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An Experimental Study on Integrating Interactive Electronic Whiteboard into Elementary Visual Arts Instruction in Taiwan

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Summary

In recent years the process of digital evolution has been escalating around the globe. A variety of digital learning devices have shown new horizons in the field of teaching. One of the devices, Interactive Electronic White Board (in short, IWB), which arose recently, has already initiated changes in the classrooms. In a traditional classroom, it is essential to have equipment for writing or demonstration, such as a black board, a white board, or a wall-or ceiling-mounted projector screen. IWB, as a digital mechanism, not only provides a writing function for systematic knowledge when used by teachers, but also extends the classroom to become a more diverse space with its design. IWB has multiple functions for teaching, with access to the internet, access to resources of audio and video materials, thereby creating a potential to create a highly interactive classroom between people and machines, and among people. Under the current transformation and evolution of the digital media, it has become an important topic for art educators to consider how best to use the digital mechanism of IWB in the field of art education, for the purposes of activating colorful art curricula and designs as well as motivating students.

This research aims to discuss the learning mechanism designed by IWB and its applications and values in the education of visual arts. Therefore, this research has adopted the research method Quasi-Experimental Design with nonequivalent pretest-posttest designs.

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It targets sixty students in two classes in an elementary school equipped with IWB in Taipei city, Taiwan. The experiment aims to see if there are distinctive differences in the learning attitude, learning effectiveness, and learning response between the experimental group and the control group after the adoption of an IWB visual arts curriculum. To ensure the entry behaviors of the experimental group and the control group, the two groups both take the designed pre-test on the Learning Attitude Scale and pre-test on the Art Test A.

With regard to the research design, the control variables of this research are teaching time, teaching content, and evaluation tools. Regarding teaching time, this research aims at the scheduled classes of visual arts each week for five weeks. There are two consecutive classes each week, each for 40 minutes. In total, there are 10 classes in 400 minutes, the same for both the experimental group and the control group. The classes are conducted by a researcher accompanied and observed by their original teacher. Both groups have the same teaching content, the original scheduled course-deformed drawing. For evaluation tools, both groups include a learning report and work evaluation report.

The independent variable of this research is the experimental teaching. The experimental group adopts an IWB visual arts curriculum while the control group uses a non-IWB visual arts curriculum. The activities and contents designed for instruction are the same for both groups. The only difference dwells on the involvement of the teaching media. To ensure the functions and the application of IWB on the visual arts curriculum, this research has conducted a pilot study to adjust the curriculum and research tools before launching the experiment. The Pilot study makes sure that the teaching content is the same except for the adoption of the teaching device in question. After sorting and differentiating the differences between the IWB visual arts curriculum and non-IWB visual arts curriculum, it concludes that the applications of IWB will aid visual arts curriculum in the following five functions: (1) key point emphasis, (2) questioning teaching, (3) art appreciation teaching, (4) demonstration teaching, and (5) supplementary information. The teaching designs for both groups will be used to build the content of the courses for effectiveness and thus be put into use for the future.

The dependent variables of this research are learning attitudes, learning effectiveness, and learning responses. The variable of learning attitude is based upon the score difference between the pre-test and the post-test on the Learning Attitudes Scale of the experimental

group and the control group. The variable of learning effectiveness is based on the score difference between the pre-test and post-test on Art Test A, Art Test B, and the evaluation and scores on art works of the experimental group and the control group. To understand the learning feedback of the experimental group, the variable of learning responses is based on the scores of the Teaching Feedback Questionnaire between the experimental group and the control group, plus information collected from the interviews with the students of the experimental group.

According to the results, this research made the following conclusions:

1. Significant improvement on the learning attitudes of the students in the experimental group with IWB visual arts curriculum, compared to that of the control group.
2. Significant improvement on the learning effectiveness of the students in the experimental group with IWB visual arts curriculum, compared to that of the control group with non-IWB visual arts curriculum.
3. Significant improvement on the learning responses of the students in the experimental group with IWB visual arts curriculum, compared to that of the control group with non-IWB visual arts curriculum.

With the nonequivalent pretest-posttest designs as the research model, this research is intended to discuss the influences of IWB visual arts curriculum on the learning attitudes, learning effectiveness, and learning responses of the senior students at elementary schools. The research results shows that, after the adoption of the Interactive Electronic White Board, the learning attitudes, learning effectiveness, and learning responses of the students from the experimental group are significantly improved in comparison to the students of the control group without an IWB. It shows that an IWB adds positive feedback to art teaching. In view of the ongoing dynamic digital evolution, digitalization has become the new model in the history of educational development. Digital learning devices exemplify an important transitional point in practice. Under the changing circumstances of this era, the teaching content, style, and mechanism shall be changed and renewed as well. Hopefully this research can cast light on the digitalization and development of art education in Taiwan.

Keywords: art education, digital learning device, interactive electronic whiteboard, integrating information technology into instruction