EDA Course Teaching Reform Based on Vivado IDE
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Abstract. EDA technology and application is an important professional course of electronic information. EDA technology is also the future application of core skills that electronic design engineers must master. This paper is based on research on teachers teaching methods, curriculum basic theory based on EDA, into the new SOPC/EDA integrated design environment (IDE), which enables students to deepen the design idea of programming system understanding, and cultivates students' innovation consciousness and the desire to explore.

Introduction
Our goal is to develop application-oriented talents, which requires students to have a certain theory on the basis and also requires a good hands-on practical ability. EDA technology and its application are new achievements in the development of modern electronic technology. Electronic information is one of the important professional courses [1]. The course is also a very practical course. Students majored in electronic information—master EDA design capabilities, not only promote student employment but also for future studies are important. The Vivado integrated design environment, the IDE, is a new generation of integrated development environment from Xilinx. Its design philosophy is significantly improved over its predecessor, the ISE: a more emphasis on IP-centric system-level design thinking; The program to explore the best way to achieve; provide a more efficient timing convergence; provide designers of FPGA layout and efficient control of wiring and so on [2]. The Vivado integrated design environment provides a new build of SOPC-enhanced, IP-and system-centric next-generation development environments that address the productivity bottlenecks of system-level integration and implementation. At present, the major domestic universities have established a special SOPC laboratory, designed to train students to SOPC system design and development capabilities, and to enhance students to analyze problems and solve practical problems. Therefore, the Hospital should also be possible with the latest integrated design environment will be better SOPC technology into the EDA course teaching to improve the competitiveness of our students.

This paper focuses on the unilateral teaching methods of teachers, based on the basic theoretical basis of EDA curriculum, into the new SOPC/EDA integrated design environment-IDE, so that students deepen the understanding of the design of on-chip programmable system, cultivate students' innovation consciousness and explore desire.

Curriculum Teaching Reform and Implementation
In order to explore new innovative talents teaching mode, stimulate students' interest, inspire exploration spirit, and train scientific thinking, we add more detailed introduction to Vivado integrated design environment in SOPC/EDA course, and based on the existing SOPC/EDA experiments to develop a series of integrated design environment based on Vivado innovative experimental project, while the laboratory also uses an open management model.

The object of this teaching reform is the sophomore students majored in Electronic Information Engineering. The aim is to cultivate students' practical innovation ability through innovative experiment. Specific reforms include:
(1) Optimize the course structure, such as the appropriate increase in the proportion of integrated circuit design course.

(2) To carry out inquiry learning, in order to improve the interaction between teachers and students, to improve the quality of teaching SOPC/EDA courses.

(3) Make full use of the multimedia network to carry out teaching, realize the students' autonomous learning, and improve the efficiency of classroom teaching.


Due to the limited time of the course, it is very difficult for students to master EDA design capability based on SOPC technology only through classroom learning. Therefore, the key issues in curriculum reform are:

(1) To establish a complete set of SOPC/EDA courses three-dimensional teaching materials, to provide students with a full range of learning EDA design platform and environment to solve the single teaching materials and classroom single phenomenon, to improve student interest in learning to meet the individual needs of individual students.

(2) The formation of a complete SOPC /EDA experimental guidance materials, in the experimental course to add Vivado integrated design environment applications.

Electronic related students of the "EDA Principle and Technology" course knowledge system of the system and complete self-build and master.

Experimental curriculum with the theoretical curriculum has also done a corresponding change, the reform of the experimental schedule shown in Table 1.

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<th>Table 1. Reformed Experimental Schedule.</th>
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1) From the one-sided emphasis on confirmatory experiments to strengthen the transfer of professional skills training;

2) From the small unit of the local circuit-based experiments to multi-module design, integrated system circuit experiment;

3) From a single experimental form of laboratory transfer to class, the laboratory forms of experimental forms of diversification.

In the course of teaching reform, we will strengthen the training of learning ability and innovation ability, and combine the electronic design contest and relevant SOPC/EDA design competition to organize the students to participate in the course, so that the purpose of the students is clearer. Learning content and learning direction can also be better combined. If they can win in the electronic design contest, then students can be more sense of accomplishment. On the basis of interest, from the achievements to motivate, learning will be better.

The research results in this paper are suitable for the promotion of all the students in our university, which is not only beneficial to the students' Professional Elective course "EDA principle and application" of learning, but also for their employment or related EDA contest preparation work to lay a solid professional foundation.

Conclusion

The SOPC/EDA curriculum reform based on Vivado integrated design environment is based on
the basic theory of EDA and SOPC technology as the bridge, which is based on the educational concept of "wide caliber, thick foundation, heavy personality, strong ability and innovation" IDE for the platform, integrated innovation for the purpose of training students to analyze and solve problems.

The main research methods of this paper are based on the theory class, with the experiment content as the carrier, and the project design as the extension, design the SOPC/EDA teaching reform. I will also continue from the following aspects to further improve the teaching reform:

(1) To further optimize the curriculum system and teaching content, content and time to deal with the contradictions, to deal with SOPC / EDA technology courses and other courses, the relationship between theory and practice, deepen the teaching methods and teaching methods, and continuously improve Teaching Quality of Electronic Technology Course.

(2) Make good use of the teaching resources of the laboratory to further mobilize the enthusiasm of teachers, study the existing problems and solutions, and constantly improve, sum up, improve, the course into students like, teacher satisfaction, the effect is remarkable, demonstrative Quality courses, to promote students' ability to improve the electronic design.

(3) To further improve the quality and level of training courses, will be built into a distinct feature of the school elective.

(4) Improve the SOPC/EDA technology curriculum site, and constantly enrich the content, making it an effective means of classroom teaching.

(5) Continue to do the construction of the echelon.

References
