts and counties were also gradually restored.

In November 1978, The Ministry of Education held a National Lantern Slide Teaching conference. Vice Premier Fang Yi met the participating representatives, and observed lantern slide exhibitions and teaching demonstrations. He affirmed that lantern slide teaching was vivid and the images were clear, recommending its nationwide promotion.

In 1982, the Ministry of Education offered elective courses on computer at Tsinghua Affiliated High School, Beijing University Affiliated High School, Beijing Normal University Affiliated High School, Fudan Affiliated High School, and East China Normal University Affiliated High School.

In 1983, all secondary schools in Beijing, and key primary schools began equipping themselves with computers, introducing computer courses, and implementing computer-assisted teaching.

In 1984, all high schools in Shanghai began offering computer courses.

In 1988, Beijing No.4 Middle School, Shunyi Niulanshan No.1 Middle School, Shijia Hutong
Primary School, and Dengshikou Primary School installed closed-circuit television.

In 1989, the “excellent schools” in primary and secondary schools in Beijing were equipped with video recorders, monitors, language laboratories, cameras, and computers.

In the same year, the Central Electrified Education Center organized a nationwide evaluation of achievements of Electrified Education, promoting the development of Electrified Education textbooks.

In February 1992, the National Education Commission issued the “Standards for Equipping Electrified Education Equipment in Primary and Secondary Normal Schools.” This standard, encapsulated as “Three Machines and One Screen” (projector, cassette recorder, video recorder, and screen), aptly reflected the practical situation.

In August 1994, the “National Seminar on Computer-Assisted Instruction in Primary and Secondary Schools” organized by the Central Electrified Education Center, took place at Inner Mongolia Normal University.

2.3.8 Establishment of academic organizations for electrified education

In August 1979, during the “Seminar on Electrified Education” organized by the Electrified Education Bureau of the Ministry of Education at Gansu Normal University, representatives of 37 universities initiated the establishment of the “China Electrified Education Research Association.” Cheng Guang was elected as the chairman, and Nan Guonong, Xiao Shuzi, Sun Mingjing, and Liao Taichu were elected as directors (Cao et al., 2010).

In 1991, with the approval of the Ministry of Education and registration by the Ministry of Civil Affairs, the China Association for Electrified Education (CAEE) was officially established. It is recognized as a national-level professional association.

2.4 Transformation Stage (early 1990s to early 21st century)

In the late 1980s to early 1990s, the development of Electrified Education encountered some challenges. The most significant among them was the lack of corresponding theoretical guidance in the practice of Electrified Education, leading to unclear directions for its development. The question of “where should electrified education go” arose at the moment.

Through research on the foreign development landscape, Chinese scholars believed that the Educational Technology theories from the United States held significant value and significance in solving the difficulties faced by Electrified Education development in China. The introduction and discussion of the definition of Educational Technology by AECT in 1994 facilitated the dissemination and practical application of Educational Technology theories in China.

1. In order to facilitate communication with foreign countries, the China Association for Electrified Education (CAEE) has been using the translation name of China Association for Educational Technology (CAET) for external communication.
1993, with the promulgation of the “Undergraduate Major Catalog for Normal Colleges and Universities” by the Ministry of Education, the major of Electrified Education was changed to Educational Technology, marking the beginning of the academic transformation and serving as a significant event that signaled the start of the transition phase. At the close of 2002, the China Association for Electrified Education (CAEE) was renamed as the China Association for Educational Technology (CAET), at the organizational level, a magnificent transformation was completed, becoming a landmark event that marked the basic end of the transformation period.

2.4.1 Changes in management structure

On April 11, 1994, the National Education Commission established the Electrified Education Committee and its daily working body, the Office of the Electrified Education Committee, abbreviated as the Electrified Education Office.

In November 1996, the “Office of the Committee for Electrified Education of the National Education Commission” was renamed as the “Office of the Electrified Education of the National Education Commission,” with its office located at the Central Electrified Education Center. The Office of Electrified Education of the National Education Commission represented the National Education Commission in carrying out Electrified Education work and exercising administrative functions.

In 1998, following the cancellation of the National Education Commission, the former Office of Electrified Education of the National Education Commission transitioned to be under the jurisdiction of the Ministry of Education. Its managerial responsibilities remained unaltered.

In August 2001, the Office of Electrified Education of the Ministry of Education was abolished. The Central Radio and Television University, the Central Electrified Education Center, and China Education Television station (commonly referred to as the “Three Electronics”) were established as independent legal entities directly under the Ministry of Education. They operated autonomously, each undertaking their prescriptive responsibilities and receiving guidance from relevant departments and bureaus.

2.4.2 Higher education institutions

(1) Construction of Educational Technology Major

In 1991, the Electrified Education Department of the National Education Commission established the National Committee for Guidance on Electrified Education Textbook, with GU Mingyuan serving as the chairman. The committee developed professional teaching plans and core course outlines.

In 1993, the National Education Commission issued the “Undergraduate Major Catalog for Normal Colleges and Universities,” renaming the major from Electrified Education to Education Technology. Between 1994 to 1998, a total of 11 universities and colleges established major in Educational Technology. With the expansion of higher education enrollment in 1999, the Educational Technology major experienced significant growth, witnessing the establishment of
119 new major by 2003. From 1994 to 2003, a total of 130 new Educational Technology Major was created (Nan, 2013).

In 1993, approved by the National Education Commission, the National Electrified Education Textbook Guidance Committee underwent a name change, becoming the National Electrified Education Teaching Guidance Committee.

In 1995, the inaugural term of the National Electrified Education Teaching Guidance Committee concluded. Led by the Teacher Education Department, the committee entered a subsequent term and was rebranded as the National Higher Normal University Educational Technology Teaching Guidance Committee, with GU Mingyuan retaining his role as chairman.

(2) Computer-Assisted Instruction (CAI) Collaboration Groups

In December 1993, the National Computer-Assisted Instruction Collaboration Group for Higher Education institutions specializing in Engineering was established at Tsinghua University.

In May 1994, the National Collaborative CAI and Question Bank Group were established at Wuhan University for Higher Education institutions specializing in Science.

In June 1994, the National Collaborative CAI Group in Liberal Arts for was established at Southwest Normal University in Chongqing for Higher Education institutions in Liberal Arts.

In December 1999, the CAI collaborative groups in liberal arts, science, engineering, agriculture, medicine, and foreign languages jointly formed the “National Higher Education Educational Technology Collaborative Committee.”

2.4.3 Modern distance education

(1) Distance Education in Higher Education

In 1999, the Ministry of Education officially approved four ordinary Higher Education institutions, including Tsinghua University, Zhejiang University, Beijing University of Posts and Telecommunications, and Hunan University, to pilot modern distance education. Simultaneously, research was initiated on the “Talent Training Model Reform and Open Education Pilot Project at Central Radio and Television University.”

In February 2000, the General Office of the Ministry of Education approved the launch of a pilot program for modern distance education courses at Beijing University. Subsequently, with the consent of the Ministry of Education, four other institutions also implemented experiments and reforms in modern distance education teaching in various forms. They were Tongji University, Renmin University of China, Southeast University, and Southwest University of Technology (later renamed Southwest University of Science and Technology).

From 2000 to 2003, the Ministry of Education successively approved 58 institutions as pilot schools to carry out modern distance education. Ultimately, a total of 68 ordinary universities were designated as pilot schools for modern distance education by the Ministry of Education.
On May 25, 2000, the Ministry of Education issued the “Notice on Implementing the New Century Online Course Development Project,” launching the “New Century Online Course Development Project.” In three phases, a total of 321 foundational online course and resource development projects were approved, comprising 299 online courses, 1 question bank, and 9 resource and case libraries, all of which successfully passed the evaluation.

(2) Modern Distance Education in Primary and Secondary Schools

In 1999, the Ministry of Education proposed “initiating pilot projects for modern distance education in primary and secondary schools” in the document titled “Opinions on the Development of Modern Distance Education in China.”

In November 2000, the Ministry of Education issued a notice titled “Promoting Information Technology Education in Primary and Secondary Schools,” announcing the comprehensive initiation of the “School-to-School Communication校校通” project. This initiative aimed to lay the foundation for the widespread implementation of information technology education in primary and secondary schools and promote the development of educational informatization.

In February 2001, the Ministry of Education initiated the “Modern Distance Education Poverty Alleviation Project”, along with the Li Ka Shing “Foundation’s project on Modern Distance Education in Primary and Secondary Schools” in the western regions of China. The launch event took place in Guizhou, featuring speeches by Minister Chen Zhili and Mr. Li Ka Shing.

In December 2003, the Central Electrified Education Center completed the construction of the Teaching Resource Repository. It provided services to primary and secondary schools nationwide through various channels such as the internet, satellite IP channels, hard drives, and CDs. Implemented through three different models, the initiative equipped 110,000 rural primary schools with CD playback points, established 384,000 satellites teaching reception points in rural primary schools, and set up 37,500 computer classrooms in rural junior high schools. This effort benefited 67% of the total number of primary school students and 47% of middle school students nationwide (Nan, 2013).

2.4.4 Establishment and development of China Association for Educational Technology (CAET)

On September 24, 1991, the National Conference on Electrified Education was held in Chifeng, Inner Mongolia. During the conference on September 26, the inaugural meeting of the China Association for Electrified Education was convened.

From its establishment in 1991 until 2002, the association held a total of 8 academic annual conferences. Each annual conference was organized based on the prevailing domestic and international trends in Educational Technology. The themes of the conferences were determined accordingly, featuring keynote speeches and Exchange experiences in the construction and development of the discipline of electrified education (educational technology), these conferences played a guiding role in the development of Electrified Education nationwide.
At the 1995 annual conference, a groundbreaking thematic discussion took place regarding the AECT 1994 definition, which held epochal significance for the development of Educational Technology in China. Following the conference, China Association for Electrified Education organized the translation and publication of the book “Instructional Technology: The Definition and Category of the Field”, which played an important role in promoting the transformation of Electrified Education in China (Li et al., 2011).

In addition to organizing an annual academic conference, the association frequently hosts independent events or collaborates with other organizations to facilitate academic exchange activities. These initiatives aim to promote the widespread adoption of Educational Technology and foster the development of the Educational Technology field.

During the “Tenth Five-Year Plan” period, the association prioritized the translation and publication of the complete set of “National Educational Technology Standards of the United States” by the International Society for Technology in Education (ISTE). This effort played a guiding role in the formulation and implementation of Educational Technology standards in China.

From 1996 to 2005, China Association for Electrified Education undertook various national research projects, including those falling under the “Ninth Five-Year Plan” and “Tenth Five-Year Plan” for national educational science, as well as relevant research projects from various departments of the Ministry of Education (Li et al., 2011).

2.5 In-depth Development Stage (Early 21st Century to Present)

With the maturation of computer network technology, particularly mobile network communication technology, and the widespread adoption of intelligent terminals, China’s trajectory toward educational informatization has gained momentum. A notable feature is the swift evolution of “online education (encompassing distance education in higher education, primary and secondary education and open education).” The stages of China’s online education can be delineated into the pilot exploration stage (1999-2002), the standardized development stage (2002-2012), the adjustment and transformation stage (2012-2017), and the governance and improvement stage (2017 to the present). This progression mirrors a development trajectory aligned with national strategy and responsive to contemporary needs.²

2.5.1 Accelerating the informatization of education


In August 2004, the China Association of Education Technology unveiled the “Standards for

² This article focuses on the development process of Electrified Education over the past century (1915-2015). The content after 2015, as well as the development of “online education”, will be introduced in another article.
Educational Technology in China (SETC)” online, inviting public feedback.

On December 25, 2004, the Ministry of Education officially issued the “Educational Technology Competence Standards for Primary and Secondary School Teachers (Trial).”

On April 4, 2005, The Ministry of Education issued a “notice on launching and implementing the National Plan for Building Educational Technology Capacity of Primary and Secondary School Teachers.” It established the “Office of the National Education Technology Capacity Building Plan for Primary and Secondary School Teachers” responsible for the specific organization and implementation of the plan.

On October 16, 2006, the Ministry of Education established the Education Informatization Office, affiliated with the Department of Science and Technology Department, serving as the executive body of the “Educational Informatization Leadership Group.”

On July 29, 2010, the Central Committee of the Communist Party of China and the State Council issued the “Outline of the National Medium and Long-Term Education Reform and Development Plan (2010-2020).”

On August 26, 2011, the Ministry of Education established the “Leadership Group for Educational Informatization,” with the “Office for Promoting Educational Informatization” as its executive body. This office was specifically responsible for promoting information technology in education, marking a new stage in China’s educational informatization development.


On September 5, 2012, the first National Television and Telephone Conference on Educational Informatization were held. Liu Yandong, a member of the Political Bureau and State Councilor of the Central Committee of the Communist Party of China, proposed at the conference:

During the 12th Five Year Plan period, we should take the construction of the ‘three connections and two platforms’ as the starting point, namely the ‘broadband internet access for every school, high-quality resources for every class, and online learning spaces for every student and teacher,’ and build an education resource public service platform and an education management public service platform (Liu, 2012).

On October 25, 2013, the Ministry of Education issued the “Opinions on Implementing the National Project to Enhance the Information Technology Application Skills of Primary and Secondary School Teachers.”

On May 27, 2014, the General Office of the Ministry of Education issued a notice on the “Standards for Information Technology Application Skills of Primary and Secondary School
Teachers (Trial).

On November 19, 2015, the National Leader Group for Education System Reform held its Second Teleconference on National Educational Informatization. Liu Yandong, a member of the Political Bureau of the Communist Party of China Central Committee, Vice Premier of the State Council, and leader of the National Leader Group for Education System Reform, attended the meeting and delivered an important speech titled “Consolidate Achievements, Forge Innovation, and Promote Comprehensive Modernization of Education through Educational Informatization.”

2.5.2 Higher education

(1) Development of Educational Informatization

On April 8, 2003, the Higher Education Department of the Ministry of Education launched the development of high-quality courses as part of the Teaching Quality and Teaching Reform Project in Higher Education institutions. Between 2003 and 2010, a total of 3,910 national high quality courses were approved, including 2,515 regular undergraduate courses, 1,043 vocational college courses, 209 online courses, and 143 military courses (including armed police) (Nan, 2013).

On January 22, 2007, the document “Opinions on Implementing the Project for Teaching Quality and Teaching Reform in Undergraduate Education in Higher Education Institutions,” jointly issued by the, proposed to:

continue advancing the construction of national quality courses, selecting around 3,000 courses for focused reform and development. The aim is to strive for significant improvements in teaching content, methods and means, teaching faculty, textbook development, and teaching effectiveness, comprehensively elevating the level of curriculum construction and teaching quality in higher education institutions across the country (Ministry of Education of PRC & Ministry of Finance of PRC, 2007).

On February 17, 2007, the document “Several Opinions of the Ministry of Education on Further Deepening Undergraduate Teaching Reform and Comprehensive Improvement of Teaching Quality” emphasized the comprehensive promotion and widespread use of “National Excellent Courses.” It actively encouraged mechanisms for cross-institutional elective courses among Higher Education institutions, strengthened credit recognition among between institutions, allowing students to access more high-quality teaching resources. Additionally, it aimed to gradually stabilize and normalize the mechanism for sharing teaching resources, emphasizing more stringent requirements for the “National Quality Courses” and their responsible personnel from 2009 to 2010.

(2) Development of Educational Technology major

From 2001 to 2005, the National Higher Normal University Education Technology Teaching Guidance Committee was renamed as the National Higher Education Technology major Teaching Guidance Committee, with He Kekang serving as the chairman. From 2006 to 2010, Xu Fuyin
assumed the role of chairman.

Between 2004 and 2007, the major of Education Technology continued to experience rapid development. In 2004, 38 new majors were established. In 2005, 14 new majors were established. In 2006, 8 new majors were established. In 2007, 10 new majors were established. From 2004 to 2007, a total of 70 new Educational Technology majors were added. In essence, by 2007, there were a total of 220 undergraduate Educational Technology majors nationwide (Nan, 2013).

2.5.3 Distance education

In April 2002, the Ministry of Education held the “Seminar on Quality Management of Online Education” in Beijing, marking a shift in the policy direction for the development of modern distance education. The adjusted approach emphasized “active promotion, regulated management, strengthened services, and enhanced quality.”

In June 2006, the Ministry of Education launched the educational reform project titled “Construction and Demonstration of Digital Learning Ports and Lifelong Learning Communities.” This project explored the development of digital learning communities, enterprise initiatives, and demonstration centers in towns.

As part of the Higher Education Quality Project in 2007, the Ministry of Education initiated the selection of national quality courses for online education. By 2010, a total of 209 online courses had been recognized as national quality courses.

The promulgation and implementation of the “National Medium and Long-term Education Reform and Development Plan (2010-2020)” in 2010, the convening of the 2012 National Continuing Education Conference, and the establishment of national and regional open universities marked a new stage for online distance education characterized by innovation-driven development.

2.5.4 China association for education technology

(1) Academic Activities

The China Association for Electrified Education officially changed its name after the 2002 annual meeting and began using the name China Association for Education Technology from 2003. From that point until 2015, a total of 13 academic annual conferences were held. Starting in 2002, the association organized annual essay competitions every year (with the exception of 2003), catalyzing a transformative shift in teachers’ understanding of Educational Technology and fostering practical application.

The China Association for Educational Technology co-hosted the Mr. Nan Guo-nong Educational Technology Thought Seminar twice, in 2000 and 2010, commemorating Mr. Nan Guo-nong’s 80th and 90th birthdays. Additionally, the association collaborated with Hebei University to organize the Mr. Xiao Shuzi 90th and 100th Birthday Commemoration events in 2004 and 2014. Through academic exchanges, these events aimed to honor the remarkable
contributions of these two predecessors to the field of Educational Technology in China, inspiring future generations to forge ahead with determination.

Since 2001, the association has organized over a dozen academic inspection activities, involving more than 300 experts and Educational Technology professionals, to visit various countries in Europe, as well as the United States, Australia, Japan, South Korea, and others. Numerous study visits to Taiwan, Hong Kong, and Macau have also taken place, involving hundreds of participants. The association has actively facilitated experts’ participation in international Educational Technology conferences and has hosted visits from experts from countries such as the United States, Japan, the United Kingdom, and Canada.

(2) Conducting Research Projects

From 2001 to 2015, the China Association for Educational Technology undertook national educational science projects as part of the “10th Five-Year Plan,” “11th Five-Year Plan,” and “12th Five-Year Plan.” The research outcomes are reflected in the research reports of each project and are also included in the relevant chapters of the “Chronicles of China Association for Educational Technology (1991-2021)” (Li & Liu, 2021).

3 Conclusions

The evolution of Educational Technology in the United States comprises two parallel threads: one is the development of media technology (materialized technology), and the other is the development of intelligent technology (non-materialized technology). The interaction and organic integration of two threads constitute the development history of Educational Technology. This dynamic interplay has shaped the developmental narrative of Educational Technology, unfolding in three pivotal stages: Media-Communication, Instruction-Design, and Learning-Performance (Gong, 2009). The theories and practices of Educational Technology in the United States have exerted significant influence globally, serving as inspiration and driving force for the development of Educational Technology in China.

The trajectory of Educational Technology in the United States has witnessed phenomena that invite contemplation. The “media frenzy” stands out, depicting a scenario where new technologies and media are overly embraced, almost deified, as the panacea for educational enhancement. Another noteworthy phenomenon is the “excessive involvement of commercial companies,” where businesses position themselves as Educational Technology authorities, sometimes amplifying the educational impact of technology beyond realistic bounds (Zhang & Zhang, 2002). These occurrences parallel challenges faced in the development of Educational Technology in China, warranting thoughtful consideration and introspection.

Modern Educational Technology in China started with electrified education. It emerged in response to the developmental needs of the country, drawing on foreign technology and experience to address urgent issues related to the public’s diathesis at the time. From its inception, it embarked on a different development path from other countries, known as “big electrified education.”
The Educational Technology in China, unfolding since the inception of Electrified Education in 1915, spans a century of transformative growth. From scratch, from small to large, it has burgeoned into a sprawling domain encompassing the Educational Technology disciplines (including major), Educational Technology undertakings, and Educational Technology industry. Thoroughly sorting out the context of the emergence and development of electrified education in China helps to understand the entire process of educational technology development in the country. In the current era marked by swift strides in information technology, breakthroughs in big data, and remarkable accomplishments in artificial intelligence, a precise understanding of the symbiotic relationship between technology and education is paramount. Educational Technology is assuming an increasingly pivotal role in steering the digital transformation of education, underscoring its escalating significance in shaping the future landscape of learning.

Figure 8

A Comparative Analysis of the Development Paths of Educational Technology in China and the United States


Figure 8 provides a comparison of important events in the development history of educational technology between China and the United States. The red characters represent the development process of educational technology in China, while the black characters represent the development process of educational technology in the United States. From the graph, it can be seen that their development process has a close correspondence and different characteristics, reflecting the commonalities and differences in the connotation of educational technology between the two countries. Readers can further study and reflect on the development history of educational technology in both countries based on this diagram.

Finally, looking into the future, Educational Technology in China will continue its march
towards advancement. This trajectory is firmly rooted in the nation’s rich cultural heritage and the research milestones achieved in the realm of Electrified Education. We should emphasize a forward-looking perspective and ongoing innovation by seamlessly integrating cutting-edge foreign ideas with the pragmatic realities of China’s educational terrain.

Acknowledgement

This research is supported by Key Project of the 14th Five-Year Plan of the China Association for Educational Technology: "Compilation and Research of Historical Literature on Educational Technology in China", Project Approval Number: XHZDKT2022001.

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