MINISTRY OF FOREIGN AFFAIRS
OF DENMARK
Innovation Centre Denmark

EDTECH IN CHINA

MINI REPORT

1. Introduction

China's economic growth has stimulated development of new technologies that drives modernisation of traditional industries. The educational industry is one such example. Recent reports show that by industry, the Chinese Educational technology (EdTech) sector took the lead as the largest recipient of global investments in 2018. Investments in the Chinese EdTech industry make up 44.1% of the 16.34 billion dollars invested globally during 2018. In comparison, the US accounted for 32% of the total global funding. Additionally, the Chinese government strongly supports development in the EdTech industry through policies put in place to encourage and increase recruitment and talent development in areas such as Science, Technology, Engineering and Math (STEM). Recognising the potential and importance of China's EdTech revolution, this mini report will cover the basics of the Chinese EdTech sector in relation to polices, markets, developments and stakeholders.

2. Policies and Markets

In China, most parents do not consider money spent on a child's education as an expenditure, but rather as an investment. As Chinese parents become more affluent the market for after school tutoring is booming. After-school tutoring is used from early childhood to K12[1] and especially in preparation for the Gaokao - China's notorious national college entrance exam.

2.1 Curriculum reform

In spring 2018, in accordance with the State Council, the Chinese Ministry of Education announced two important action plans stipulating the following:

1. Promotion of the construction of labs, multifunctional classrooms, aligning physical spaces and facilities with interdisciplinary curriculums, as well as encouraging practical use of big data tools.
2. Formation of a new talent development mode of "AI+X" (X representing any second subject); establishing 100 "AI+X" majors and 50 AI academies, research institutes or interdisciplinary research centres.

In accordance with the government action plans, more than 30 top universities, including Tsinghua University (Top 1) and Peking University (Top 2), have included science and technology specific results into their independent enrolment scope[2], which further raises the importance and focus on these subjects.

One of the ways that the interdisciplinary curriculums are realised in China is through STEAM education[3]. Among the different STEAM educations, robotics is among the most popular, as it combines the teaching contents and methods across STEAM. So far, there are more than 10.000 after-school institutions in China offering K12 robotics education.

[1] Primary and secondary education

[2] University specific exams, which can add to the students' Gaokao score. The score is only valid for the given university.

[3] STEM education refers to science, technology, engineering and mathematics. STEAM represents STEM plus the Arts, including humanities, language, drama, music, visual arts, design and new media. STEAM investigates the same concepts as STEM, but does it through inquiry and problem-based learning methods used in a creative process.

ICDK Assessment on STEAM

1. There is no national standard curriculum for STEAM courses. Most content is developed by companies, resulting in uneven levels and competences.

2. Most learning content is developed from basic STEM education, mostly focusing on hardware and software learning instead of teaching through a STEAM style learning and mind-set.

3. The penetration of robotics education in kindergarten is low. There is no proper STEAM content focused specifically on 3-6 year olds. Current curriculum designs pay more attention to hardware construction, which requires a more hands-on practical experience.

4. The market is still maturing and the demand for STEAM education has not yet solidified causing shorter customer life cycles.

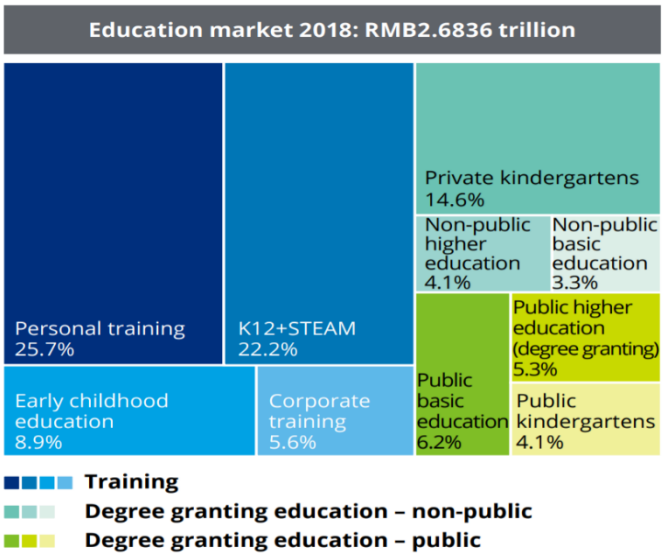
2.2 Markets

In 2018, the entire education market of China made up RMB 2.6836 trillion. Of this, the tutoring market makes up more than 60%. The market is divided into three sub-markets:

1. **Early childhood (pre-school) market**: Parents' ambitions on behalf of their children and their educational achievements, contributes to a booming pre-school market. China's Ministry of Education forecasts that the pre-school market revenue will exceed RMB 300 billion in 2023.

2. **The K12 after-school market:** Focuses on additional courses and after school tutoring. Most of a K12 student's leisure time is spent on after-school tutoring or courses to prepare for the Gaokao. Having children enrolled in the best schools and after-school activities is seen as crucial. Despite education giants' vast revenues, the K12 market is scattered. The largest companies, TAL and New Oriental, occupy only 6% of the entire market.

3. **Vocational training market:** In April 2019, the State Council of China published the "National Vocational Education Reformation Implementation Plan" to encourage growth in the vocational education. As a result, numerous companies are eager to enter this field. The submarkets can broadly be divided into diploma education, career competency development, lifelong learning, and industry-education collaboration. While a number of industry insiders reckon that the entry barriers of the vocational training market are high compared other markets, there are a number of unicorn companies with mature business models and economy of scale. Hope Education Group[4] is a prominent example of such a company.



Education market scale of China in 2018
Source: Deloitte Research 2018

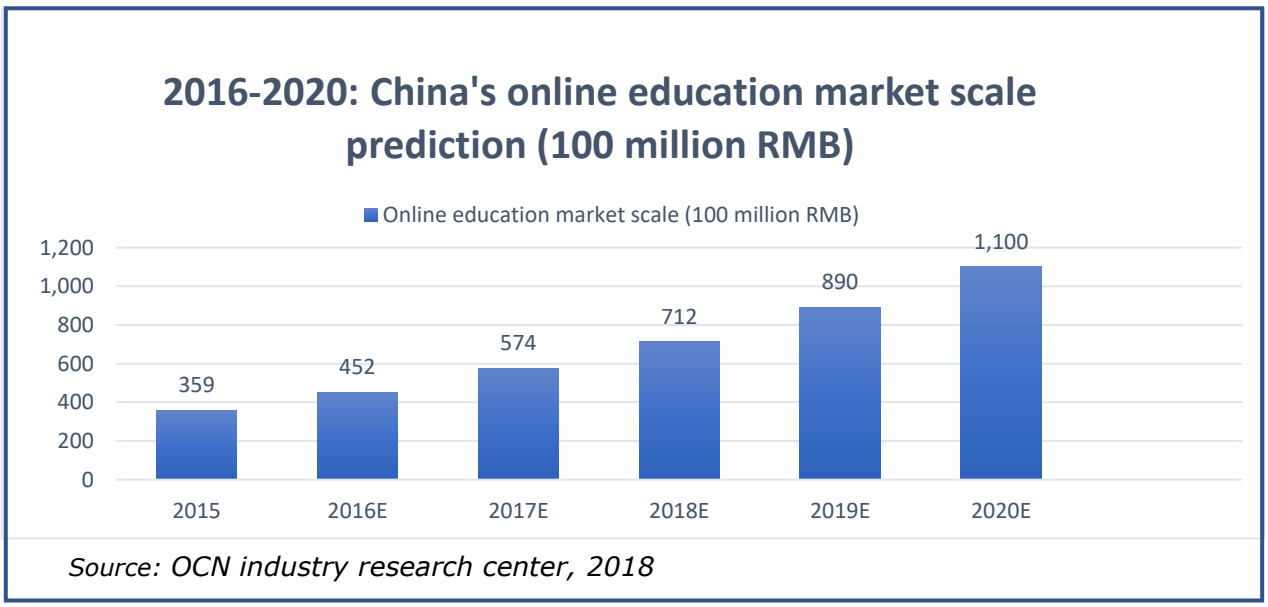
[4] http://www.hopeedu.com/

3. Trends in China's EdTech sector

The following section outlines trends and developments of different types of EdTech technologies in China. The technologies have been divided into the following major categories:
Online learning, AI education, Virtual Reality (VR and augmented reality (AR)) education, and digital classroom/smart campus.
With the exception of digital classroom/smart campus, these technologies all have a higher penetration rate in the after-school education market than they do in the public and private school system.

3.1. Online learning

The online learning market is currently the largest sub-market within the EdTech sector and it is forecasted that it will grow substantially during the next decade.



Source: OCN industry research center, 2018

Livestreaming of STEAM courses to K12 audiences is currently one of the most popular modes of online learning. There are mainly three popular types of livestreaming courses:

1. 1-to-1 teaching
2. 1-to-multiple, small class teaching (usually with no more than 8 students per class)
3. Double teacher class (classes of up to 60 students taught by a prominent online teacher online and an offline assisting teacher)

ICDK Assessment on Online learning

1. Subjects and contents are limited. The majority of online learning resources are within language and mathematics. Online learning resources on subjects like physics and chemistry, which requires hands-on practice, are limited.

2. Learning effects are not guaranteed. Especially for the double teacher model, the large size of the class does not allow teachers to pay attention to each student's performance.

3. Cost of customer acquisition is increasing, especially for 1 to 1 and the small class model.

3.2 Adaptive learning

Adaptive learning is an educational method, which uses computer algorithms to orchestrate the interaction with learners and deliver customised resources and learning activities to address the unique needs of the individual learner.

Adaptive learning is currently the most widespread mode of AI education in China. According to the latest data, a total number of 45 companies in China are engaged in the adaptive learning field, including giants like New Oriental and TAL. Companies in AI education are mostly service-driven rather than technology-driven.

3.3 Virtual reality and augmented reality (VR/AR)

While having a relatively small market share (8.8%) in 2016, the VR content market in China is expected to surpass the market for VR equipment and reach a market share of nearly 50% (38.64 billion RMB) within the coming years. However, due to the high cost of producing content for VR education, there is a gap between the increasing demand of the market and a shortage of high-quality VR content.

The Chinese Ministry of Education's 13th five-year plan (2018) states that a key task in education digitalisation is to adopt more VR technology in teaching processes.

ICDK Assessment on VR/AR education

1. A high cost of producing VR content as well as complexity of content standardization could become barriers for the development of the VR education market, as well as for start-ups in VR education.

2. The current trade tensions between China and the U.S. presents opportunities to European countries as alternative partners. There are promising prospects for Sino-Nordic collaborations due to the Nordic countries' strengths in innovative education.

3.4 Digital Classroom and Smart Campus

Most digital Classroom and Smart Campus solutions are currently at an early stage of development. The solutions are based on digital management systems and serve to gather data and optimize classroom efficiency and administration.

Examples of the use of digital classroom technologies range from facial recognition technology, to improve exam control or detect students' level of attention and understanding during class, to smart libraries customizing curriculums based on students' learning progress.

4. Key stakeholders

4.1 Education Groups – a single entry point to many schools

In China, many schools are owned and managed by public or private education business groups. These "Education Groups" are often responsible for the management of a large amount of schools and can provide a wide range of different types of schooling and education.

For Danish stakeholders, Education Groups can be important entry points to the Chinese market. As each Education Group manages a large number of schools, and is responsible for their curriculum, technologies etc. companies can reach a large amount of schools by collaborating with one single Education group.

4.2 Tech corporates

All the Chinese tech giants have entered the EdTech industry. Their entry is based on the strengths of the individual company's core business model. These are the three largest actors:

- **Alibaba:** In early 2019, Alibaba launched their digital operation management platform aiming to build 1,000 future campuses and incubate 10,000 digital management talents, to facilitate future education resource sharing.
- **Tencent:** In May 2019, Tencent released Tencent Education, which integrates the educational undertakings in the company's different departments under the umbrella of Tencent Education.
- **Baidu:** One of the first tech companies in the education industry, their entry on the market dates back to 2012 when Baidu Education was established. In 2018, Baidu worked together with universities to launch AI majors and utilize Baidu smart class to help schools establish artificial intelligence education.

4.3 Investment and investors

In 2018, the Chinese EdTech industry took the lead as the largest recipient of global investments and the industry has an expected annual growth of 20%.

The Chinese government is strongly supporting the EdTech industry by enacting growth facilitating policies and large investments. In 2015 alone, the Chinese government invested $1.07 billion in EdTech start-ups and by 2020 they plan to have invested 30 billion dollars.

Apart from government investments, the following two investment types are the most significant:

1. **Corporate Investments**: Though having various focuses and considerations while investing, the investments of the three largest actors (Alibaba, Tencent, and Baidu) share one common characteristic: Their investments are made to serve and support their main businesses. In this regard, they differ from venture capital or private equity investments.

2. **Educational Group Investments:** In order to expand their business territories, educational groups, especially TAL and New Oriental, are actively making investments. Their investments are mainly concentrated in A and C rounds, which account for 30% of total investments.

The above-mentioned industry stakeholders may all play an important role in succeeding on the Chinese EdTech market. Therefore, before attempting to enter the market, companies must have a clear strategy for dealing with or collaborating with these stakeholders.

If you are interested in more in-depth knowledge of China's EdTech industry, Please contact Innovation Centre Denmark Shanghai's EdTech Innovation Officer Mingyu Cui.

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