

Research on A New Type of Rural Vocational Education Information Display Device

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Abstract

Aiming at the problems of fixed position and unadjustable size of the current rural vocational education informatization display device, a display device with movable location and expandable area is designed to improve the information display effect and fully tap the potential of rural vocational education.

Keywords

Display device; Informatization; Mobile; Rural vocational education.

1. Introduction

Rural vocational education is a vocational education for rural areas. Master Huang Yanpei's "Great Vocational Educationism" revealed the essential characteristics and special functions of vocational education, and more fully tapped the development potential of vocational education[1- 2].

In the process of implementing education, it is necessary to use a variety of equipment to assist, which involves information display devices. Information display devices are devices that display scientific information (such as scientific names, growth status, etc.) of crops, so that people can scientifically and effectively to obtain information about crops.

The existing information display devices have the following problems: (1) After the device is installed and fixed, it is inconvenient to move and adjust the device and change the position of the device; (2) The size of the information display rack cannot be adjusted to expand the size of the display board, So as to show more information [3]. There is an urgent need to design a mobile information display device for rural vocational education to solve the above problems.

2. The Structure and Working Principle of The Rural Vocational Education Informatization Display Device

2.1. Overall Structure

As shown in Figures 1 and 2, the display device includes: 1. a bracket; 2. a limit block; 3. a first bump; 4. a first chute; 5. a through hole; 6. a clamping block; 7. Spring; 8. fixing frame; 9. second bump; 10. main display board; 11. connecting inclined plate; 12. second chute; 13. first card slot; 14. transition slot; 15. second card slot; 16. auxiliary display board; 17. connecting slot; 18. groove.

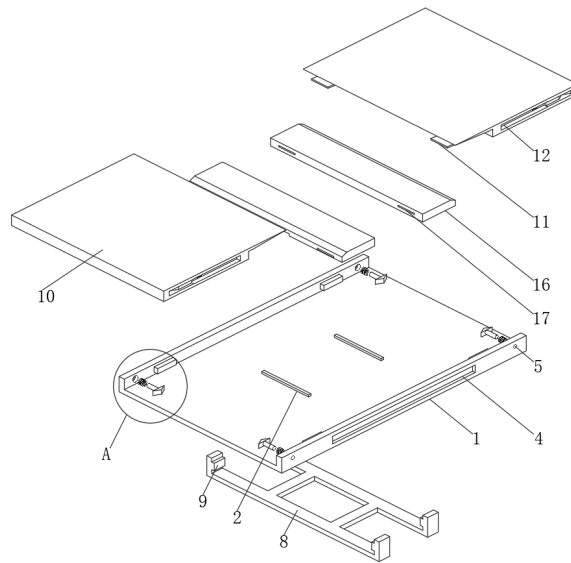


Figure 1. Schematic diagram of the structure of the information display board for rural vocational education

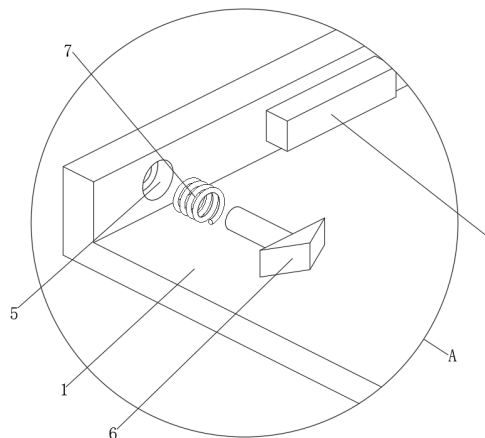


Figure 2. Schematic diagram of the partially enlarged structure at A

2.2. Working Principle

First, install the fixing frame 8 on the wall, and then install the bracket 1 on which the main display board 10 and the auxiliary display board 16 are installed on the fixing frame 8. After the bracket 1 is installed, during use, the relative position of the bracket 1 and the fixing frame 8 can be changed by pushing the bracket 1 to achieve the purpose of adjusting the position of the display board on the bracket 1. When the usable area of the display board needs to be increased, by pushing the main display board 10 outward, the second chute 12 opened on the side of the main display board 10 slides on the first bump 3. During the movement of the main display board 10, since the limiting block 2 blocks the auxiliary display board 16, when the main display board 10 slides outward, the auxiliary display board 16 will not be driven to move in the same direction. Through the cooperation of the connecting inclined plate 11 and the connecting groove 17, the auxiliary display board 16 is moved obliquely upward, so that the upper surface of the auxiliary display board 16 and the main display board 10 are in a flush state, so that the area of the display board is increased.

When the main display board 10 moves, the block 6 and the main display board 10 are moved relative to each other. Due to the different depths of the first card slot 13, the transition slot 14 and the second card slot 15 opened on the side of the main display board 10, after a different location, the clamping block 6 will compress the spring 7 to slide on the bracket 1. The first

card slot 13 and the second card slot 15 are matched with the card block 6, so that the position of the main display board 10 is limited at the designated position. When the position of the main display board 10 is fixed, the relative position of the main display board 10 and the auxiliary display board 16 Fixed, so that the display board area is maintained at a fixed size.

3. Technical Advantages and Solutions of Rural Vocational Education Informatization Display Devices

3.1. Technical Advantages

Compared with the prior art, the advantages of the rural vocational education information display device are that the device position can be moved and the area of the display board can be expanded. Fix the fixing frame on the wall, and then install the bracket on the fixing frame. Through the cooperation of the first chute and the second bump, the bracket can move on the fixing frame, change the position of the bracket, and then change the bracket installed on the main display board. And by pushing the main display board outwards, the main display board slides outward, and during the sliding process of the main display board, the auxiliary display board moves obliquely upward through the cooperation of the connecting inclined plate and the connecting groove. When one end of the second chute is in contact with the first bump, at this time, the auxiliary display board rises to the highest position, and the upper surface of the auxiliary display board and the main display board are in a flush state, which increases the area of the display board[4-9].

3.2. Technical Solutions

The specific technical solutions are shown in Figures 3 to 5. The bracket 1 of the display device is movably installed on the fixing frame 8, the fixing frame 8 is installed and fixed on the wall, the main display board 10 is movably installed on the bracket 1, and the auxiliary display board 16 is installed and connected to the main display board 10. The four corners are provided with clamping blocks 6, and the clamping blocks 6 are located on the side of the main display board 10. The upper and lower sides of the bracket 1 are provided with a first chute 4, the upper and lower ends of the fixing frame 8 are fixed with a second bump 9, and the second bump 9 is installed inside the first chute 4. The bracket 1 and the fixing frame 8 form a sliding structure.

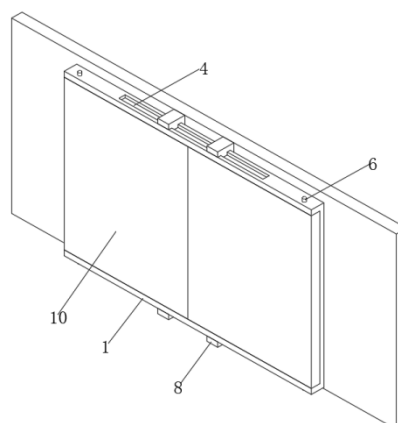


Figure 3. Schematic diagram of the axonometric structure of the display board

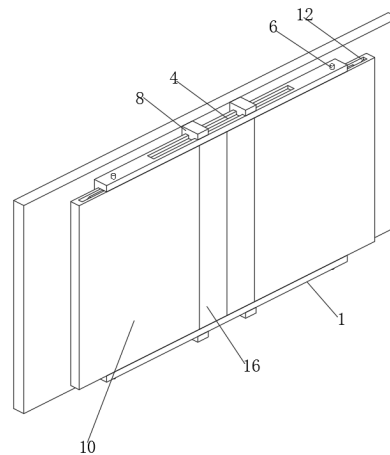


Figure 4. Schematic diagram of the expanded structure of the display board

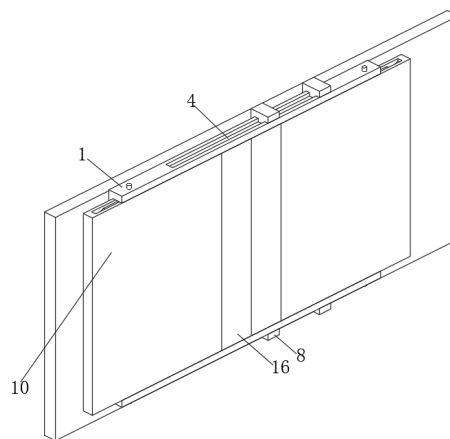


Figure 5. Schematic diagram of the structure after the display board being moved

Two symmetrically arranged first bumps 3 are fixed on the inner wall of the bracket 1 , second chute 12 is opened on both sides of the main display board 10 , the first bump 3 is installed inside the second chute 12 , and the bracket 1 forms a sliding structure with the main display board 10 .

Two sets of connecting inclined plates 11 are symmetrically fixed on the lower half of one side of the adjacent main display board 10 (see FIG. 6) , and a connecting groove 17 is opened in the interior of the auxiliary display board 16 (see FIG. 7) . Inside the connecting groove 17 , the main display board 10 and the sub-display board 16 form a sliding structure.

A first card slot 13 , a transition slot 14 and a second card slot 15 are sequentially opened on the side of the main display board 10 from the inside to the outside. There is one end of the block 6. The height of the transition groove 14 is less than the height of the second chute 12 , the height of the transition groove 14 is the same as the thickness of the clamping block 6 , the clamping block 6 and the first clamping groove 13 form a clamping structure , and the internal size of the first clamping groove 13 is the same as the thickness of the first clamping groove 13 . The inner dimensions of the two card slots 15 are the same.

A groove 18 is formed at the lower half end of one side of the auxiliary display board 16 close to the main display board 10 . A limit block 2 is arranged inside the groove 18 , and the limit block 2 is fixed on the bracket 1 . Four corners of the bracket 1 are provided with through holes 5 , and the through holes 5 are composed of two groups of cylindrical holes of different sizes . A clamping block 6 is installed inside the through hole 5 . The clamping block 6 is composed of a triangular prism and a cylinder . The cylinder hole with a smaller radius is located on the outer

side of the bracket 1. The outer side of the cylinder is provided with a spring 7. The spring 7 is installed at a larger radius. Inside the cylindrical hole, the bracket 1 and the clamping block 6 constitute a sliding structure.

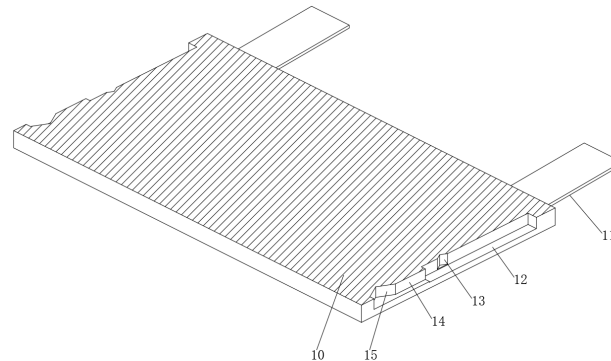


Figure 6. Schematic diagram of the sectional structure of the main display board

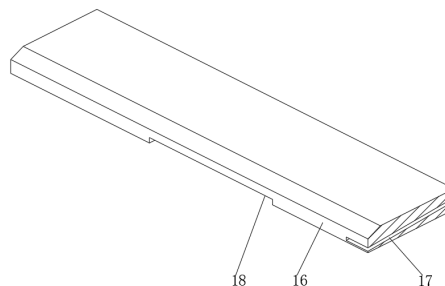


Figure 7. Schematic diagram of the side sectional structure of the auxiliary display board

4. Conclusion

The new rural vocational education informatization display device properly solves the technical drawbacks of the existing display devices, realizes the movable position of the device and the expansion of the display board area, which can better promote the dissemination of rural vocational education information, and has broad application prospects, with great commercial value and educational significance [10-15].

5. Funding

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References

- [1] Wu MH, 2020,. Research on the development problems and countermeasures of rural vocational education under the rural revitalization strategy——Taking 20 rural vocational education pilot schools in Hebei Province as an example. Doctoral dissertation of Hebei University of Economics, 2020: 15-32.
- [2] Li JY, 2019, Analysis on the path of rural revitalization from the perspective of agricultural supply side reform——Based on the field survey in S town in Shandong Province. Journal of Shandong Youth University of Political Science, 2019(2): 97-103.
- [3] Dong LL, 2019, Research on the management of highway billboards. SME Management and Technology, 2019(12): 32-33.

- [4] He JW, Hu YZ, Fu JW, et al., 2021, Research on a new type of multi-format advertising display device. *Southern Agricultural Machinery*, 52(14): 128-131.
- [5] Wang MX, Zhu YL, Shi AJ, et al., 2020, Design of an interactive display device for 981 drilling platform. *Electromechanical information*, 2020(21): 109-110.
- [6] Li GR, Guo X, Chen P, et al., 2019, Design and application of garden plant sample display device. *Jiangxi Agriculture*, 2019(12): 72-75.
- [7] Zhang HX, Zhai YG, 2019, Display device based on adjusting color temperature and brightness. *Information recording materials*. 20(06): 225-226.
- [8] Song TR, 2018, Discussion on a rotating display device for physical education teaching and training. *Southern Agricultural Machinery*, 49(09): 123-124.
- [9] Li GR, 2017, Design of sample display device for agro-ecological gardens. *Agricultural Engineering*. 7(03): 105-106.
- [10] Ribeiro AL, Bittencourt RA, 2019, Proceedings of the 49th Annual Frontiers in Education (FIE) Conference, October 16–19, 2019: A Case Study of an Integrated Programming Course Based on PBL. IEEE, New Jersey, 1–9.
- [11] Wang YF, 2021, An Analysis of the “Four Qualities” Standard for the Construction of Master Studios. *Forum on Teacher Education*, 2021(08): 82–83.
- [12] Sun Y, Li X, 2019, The Construction of “Golden Course” in Higher Education: Dilemma, Criteria and Path. *Chongqing Higher Education Research*, 7(04): 75–82.
- [13] Zhang D, 2021, Curriculum Thinking Politics: The Fundamental Followings of Moral Education in the New Period. *China Higher Education Research*, 2021(01): 5–9.
- [14] Doddamani ST, 2018, Project Based Learning of Programming Subject: Case Study on Data Structures. *Journal of Engineering Education Transformations*, 31(3): 250–255.
- [15] Lu D, 2021, Design and Implementation of Curriculum Civics Evaluation. *Theory of Thought Education*, 2021(03): 25–31.