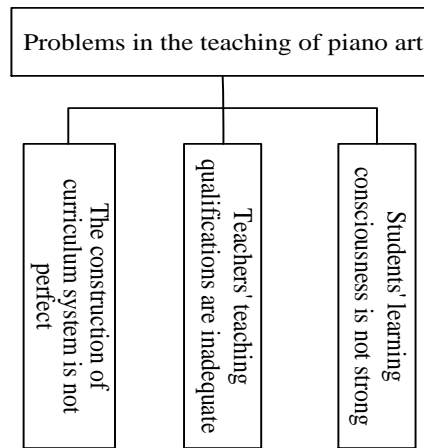
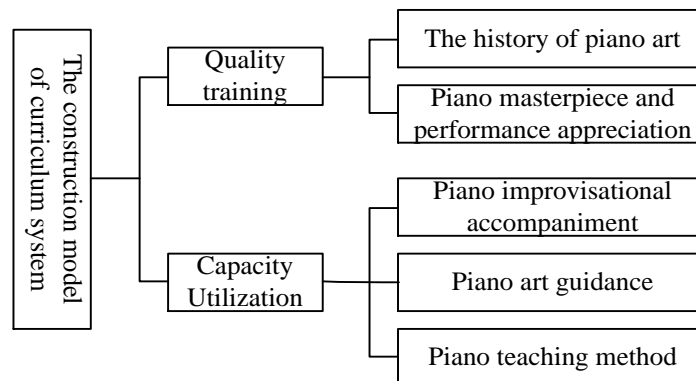


interest in the piano. With a certain piano base, the learning attitude is negative. But some students do not have enough financial capacity to learn the piano from childhood, and choose the piano after entering colleges and universities. Though they have interest in learning, they are not able to keep pace with teachers' teaching speed due to the large gap between teachers and students.



**Figure 1.** Problems in the teaching of piano art instruction

Colleges and universities should actively set up piano art guide courses to train students from the quality training and the ability using, so as to enrich the content of curriculum construction. The courses not only need to meet the requirements of the Ministry of education in teaching and educating, but also need to understand students' needs for knowledge. Under the environment of new media, the construction of piano art guidance course system can be used as the pattern shown in Figure 1.



**Figure 1.** Construction mode of piano art guidance course system

**Conclusions:** Under the thinking of the new media, there are many opportunities in the teaching of piano art instruction. The new media will inject new vitality into the teaching of piano art, and it not only relies on the teaching of plate books and PPT. Based on the discussion of the existing problems in the teaching mode of piano art instruction at the present stage, a questionnaire is used to investigate the status of the teaching of piano art guidance under the new media thinking. It mainly includes three aspects: curriculum, teachers and students. In the process of investigation, interviews were conducted on teachers, questionnaire survey was taken on college students, and the results of the survey were analyzed with SPSS software. Both reliability and validity could meet the requirements. Based on the results of the questionnaire survey, this paper puts forward the innovative measures for the teaching mode of piano art guidance under the new media, including improving the curriculum of colleges and universities, improving the accomplishment of piano art instructors, strengthening the students' learning concept of piano art guidance and so on. It provides suggestions for relevant colleges and universities to reform piano art guidance course, enriching the teaching content of piano art instruction.

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## RESEARCH ON SURVEYING AND MAPPING ELEMENTS INTEGRATION AND MODEL

## SHARING METHODS BASED ON BIM TECHNOLOGY UNDER COGNITIVE IMPAIRMENT

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**Background:** Building information model is called BIM for short. With the help of digital means, the information of related structures can be displayed, and a series of all-round improvements can be made to structures. This technology has the characteristics of full life cycle management. It is a new direction of the construction industry and is mainly used in construction projects. At present, scholars have less research on the relevant applications in the field of Surveying and mapping. The system for the use of centralized and diversified geographic information is GIS system. The research results of the system are mainly to browse the relevant surveying and mapping results. The research effect on the integration of mainstream BIM Technology is poor. It does not make full use of geographic information data, and technical innovation is needed. Nowadays, there are three integration methods of Surveying and mapping elements, which integrate surveying and mapping elements through topographic map, GIS and BIM. The topographic map can display the relevant landform in a certain proportion to provide data reference for the relevant activities of construction engineering. However, the topographic map results have certain limitations, such as single content and discrete data, which are not conducive to the work of designers. GIS technology can integrate surveying and mapping elements such as point, line and surface, make the drawn electronic map clearly and intuitively displayed in front of people through symbolization and other related processing, and get relevant attribute data in the map. With the development of Surveying and mapping field, many surveying and mapping methods have been studied, such as remote sensing and laser scanning. The data forms obtained by various surveying and mapping methods are different. Facing this situation, it is necessary to specially design software that can accommodate these data forms, and try related aspects according to the characteristics of BIM Technology. After integrating various types of data, the sharing mode of Surveying and mapping BIM model also needs to be studied and adjusted according to different format requirements.

**Objective:** To solve the cognitive barrier of BIM Technology in surveying and mapping application, study the integration of Surveying and mapping elements of BIM Technology, and develop different sharing methods. The established surveying and mapping element integration system can intelligently identify terrain related attributes and define these attributes. During cross platform sharing, the attributes of geographic information data can be completely retained without any loss of attribute information, which is conducive to the smooth development of relevant design by designers and provides good technical support for relevant analysis work.

**Research objects and methods:** 264 graduate students majoring in remote sensing from 11 universities were randomly selected in this study. These graduate students came from different grades. 264 questionnaires were distributed to them. The number of recovered and effective questionnaires were 251 and 243 respectively, and the recovery rate and effective rate were 95.08% and 92.05% respectively. The questionnaire is prepared according to the relevant contents of BIM innovation technology and relevant model sharing mode. The data processing software collected in the questionnaire is SPSS software. The relevant scoring standard adopts grade 1-5. The higher the score, the higher the degree of correlation.

**Results:** The questionnaire data were collected and processed by SPSS software. The evaluation of BIM innovative technology by postgraduates majoring in remote sensing of different genders is shown in Table 1.

**Table 1.** Evaluation of BIM innovative technology by postgraduates majoring in remote sensing of different genders

| Postgraduate in remote sensing | Technical value | Economic value | Social value |
|--------------------------------|-----------------|----------------|--------------|
| Male                           | 4               | 3              | 4            |
| Female                         | 3               | 2              | 4            |

In Table 1, remote sensing Postgraduates of different genders evaluate BIM innovative technology from technical value, economic value and social value. On the whole, remote sensing postgraduates believe that BIM innovative technology has certain value, of which the social value score of the technology is the highest, 4 points, and the economic value score is relatively the lowest, the scores of male and female graduate students majoring in remote sensing are 3 and 2 respectively.

**Conclusions:** BIM Technology is innovated and applied in the field of Surveying and mapping. This technology has a good effect on the integration of multi-source geographic information data. The established surveying and mapping BIM model can better realize cross platform data sharing and completely retain the attribute information of relevant data. The innovative application of BIM Technology provides

reference technical data for designers to carry out relevant work, and contributes to the smooth development of construction projects.

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## THE PSYCHOLOGICAL PROMOTING EFFECT OF MOTHER TONGUE ON WRITING FOR COLLEGE ENGLISH MAJORS BASED ON SAPIR-WHORF HYPOTHESIS

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**Background:** Learners use their mother tongue to think in the process of second language writing, which is universal, and this kind of thinking consciousness and behavior is stubborn to some extent, especially for Chinese learners. So, any attempt to completely eliminate this kind of behavior from learners' foreign language writing process is unrealistic and irrational. Perhaps an unverified explanation for this deep-rooted phenomenon is that Chinese learners, especially English majors in colleges and universities, need high-quality language ability and writing, but they have always studied foreign languages in a living and learning environment out of context, so it is difficult for them to think freely in English like native speakers of foreign languages. Once they are required to do some writing in English, it is common to use Chinese as a translation strategy. Naturally, there are two different language systems in the process of Chinese learners' second language writing, which are both interrelated and independent.

**Study Design:** Language learning and teaching is an empirical science, and direct observation often triggers reflection on many problems. The major purpose of this study is to testify the influence and the role of L1 (Chinese) in the process of college English majors' writing in second language learning. Qualitative and quantitative analysis will be used to get a more comprehensive understanding of this issue.

**Subjects and Methods:** Twelve senior English majors are selected as the research objects. Given that TEM4 is a comprehensive test set for English majors only where writing plays a prominent role, the subjects are divided into three groups (weak, fair and good) based on their scores in TEM4. In this study, the method of thinking with voice is adopted and post-test interview is supplementary to further enrich and perfect the audio thinking record, as Table 1.

**Table 1.** Subjects' information

| Level | Subjects | Score in TEM4 |
|-------|----------|---------------|
| Weak  | S1.1     | 55            |
|       | S1.2     | 58            |
|       | S1.3     | 58            |
|       | S1.4     | 59            |
| Fair  | S2.1     | 60            |
|       | S2.2     | 66            |
|       | S2.3     | 68            |
|       | S2.4     | 72            |
| Good  | S3.1     | 80            |
|       | S3.2     | 84            |
|       | S3.3     | 84            |
|       | S3.4     | 86            |

Wang Wenyu (2004) divided the thinking activities in writing into five categories. According to Wang Wenyu's classification of thinking activities in the writing process, this study classifies the contents of voiced thinking drafts, as Table 2.

**Data analysis:** The amount of mother tongue thinking in second language writing. In this section, research question 1 “How much do learners depend on their mother tongue thinking in the process of second language writing?” and question 2 “What are the differences in the influence of mother tongue thinking on different levels of second language learners?” will be answered. Here is the sheet of words calculation for both English and Chinese, which presents the proportion of mother tongue thinking for each subject, as Table 3.