ISSN: 0025-1569

MAN IN INDIA

FOUNDED IN 1921 BY SARAT CHANDRA ROY

Volume 96 Number 5 2016

Special Issue

RESEARCH AND DEVELOPMENT IN EDUCATION AND SOCIAL SCIENCES

Guest Editor in Chief: Dr. Mihir Kumar Mallick

AN INTERNATIONAL JOURNAL OF ANTHROPOLOGY

SERIALS PUBLICATIONS (P) Ltd., New Delhi (India)

Man In India, 96 (9) : 3353-3363

CONSTRUCTIVISM MODEL APPLICATION IN DRAWING PERSPECTIVE LEARNING AT DEPARTMENT OF ART EDUCATION

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This research aims to learn the application of learning models constructivism course on drawing perspective. The type of this research is a research & development (R & D) by developing a learning package drawing perspective based constructivism learning model.Components of the package consists of, textbooks, lecture events unit (SAP), learning media (slides), learning design, assessment tools, guidelines to students, and guidelines for lecturers. The research method with a model-based constructivism, and begins with needs analysis, drafting packages, testingpackage, and the test results of applying the model as well as the implementation and application of the model development package.The results showed that with the package of learning development results and by applying the constructivism learning model, can improve students' understanding of the concepts and principles drawing perspective.

Keywords: Development of the package, Drawing perspective, constructivism learning model.

Introduction

In the era of advances in science and technology today in various ways, methods, strategies, and learning models have been used and tested to achieve the learning objectives for each educational institution. Each institution has different aspects or components that require coaching systematically, comprehensively, methodically, and require models of the specific learning and characters in each course.

One of the existing courses on Arts Education which is subject field of studyis the subject drawing perspective. This course covers the theory and practice that must be understood and practiced by students. This course has properties as engineering drawings are characterized by the use of special equipment such as ruler, compass, a special pen, etc., As well as the application of engineering principles in an effort to realize the nature of three-dimensional images into two-dimensional image area.

In relation with the phenomenon in the field, shows the ability of the students in this course, a student's understanding of the principles of drawing perspective is still low, it is characterized by poor quality of the practice of drawing for students. An efforts to optimize the student's understanding, and motivations is the application of constructivism learning model still low.

Constructivism is a philosophy of learning that is built on the assumption that learning is to verify certain personal experiences, while the constructivist theory is

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a theory that gives freedom to the people who want to study or look for their needs with the ability to find the desire or need with the help of facilitation of others. [1]

Procedurally a constructivist approach to follow the steps as follows:

1. Identify the objective. Objectives in learning will give directions in designing the program, program implementation and evaluation.
2. Establish Product Contents Learning. At this stage, the set of concepts and principles of the lessons which should be controlled by the student.
3. Identification and Early Knowledge Clarification students. Identification of the initial knowledge of students is done through preliminary tests, clinical interviews and concept.
4. Identification and clarification of misconceptions students. Prior knowledge of students who have been identified and need to be analyzed further clarified to establish which of them that have been in accordance with the scientific conception, which is wrong and which are misconceptions.
5. Learning ProgramPlanning and Strategy Changing Concepts. Learning programs are translated in the form of lesson units. While the strategy of changing the conception of the student realized in the form of modules.
6. Learning and Strategy Implementation Program Changing Conceptions. This stage is the actual activities in the classroom. This stage consists of three steps: (a) orientation and presentation of the learning experience, (b) explore the ideas of students, (c) restructuring ideas.
7. Evaluation. After the expiry of the implementation activities of the learning program, the evaluation of the effectiveness of the learning model that has been applied to this.
8. Clarification and analysis of student misconceptions resistant. Based on the evaluation of misconceptions changes the clarification and analysis of student misconceptions, both of which can be changed completely or resistant.
9. Revised strategy of changing misconceptions. The results of the analysis are resistant misconceptions used as consideration in revising the strategy of changing conceptions of students in the form of modules.

Therefore, teachers should provide and deliver as many opportunities as possible for students to learn actively. Therefore the students can create, build, discuss, compare, work together, and doing experimentation in learning activities (Setyosari, 1997: 53). [2]

From the above it can be sin the size that this theory gives liveliness to the students to learn to find their own competence, knowledge able, and everything else needed to develop ability of drawing. One theory is very well known with regard to constructivism learning model is Piaget's theory of mental developmed.

This theory also called theory of intellectual development or the theory of cognitive development. The learning theory with respect to the student's readiness to learn, which is packaged in a stage of intellectual development from birth to adulthood. Each stage of intellectual development is equipped with certain characteristics in constructing knowledge. For example, at this stage of the motor sensory children think through the motions or actions.

Origin of the word constructivism namely "to construct" which means "form". Constructivism is one school of philosophy that has the view that the knowledge we have is the result of construction or build from ourselves. In other words, we will have the knowledge when we are actively involved in the process of knowledge discovery and formation within ourselves. Constructivism believes that knowledge is the individual acquisition through active involvement in taking the learning process. (Woolfoolk, 2009: 145). [3]

Based on the issues raised above, which is the goal of research is to see whether using a constructivism learning model and the development of instructional package can enhance their understanding and ability to draw practical perspective students of Arts Education.

Research Methods

In this research used research methods development. All components related to drawing perspective packed in one package developed through stages as shown in the following scheme. As a research and development models, beginning with the drafting, planning, development, implementation of the development, validation packages, revision, testing to produce a package that is complete and ready to be implemented. Research and development (R & D) models selected with the aim to produce a package of learning appropriate, effective, valid and practical, which is based on constructivism learning model.

The procedure of this research adjusting models developed by Borg and Gall (1983) through the following steps:1) Research and information collecting, 2) Planning, 3) Develop preliminary form ofproduct, 4) Preliminary field testing preliminary, 5) Main product revision, 6) Main field testing, 7) Operational product revision, 8) Operational field testing, 9) Final product revision, 10) Dissemination and implementation (Borg and Gall, 1983). [4]

Implementation of research programs related to learning package drawing perspective by the steps according to the pattern of Borg and Gall, and based constructivism learning model, can be classified stages of implementation based on the following scheme: ie from phase I to phase IV.

Phase I is the preliminary stage, namely the study of theory and survey spaciousness, at this stage in order to identify the phenomena that occur in the field, then based on the study in the field of researchers/developers identify learning objectives. A comprehensive and in-depth information about the phenomenon/

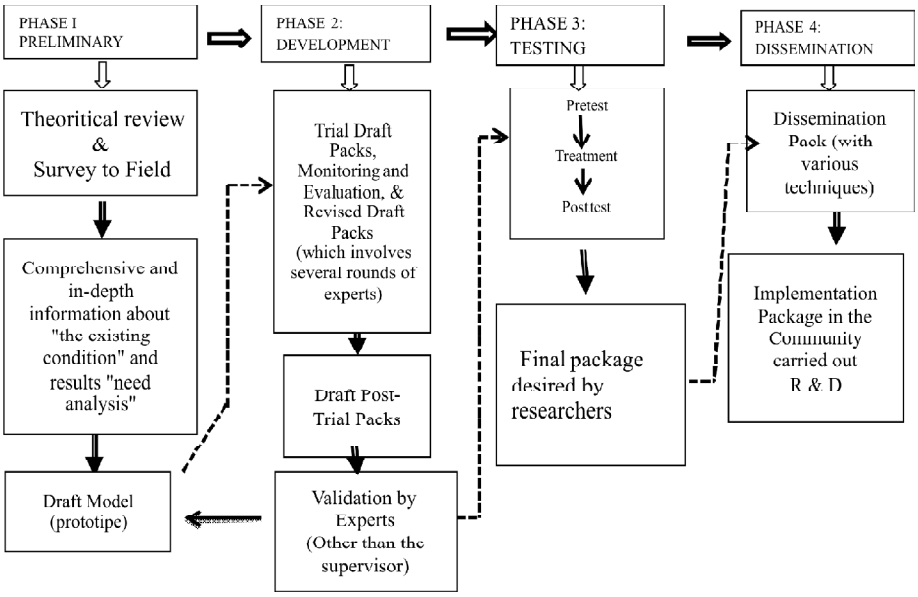

Figure 1: Schematic steps of research and development based on the model of development of Borg & Gall (Source: Nurkamto) [5]

condition and the results of the needs analysis, made a draft model of design that will be used (prototype), the next step in the second stage.

Phase II is a development stage, which is testing the model draft, monitoring and evaluation, and revision of draft models, this is done in a few rounds. At this stage involved several experts who are competent in the fields related, such as subject matter experts, media specialists and experts in the relevant design.

Phase III is the testing phase, systematically testing phase consists of testing the first step, which is to look at the ability of the students of the ones before it is treated (course material), after initial testing, carried out the implementation of learning based on the draft models.

PhaseIV is the stage of dissemination of learning packages that have been developed. In the dissemination of this can be done by a variety of techniques, and as a result of the implementation of the development that has been tested, is expected to contribute the maximum to the users (students, faculty, and/or community).

Based on the classification/clustering of the implementation phase of research and development according to the pattern of Borg and Gall, starting from the preliminary stage, and the stage of development, and testing phases and stages of dissemination, the following more detailed description of the scheme measures research and development according to Borg & Gall is as follows:(a) Research and collecting initial information, (b) Planning, (c) Development of the format of

the initial product (material), (d) initial tests, (e) Revision products (f) field trial, (g) Revision products, (h) field test, (i) Revision of the final product, (j) Dissemination and implementation [4]

Research Results

The principles of drawing perspectivecreation

In addition to create perspective drawings requires certain techniques specifically, also requires the distinctive with other techniques such as drawing, in the drawing projection and drawing using a ruler. The principles of drawing perspective can be explained as follows:

1. In drawing perspective, can see parallel lines, if extended away from the eye (observer), it would seem to meet at a point.
2. The lines will remain vertical despite vertical stripes in a position where the establishment is not horizontal or uneven.
3. An object (line), the more far away from the eyes of the smaller, short and thin
4. The colors of the object, the farther the more fuzzy and together and getting closer more clearly and decomposes.
5. Field flat position parallel to the eye, then the field will be a straight line.
6. A field shaped like an elliptical circle will change if the skew towards the eye.
7. In the form of construction perspective, all the elements of a line object to be created/declared.
8. In the sketch perspective not all elements of the object to be drawn, but only the visible only.
9. lines as the boundary shape does not appear, on the construction of perspective must be made dashed.
10. Limit the shadows step in the construction of perspective must be made with a dotted line.
11. Construction perspective, picture is made a measured both the volume (length, width and height or inside), and a thick line as a component form

As a form of a picture (visual), the development of learning packages in the form of printed materials (textbooks), slide (CD), as well as a collection of pictures (match photo) that is packaged as materials and learning media can enhance the experience of seeing (observing) students. Moreover technical skills in using tools is necessary, because the accuracy and precision of shape, determined by the mastery of the use of equipment such images. Have to practice using the tools to be able to

master the technique of its use. Without exercise in high frequency, it is impossible to master in full context.

Drawing perspective on curriculum Arts Education Program

In the curriculum Arts Education Program, a perspective drawing is one of the compulsory subjects. Explicitly curricular goals of the courses of perspective drawing is to provide knowledge and understanding about the notion of perspective drawing, use of materials and tools, concepts relating to components of perspective drawing, principles of perspective drawing lines, the principle of perspective drawing color, component construction perspective, perspective sketch, the determination of the shadows and perspective interior (space perspective).

Constructivism learning model for the subject in the course of perspective drawing

Model learning plan for subjects the scope of this course perspective drawings are based on familiar constructivism learning model that is constructing or compile and build their own material to gain students.Understanding as a science, picture perspective has principles and concepts underlying some manifestations in the form of visual and conceptual perspective drawing is a science that allows to describe the forms that are three-dimensional into a form of two-dimensional (flat surface). Thus, in the perspective needed to draw support programs in engineering in developing it.

In realizing the perspective drawing, objects in relationwith specific techniques.The psychology of student also determines in the processing of information or data observations, students experience barriers to work when feeling themselves show less understand about the concepts and principles of science studies. Also required learning device that can provide motivation to the students, as an example of the varied and delightful picture, forms an aesthetic and creative, and others.

One program that can be utilized in developing lesson plans varied, aesthetic, and accurate is to use computer programs, namely software that can be used to design and develop a perspective view an example of a more varied and more interesting or fun. Figure perspective is the kind of engineering drawings are realized in the form of the line element in the form of construction and sketch, in addition to the material in the form of verbal concepts and principles.

This course has some of the subjects and sub-subjects. In the process of learning, there are some subjects that are difficult understood by students. The subject that requires an understanding of concepts, and understanding of the principles required data concrete form of mock objects in the form of picture (visual) is rich and varied, both in the composition (formulation, shape, harmony, proportion, balance, and some principles or rules other compositions), as well as systematic presentation.

The main points of discussion that meant that there were three topics that will be developed learning package, into learning packages consisting of forms part of a whole. Forms part of it embodied in various positions, either vertically, or horizontally that reflects the location and position of objects on the eye (observer).

The position of one corner of the object should use two or three vanishing points on the horizon and beyond the horizon line, depending on the position of the eyes vertically. Based on the position of the eye vertically and horizontally (from the corner and from the side), can be combined in a single object, so the variations that occur more complex shapes. The wide variety of positions, either vertically or horizontally, the students' understanding of the principles of perspective drawing can be done by observing the forms picture of objects (visual).

In addition to the subject based on (1) the principle, and the position of the eyes vertically and horizontally, (2) the concept of the exterior and interior, more varied topics that can be developed (3) determination of the shadows. The concept of the determination of the shadows and principles, as well as the realization of

TABEL 1: DATA HASIL PRE-TES DAN POST-TES (TOTAL SAMPLE N= 25)

No	*Code*	*X*	*Y*	*D*	*D2*
1	1281040003	60	71.42	11.42	130.42
2	1281040004	48.57	71.42	22.85	522.12
3	1281040005	62.85	82.86	20.01	400.40
4	1281040007	54.24	86.86	32.62	1.064.06
5	1281040009	71.42	91.43	20.01	400.40
6	1281040012	51.43	68.57	17.14	293.78
7	1281040013	74.28	85.71	11.43	130.64
8	1281040016	68.57	77.14	8.57	8.12
9	1281041001	48.57	68.57	20.00	400
10	1281041002	74.28	80.00	5.72	32.73
11	1281041003	57.14	85.71	7.54	816.24
12	1281041004	68.57	71.42	4.85	78.32
13	1281041007	37.14	71.42	33.28	1.175.11
14	1281041008	48.57	60.00	11.43	130.64
15	1281041009	65.71	77.14	16.43	130.60
16	1281041010	57.14	91.43	34.29	1.175.80
17	1281041011	42.86	74.14	31.28	978.80
18	1281041013	80.00	94.28	14.28	203.92
19	1281041015	85.71	97.14	11.43	130.64
20	1281041016	57.14	71.42	14.28	303.92
21	1281041020	57.14	62.85	5.71	32.60
22	1281041024	45.71	74.28	28.57	816.24
23	1281041050	34.29	82.86	48.57	2.359.04
24	1281042002	57.14	94.28	37.14	1.379.38
25	1281041021	48.57	77.14	20.57	816.24
	N= 25	ΣX	ΣY	ΣD	ΣD
		1365.71	2035.63	=512.73	= 13.80
		54.63.	81.43		9.79

components and resources manifestations (light) required visual materials are more varied. By using two light sources (sun and lamp) that cause different shadows, the possibility of a variety of shapes that can be developed are unlimited.

The results of pre-tests and post-tests as shown in the table below, will be statistically analyzed by t-test. The tests are done to see the degree of reliability of the results of the development package.

Discussion

Based on the analysis of data, t_o is greater than tt at 5% level or at the level of 1%, namely 2.06 and 2.80 this means to the development of learning packages drawing perspective with the application of constructivism learning model is valid and can be implemented,deemed effective enough.

Constructivismlearning model is a further development of the gestalt theory. The different is; the gestalt concerns raised comes from external inducement, whereas in constructivism problems arise and are built on the knowledge that reconstructed by the students. This theory is very reliable that students are able to find your own problems, develop their own knowledge through thinking skills and the challenges it faces, finish, and makes the concept of realistic overall experience and theory in of the buildings intact. Constructivism is a philosophy of learning that is built on the assumption that learning is to verify certain personal experiences,, while the constructivist theory is a theory that gives freedom to the people who want to study or look for their needs with the ability to find the desire or need with the help of facilitation of others. [1]

The principles of perspective drawing creation through procedures and constructivism learning model

Conceptually, the learning process in the light of the cognitive approach, not as the acquisition of information that goes in one direction from the outside to the inside of a student, but as a student of giving meaning to experience through the process of assimilation and accommodation that lead to the updating of the cognitive structure. More learning activities in terms of the process of the acquisition in terms of knowledge of the facts that apart-off. The process for the provision of meaning to the objects and experiences by the individual is not done independently by students, but through interaction in a unique social network, formed either in the classroom or outside the classroom culture.

From the view of the stage of cognitive development Piaget students can understand that, at some stage, how students construct knowledge and capabilities vary based on intellectual maturity. The views of students from among more recent constructivism developed from cognitive learning theory as proposed Pieget.

Piaget stated that science is built in the mind of a student with assimilation and accommodation activities in accordance with its schemata. Learning is an active

process to develop that knowledge related schemata like cobwebs and not merely arranged hierarchically. From the above, it is understood that learning is an interactive activity that takes place between the internal factors in self-learners with external or environmental factors, thus giving birth to behavior change.

Drawing perspective on curriculum Arts Education Program

There are some subjects related to drawing perspective, and that meant there were three topics that will be developed learning package, into learning packages consisting of forms part of a whole. Forms part of it embodied in various positions, either vertically, or horizontally that reflects the location and position of objects on the eye (observer).

As a science, drawing perspective has principles and concepts underlying some manifestations in the form of visual and conceptual perspective drawing is a science that allows to describe the forms that are three-dimensional into a form of two-dimensional (flat surface). Thus, in the perspective needed to draw support programs in engineering in developing.

One program that can be utilized in developing lesson plans varied, aesthetic, and accurate is to use a computer program which is softwarethat can be used to design and develop a perspective view an example of a more varied and more interesting or fun. Drawing perspective is the kind of engineering drawings are realized in the form of the line element in the form of construction and sketch, in addition to the material in the form of verbal concepts and principles.

This perspective drawing subjects had some subjects and sub-subjects. In the process of learning, there are some subjects that are difficult understood by students. The subject that requires an understanding of concepts, and understanding of the principles required data concrete form of mock objects in the form of pictures (visual) is rich and varied, both in the composition (formulation, shape, harmony, proportion, balance, and some principles or rules other compositions), as well as systematic presentation.

The main points of discussion that meant there were three topics that will be developed learning package, into learning packages consisting of forms part of a whole. Forms part of it embodied in various positions, either vertically, or horizontally that reflects the location and position of objects on the eye (observer).

The position of one viewpoint to the object, must use two or three vanishing points on the horizon and beyond the horizon line, depending on the position of the eyes vertically. Based on the position of the eye vertically and horizontally (from the corner and from the side) can be combined in a single object, so the variations that occur more complex shapes. Various variations of the position of the eye position, either vertically or horizontally, then the students' understanding of the principles of perspective drawing can be done by observing the forms pictures of objects (visual).

In addition to the subject based on (1) the principle, and the position of the eyes vertically and horizontally, (2) the concept of the exterior and interior, more varied topics that can be developed (3) determination of the shadows. The concept of the determination of the shadows and principles, as well as the realization of components and resources manifestations (light) required visual materials are more varied. By using two light sources (sun and lamp) that cause different shadows, the possibility of a variety of shapes that can be developed are unlimited.

Application of constructivism learning model, and using learning packages that have been developed, then increase the ability of students in the subject of perspective drawing can be improved. Learning packages perspective view has been developed consisting of several components, showed a significant effect on the improved capabilities in students. Indicators that can be used as instructions were clear and convincing about the influence of the learning package development perspective drawing is primarily on the trial results, both on the test results on the pre-test and post-test. Comparison of trial results of pre-test and post-test showed a significant difference. The average difference of the two results of these trials showed differences in convincing both individual differences and the difference between the average number of both the test results.

In addition to the selection of the learning model that suits the character drawings perspective learning package development, it is also very influential to increase students' ability to learn the perspective drawing is a complete development package and systematic.

Constructivism learning model for the subject in the course of perspective drawing

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Conclusion

Being based on constructivism learning model, learning implementation perspective drawings proves their significance and suitability to the package of the development consisting of several components (books, media, SAP, syllabus, instructions for lecturers, students and the instructions for tool evaluation). So that the learning of the concept and principles, as well as the application of the principles of perspective drawing, showing an increase of students.

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