J. Astrophys. Astr. (2014) **35,** 585–586

Astronomy Education Project for Guangdong High Schools

F. P. Pi, K. Y. Guan, J. Wang, H. G. Wang*, Y. Liu & J. H. Fan
School of Physics and Electronic Engineering, Guangzhou University, Guangzhou, China.
**e-mail: hgwang@gzhu.edu.cn*

Abstract. Guangdong province is an active area in China for astronomy education and popularization. The current status and problems of astronomy education in high schools are reviewed. To tackle these problems, an astronomy education project for high school teachers and students was initiated by Guangzhou University in 2013. The purpose and key points of the projects are introduced in this paper.

Key words. Astronomy education—high school—science popularization.

1. Introduction

Thanks to the boosting economy, Guangdong province, especially the cities in Pearl River Delta, have been very active in astronomy education and popularization for the last 30 years. The organizations devoted to astronomy education and popularization include provincial and municipal sectors, e.g., Guangdong Provincial Association for Science and Technology, Bureau of Education of Guangzhou Municipality, universities and research institutes, professional and amateur astronomical societies, e.g., Guangdong Astronomical Society, and observatories and museums. Most of the organizations are involved in high school astronomical education and popularization in different ways. Many high schools in Pearl River Delta region are equipped with telescopes, and some of them have planetaria. High school students are taught fundamental astronomy knowledge, from astronomical coordinate systems to celestial objects in the universe, through geography courses and astronomical activities.

2. Current problems

Since 2005, Guangzhou University has been involved in high school astronomical education by training students, teaching courses and organizing Guangdong Astronomical Olympiads. Through practise and investigation, we found some problems that had become bottle-necks for improving the quality in education. These are:

(1) Lack of well trained teachers. Nearly all high school teachers who teach astronomy do not have a degree in astronomy. Most of them have majored in geography and did not receive systematic training in either modern astronomy theories

or experiments. Therefore, it is difficult for them to teach new thoughts, discoveries, and techniques in astronomy.

(2) The textbooks and other teaching material mainly focus on knowledge, barely focussing on the origin of ideas and methodologies in astronomy.

(3) Open sources that can be used in high school astronomy education are far from enough, especially the sources regarding research methodologies.

3. An astronomy education project

In order to improve the quality of astronomy education in Guangdong high schools, we initiated an astronomy education project in early 2013, which covers the following aspects.

(1) Offer training programmes on modern astronomy for high school teachers to improve their capabilities in applying new techniques and materials for teaching.

(2) Offer an astronomy curriculum for undergraduate physics students at Guangzhou university from their 4th semester (Fan *et al.* 2011). It is expected that some of them will become high school teachers in the future, hence this will increase the ratio of teachers with solid astronomy background.

(3) Get talented students involved in real research projects that can be adapted to high school level.

(4) Introduce open sources to high schools. At present, we are working on introducing World Wide telescope (WWT), PULSE@Parkes and Galaxy Zoo to teachers and students. Celestial coordinate and time systems are the key knowledge taught in high-school geography courses. We are now developing a module that relates this knowledge to real observations, which will help teachers and students to understand the applications better. We will develop other teaching and research sources on AGN, pulsars, and planets.

In this 4-year project, we hope to train at least 40 high school teachers and push the usage of open sources in teaching and research activities in Guangdong high schools.

Acknowledgements

This work is partially supported by the National Natural Science Foundation of China (NSFC 11178001,11203007).

References

Fan, J. H., Zhang, J. S., Zhang, J. Y., Liu, Y., Wang, H. G. 2011, *J. Astrophys. Astr.*, **32**, 331–332.