

# *Teaching Reform of Sign Language Curriculum "Six-Ization" in Special Education in Colleges and Universities*

**Constable Edwin\***

*University of London, UK*

*\*corresponding author*

**Keywords:** Sign Language Course, Special Education, Innovative Teaching Reform

**Abstract:** With the development of society, the participation of deaf people in social capacity has increased, and the demand for social opponent language translation has increased. It is necessary to train high-quality sign language translators. The sign language translation profession and the deaf higher education came into being, which is the need of special education development and a highlight of the development of higher education. Sign language together with Mandarin, music, dance, piano, Braille, courseware production, subject teaching method, educational technology and other courses together constitute the basic module of special education professional courses. At present, China's sign language education is still in the stage of development and improvement, especially in the teaching process of the sign language of special education, there are still many problems, which need to be improved. This paper intends to use "school-based textbooks, diversified teaching methods, teaching methods MOOC-ization, rationalization of curriculum settings, diversification of assessment and evaluation, and professionalization of faculty, etc., and exploration of the "six-ization" teaching reform of the "sign language" curriculum. Experimental research shows that there have been great changes in teaching methods, with an increase of nearly 15%, which fully reflects the feasibility of the "six modernizations" teaching reform.

## **1. Introduction**

In order to create a barrier-free communication environment and help deaf people better learn their lives, to encourage society to accept deaf people and allow them to better integrate into society, a large number of sign language translators are required. However, as the major of sign language translation is a new profession in our country, the history of running a school is still relatively short, and the experience of running a school is rather lacking. Therefore, the cultivation of sign language translators is faced with many difficulties. There is still a lack of instruction in linguistic theories in

teaching sign language. The curriculum standards are not uniform, the teaching resources are scarce, the teaching methods are outdated, the practical skills are insufficiently cultivated, and the use of modern information technology is weak. In order to improve the quality of sign language translators, it is imperative to carry out innovative reforms in the course of sign language courses. This paper starts with the social situation and the status quo of sign language translation. Firstly, it puts forward the existing problems and existing meanings of sign language translation courses, and reveals the necessity of the study of sign language translation course setting. It is recognized that the existing research mainly focuses on the individual research of sign language translation professional skills and humanities literacy, and lacks the overall research on the setting of the target language translation course. Therefore, it strengthens the investigation and study of the institutions of higher learning that currently offer sign language translation. In-depth analysis of the problems in the course setting of sign language translation, and the discussion and reference of the countries with advanced translation of the language, and the principles and strategies for reforming the reality of China.

## **2. Analysis of the Current Situation of Sign Language Course Teaching**

### **2.1. Lack of Guidance Linguistic Theory**

Sign language is a true language, and 50 countries around the world have affirmed the language status of sign language in the form of legislation. Sign language is the native language of the deaf, but it is a "second language" for most listeners. Therefore, sign language teaching should be guided by linguistic theory and second language acquisition theory. However, the current sign language teaching is basically a vocabulary-based "gesture Chinese" teaching in accordance with the Chinese word order. It does not follow the laws of the natural sign language of the deaf, and lacks the theory of sign language linguistics, cognitive linguistics and sociolinguistics. Although the students are proficient in "gesture Chinese", they still cannot communicate with the deaf people.

### **2.2. Curriculum Standards Vary**

Sign language courses have achieved great development in recent years, but the research and development of professional curriculum standards is still relatively lacking. There is no unified, systematic, national-level sign language translation professional curriculum standards. Because there is a lack of deep cooperation in the universities that offer sign language translation professionals in China, the curriculum standards for the various professional courses are all set by the teachers themselves, and there is a lack of research and formulation mechanisms. Therefore, there is a phenomenon of setting up the same curriculum, but the curriculum standards are not uniform. Coupled with the limited level of teachers themselves, curriculum standards are not scientific and rational. The curriculum content is lack of modernity and pertinence, and it is actually out of touch with the contemporary society. Some "key abilities" that are conducive to the sustainable development of students cannot be integrated into the curriculum. In the course of curriculum development, there is a lack of normativeness, pertinence and arbitrariness.

### **2.3. Lack of Teaching Resources**

Teaching resources refer to various human and material conditions that can support teaching and learning activities. Therefore, teaching resources can provide resources for teaching and student learning. Most studies in the design of teaching resources system, according to the level of resources to teaching resources into three categories: professional-level resources, curriculum-level

resources and material-level resources. Professional -level resources include professional teaching materials and personnel training programs; curriculum-level teaching resources include curriculum standards, lesson plans, PPT courseware, and exercises. Material-level resources include various types of pictures, videos, animations, and cases. At present, the teaching resources of the sign language translation course are very scarce, the professional sign language teaching materials are scarce, there is no quality resource sharing class, and all kinds of teaching resources are in the stage of exploration and construction.

### **3. The Reasons for the Problems in the Teaching of Sign Language Courses**

#### **3.1. Teaching Content is Complex, Learning Ability is Limited**

The special education major has many courses such as special education introduction and special child behavior correction. The boring and massive theoretical teaching is easy to make students burnout. The sign language course has many vocabulary, rich content and few associations. Some vocabulary gestures are similar and confusing. Some vocabulary is difficult to memorize, and it is not easy to master sign language for beginners. In addition, a considerable number of students lack learning enthusiasm and learning methods, which increases the difficulty of sign language learning to a certain extent.

#### **3.2. Difficulties in the Development of Teaching Materials and Lack of Professional Talents**

The current lack of professional sign language teaching materials is an important factor affecting the quality of sign language teaching. The reason is that the development of sign language teaching materials is difficult and there is a shortage of sign language professionals. Because sign language teaching has the characteristics of strong professionalism, pertinence and particularity, the development of sign language teaching materials must also be completed by professional teams with high professional qualities and rich experience. However, special education personnel are scarce, not to speak of professional R&D teams, so that our sign language textbooks are old and single, and have not been effectively updated for many years.

#### **3.3. The Impact of Traditional Ideas, Sign Language Teaching Desire is Not Strong**

Some of the social people's "discrimination" to the deaf person has led to prejudice to special education and sign language teaching. Some students and parents think that the number of deaf people is limited, special education is narrow, and the prospects are bleak. Some parents think that deaf people are not perfect. Entering special school work will affect the physical and mental health of their children and they are reluctant to allow them to choose special education or sign language translation professional learning. Development; Some people think that normal people are accustomed to oral communication. It is difficult to use two years of learning and skill in using sign language. These traditional ideas have caused society to place special education on the "bottom."

#### **3.4. Insufficient Understanding of Practical Teaching**

Sign language teaching cultivates talents with professional practical skills. Therefore, professional curriculum teaching should focus on the combination of theory and practice. Due to the influence of traditional education concepts and models, it is difficult for current institutions to meet the training of students' practical skills in terms of teaching methods and teaching resources. The management department of the college pays less attention to the practical teaching of the opponent

language. The policy support and educational resources are insufficient. The practical teaching resources of the sign language course lags behind the demand of practical teaching from software to hardware construction.

#### **4. The Innovative "six-ization" Teaching Measures for Improving Sign Language Teaching**

##### **4.1. Textbook Selection (Teaching Content) School-Based**

Institutions should combine the training objectives of special education professionals and the needs of the industry for talents, and increase the practical communication sessions (such as life scenes, cultural knowledge articles, subject teaching articles, etc.) and sign language for special education teaching and service management. Dance and pantomime performances, sign language translation and other practical teaching content into the classroom, textbooks, and included in the final evaluation and post-test content. At the same time, teachers can learn from the deaf group some local sign language with high frequency of use, and teach students to special education, which will help them integrate into the learning and life of the students better and faster in the future, and improve the effect of education and teaching.

##### **4.2. Diversified Teaching Methods**

Teaching methods are an important part of the teaching process, and its expressive power determines the vividness and specificity of the knowledge transfer to students. The content of the same textbooks is very different from the effect achieved by the teaching of the original and the innovative and innovative teaching. The establishment of sign language courses in colleges and universities in China is relatively late, and the teaching system is constantly improving. The teaching of sign language courses for special education students needs to be practiced, reflected and summarized continuously, thus truly improving the practical teaching ability and sign language translation ability. While fully respecting the individuality of students, colleges and universities should encourage students to participate in the interactive teaching of sign language topics and cultivate students' ability to learn independently; develop interest groups such as sign language clubs and sign language corners, and widely introduce situational teaching, micro-training, and deafness demonstrations. A variety of teaching methods, fully mobilize students to learn sign language enthusiasm and subjective initiative.

##### **4.3. Teaching Methods MOOCization**

Use multimedia video (such as online sign language dictionary, deaf news, sign language teaching blog, sign language WeChat, sign language melodrama, sign language movies, etc.), use QQ and WeChat establish an interactive platform for campus sign language learning, and develop a sign language online learning network platform to fully realize the intuitiveness, dynamics and diversification of teaching methods, enrich the students' sign language learning materials, and improve the fun, effectiveness and meaning of sign language classroom teaching. Activity. Colleges and universities should increase capital investment, strengthen technical support, and formulate incentive measures and employ MOOC course expert lecture, famous teacher demonstration (high quality features MOOC courses) and on-site guidance, encourage professional teachers to spend their time and work together to sign language The MOOC course (also known as the large open online course) extends the teaching of sign language courses with limited time, limited location and limited content to infinite space and unlimited fields to meet the needs of different students' sign language learning.

#### 4.4. The Curriculum is Rationalized

The contents of the different requirements of relying on special schools, special education institutions and a sign language interpreter jobs, demand industry for special education professionals, job ability, training content to further refine the sign language skills (special school teaching, management; special education institutions Service , the content of the management; the content of the sign language translator's post service) and the level requirements, develop the sign language course teaching plan, clarify the goal of the sign language course training and training specifications, and at the same time analyze the course plan of the sign language translation major in the brother institution and the special education major of the school. The applicability and timeliness of the curriculum plan, starting from the characteristics of the sign language translation profession, searching for existing problems, exploring diverse talent training models, applying advanced teaching ideas and excellent teaching results to teaching practice, forming distinctive professional features.

#### 4.5. The Professionalization of the Teaching Staff

With the establishment of national education teacher qualification certificate system with disabilities and special education teachers' professional standards, proficiency in the national through sign language will become an important pre-service teacher training deaf education and job training. Pay attention to the exploration and cultivation of a multi-functional, technical and technical sign language teacher, and increase the on-the-job training of sign language teachers. Teachers are required to participate in at least two sign language professional lectures (or learning activities) per semester, and at least two weeks of special schools. Teaching practice experience, timely update the concept and method of sign language teaching, deeply understand the similarities between natural sign language and grammar sign language; encourage teachers not only to obtain the qualification certificate of college teachers, but also to obtain the qualifications of professional ability such as middle-level and above national sign language translators and sign language trainers. Proof to improve the proportion of teachers' "double certification".

#### 4.6. Assessment and Evaluation of Diversity

Introduced the CAEP Sign Language Professional Qualification Certificate Evaluation System. Colleges and universities can open CAEP sign language professional ability qualification certificate evaluation content, organize students unified study training, collective research, strictly require students to obtain primary school teacher qualification certificate and Mandarin, English, computer and other grade certificates before graduation, at least CAEP sign language (Junior) professional ability qualification certificate. This will greatly expand the breadth and depth of student employment, greatly enhance the employment competitiveness of students, and improve the satisfaction and recognition of employers and society. Strengthen the process evaluation, adjust and optimize the setting of the optimization test for the sign language examination course, reduce the proportion of the examination results at the end of the period, and combine the self-evaluation, student peer review, teacher evaluation, and other assessments, and classify the classroom performance, curriculum questions, and sign language. Extracurricular practice, daily homework, sign language professional qualification certificate and other assessment methods are introduced into the student learning comprehensive evaluation system. Students' sign language courses are evaluated from many aspects such as sign language knowledge, sign language vocabulary accuracy, gesture art expression, and sign language display innovation. The level of study and emphasis on student personal development.

## 5. Optimizing TLD Sign Language Tracking Algorithm Based on Convolutional Neural Network

### 5.1. Gesture HOG Feature Extraction

#### 1) Grayscale processing

The gray-scale processing of the target gesture image can achieve the optimization of the image contrast, reduce the interference caused by the partial shadow of the image and the light transformation, and have a noise reduction effect.

#### 2) Calculate the gradient of the gesture image

Calculate the gradient of the horizontal and vertical coordinates of the gesture image to obtain the gradient direction value of each pixel. The gradient of the pixel  $(x, y)$  in the image is:

$$G_x(x, y) = H(x+1, y) - H(x-1, y) \quad (1)$$

$$G_y(x, y) = H(x, y+1) - H(x, y-1) \quad (2)$$

In the above formula,  $G_x(x,y)$ ,  $G_y(x,y)$ ,  $H(x,y)$  refer to the horizontal gradient, vertical gradient and pixel value at the pixel position  $(x,y)$  in turn. And the gradient magnitude and gradient direction at pixel position  $(x, y)$  are:

$$G(x, y) = G_x(x, y)^2 + G_y(x, y)^2 \quad (3)$$

$$\alpha(x, y) = \tan^{-1}\left(\frac{G_y(x, y)}{G_x(x, y)}\right) \quad (4)$$

This paper selects the  $[-1,0,1]$  gradient operator to perform the convolution operation on the original image to obtain the horizontal gradient component  $gradscalx$ , and then use the  $[1,0,-1]$  gradient operator to repeat the previous step to perform the convolution operation, Get the gradient component  $gradscalx$  in the vertical direction. Finally, the gradient amplitude value and direction of the pixel point are obtained according to the above equations (3) and (4).

### 5.2. Use Convolutional Neural Network to Check Gestures

Use the first layer of CNN to roughly locate the off position of the gesture, and then repeatedly use the second layer of neural network to fine-tune the first layer of network to achieve the purpose of fine classification. When testing the convolutional neural network in the experiment, when detecting images that do not contain HOG gestures, wrong target regions sometimes appear. These wrong target regions are classified into negative samples, and the training is performed again to significantly improve the classification effect. The target gesture can be better detected by the convolutional neural network.

## 6. "Six Modernizations" Teaching Experimental Research on Sign Language Course in Special Education

### 6.1. Experimental Protocol

In order to make this experiment more scientific and effective, this experiment investigates and analyzes its sign language courses by in-depth special language majors in a certain university. This experiment conducted an experimental investigation on the status quo of special education courses in colleges and universities in the form of a questionnaire survey. The subjects of this investigation were all juniors and above to ensure the validity of the experimental data. On this basis, this article conducts in-depth research on the "six modernizations" of sign language courses with teachers of



sign language courses, and conducts statistics and analysis on the data usage process and mathematical statistics.

## 6.2. Research Methods

### 1) Questionnaire survey method

In this study, by asking relevant experts, a targeted questionnaire was set up, and the survey was carried out in a semi-closed manner. The purpose was to promote the correct filling of the students under investigation.

### 2) Field research method

This research analyzes its teaching status and collects data by going deep into the special language sign language courses of universities in a certain place. These data provide a reliable reference for the final results of this article.

### 3) Mathematical Statistics

Use related software to analyze the research results of this article.

## 7. "Six Modernizations" Teaching Experiment Analysis of Sign Language Course in Special Education

### 7.1. Analysis of the Status Quo of Sign Language Teaching

In this experiment, a questionnaire survey was conducted among students of special language majors in a certain place through a questionnaire survey. The data obtained are shown in Table 1.

Table 1. An analysis of the status quo of sign language teaching

	Single teaching method	Different curriculum standards	Insufficient teaching resources	Others
Man	7.26	7.77	6.35	6.21
Woman	8.09	7.21	6.89	5.49

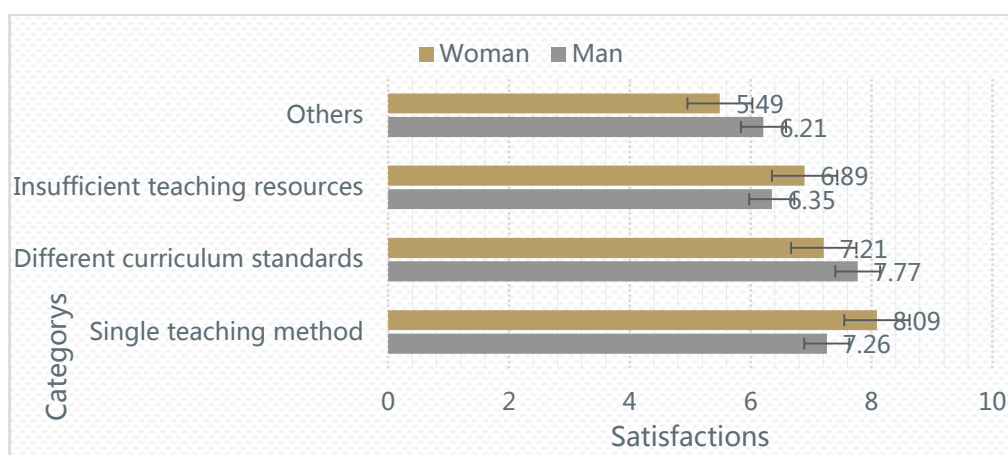


Figure 1. An analysis of the status quo of sign language teaching

It can be seen from Figure 1 that most students think that the sign language course teaching is single, and the teaching curriculum standards are not unified. There are relatively few curriculum resources for learning, which fully shows that the current teaching of special languages in colleges and universities in our country is difficult, and the existing problems need to be solved urgently.

## 7.2. Comparative Analysis of Sign Language Teaching

In order to further conduct an experimental analysis of the research in this article, this experiment compares the traditional sign language teaching curriculum with the "six modernizations" teaching studied in this article. The data obtained are shown in Table 2.

Table 2. Comparative analysis of sign language teaching

	teaching methods	Learning interest	Course Resources	Others
Six Teaching	72.3%	68.2%	66.7%	62.9%
Traditional	58.1%	59.7%	54.2%	55.0%

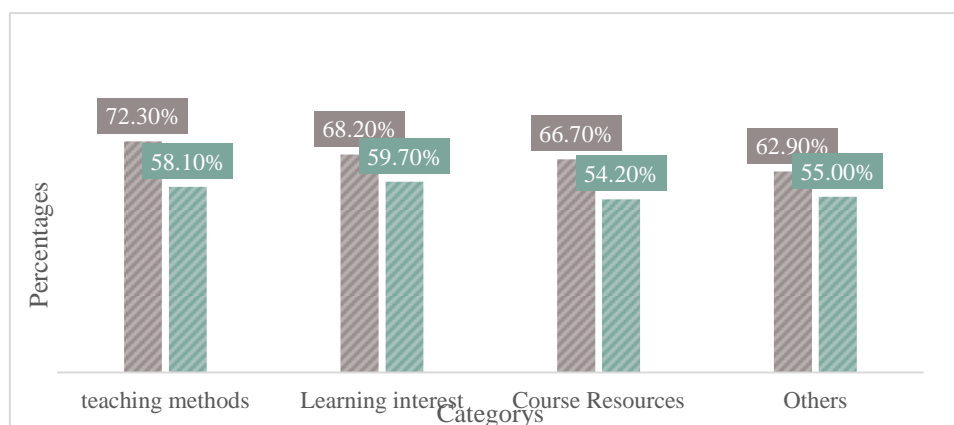


Figure 2. Comparative analysis of sign language teaching

It can be seen from Figure 2 that compared with the traditional sign language teaching model, the teaching based on the "six modernizations" is more excellent in many aspects, especially the teaching method has been greatly changed, with an increase of nearly 15%, which fully reflects the feasibility of "six modernizations" teaching reform.

## 8. Conclusion

With the improvement of the level of social civilization in our country, the awareness of the rights of deaf people has increased, and the demand for social opponents in translation has increased. In order to cultivate high-quality sign language translators, it is necessary to reform the professional curriculum. In the innovative reform of the sign language course of the professional core course, we can learn from the successful experience of language teaching at home and abroad, and use the theory of sign language linguistics, cognitive linguistics, sociolinguistics and second language acquisition to guide the establishment of scientific courses. The concept, establish a rich library of teaching resources, explore a variety of open modern teaching methods, and effectively improve the teaching quality of sign language courses, and cultivate students' solid and solid sign language skills. At the same time, we must pay attention to absorbing the advanced personnel training experience at home and abroad and achieve mutual complementarities through cooperation and exchanges. Schools that have established sign language translation programs in China should also strengthen interaction and exchanges, and strengthen cooperation and research in personnel training programs, textbook development, and classroom teaching. All colleges and universities should further promote the integration between domestic sign language and linguistics, sign language translation and translation, and learn from the existing theories of linguistics and translation studies to guide the cultivation of talents in sign language translation.



## Funding

This article is not supported by any foundation.

## Data Availability

Data sharing is not applicable to this article as no new data were created or analysed in this study.

## Conflict of Interest

The author states that this article has no conflict of interest.

## References

- [1] Struhl B, Vargas J. *Taking College Courses in High School: A Strategy Guide for College Readiness--The College Outcomes of Dual Enrollment in Texas.. Jobs for the Future*, 2012:44.
- [2] Wei L U. *Research on Sign Language Teaching in China's Colleges and the Suggestions. Journal of Changchun University*, 2014.
- [3] Nofal K H. *The Reasons Behind the Students' Weaknesses in University Requirement Language Courses in Speaking Skills. International Journal of Social Sciences & Education*, 2012.
- [4] Yi T, Fan J B. *A Discussion on Teaching Integrated Computer Programming Language Courses. Journal of Shangluo University*, 2012.
- [5] Liu Q. *Optimization of Course Contents in College of Chinese Language and Literature in Hubei University of Arts and Science. Journal of Hubei University of Arts & Science*, 2013.
- [6] Qian M. *An Analysis of Students' Needs for English Courses in General Colleges and Universities. Shandong Foreign Language Teaching Journal*, 2014.
- [7] Jaganathan P, Pandian A, Subramaniam I. *Language Courses, Transversal Skills and Transdisciplinary Education: A Case Study in the Malaysian University*. 2014, 2(2):83-92.
- [8] Arn ó-Maci à E. *A Qualitative Approach to Educational Research in LSP: Language Courses in English Studies. Lecture Notes in Electrical Engineering*, 2017, 240(45):585-592. <https://doi.org/10.7146/hjlcb.v23i45.97354>
- [9] Yang J R, University S. *Building Intercultural Competence in an Integrated Language Course— College English Curriculum Reform of Shantou University. Overseas English*, 2015.
- [10] Yong J. *Innovation to Course System of Chinese Language and Literature Major in Colleges and Universities. International Conference on Management Science, Education Technology, Arts, Social Science and Economics*. 2015. <https://doi.org/10.2991/msetasse-15.2015.120>
- [11] Wang Q. *Pondering on Documentary Course Construction for Media Major in Foreign Language Colleges and Universities. Science Education Article Collects*, 2016.
- [12] Xie L. *Reflection on the Necessity of Adding the Optional Course of Sign Language in Colleges and Universities. Journal of Guilin Normal College*, 2017.
- [13] Ihde T W. *A Hundred Years: Irish Language Courses in American Colleges. Éire-Ireland*, 2017, 30(4):181-186. <https://doi.org/10.1353/eir.1995.0064>
- [14] Zhang G F. *Thoughts on the Course of Chinese Language Literature Selection in Colleges and Universities. Journal of Jiamusi Vocational Institute*, 2018.