Learning Media Development Physical Education Sport and Health Based Applications
(The development of learning model based application for basketball, volleyball and soccer).

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Abstract

The use of learning media in the millennium and the advancement of Technology (Science and Technology) era, especially for information and communication technology (ICT) can be used by educators to achieve better education and learning outcomes. The development of learning model based application became the main target of this study. This research and development were involving teachers as main role of learning process, the students, the experts of learning media and the academicians in the field of Physical Education Sport and Health. The suggestions and ideas from the experts, academicians, teachers, and students were very important in the development of physical education sport and health media by using Focus Group Discussion. The results of material analysis and the application of Physical Education Sport and Health learning model development showed that a learning model used the application media for class X. This model was very helpful for educators and students in understanding the learning material that would be or being studied. Through this learning media, the students were being free or independent from their teacher, space, and time and being able to learn Physical Education Sport and Health subject that must be learned by them.

Keywords: ICT, Research and Development

Introduction

With the construction of modern learning systems today, students not only play the role of recipients of messages, but students also play a role as communicators or messengers. Besides, having a mixture of students with different learning preferences and styles necessitates using multiple modalities for learning in order to deliver the right content in the right form (Singh, 2003). In situations and conditions like that, what will happen is what is called two (2) communication direction and even multi-directional communication. In communication learning, learning media is needed to improve the effectiveness of achieving learning goals. The use of tools, facilities and infrastructure that have not been evenly distributed at the education level starting from the elementary school level to the high school starting from rural to urban areas, is very much different from the tools, facilities and infrastructure used as learning media. Inequality in the use of tools, facilities and infrastructure is a problem in achieving the learning process. It means that the learning process will occur if there is communication between the recipient of the message and the source / channel of the message supported by maximum learning media (Abbas, 2012).

The world of education today enters the era of the media world, where the process of learning activities is required to reduce conventional methods and tend to be added to the use of some media that are more interesting and motivating children in learning. The learning process currently emphasizes process skills and active learning, so the role of learning media is very important(Imran

Akhmad, 2016). There are several emphases on the context and function of learning media, they are; 1) the media as a tool for the learning process is more effective, 2) accelerating the teaching and learning process, 3) further improving the quality of teaching and learning processes, 4) concreting something abstract so that it can reduce the occurrence of mistaken interpretations of verbalism.

The development of learning models is a necessity in the millennium (digitalization) in order to create interest and motivate students in the teaching and learning process. The development of Physical Education Sports and Health learning models using applications contained in smart phones (smartphones) that characterize the needs of this millennium generation that can be carried anywhere in any activity, will greatly help and facilitate students in understanding lessons according to the current curriculum applied. Specifically, it can be stated that the purpose of this study is the development of a Physical and Health Physical Education learning model based on an android application (Arsyad, 2009). The research on the development of Sport and Health Physical Education learning models has become very important because; 1) it helps the teacher in giving a message in the teaching and learning process, 2) it helps students in receiving messages in the teaching and learning process, 3) the teacher does not need to repeatedly create the same learning media from year to year, 4) interesting material and learning media obtained easily. With the creation and implementation of the development of Physical Education Sports and Health learning models based on android applications, it will significantly improve the quality of Postgraduate education at the Undiksha because the graduate students of Physical Education and Health Study Program will later bring this information (Physical Education learning model products to school) to their own schools to be applied for the overall purpose of Physical Physical Education and Health. Integrating technology with face-to-face instruction can reinforce both an interactive and communicative learning environment and provide meaningful learning outcomes (Rooney, 2003; Garrison & Kanuka, 2004)

Method

Development of learning media for Physical Education Sports and Health is a research and development / R & D. The software will be designed and developed through 10 stages which are based on Borg & Gall (2003: 772), they are; 1) Initial data collection, 2) planning, 3) development of product drafts, 4) Initial field trials, 5) revising trial results, 6) field trials, 7) product improvement results from field tests, 8) field implementation tests, 9) final product improvement and 10) dissemination and implementation(Yamin, Martinis. 2006).

By following the general stages of development research, the methods and instruments of data collection can be done in the following ways, they are(Trisha Dowerah Baruah, 2012): 1) relating to the design elements of use, appearance, operation and interactivity of media use, carried out by reviews by media experts and learning experts to analyze development of learning media for Physical Education Sport and Health that are being developed, 2) the development of learning media for Physical Education Sports and Health is measured in quality, by filling out questionnaires to users (teachers, students).

During the trial or validation of the development of the Sports and Health Physical Education learning media, the users were given a data collection tool in the form of a questionnaire with a Likert scale. Scores obtained with a data collection tool in the form of this questionnaire, the data were compiled and searched for averages(Tejo Nurseto, 2011).

Results and Discussion

Below are the models of each application designed in the first phase of this research, as follows (Chidi E. Onyenemezu, 2014):
1) Material for designing applications for class X (big ball games / basketball):
   a. Throw and catch flat (chest pass):
      1. Throw and catch flat (chest pass)

1) Preparation for chest pass:
   a) Stand up with a step.
   a) The ball is held with both hands in front of the chest.
   b) The body is leaning forward.
2) The basic motion of throwing a chest-level ball:
   a) Push the ball forward by stretching both arms together as the back leg is moved forward and the weight is carried forward.
   b) Release the ball from both hands after the arms are straight.
   c) The direction of the straight ball parallel to the chest.
3) Final movement of the bottom passing basic motion:
   a) Weight is carried forward.
   a) Both arms straight forward relax.
   b) The view follows the direction of the ball.
   (Video).

2. The technique of throwing bounce balls.
   1) Preparation for doing the basic bounce pass:
      a) Stand up with a step.
      b) The ball is held with both hands in front of the chest.
      c) The body is leaning forward.
      d) Your elbows are straight to the side Berdiri dengan sikap melangkah.
   2) Movement to do the basic bounce pass:
      a) Push the ball by straightening your arms forward and down along with your back foot stepped forward and your weight carried forward.
      b) Release the ball from both hands after both arms are straight.
      c) Direction of the ball bouncing to the floor.
      d) Reflection of the ball is tried at the height of the ball receiver's chest.
   3) End of movement to do the basic bounce pass:
      a) Weight is carried forward.
      b) Both arms are straight lower and lower relaxed.
      c) The view follows the direction of the movement of the ball.
      (Video).

3. The technique of throwing the ball from the top of the head (over head pass)..
   1) Preparation of throwing the ball from the top of the head (over head pass):
      a) Stand with a step toward the throw.
      b) The ball is held with both hands above the head.
      c) The body is leaning forward
   2) Movement to throw the ball from the top of the head (over head pass):
      a) Swing the ball forward by stretching both arms together as the back leg is moved forward and the weight is carried forward.
      b) Release the ball from both hands after both arms are straight.
      c) The direction of the ball is straight and flat towards the recipient's chest.
   3) End of the throwing ball from the top of the head (over head pass):
      a) Weight is carried forward.
      b) Both arms straight forward relax.
      c) The view follows the direction of the ball.
      (Video).

4. Basic Motion Skills to catch the ball.
   1) Preparation for curving the basic motion of catching the ball:
      a) Stand with your feet stepped toward the direction of the ball.
      b) Both arms are extended forward towards the direction of the ball with the palm of the hand facing the direction of the ball.

       c)   Weight rests on the front foot.

  2)   Movement of the basic motion to catch the ball:

      After the ball touches the palm of the hand, pull the front foot back, the elbow of the arm is bent until the ball is pulled closer to the chest / body.

  3)   End of the basic motion movement to catch the ball:

     a)   The body is leaning forward.

     b)   Weight rests on the hind legs.

     c)   The position of the ball is held in front of the body.

     (Video).

5. Basic dribbling skills.

  1)   How to do it:

     a)   Beginning with the preparation of standing with a stepping attitude.

     b)   The body is leaning forward.

     c)   Weight is on the front leg.

     d)   By pushing the ball using the palm of the hand to the floor with the source of movement from the elbow assisted by the wrist activated.

     e)   The height of the bouncing ball is limited or below the waist.

     f)   The eye view when dribbling the ball freely towards the front.

     g)   The end of the movement of both hands relaxes and the body is re-established.

     (Video).

6. Basic Motion Skills Shooting.

  1)   Shooting with one hand:

     a)   Beginning with the preparations to stand upright facing the direction of the movement in a stepped manner, the position of the foot straight forward.

     b)   The knees are slightly lowered.

     c)   The ball is held on the bottom side with both palms and fingers open.

     d)   Look at the target shot.

     e)   With the movement of pushing the ball forward up until the arms are straight, along with that the hips, knees and heels rise.

     f)   Release the ball from the hand grip when the arm is straight and the release of the ball is helped by activating the wrist and fingers.

     g)   The correct shape of the ball is like a curved upper satellite dish.

     h)   End of movement of both arms straight forward relaxed and the direction of view follows the direction of motion of the ball.

     (Video).

  2)   Shooting with one hand:

     a)   Beginning with the preparations to stand up straight, stance step toward the direction of the ball and the knees are rather low.

     b)   The ball is held at the bottom with the palm and fingers.

     c)   One open while the other hand helps hold the side of the ball.

     d)   Look at the target shot.

     e)   Continued with the movement of pushing the ball to the front above by using one arm until the arms are straight. Together with that the hips, knees and heels rise.

     f)   Release the ball from the hand grip when the arm is straight.

     g)   Ball release movement is assisted by activating the wrist and fingers.

     h)   The correct direction of the ball is to resemble parabolic or curved.

     i)   The end of the movement of both arms straight forward relaxes and the direction of view follows the direction of motion of the ball.

     (Video).

  3)   Basic motion shoot lay-up:

     a)   Stand in front of a colleague in front of ± 5 m.

   The stepping motion, followed by two steps while holding the basketball, who has done the shoot lay-up moves to the row of the ball. This exercise is done in pairs or groups. To instill values of cooperation, courage, sportsmanship, and competitiveness..

   (Video).
4) Lay-up shoot begins with dribbling:
   a) Stand facing a distance of ± 5 m.
   b) Perform shoot lay-up technique, which has done a shoot lay-up moving to move to the row of the ball. This exercise is done in pairs or groups. To instill the values of cooperation, courage, sportsmanship, and competitiveness.

   (Video).

2) Material for designing applications for class X (big ball games / Bolavoli)::
   a. Motion Skill Game Bolavoli.
      1. Basic passing below.
         1) Preparation before carrying out the bottom passing basic motion:
            a) Stand with both feet shoulder width apart and knees lowered so that the body weight is rested on both ends of the foot on the front.
            b) Close and straighten both arms in front of the body until the two thumbs are aligned.
            c) A view of the arrival of the ball.
         2) Movement of the bottom passing motion:
            a) Push both arms towards the ball as both knees and hips rise and heels lift from the floor.
            b) Try the direction of the ball right in the middle of the body.
            c) The introduction of a good ball right on the wrist.
         3) Final movement of the bottom passing basic motion:
            a) The heel is lifted from the floor.
            b) Hips and knees rise and both arms straight.
            c) The view follows the direction of the ball.
            (Video).
      2. Basic passing movement.
         1) Preparation before carrying out the basic passing motion:
            a) Stand with both feet shoulder width apart, knees lowered until the weight rests on the front of the foot.
            b) Position the arms in front of the body with both palms and fingers apart so as to form a bowl in front of the face (face).
            c) A look at the ball.

2) Movement of the upper passing motion:
   a) Push both arms towards the direction of the ball along with both knees and hips up and heels raised.
   b) Try the direction of the ball in the middle of the face.
   c) The introduction of a good ball is right about the fingers.
3) Final movement of the basic passing motion above:
   a) The heel is lifted from the floor.
   b) Hips and knees rise and both arms straight.
   (Video).
3. Top service base motion.
   1) Preparation before doing basic service moves on:
      a) Stand upright in the direction of the ball (front).
      b) Both feet step (left foot in front, right behind).
      c) The left hand holds the ball in front of the body.
   2) Basic service movements for:
      a) Roll the ball upwards a little back ± 1 meter using your left hand.
      b) Slightly bouncy back and body weight on hind legs.
      c) Swing your right hand together with the forward body movements.
      d) The ball is hit using the right hand which is assisted by activating / whipping the wrist..
   3) End of service movement for:
      a) Weight is carried forward by stepping back (right) forward.
      b) The view follows the direction of the ball.
      (Video).
4. Basic smash motion.
   1) Preparation before doing basic smash moves:
      a) Stand with a step toward the net.
      b) Weight on the front legs.
      c) Forward-looking (net direction).
   2) Basic smash motion:
      a) Prefix movement, step foot at least two steps and the last step wide.
      b) Repulsion motion, refusing with both feet up and followed by swinging both arms forward upwards.
      c) Punch motion, hitting the ball with the palm of the hand on the top of the ball together with the wrist activated.
      d) The motion landed, landing with both ends of the feet, together with knees flat.
   3) End of the smash movement:
      a) Both knees are lowered and followed by bending.
      b) Weight is carried forward and the outlook is upward.
      c) Both arms in front of the side of the body relax.
      (Video).
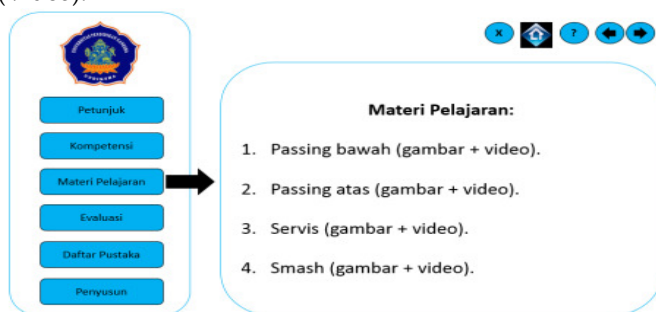
3) Material for designing applications for class X (big ball games / Soccer):
   a. Feed using the inner leg.
      1) The initial position of the ball feed with the inner leg:
         a) Starting with the attitude of standing facing the direction of movement.
         b) Place the foot resting next to the ball with the knee slightly bent and shoulders facing the direction of the movement.
         c) The attitude of the arms on the side of the body is rather stretched.
         d) The ankle to be used is kicked out and locked.
         e) The view is centered on the ball.
      2) Movement to feed the ball with the inner leg:
         a) Note the readiness of your partner / partner is ready or not to receive ball feedback.
         b) Pull the legs to be used kicking back then swing forward towards the ball.
         c) The introduction of the foot on the ball right in the middle of the ball.
      3) End of movement to feed the ball with the inner leg:
         a) Move the weight to the front of the foot together as the foot used is kicked in front..
         b) Future outlook.
   b. Feed using the outer leg.
      1) The initial position of passing the ball with the outside foot:
         a) Starting with a standing attitude facing the direction of the ball's movement.
         b) Put your foot on the side of the ball.
         c) The attitude of the arms on the side of the body is rather stretched.
         d) The ankles to be used kicking are turned in and locked.
         e) The view is centered on the ball.
      2) Movement to feed the ball with the outside foot:
         a) Note the readiness of your partner / partner is ready or not to receive ball feedback.
         b) Pull the foot that will be used to feed it to the back, then swing it forward towards the ball while the foot is rotated inward.
         c) The introduction of the foot on the ball right in the middle of the ball.
      3) End of movement to feed the ball with the outside foot:
         a) Bring the weight forward while the used foot is kicked in front.
         b) Future outlook.
   c. Feed using the back of the foot.
      1) The initial position of the ball feed with the back of the foot::
         a) Starting with the attitude of standing facing the direction of movement.
         b) Place the foot resting next to the ball with the knee slightly bent and shoulders facing the movement.
         c) The attitude of the arms on the side of the body is rather stretched.
         d) The ankle to be used is kicked back and locked.
         e) The view is centered on the ball..
      2) Movement to feed the ball with kak's back:
         a) Note the readiness of your partner / partner is ready or not to receive ball feedback.
         b) Pull the legs to be used kicking back then swing forward towards the ball.
         c) The introduction of the foot on the ball right in the middle of the ball.
      3) End of the ball feed movement with the back of the foot:
         a) Bring the weight forward while the used foot is kicked in front.
         b) Future outlook.
   d. The basic technique is to stop the ball with the inner leg.
      1) The starting position stops the ball with the inner leg:
         a) Begin with an attitude facing the direction of the arrival of the ball and center the view towards the movement of the ball.
         b) Turn the ankle to use to hold the ball out and lock it.

2) Movement to feed the ball with the inner leg:
   a) Extend the foot that will be used to hold the ball towards the ball.
   b) Pull back to follow the direction of the ball when the ball hits the inside of the foot, until the motion of the ball is held back and stops in front of the body.
3) End of movement to feed the ball with the inner leg:
   a) Bring the weight forward while the legs that are not used hold the ball into the weight of the body.
   b) Future outlook.
e. The basic technique is to stop the ball with the outside foot.
   1) The initial position of stopping the ball with the outside leg:
      a) Stand facing the direction of the ball movement.
      b) Put your foot on the side of the ball.
      c) The attitude of the arms on the side of the body is rather stretched.
      d) The ankles that will be used stop being turned in and locked.
      e) The view is centered on the ball.
   2) Movement to feed the ball with the outside foot:
      a) Pull the foot to be used kicking back, when the ball touches the outside of the foot.
      b) The introduction of the foot on the ball right in the middle of the ball.
   3) End of movement to feed the ball with the outside foot:
      a) Bring the weight forward while the legs that are not used hold the ball into the weight of the body.
      b) Future outlook.
f. Dribble with the inner leg.
   1) The initial position of dribbling with the inner leg:
      a) The attitude begins to stand facing the direction of movement, foresight.
      b) The attitude of both arms beside the body relaxes, the ankles are rotated outward and locked.
   2) Dribbling with the inner leg:
      a) Push the ball with the inner leg towards the front with the position of the foot slightly opened in front of the foot together to move.
      b) The ball moves forward rolling on the ground.
   3) End of the dribbling movement with the inner leg:
      a) Stop the ball with the soles of the feet at the top of the ball.
      b) The body weight is on the feet that are not used in dribbling.
      c) Foresight.
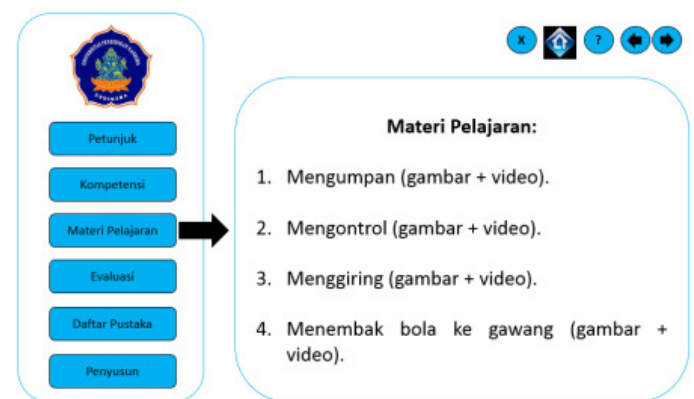
After the process of making the application was completed, it was continued with small groups trials and large group trials. Small group trials were carried out in one class at Singaraja High School,

which amounted to 20 subjects. The subject of this research was taken by random sampling method. A large group trial was conducted at two at Singaraja Lab High School, totaling 70 subjects. Following are the test results data in each group:

1. Data Validation of PJOK Experts

   Data from PJOK expert validation is obtained on Wednesday, August 1, 2018 and Friday, August 3, 2018. Based on the results of expert validation, data obtained from 26 statement questions in the application selection; 89% were declared valid and as many as 11% were declared invalid. Suggestions and input from PJOK experts, namely; (1) there are several statements in the choice of application that are not in accordance with the characteristics of the students, (2) it needs a complete revision of the statement in the choice of application, (3) the image in the application needs to be clarified and enlarged in order to make it easier for the user to see and understand.

2. Language Validation Data

   Data from linguist validation was obtained on Friday, August 10, 2018. Based on the results of expert validation, data obtained from 26 questions in the choice of statement in which 91% were stated to be very valid, and 9% were stated as quite valid. The advices and inputs from experts are; (1) it needs to be more clear related to spelling and punctuation; (2) prioritizing terms that have equivalents in Indonesian, (3) Use easily understood sentences.

3. Data Validation for Media Experts

   Data from media expert validation was obtained on Friday, August 24, 2018. The results of data analysis that has been carried out were obtained from 26 statement questions in the choices in the application divided into 2 categories namely; (1) PJOK Learning Materials and (2) Fill in PJOK Learning. Based on the results of media expert validation, the results obtained were PJOK Learning Material obtained percentage of 91.88%, and PJOK Learning Content obtained a percentage of 91.43. Suggestions and input from media experts are; (1) the background should be replaced, (2) no need for foreign sentences, (3) musical instruments are eliminated because they interfere with the concentration of learning.

4. Small Group Trial Results Data

   Small group trials were conducted to obtain data on product feasibility. Small group trials to obtain data on product feasibility were held on Thursday August 30 2018. Based on the first small group trial shown that on the number of 26 model statements on the application obtained the criteria for product learning material on percentage of 89.17% and criteria of product learning content on percentage of 87.50%.

5. Large Group Trial Data.

   Large group trials were conducted to obtain data on product feasibility. Large group trials to obtain data on product feasibility were held on Thursday September 6, 2018. Based on large group trials, the results of 26 statement models on the application obtained that the criteria for product learning materials on percentage of 91.17% and product learning content criteria on percentage of 88.40%.

   The following shows the percentage of each trial in graphical form.
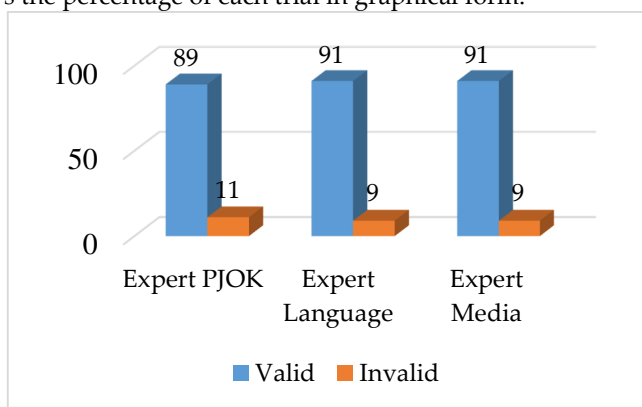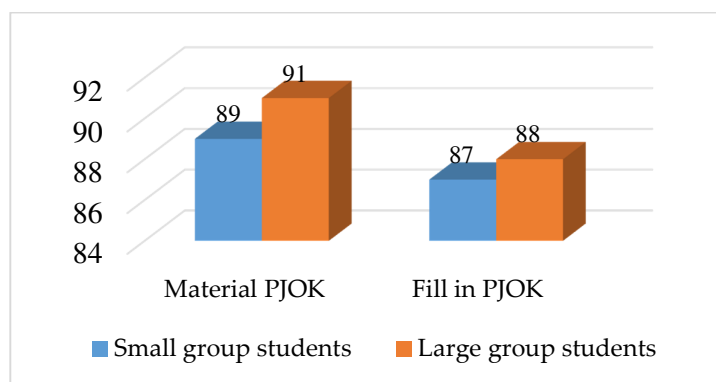

Table 1. Test Results of the Expert Team

Table 2. Small and large group material test results

Based on the results of research involving 4 groups, in which each of the group has its own competencies, namely; 1) PJOK expert validation, (2) learning media expert validation, 3) linguist validation and 4) small group and large group students, obtained very significant recommendations ranging from 87% to 91%. This proves that the application model developed is proper to be followed up by making an Android application-based PJOK learning media, therefore the beneficial impact on teachers and students which imply to the increasing of the learning quality.

Conclusions

Based on the results of the questionnaire survey and feedback from respondents who were PJOK experts, learning media experts, linguists and scholars, it can be concluded as follows;
1) Validation of PJOK Experts; provide a recommendation that the application development is very good with a validation percentage of 89%.
2) Validation of linguists; provide recommendations that the development of the application is very good with a validation percentage of 91%.
3) Validation of Media Experts; provide recommendations that the development of the application is very good with the percentage validation a) PJOK learning material obtained a percentage of 91.88%, and b) the contents of PJOK learning obtained a percentage of 91.43.
4) Small Group Trial Results; provide recommendations that the application development is very good with PJOK learning material percentage of 89.17%, and product learning content criteria obtained a percentage of 87.50%.
5) Large Group Trial Results; provide recommendations that the development of the application is very good with PJOK learning material with a percentage of 91.17%, and the product learning content criteria obtained a percentage of 88.40%.

Acknowledgments

References

Abbas Pourhossein Gilakjani. (2012). Visual, Auditory, Kinaesthetic Learning Styles and Their Impacts on English Language Teaching, Journal of Studies in Education ISSN 2162-6952, 2012, Vol. 2, No.

1, Lahijan Branch, Islamic Azad University, Lahijan, Iran English Language Department, Islamic Azad University, Lahijan, Iran

Arsyad, Azhar. (2009). Media Pembelajaran. Jakarta: PT Raja Grafindo Persada.

Chidi E. Onyenemezu And Olumati. (2014). Educational Media And Technology: A Panacea For Effective Teaching And Learning Among Trainee Adult Educators In University Of Port Harcourt, Vol.2,No.3, Pp.75-81,July 2014, Department Of Adult And Non-Formal Education,University Of Port Harcourt, Port Harcourt Rivers State, Nigeria

Imran Akhmad. (2016). Sumber Belajar Dan Teknologi Komunikasi Dan Informasi Untuk Pengembangan Keprofesian Berkelanjutan, Kementerian Pendidikan Dan Kebudayaan Direktorat Jenderal Guru Dan Tenaga Kependidikan.

Rooney, J. E. (2003). Blending learning opportunities to enhance educational programming and meetings. Association Management, *55*(5), 26-32.

Singh, H. (2003). Building effective blended learning programs. Educational Technology, *43*, 51−54

Tejo Nurseto. (2011). Membuat Media Pembelajaran Yang Menarik, Jurnal Ekonomi & Pendidikan, Volume 8 Nomor 1, April 2011, (Fakultas Ekonomi Universitas Negeri Yogyakarta.

Trisha Dowerah Baruah. (2012). Effectiveness of Social Media as A Tool Of Communication and Its Potential For Te Chnology Enabled Connections: A Micro-Level Study, International Journal of Scientific And Research Publications , Volume 2, Issue 5, May 2012, ISSN 2250-3153, Department Of Mass Communication Krishna Kanta Handiqui State Open University, Dispur, Guwahati – 781006, Assam, India

Yamin, Martinis. (2006). Strategi Pembelajaran Berbasis Kompetensi. Jakarta: Gaung Persada Press