

The Basic Role of Art Education 4.0 in the Educational Revolution of Colleges and Universities

-- Take the Influence of "Student Revolution" and "Humboldt Model" on German Higher Education as Inspiration

Ju Xiong¹, Jing Yang^{1,*}, Matthias Lehnhardt²

¹. School of Media and Communication, Wuhan Textile University, Wuhan, Hubei 430073, China

². Hamburg Fine Arts University, Germany

Abstract. This article intends to describe the related elements of "Humboldt Model" and "Art Education". Through the analysis of the influence of the "student revolution" and the "Humboldt model" in German higher education, it explores effective ways to carry out higher education reform 4.0. Put forward the idea of letting art education, science and technology innovation, and school-enterprise cooperation form a key interconnected group. Explore the reform and development ideas and future directions of art higher education.

Keywords: 4.0; Art; Education; Reform; Humboldt University.

1. Introduction

A holistic viewpoint, described with the "Humboldtian Model", and elements of the "art-based education" can create new solutions. Project-groups with artists and art-students, scientist, members of companies and the government can form a critical mass to explore the great lines of a sustainable cultural development. The following aspects will be discussed to establish a framework for the re-formation of the educational system.

2. Industry 4.0

"Industry 4.0" show the importance of new solutions, to develop the production and service area without to endanger the culture, the harmony of the societies.

The first three industrial revolutions were declared afterwards - the 4th in front! The phases: Mechanisation, Mass Production, Automation, Industry 4.0. Or: machinery, power-sources, computer and global networks. Actually, nobody knows the global meaning of "Industry 4.0. In general, "Industry 4.0" should connect everyone with everything, should connect the "Social Networks" with the "Internet of Things". In a global world, concepts for "4.0" should be "holistic", should include all sectors and people concerned. Germany uses "Industry 4.0" to replace human power with robots – the discussion of new jobs or unemployment comes behind. The hamburg government presented a 5-years plan for "E-Culture", the first step to "Culture 4.0". China tries to catch up with the car-industry, the "smartphone on wheels" was presented as an innovation. About 80% of the cars, running in China, are imported. Over 80% of the fashion, produced in China, is imported from the United States and Europe. The "old" industry, steel and construction, comes to an end - but the new potentials are visible with new duties for the educational system.

3. University 4.0

The phases in Germany: (1) 1810, constitution of the "Humboldt University Berlin", following the idea of the "Humboldtian Model", a holistic combination of research and studies. Followed by the "Professorial University" (1945 – 1968). The institution is complete constituted by a professorial panel. (2) The "Group University", following the claims of the "Students Revolution" for more influence, was constituted during the 80es. The universities had to open up for different social groups

(professors, teachers, students, staffers, industry, government, ...). The “Humboldtian Model” was rediscovered as “Learning by Research” and “Study by Projects”. (3) Following the “Bologna Process”, the European countries decided the “modularization” and BA/ MA as standard examination. The background was the idea of the university as a “Company to produce graduates”. (4) University 4.0 must react on the errors of the “modularization”, on the idea of interdisciplinarity, on the relation between generalists and specialists - but must keep their culture.

Soft-facts in art-based education: creativity, motivation, self-awareness, self- confidence, responsibility, identity, personality. Those main virtues show the profile of the art- education. Art-education bases on experiments, on experience with the help of theory and history (knowledge/ cognition).

Art-students have to look around, have to make experience, to think different, they connect what cannot be connected, they take risks, they make mistakes, they are responsible for them and learn with them. They have to change position, to expose their work, they have to find their position on the timeline. They have to find their style, to find their way - teachers will give support, making them better. The scientific education bases on cognition with rare experience.

The artist as a generalist and the scientist as a specialist should cooperate with respect to concentrate on future solutions. A good example is the cooperation between the “Ars Electronica Center” Linz, the European Organization for Nuclear Research (CERN), the Art University Linz, the local steel company Vöest- Alpine (Siemens), the Austrian TV-station ORF, the local and the central government of Austria.

The annual conference and exhibition “Cyberarts” are additional supported by many international companies and institutions.

4. Art 4.0

The phases: Traditional Art; Modern Art (Marcel Duchamps, Kasimir Malewitch); Extended Art (Joseph Beuys); Art 4.0: digital and post-digital art? The history of art shows, that the artists community tries to find visions besides the mainstream, to think the unthinkable, to show the invisible, to do what cannot be done. The current discussion in Germany focuses on: what comes next after the digital culture – the re-discovery of analog traditions? We know three kinds of innovation: “fake innovation”, a red case instead of a blue one, “improvement innovation”, like faster networks or a lower price and “basic innovation” like the wheel or the steam-power. Today it is time for basic innovations.

Creativity means the scale between “new relations among known objects” and “known relations among unknown objects”. The term “objects” includes persons. The composer Igor Strawinsky locates creativity in given close limits. Science-fiction. The authors John Brunner (shock wave rider), Wiliam Gibson (newromancer), Neil Stevenson (snowcrash), Stanislaw Lem (solaris) or Marshal McLuhan (understanding media) and the American TV-series “Star Trek” gave the ideas for today’s global network (cyberspace, virus, hacker, “Global Village”, metaverse, matrix, avatar etc.).

5. Art Education Revolution 4.0: Digital Empowerment

In April 2019, the German Federal Ministry of Economy and Energy released the "2019 Progress Report: Germany's Vision for Industry 4.0 in 2030", which elaborated on the important factors that the global digital ecology must or plan to have in terms of autonomy, interoperability and sustainability. It is not difficult to see from the report that Industry 4.0 will reshape the creation and innovation value system of information networking on a global scale, and propose new ways of value creation. Germany is also thinking about how to rely on this flexible and diverse global information network value-added system to accelerate the application of digital economy and business models. "Independence, this is a strong guarantee for the competitiveness of digital business models; interoperability, to create a cooperative and open ecosystem, taking into account diversification and

flexibility; sustainability, to realize the creation of modern industrial value, and to ensure a high-quality life." [5] The cooperation route of the German Chamber of Commerce and Industry is "Industry 4.0@Mittelstand" [6], which has entered its fourth year. More than 50 activities have been carried out nationwide and more than 20 plans have been completed. For example: Industry 4.0 Map: The online map of the Industry 4.0 platform contains more than 360 German Industry 4.0 cases. The map covers 76 test centers where it can be explored, tested, and developed for Industry 4.0 applications. Industry 4.0 online library and seminar series I4.0@Mittelstand: You can access platform content and guides and partner publications.

The global social economy is constantly advancing rapidly, and the consumer end under the influence of information technology and technology has different demands for various products. In other words, the personalized demand for various products has been increasing. Application-oriented talents are required to have a more comprehensive knowledge background and structure, and have very strong learning and cooperation capabilities, and can continue to carry out knowledge iteration and innovation. In terms of external innovation, art higher education institutions should continue to deepen the benign cooperation with enterprises, governments, research institutions and major international universities.

1) Establish and promote a cooperative education mechanism for art higher education, continuously deepen the new model of school-enterprise cooperation in talent training, and encourage schools and companies to build a student internship training platform together, so that educational resources can flow freshly. Professor Charles Van Hays of the University of Wisconsin in the United States put forward the very famous "Wisconsin Idea" in 1904. The core content is that colleges and universities strive to achieve an open school model in the teaching of professional knowledge. Let colleges and universities become a booster for economic and social development. For example, the establishment of a joint training laboratory for universities and enterprises, and the implantation of innovative projects of enterprises into curriculum teaching and training. The FINK project of the Faculty of Media and Information Technology of the Hamburg University of Technology is a very successful case.

2) Make use of the rapid development of Internet and information technology, in the context of Industry 4.0, use Microsoft Remote Assist and Microsoft Layout to establish an MR mixed reality practice training base. Using the Internet and information technology to establish a digital practice platform, students can use the digital MR mixed reality factory training practice platform to simulate the process of project design and implementation at school, and they can also carry out various trainings. Enterprise personnel can remotely guide students . It not only enriches the project design and implementation at school, and they can also carry out various trainings. Enterprise personnel can remotely guide students . It not only enriches the ways of student internship training, but also promotes the current idea of creativity-driven technological innovation, and breaks the traditional bottleneck-geographical restrictions, and achieves rapid resource optimization. Professor Ye Zhewei of Tongji Hospital, Affiliated Hospital of Huazhong University of Science and Technology, has comprehensively promoted and tried out 5G smart medical care.

3) Create an interactive cooperation mechanism between the government, universities and enterprises, and establish a more flexible mechanism for the transformation of academic styles. The rapid development of information and technology has reconstructed the behavioral pattern between the education subject and the educated subject. Education 4.0 can clearly see from the educated to analyze, because of the promotion of various mobile terminals, traditional classrooms are fixed Educational time is gradually divided by fragmented educational models. This also brings diversification of cooperation methods to education and enterprise cooperation, but at the same time adds a certain degree of difficulty to quality monitoring. The purpose of the interactive cooperation mechanism between government, universities and enterprises is to establish a virtuous circle of government supervision, university execution, and enterprise employment review. At the same time, the interactive conversion of credits is realized. High-efficiency and enterprises can adjust the credit

recognition module according to specific projects and professional courses, and the adjusted credit conversion review will be implemented by the government.

4) Build a joint and interoperable art popularization platform, and use art projects as a medium to integrate the omni-media platform and national aesthetic education under the media-integrated marketing method. As General Secretary Xi Jinping pointed out, "The media landscape, the ecology of public opinion, the audience, and the communication technology are all undergoing profound changes, especially the Internet is spurring an unprecedented change in the media field." In the Industry 4.0 era, all kinds of knowledge are on the face. Since then, cross-media, self-media, and integrated media have become new communication bridges between consumers and producers.

In the 19th century, the famous German educator Adolf Distohui said, "The art of education is not about imparting knowledge and skills, but about inspiring, awakening, and inspiring." (Li Xiaonan, 2017). The teaching method in Germany is relatively open and free. Art university teachers under Industry 4.0 act as guides and choose the material media needed for creation according to their own interests and hobbies. Let students become the main body of the classroom, and cultivate students' ability to explore and practice independently. The Time-based media studio of the Hamburg Academy of Fine Arts regards inspiration of creativity and imagination as the core of the module course. Einstein concluded: Imagination is more important than knowledge. Because knowledge is limited after all, but imagination includes everything in the world and is the source of advancement and knowledge evolution. The end of the art education reform under Industry 4.0 should be the protection and inspiration of students' imagination and individuality.

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