

STEM EDUCATION AND TRAINING PROJECT

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ABSTRACT

This project is a multi-age children's education and training project based on STEM curriculum research and development design, teaching aid research and development, teaching team training, education platform construction, study tour exchange and other business processes. The project makes full use of the superior resources of colleges and universities, introduces high-level and new-concept teaching teams, and then visualizes the growth track of children through the innovative system STEM course. The project will lead a new teaching mode, subvert the traditional "lecture-style" classroom, adopt 4C education concept, and focus on the cultivation of students' critical thinking, innovation, cooperation, communication, and other abilities, so as to educate children's ways to know the world and creative problem-solving ability, so that every child will have the opportunity to become the leader of future scientific and technological innovation.

Keywords: STEM education, 4C education idea, critical thinking

BRIEF INTRODUCTION AND COMPANY DESCRIPTION

This project is a multi-age children's education and training project based on STEM curriculum R&D design, teaching aid R&D, education platform construction, study tour exchange and other business processes. The project visualizes children's growth trajectory through the innovative system STEM course. The project will lead the new teaching mode, subvert the traditional "lecture-style" classroom, adopt 4C education concept teaching, and the classroom links will focus on the cultivation of students' critical thinking, innovation, cooperation and other abilities, so as to educate children's methods of knowing the world and creative problem-solving ability, and give every child the opportunity to become the leader of future scientific and technological innovation.

The contents of the project include high-quality curriculum and textbook design, STEM graduation organization, study tour experience camp, etc.

High quality courses and teaching materials

With the aim of cultivating children's STEM thinking and systematically constructing STEM knowledge for children, the project started with the modules of science, technology, mathematics, engineering and biology, and compiled a set of courses suitable for children to learn, including teaching materials and lesson plans.

Competition organization

By organizing and participating in WRO, VEX, MakeX and other international robot contest, National Youth Science and Technology Innovation Competition, DI Innovation Thinking Competition and other high-level STEM education competitions at home and abroad, the project will create opportunities for students to get close contact with advanced educational resources at home and abroad and experience personally, so that students can attach importance to the connection between science and technology and practice, and promote the all-round development of children's creativity and thinking.

Experience camp

The project has established partnerships with education and training institutions in many developed European countries, such as Britain and the United States, and established long-term learning and communication channels with many countries around the world. Through visits, lectures by famous teachers, interaction and learning exchanges with local teams, etc., students can learn and experience foreign advanced technologies and ideas in the process of "wandering abroad".

company introduction

Zhongqiang STEM Education and Training Company was established in 2021, with a registered capital of 50 million yuan. It is a professional training institution dedicated to STEM education and training for teenagers aged 3-16 and the development of quality and skills. The syllabus is based on the ability grade standard of STEM courses for Chinese teenagers, and the courses cover intelligent hardware such as graphical programming, Python artificial intelligence programming, unmanned aerial vehicle, robot, single chip microcomputer and rich STEM special courses. Build professional science and technology competition platforms such as grade evaluation, whitelist competition of Ministry of Education at home and abroad, international challenge, etc., and provide a one-stop learning platform for young people to program competition and improve their scientific and technological literacy. With the mission of "Unleashing every child's creativity", the company pays attention to the original spirit, and takes "learning by playing" and "creating by playing" as its development philosophy. The company will synchronize with the international STEM education and training industry through brand building, adhere to new ideas and models, and ensure that children can gain a sense of accomplishment and enjoy learning through exploration.

INDUSTRY ANALYSIS

Strength: First of all, the project is different from the traditional teaching of teacher-centered, which advocates student-centered teaching. According to the teaching characteristics of STEM course and the situation of target students, the internship small class teaching tutor understands the different needs of each student, pays full attention to each student and pays attention to the interaction between teachers and students.

Secondly, different from the traditional "scoring system" evaluation method, the project adopts embedded evaluation, and each class is evaluated according to the teaching objectives and NGSS standards, relying on classroom observation and evaluation tools to evaluate students in a three-dimensional and developing way and promote students' learning. After each

inquiry stage, an evaluation report will be issued to help parents understand students' knowledge and ability at this stage.

Third, the project adopts PBL(Project- Based Learning) teaching method, and implements ladder-based project teaching. A complete teaching concept based on student-centered education and situational design. Participate in the problem-solving process with the method of inquiry (IBL) and project-based system (PBL), so as to fully understand the basic laws of nature and learn systematically.

Weakness: difference in operation mode: Compared with the traditional K12 discipline training program, the effect of K12 discipline training can be demonstrated by staged tests. Quality education, such as art and children's programming, needs to be verified by holding competitions or grading tests. Industry demand rigidity is not strong: K12 education and training is the rigid demand of school-age children, with relatively high fees and long customer life cycle. Quality-oriented education is relatively non-rigid demand, and many customers will give up because it is difficult to persist, and the tuition fees are relatively low. Differences between curriculum system and teachers: K12 curriculum system changes slowly, and most of the teachers resources are highly educated personnel from famous universities, and a mature management system is formed internally. Comparatively speaking, there are many kinds of quality education curriculum systems, and the frequency of updating and adjustment is high. Teachers in quality education and training are mostly professionals in art and sports, which is quite different from K12 teaching and training industry. Therefore, it is necessary to develop and cultivate a new teacher management model.

Opportunities: With the advent of the information society, STEM education has been paid more and more attention by Chinese people. Since 2020, China's STEM education capital market has mainly focused on children's programming, educational robots and other tracks, and capital is more favored for off-campus training and education and STEM education product research and development technology.

At present, the idea of innovative education in Chinese primary and secondary schools mainly focuses on cultivating "all-round development students". Influenced by STEM education in the United States, China has also begun to pay attention to exploring new education modes such as STEM education and maker education. Recently, it joined Arts and developed into STEM education, which is a comprehensive education integrating science, technology, engineering, art and mathematics.

Challenges: The implementation of the "double reduction" policy has effectively stopped the phenomenon of burning money to get customers and advertising enrollment in the education and training market. However, under the background threats the demographic dividend is gradually fading, the basic status quo of institutions "getting customers is difficult and expensive" has not changed. Compared with subject training, many course effects of each subdivision track of quality education are difficult to quantify, the learning cycle is long, and the corresponding evaluation standards are lacking. Quality education products are non-"just-needed" educational products. How to make students and parents actively pay for the products has become the biggest problem faced by institutions. In addition, after the "double reduction", the development of education and training institutions changed from growth logic to profit

logic. For quality education, it is faced with the pain points of limited scale expansion in business model and difficulty in realizing scale effect.

MARKET ANALYSIS AND MARKETING PLANNING

There are more than 600,000 education and training institutions in China, but most enterprises are small in scale, and there are not many large-scale chain education and training institutions. Guosen Securities data shows that before 2016, there were no more than 10 educational and training companies listed overseas in China. Since 2017, the pace of listing of enterprises in the industry has obviously accelerated, and many educational and training companies have successively landed in the Hong Kong stock market and the US stock market. In the first half of 2021, affected by policy supervision, the number of newly listed companies declined compared with previous years. As of June 30, 2021, a total of 65 education and training enterprises had successfully listed overseas.

From 2019 to 2020, the overall market of China's education and training industry is good, and the total market value of overseas listed companies has increased substantially. However, since the beginning of 2021, the regulatory policies of the education and training industry have been tightened, the stock price has fallen sharply, and the total market value of the sector has continued to shrink, from 865.1 billion yuan in 2020 to 457.8 billion yuan.

marketing design

Dynamic marketing strategy:

According to the changes of various factors in the market, constantly adjust marketing ideas and improve marketing measures, so that marketing activities can dynamically adapt to market changes. The project will continuously pay attention to and investigate the user market, always pay attention to the market development trend and user demand changes, update and optimize the functions of goods and services in real time, and ensure that the dynamic development keeps up with the ever-changing individual demand changes and industry development trends.

Moderate price strategy:

Price positioning is an important factor that affects the success or failure of marketing. For the consumers who are realistic and honest, the price directly affects their consumption behavior. Adhering to the business philosophy of quality first and moderate price, the project will create a product service system with reasonable price, rich content and vivid teaching, which will provide convenience for the vast number of users.

Single appeal strategy:

Project promotion pays attention to user portrait analysis and precise matching, and provides diversified and personalized curriculum arrangement and teaching services for students with different quality and skill upgrading needs.

MANAGE TEAM AND COMPANY STRUCTURE

Management team:

1. general manager office: executive director and general manager of the company.

Executive director of the company: Zhongqiang, the main founder of the company, chairman of the board of directors, executive director and CEO, is fully responsible for the strategic planning, positioning and management of the Group.

General Manager: Sun Qiang, one of the main founders of the company, was appointed by the board of directors as the general manager of the company and was responsible for the daily business affairs of the company; To decide on the appointment and dismissal of deputy general managers and department heads and their remuneration; Coordinate the relationship between internal departments.

Market center: responsible for investigating and analyzing the domestic STEM education and training market situation and formulating marketing strategies, introducing the company's product features to customers and expanding the domestic market share.

3. Curriculum R&D Center:

The engineering department is responsible for the company's curriculum design, teaching aid research and development, and client equipment installation.

4. Administrative and Personnel Center: Administrative Office and Human Resources Management Department.

Be responsible for the company's document management, logistics and corporate culture construction, accept customer complaints, organize and report to the general manager regularly.

Zhongqiang Company has an existing human resources supervisor who manages daily human resources matters. The human resources management department is responsible for the company's human resources planning, staff recruitment and allocation, training and development, performance appraisal and salary and welfare management.

5. Finance Center: Finance Department and Purchasing Department

Be responsible for the fund raising, use and distribution of the company, and do a good job in financial planning, capital structure determination, dividend distribution, daily accounting work, cashier management and tax administration under the guidance of the annual financial budget plan and settlement plan of the company formulated by the executive director.

PRODUCTION AND OPERATION PLAN

Preparation (one month before the implementation of the project)

- ✓ Laboratory construction
- ✓ Teacher training: STEM product training, STEM innovative teaching mode training, etc.
- ✓ Preparation of teaching materials: students' books, teachers' books and toolkits
- ✓ Establish STEM innovative teaching project team.

Mid-term implementation (at least one semester or one academic year)

- ✓ Organize the class participating in the project to implement the pre-test.
- ✓ Regular project meeting: a monthly meeting of members of the project team to communicate the progress of the project implementation and conduct class evaluation activities.
- ✓ Mid-term training: provide training according to project requirements.

Final summary (the last month of a semester or school year)

- ✓ Post-test and statistical analysis of project implementation
- ✓ Post-test of organization. Obtain data and make statistical analysis.
- ✓ Summary report: Summarize the project and share the STEM innovative teaching experience and cases.

FINANCIAL ANALYSIS**Table 1** Analysis table of main economic indicators of the project

serial number	name	unit	numerical value	remarks
one	Total project investment	Ten thousand yuan	1500	
1.1	construction investment	Ten thousand yuan	100	
1.2	working fund	Ten thousand yuan	100	
2	Annual operating income	Ten thousand yuan	2116	Ten year average
three	Total annual cost	Ten thousand yuan	1129	Ten year average
four	Annual operating cost	Ten thousand yuan	1029	Ten year average
five	Total annual profit	Ten thousand yuan	1077	Ten year average
six	income tax	Ten thousand yuan	529	Ten year average
seven	Annual after-tax profit	Ten thousand yuan	548	Ten year average
eight	Payback period of investment	year	five	Construction period

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