



The Practical Challenges and Ways Forward for News & Communication in Higher Vocational Education Under the Influence of 5G Technology

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Abstract. As a revolutionary technology, 5G has 6 basic features: high speed, ubiquitous network, low power consumption, low latency, Internet of Everything and reconfiguration of security systems; these together allows a leap from the Traditional Internet and Mobile Internet to an age of Intelligent Internet where all things are connected and always online. 5G has been restructuring the media industry by inducing changes in its four fundamental qualities and properties, i.e., communicators, users, contents and media. The Higher Vocational Education of News & Communication should take a turn and rethink the traditional model of education and teaching practices which had been built on the mode of mass communication; progressive, reformative strategies should be adopted in light of the current realities and past experiences in this field; goals of its training of talents should be repositioned with reference to the demands around media industry in the 5G Era, so as to address important questions such as who are to be cultivated, how this process of cultivation should be done and for whom are we carrying out such a process. Meanwhile, however, educators should note the risks associated with the technology and make it artistic.

Keywords: 5G technology · Higher Vocational Education of News & Communication · Restructure of the media industry · Major reality · Major outlet

1 Research Background and the Research Question

1.1 Influence of Social Change on Vocational Education

As a major builder in higher vocational education school, I know that running a good major is a win-win situation for students, teachers, schools and enterprises. However, it is not easy to do a good job in speciality management. Moreover, vocational education also has its fluidity, which is regulated by the orientation that vocational education serves the regional economic and social development. It is obvious that regional economic and social development is constantly varying at the micro-level, affected by many factors,

including policy inclination, scientific and technological progress, and industrial structure adjustment. In brief, it is a complex problem for all vocational educators to deal with the fluidity, adjust the practical structure and development direction of vocational education.

Vocational education is accustomed to caters to the demands of enterprises, industries and the higher vocational education of News & Communication (hereinafter referred to as HVENC), which, even experiences more dramatic and complex challenges from the change of News & Communication industry, also called the media industry in this paper, comparing with other fields. It is observed that the media industry has been deeply impacted by revolutionary media technology. Moreover, this influence has been transmitted to higher education, especially the market-oriented higher vocational education. Therefore, the question of how higher vocational education could respond to the drastic technological changes has become essential for every HVENC's builder and researcher. At the same time, it will determine the development space and survival of the major.

1.2 Reshaping of the Media Industry and Its Institutionalization on Communication Practice

For the media industry, the media technology between communicators and users, stipulates the form of produce-distribute-present of content and the format of contact-select-accept of the users. Media technology usually refers to media tools used to create and disseminate cultural content [1]. Marshall McLuhan, a famous Canadian communication scholar, his famous view of the media is the message tells us that media technology not only perceptibly shapes the media industry, constructs the pseudo environment, proposed by Walter Lippmann about 100 years ago, like air, people are in it and often forget its existence, but also constructs our cultural environment, changes our knowledge, consciousness, and our experience of time and space [2–4]. Furthermore, technology determinist in today's world asserts that media technology fundamentally determines, not shape, the media industry. We will not discuss the right or wrong of technological determinism, but we must admit that media technology plays a fundamental role in shaping society's existence, including certain forms of social behavior [5]. In other words, media technology can construct the whole life of social reality and new social-life space which is different from any previous form.

However, not every media technology has the ability to restructure the media industry. Any work on media history tells us that printing, broadcasting, the Internet and social media are the only revolutionary media technologies known to people in history. W. Brian Arthur, a famous technology thinker, considers that technology is autopoeitic, which created different forms and practices in media history, and constitute the current media ecology, composed of Newspaper, Magazine, Book, Radio, Television, Portals Website, Social Networking Services, Microblog, Instant Messaging, Short-Form Video etc., that we can perceive, even intervene. Obviously, each media form has disciplined communicators and users through long-term contact and use, then create a unique media Technoculture [6]. Currently, we are concerned about emerging media technologies, but only Blockchain, Big Data, Cloud Computing and 5G are worthy of discussion. In this paper, it must be demonstrated that the 5G technology accelerating the diffusion at present, will lead to a revolution in the media industry. In other words, 5G technology will

reconstruct the media industry after printing technology, electronic technology, digital technology and Internet technology to construct a media reality with all-new theoretical logic and practical paradigm. However, it does not imply that other technologies are unimportant, but they are not revolutionary enough compared with 5G.

As a major builder who has received professional education for many years and engaged in higher vocational education for a long time, I have to admit an objective reality: the current HVENC is based on print media, electronic media, digital and network media. However, due to the non-synchronization in communication practice and theoretical norms, the former is in a strong position, while the latter is in a weak position. Whether digital media or network media, it could be defined as unformed and immature media technology and communication form. In addition to the irresistible path dependence brought by the media elite tradition which formed by the long-term practice of print media and electronic media, while the failure of practice does not affect the legitimacy of ideology and the leadership and orthodoxy of culture, HVENC still follows the mature mass communication mode and practices the media tradition, that is one to many, point to surface, as well as mend the curriculum in the name of internet and new media forced by the vigorous development of digital communication. In short, digital and internet media outside, while print and electronic media inside. And the mutual-construction between the traditional media industry and society has reached a steady-state and been a pattern. Thus, the former owns the leading power of how to communicate. On the contrary, digital and network media have incomplete connectivity with the limitation of technology level, although it can trigger some changes of the media industry, it still has not the ability to reconstruct basically.

1.3 Initiative on Vocational Education Design

As a type of education, vocational education and general education are different, but have same aim at cultivating people in common. Vocational education takes employment as the guidance, making people professional and social, that is, to achieve the so-called utilitarian goal of occupation and the humanistic goal of education. Therefore, vocational education should not passively adapt to the guidance, but should actively design the guidance [7]. In other words, vocational education content cannot simply adapt to the development of technology and the requirements of vocational work tasks. However, it must pay more attention to the relationship among work, technology, education and their interaction process, and actively participate in this process [7]. The major builders of HVENC have to consider the question of how 5G will restructure the media industry, adopt what type of action framework will be adopted and what new social occupations and post groups will be created, what requirements would be requested on practitioners' knowledge, skills and attitudes, and what action knowledge structure will be needed. The professional connotation of vocational education, which is the logical starting point of major construction, is determined by these problems of new jobs brought by 5G. Due to the Limitation of the length of this paper, I have no intention to discuss some micro operational issues, such as how to integrate structuring action knowledge and transferring structured knowledge into the curriculum for further design. Instead, I focus on some macro-issues with far-reaching impact, that is, what kind of structural changes will take place in the media industry after the large-scale commercialization of 5G in the future,

and how this change affects the response of HVENC to the fundamental question of who are to be cultivated and how this process of cultivation should be done and for whom are we carrying out such a process.

2 5G as a Revolutionary Technology and Reconstruction of Media Industry

2.1 5G as the New Start of the Intelligent Internet

5G is the fifth-generation mobile communication technology. On June 6, 2019, MIIT (Ministry of Industry and Information Technology of the People’s Republic of China) issued 5G licenses for commercial use, marking that China has officially entered the 5G-era. 5G New Media Industry White Paper pointed out that the media industry will be benefited from the 5G first, and 5G will bring more than 40 billion RMB of market space to China’s media industry before 2022. Meanwhile, 5G users in China kept growing rapidly. China accounted for 70% of all 5G connections in 2020 alone, and has been home to the largest number of 5G base stations and 5G users across the globe. GSMA’s research has further suggested that at some point after 2025 and quite likely in as early as 2026, the Chinese communications market will experience a structural transformation during which its 5G users may exceed its 4G counterpart in number, making the former the largest user group in the communications market, as demonstrated below (see Fig. 1) [8].

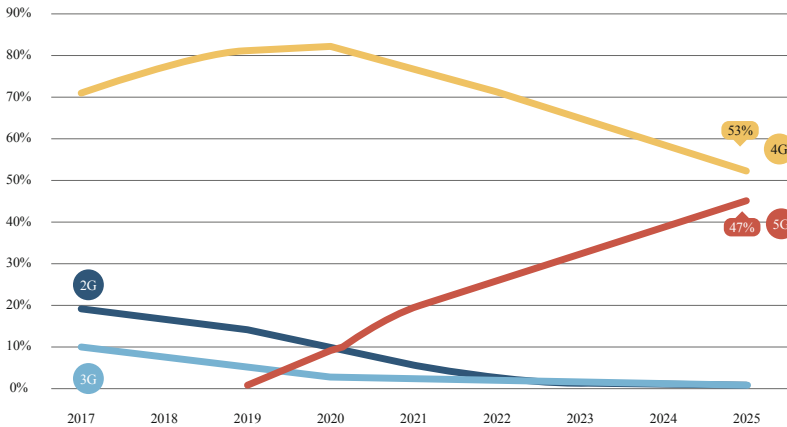


Fig. 1. The mobile economy China 2020

Up to the present, 5G has been a new generation of wireless mobile communication technology with the most revolutionary potential. In addition to providing basic communication services between people, 5G also extends the communication ability to people and machines and becomes the foundation of the Intelligent Internet [9]. W. Brian Arthur believes that all technologies are generated by previous technologies. In other words, technologies are generated from existing technologies or the combination of existing

technologies [6]. Timeline of the mobile wireless communication history shows 1G mobile analogue communication, 2G mobile digital communication, 3G mobile intelligent communication, 4G mobile intelligent digital communication, and 5G mobile communication technology which is in the process of innovation and diffusion. Paul Levinson, an American media theorist, proposed the Remedial Medium Theory, the whole process of media evolution can be regarded as remedial measures, that is to say, the new media has a remedial impact on old media. Taking 5G as an example, it has offset all the disadvantages, integrated and improved all technical advantages from 1G to 4G. IMT-2020 (5G) Propulsion Group defines four major technical advantages and key performance indicators of 5G, including continuous wide area coverage, high capacity of the hotspot, low power consumption and large connection, low latency and high level of reliability. ITU released three application contexts of 5G: First, Enhanced Mobile Broadband (eMBB), which is reflected in the ultra-high-speed and capacity of network data transmission, can be widely used in smartphones, tablet computers, 4K/8K video, 3D video and VR/AR; Second, Massive Machine Type Communication (mMTC), that is, large-scale Internet of things, can connect billions or even billions of mobile devices and IoT devices in the future (by 2025, only China's mobile terminal products will reach 10 billion, with more than 8 billion IoT terminals), which can be applied to intelligent meter reading, surveillance cameras, smart home devices, mobile phones, etc. Third, Ultra-Reliable Low-Latency Communications (uRLLC), is a communication technology that supports super response connection, less than 1ms air interface delay, medium and high data speed and high-speed mobile communication, and its applications include internet-connected vehicle, automatic driving and industrial Internet [10].

In a word, the technical features and advantages of 5G can be summarized as follows: high speed, ubiquitous network, low power consumption, low latency, Internet of Everything, and reconfiguration of security systems. These six fundamental features ensure the basic experience of users in the 5G era. Moreover, 5G will make 'communication between people, people and things, things and things' reality with the continuous development of core technology around the three goals. It is not only the inheritance and improvement of 3G technology solving the communication of people to people and 4G technology solving the interaction of people to information, but also a basic communication network with the function of paradigm shift, that is to say, the wide use of 5G will realize the transition from Traditional Internet (PC as the core terminal) and Mobile Internet (smart phone as the core terminal) to Intelligent Internet.

2.2 5G Has Been Restructuring the Media Industry

5G will bring mankind into an era of intelligent Internet that can integrate mobile Internet, intelligent sensing, big data and intelligent learning, and become the foundation of the 7th information revolution and the fundamental guarantee for the completion of the construction. 5G has broken through the limitation of traditional bandwidth, and will fundamentally solve the problem of information transmission with the ability to connect massive terminals and its ultra-low latency. 5G can fully stimulate the potential of intelligent sensing, big data and intelligent learning, and integrate them into a powerful service system, which can not only change the society, but also influence all aspects of human life [9]. Specifically, these revolutionary changes are shown in the following

four aspects: First, 5G will enable the link elements in the world to be connected and permanently online theoretically, and maintain the constant existence of basic relationships in the digital world; Second, 5G makes it a reality for the User Experience without speed barrier and traffic barrier; Third, 5G will create more products and applications of daily-life scenes; Fourth, 5G will accelerate the development of artificial intelligence and create a fully-mobile and fully-connected intelligent society [5].

Reconstruction usually refers to the reorganisation of the structure by changing elements' number or relationship and innovating elements' nature or attribute. No matter how the media industry transforms, the most basic elements are still communicators, users or receivers, content or message, and the media, which cannot escape from the underlying framework of human-information-technology.

The communication reality illustrates that 5G is gradually altering the connotation and extension of the four elements, thus triggering a structural change in the media industry. Specifically manifested in four aspects:

First of all, Communicators. 5G further releases the subjectivity of the communicator based on 4G, and due to the low threshold of video expression, being a communicator has become a reality from theory. Moreover, in the 5G era, relying on sensors that are always connected and the technical ability of artificial intelligence to process massive amounts of data, machines will become communicators alongside users, professional media, professional media person and professional communication agencies, participating in the production of future content, which contains unique values.

Secondly, Users. In the framework of human-information-technology, human-information is the core. Human need information to transform the world, and information need human to realize its value, while technology, as an intermediary and means, to a certain degree, can shape the relationship and form of human and information to a certain extent, but its ultimate goal is to become the hidden art, the stars of the arching moon. The absolute technological advantage of 5G will gradually highlight the core position of users in communication. Therefore, understanding human, how to accurately insight and manage users, and how to better connect content with users, services with users, will become the core competitiveness of communicators in the era of 5G.

Thirdly, Contents. What forms of contents would become mainstream in the 5G era? There is little disagreement among scholars and experts: video will replace text as the mainstream of social expression, with short videos drawing attention and setting issues, and medium-length videos having a significant impact on the choices and judgments of social decision-makers [5]. It is a basic judgment, but more importantly, the value and type of content only reflected in the dissemination of Message is not enough in mass communication of the 5G era. It will become an important value dimension and practice guide that content as a relationship to express emotions and assist the communication between subjects, and as a medium to build contexts and create new communication modes,

Lastly, Media. In the era of mass communication, we usually understand the medium as physical media such as radio, television, newspapers and magazines, which is an extension of the physical sense of human body functions. However, social media, emerging and active in the era of Traditional Internet and Mobile Internet, means the transformation from physical media to relational media. In the 5G era, permanent online sensors will

create a new virtual reality world, where our physiological, psychological and emotional messages are sensed intelligently and interconnected with the physical world through processors and interfaces. But to gain insight into the secrets of the new world, we must rely on algorithms, which will play a fundamental role in the future of communication. While it is almost useless for the human to transform the world by merely sensing the information of the surface structure and generating fragmented data. Only by using algorithms to reveal and describe the deeper structure of information and data can generate the value belongs to human.

In short, the media industry based on 5G has its radical connectivity and an evolving intelligence that allow it to form a social information system of complexity and fluidity by integrating physical, social, physiological and psychological factors. The mutual-construction between social information system and the individual communication system will be the basic logical starting point for understanding the current media industry. Obviously, the interaction goes far beyond the explanation scope and practice radius of the traditional mass communication model.

3 A Response from HVENC: A New Radical Way of Thinking

3.1 The Current Situation of HVENC

As a developing country, higher vocational education has made an indelible historical contribution to constructing a modern industrial system with a complete range of disciplines. However, with the reform of the education system, vocational education as a type of education has gradually become a loser in education stratification and social stratification, and the cost-benefit gap with general education is widening. Although in 2019, the Chinese government promulgated the National Vocational Education Reform Implementation Plan, which achieved formal equality in political status between vocational education and general education, while substantive equality in a social sense is still a long way off. This means that, although a small number of higher vocational colleges are currently piloting vocational education at the undergraduate level, the vast majority are still at the junior college level.

Thus, HVENC has to face up two uncontrollable primary limitation stems from junior level: firstly, time is limited, that is, to complete the training of qualified professional talents at the junior college level within three years; secondly, the source of the student is limited, that is, the training objects have different types and structures of intelligence from general high school students, and they are usually better at figurative thinking [7]. These two basic limitations set the spatial and temporal boundaries for discussing the major's connotation and construction.

As mentioned above, another powerful force that can be controlled but difficult to control, is the tradition or mode developed by HVENC and usually based on the basic assumption of the mass communication mode. In addition to following the general pedagogy of vocational education, such as work-learning integration and industry-education integration, the practice of vocational education for the mass media industry, including the formulation of talent training objectives, talent training specifications, design of curriculum systems, exploration of training models, should also follow the communication logic and practical paradigm of mass communication, and gradually be institutionalized

and patterned into a stable force according to the degree of effectiveness of implementation. While once formed, this force usually has no incentive to change itself, or if it does, it is difficult to make fundamental changes, such as reconfiguration.

The VEHC, which carries out education and teaching practice according to the talent demand standard of the mass media industry, is usually in a tension between elite talent demand and weak training target. The communication logic and practice paradigm of the traditional mass media industry can be simply summarized as four aspects: specialization and elitism of communicator; content of the communication is message-oriented; the medium of the communication is based on the physical medium; audience (not user) is regarded as the consumer of information [11]. In other words, the traditional mass media industry is centered on the communicator. While newspapers, magazines, radio stations, television stations and portals websites own absolute discourse and elite consciousness and dominate the communication order with users at the bottom. It is difficult for higher vocational education institutions, which are relatively disadvantaged in all aspects of education, to bridge the gap that arises from the tension. As a result, although the traditional higher vocational education of journalism and communication has its own advantages, such as focusing on the training of basic knowledge and basic skills, and often pointing to the improvement of comprehensive ability, it still does not prevail in the education competition and has to remain in a marginal position in the talent supply of the traditional mass media industry.

3.2 Opportunities and Challenges: The Progressive Reform in the 5G Era

The historical experience of China's social revolution and Economic Reform and open up has long proved that radical transformation without considering social cost and social impact usually means upheaval and disruption. The same applied to education, unless there is no historical and traditional burden and to catch the new trend right out of the gate. The Ship of Theseus, a famous question in philosophy, shows that we can complete the paradigm shift in the gradual change of time as long as we carefully design and actively push forward, thus promoting structural change. This is a question of action strategy, which has proven its feasibility, while what opportunities and challenges do the media industry in the 5G era present for VEHC, and what do we need to do to reform tradition and complete renewal is the more crucial question.

There is no doubt that our current students are all real 21st century people who are strictly digital natives. For them, computer games, E-mail, the Internet, mobile phones, and instant messaging are already part of their lives, but familiarity does not necessarily mean understanding. Otherwise, education would be meaningless. As a major builder, we need to design these digital natives, that is, what kind of people do we want to cultivate?

First of all, I would like to answer that even in the new era of 5G, vocational education will not become general education. In other words, it is not in our plan to train students to become leaders in the media industry of the 5G era. Remember, the world is random. I hope they will become actual participants and builders of the communication society in the 5G era and be localized.

Secondly, our students should own a user mindset in the face of technology and learn to cooperate with machines. Technologists have the advantage of mastering a complex

terminology system and the technical principles behind it, through which they make a living. However, our students do not necessarily need to master them. They just need to understand the way of thinking behind it, to know what technology to use to analyze the problems and how to interpret the results correctly [12]. Namely, it is enough to be a user who can apply technology. The machine is the concretization of technology. It will become a content producer, possessing the subjectivity of the communicator, especially after having sensors and algorithms. That is to say, the machine will play the role of workmates or competitors. For students, learning to be colleagues with machines will become an essential part of vocational education.

Thirdly, our students should have empathy and communication skills, can consciously understand and insight into others. In the 5G era, the media industry has realized Kant's great prediction that people are the purpose, not the means. User has completely left the right boundary of information consumer and obtained the absolute dominant position. For communicators who will understand users and grasp their needs precisely will become the key to the success of communication in the future. However, it is clear that this type of competency is very generic and challenging to develop, but at least it indicates the work focus and direction for HVENC.

Fourthly, our students should master the language of video, which will replace elitist textual language as the dominant form of social expression in 5G era. Years of teaching practice has proved that our students are not good at using written language to rationally express facts and logic, it is not fun in itself, but their interest is often drawn to the dynamic video. In other words, rather than struggling to improve students' textual skills, it is better to focus on cultivating their video expression skills. It can be an interesting journey to learn more about short video and medium-length video, grasp their use logic and operation rules, and guide the whole learning process.

Finally, being a context constructor, 5G will make context construction, which includes virtual context and augmented context based on VR technology, and it will definitely become the mainstream of value innovation in the future communication [13]. The functional feature of context lies in promoting the interconnection, aggregation, collaboration and value realization among users, producers, products and services, so as to provide a high-quality experience to users in the context and to meet their personalized needs to the greatest extent [5]. Obviously, building contexts through content, social interaction, games, and sharing will become an essential high-level competence for the future communicator.

4 Conclusion

The basic proposition of technological determinists is that technology is autonomous and that technological change leads to social change. Karl Theodor Jaspers, a famous philosopher, believes that technology is a scientific process of human being controlled over nature that aim to shape their own existence, free themselves from want, and give human environment a form in which everything depends on themselves. The appearance of human technology to nature, and how this technological process acts on human beings, forms one of the historical baselines. Through this path, the way humans work, the organization of work and the development of environment has changed themselves [14].

That is to say, while people use technology, they must also follow the logic of technology, but this logic is not always good for people, technology creates exquisite things according to the possibilities of science, it does not redefine human nature, but distorts it by trying to redefine life, moreover, technology contains all the risks that may be unbearable [15]. 5G may be a great technology with revolutionary trans-formative power. As a result, the media industry has undergone structural changes, which in turn leads to the reform of HVENC. Then we major builders must rethink the countermeasures in order to transform our students. In other words, the technology we have invented is forcing us to adapt ourselves to it in the name of human welfare. Obviously, it is not a question I could answer, but we should know that what we think and what we do is not only motivated by the logic of technology or the logic of machine, but also by a return to the core purpose of the logic of human beings, and make technology artistic, that is, creating exquisite life according to the logic of humanity, which expresses only humanity and never more than humanity [15].

Therefore, the reorganisation of the media industry by 5G and the reposition of HVENC could be essentially defined as a question of technology, of how people are educated to become qualified professionals. However, learning lifelong learning, self-reflection, communication, and how to be a member of society with a sound personality would be the most humane-centered and timeless education purposes.

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