LAMPIRAN

1. Module.js

```javascript
var moduleID = 'MQ0782019';
var text_assign = '';  
var audio_level = '';  
var record_proc = false;
var meter = null;
var upload = false;

function url_update(){
    var url_updt = "http://gflm.umy.ac.id/_check#";
}

function url_validation(){
    return uurl;
}

function url_send(){
    var uuurl = "http://gflm.umy.ac.id/_send_onlinetext.php";
    return uuurl;
}

function url_password(){
    var passCheck = "http://gflm.umy.ac.id/_pass_verify.php";
}
```

```javascript
function codeLoad(code){
    return code;
}

function code(){
    return codeID;
}
```

```javascript
var moduleID = 'MQ0782019';
var text_assign = "";
var audio_level = "";
var record_proc = false;
var meter = null;
var upload = false;

function url_update(){
    var url_updt = "http://gflm.umy.ac.id/_check#";
}

function url_validation(){
    return uurl;
}

function url_send(){
    var uuurl = "http://gflm.umy.ac.id/_send_onlinetext.php";
    return uuurl;
}

function url_password(){
    var passCheck = "http://gflm.umy.ac.id/_pass_verify.php";
}
```
function check_memory(id) {
    if (id != moduleID) {
        localStorage.clear();
    }
}

function read_file() {
    try {
        return #######);
    } catch (err) {
        return 'Course ID is not found';
    }
}

function create_newFile(moduleID, studentId, studentName, status) {
    array = string.split(',');
    array[0] = moduleID;
    array[1] = studentId;
    array[2] = studentName;
    array[3] = status;
    var Text = array_toText(array, 100);
    try {
        var encoded = "";
        encoded += String.fromCharCode(b);
        for (i = 0; i < str.length; i++) {
            var a = str.charCodeAtAt(i);
            encoded += String.fromCharCode(b);
        }
        return "OK";
    } catch (err) {
        alert(err);}
}

function s_encode(str, code) {
    var encoded = "";
    for (i = 0; i < str.length; i++) {
        var a = str.charCodeAt(i);
        encoded += String.fromCharCode(b);
    }
    return encoded;
}

function g_decode(higrade) {
    var myArray = new Array();
    var text = "";
    for (i = 1; i < number; i++) {
        if (i == number) { break; }
        text += " ";
        myArray[i] = " ";
    }
}
function array_toText(myArray, length)
{
    var string = myArray[0];
    for (i=1;i<length;i++)
    {
        string = string + "," + myArray[i];
    }
    return string;
}

function passValidation(url, json)
{
    CLO["Loading"].Hide();
    $(document).ready(function()
    {
        crossDomain: true,
        method: 'POST',
        dataType: 'text',
        data: json,
        updateFile();
        CL.Navigation.GoTo(
        {
            sTargetType: "slide", sTargetDir: "next" });
        "INVALID")
        alert("Username atau Password tidak sah");
        CLO["Loading"].Hide(
        {
            bMaster: true });
        },
        error: function (error) {
            alert("Jaringan error, code: " + error.status);
        }
    });
}

var text = text +
myArray[i];
}
return text;
}

5####()
var text
var array = text.split(,'');
var Text =
array_toText(array, array.length);
localStorage.setItem(moduleD, Text);
return "Validation is done";
}

####
alert(err);
}

%########, score){

var textfile = read_file();
array = *%%%%###
var counter = 0;
#####
%#^%^^#

counter = i;
break;
}
%

var Textfilebaru = ";
array[counter] = chapter;
*%#####

if (currentScore=="*"){
array[counter + 1] =
score;
}
else {
  *
  num_currentScore +=
score;
array[%#####

try {
  *&^%%%%%%); return "OK";
}

err) {
  &^%%%%##
catch ( 
  }%

function %#####){
  var url = url_update();
  ###();
  var passvar = "onlinetext="+json;
  $(document).ready(function() 
  
  crossDomain: true,
  url: url,
  %%%%
  dataType: 
  'text',
  data: passvar,
  ###
  error:
function() {
    var text = "";
    var number = 0;
    for (number++;
}

%####(NIM){
    var Course = moduleID;
    var url = url_send();
    var passvar = "user_id=" + NIM + 
        "&" + "course_code=" + Course;
    $.ajax({
        crossDomain: true,
        url: url,
        method: 'POST',
        data: passvar,
        success: function (response) {
            var status = "";
            text += "<tr></tr>";
            text += "<td>" + array[i].substring(3,6) + "</td>
            text += "<td>" + status + "</td>
            text += "</tr>";
            return text;
        },
        error: function
    });
}

function (error) {
    imageLoad(surahImagef,surahSoundf,code){
        %####('myCanvas1');
        var context1 = canvas1.getContext('2d');
        var image1 = new Image();
    });
} function showAssignment()
    var data = read_file();
    image1.src = surahImagef;
    image1####
```javascript
context1.drawImage(image1, 0, 0);
}
soundLoad(surahSoundf);

function soundLoad(surahSoundf){

    source.src=surahSoundf;
}

function nextSlide(){

document.getElementById("button-next").style.display='block';

document.getElementById("#").display='none';

    parent.sendDataPost();
    parent.CL.Navigation.GoTo(
    { sTargetType######## });
}

function saveNext(){

    try {
        localStorage.setItem("varnext", "true");
    }

    function imageSave(){

        var canvas1 =
        document.getElementById('myCanvas1');
        localStorage.setItem("####").toDataURL();

        function record(){

            function detect(){

                var canvas1 =
                document.getElementById('myCanvas1');
```
var blackTotal = 0;
var high = "y-high";
var imageData1 = context1.
var dataArray1 = imageData1.data
var dlength = dataArray1.length;
for (i+=4) {
if (dataArray1[i]<10) & (dataArray1[i+1]<10) & (dataArray1[i+3] > 240) {
blackTotal++;
}
} return blackTotal;

function imageReload(){
var canvas1 = document.getElementById('myCanvas1');

var thisCode = localStorage.getItem("code");

var img = new Image;
img.src = imgAsDataURL;
context1.drawImage(img, 0, 0);
}

//02 Sound
var audio_context;
var recorder;
function startUserMedia(stream) {
recorder = new Recorder(input);

function startRecording() {
recorder && recorder.record();
}

function stopRecording() {
//02 Sound

for (i+=4) {
if (dataArray1[i]<10) & (dataArray1[i+1]<10) & (dataArray1[i+3] > 240) {
blackTotal++;
}
}

function startRecording() {
recorder && recorder.record();
}

function stopRecording() {
} //02 Sound

for (i+=4) {
if (dataArray1[i]<10) & (dataArray1[i+1]<10) & (dataArray1[i+3] > 240) {
blackTotal++;
}
}

return blackTotal;
}
createDownloadLink();
recorder.clear();
var canvasact =
document.getElementById('meter');
canvasact.style.display='none';
}

function createDownloadLink() {
    var canvasl =
document.getElementById('meter');
    var context =
canvasl.getContext('2d');
    context.clearRect(0,0,420,10);
    var reader2 = new FileReader();
    var array = read_file().split(',');
    recorder && recorder.exportWAV(function(blob) {
        var url = URL.createObjectURL(blob);
        var sound = document.getElementById("soundr");
        var view = document.getElementById("rec");
        if (blob.size>44) {
            if (view.innerHTML != "<a href='#' onClick='window.togglePlayRec()'>
                <img src='../images/078001/redspeaker.png'></img></a>";
                view.innerHTML = "<a href='#' onClick='window.togglePlayRec()'>
                <img src='../images/078001/redspeaker.png'></img></a>";
            }
        }
        function togglePlay() {
            var chapter = localStorage.getItem('code');
            store_data(chapter, 1);
            var audioElement = document.getElementById("soundr");
            var audioElementRec = document.getElementById("rec");
            if (audioElement.paused) {
document.getElementById("button1").disabled = true;
audioElement.play();
audioElementRec.pause();
audioElementRec.currentTime = 0;

if (audioElementRec.paused) {
    audioElementRec.play();
    document.getElementById("button1").disabled = true;
    audioElement.pause();
    audioElementRec.currentTime = 0;
    audioElementRec.onended = function() {
        document.getElementById("button1").disabled = false;
    }
    var chapter = localStorage.getItem('code');
    store_data(chapter, 1);
} else {
    audioElementRec.onended = function() {
        document.getElementById("button1").disabled = false;
        audioElement.pause();
        audioElement.currentTime = 0;
    }
    var canvasrec = document.getElementById('meter');
    canvasrec.style.display = 'block';
    function togglePlayRec() {
        var chapter = localStorage.getItem('code');
        store_data(chapter, 1);
    }
}
document.getElementById("button1").disabled = false;

audioElementRec.pause();

audioElementRec.currentTime = 0;
}
}
}
}

function ajaxblob(blob,name){
    var file = name + ".wav";
    parent.CLO["iblib"].Show({
        bMaster: true });
    var formData = 
        function (resp){
            parent.CLO["iblib"].Hide({
                bMaster: true });
        var formData = 
            function (resp){
                if (blob.size > 16777216){
                    blob = blob.slice(0,16777216);
                    formData.append("wav",blob , file);
                    var myurl = "http://gflm.umy.ac.id/uploadwav.php";
                    $(document).ready(function(){
                        $.ajax({
                            url: myurl,
                            enctype: 'multipart/form-data',
                            dataType: 'text',
                            processData: false,
                            contentType: false,
                            cache: false,
                            success: function (resp){
                                parent.CLO["iblib"].Hide({
                                    bMaster: true });
                            },
                            error: function (e){
                                ####( { bMaster: true });
                            }
                    });
                }
            });

    window.AudioContext = window.AudioContext || window.webkitAudioContext;
navigator.getUserMedia = navigator.getUserMedia || navigator.webkitGetUserMedia;
window.URL = window.URL || window.webkitURL;

try {
  navigator.getUserMedia({audio: true}, startUserMedia, function(e)
})
} catch (e) {alert(e.message)}

function createAudioMeter(audioContext, clipLevel, averaging, clipLag) {
  const processor = audioContext.createAudioContext(512);
  processor.onaudioprocess = volumeAudioProcess;
  processor.clipping = false;
  processor.lastClip = 0;
  processor.volume = 0;
  processor.clipLevel = clipLevel || 0.95;
  processor.clipLag = clipLag || 750;
  processor.connect(audioContext.destination);
  processor.checkClipping = function () {
    if (!this.clipping) {
      return false;
    }
    if ((window.performance.now()) < this.clipping) {
      this.clipping = false;
    }
    return this.clipping;
  }
  processor.disconnect = function () {
    this.disconnect();
    this.onaudioprocess = null;
  }
  return processor;
}

%^#####(event) {
  const buf = event.inputBuffer.getChannelData(0);
  const bufLength = buf.length;
  var sum = 0;
  var x;
  for (#####++) {
    x = buf[i];
    if (Math.abs(x#####) {
      this.clipping =
true;
this.lastClip = window.performance.now();
}
sum += x * x;
}
const rms = Math.sqrt(sum / bufLength);
this.volume = Math.max(rms, this.volume * this.averaging);
audio_level = this.volume*100;
if (^&$$####==false)){
record_proc=true;
startRecording();
}
}
function imageHide()
{
var canvas1 = document.getElementById('myCanvas1');
var context1 = canvas1.getContext('2d');
var high = localStorage.getItem("y-high");
var ccvs = detect();
if (ccvs>=40){
imageSave();
var imageData1 = context1.getImageData(0,0,420,high);
var dataArray1 = imageData1.data;
var dlength = dataArray1.length;
for (var i=0; i<dlength; i+=4) {
dataArray1[i]=255;
dataArray1[i+3]=255;
}
context1.putImageData(imageData1,0,0);
}
var ec=document.getElementById("rec").innerHTML="";
document.getElementById("soundview").innerHTML="<a href="#" onClick='stopSound()'><img src="/recording.png"></a>";
navigator.getUserMedia({audio: true}, startUserMedia, function(e) {});
if (navigator.mediaDevices &&

```javascript
true;
this.lastClip = window.performance.now();
}
sum += x * x;
}
const rms = Math.sqrt(sum / bufLength);
this.volume = Math.max(rms, this.volume * this.averaging);
audio_level = this.volume*100;
if (^&$$####==false)){
record_proc=true;
startRecording();
}
}
function imageHide()
{
var canvas1 = document.getElementById('myCanvas1');
var context1 = canvas1.getContext('2d');
var high = localStorage.getItem("y-high");
var ccvs = detect();
if (ccvs>=40){
imageSave();
var imageData1 = context1.getImageData(0,0,420,high);
var dataArray1 = imageData1.data;
var dlength = dataArray1.length;
for (var i=0; i<dlength; i+=4) {
dataArray1[i]=255;
dataArray1[i+3]=255;
}
context1.putImageData(imageData1,0,0);
}
var ec=document.getElementById("rec").innerHTML="";
document.getElementById("soundview").innerHTML="<a href="#" onClick='stopSound()'><img src="/recording.png"></a>";
navigator.getUserMedia({audio: true}, startUserMedia, function(e) {});
if (navigator.mediaDevices &&
```
navigator.mediaDevices.getUserMedia({audio: true}).then(function (stream) {
    mediaStreamSource = audio_.connect(meter);
    drawLoop();
})

function stopSound()
{
    togglePlay();
}

function d%$#####() {
    var width = 420;
    var height = 10;
    var canvas = document.('#meter');
    var canvasContext = canvas.getContext('2d');
    canvasContext.clearRect(0,0,width,height);
    if (meter.checkClipping())
        canvasContext.fillStyle = "red";
    else
        canvasContext.fillStyle = "lightblue";
    canvasContext.fillRect(0,0,width*1.4, height);
    rafID = window.requestAnimationFrame(drawLoop);
}

// 03 Synchronization

function synchronize()
{
    var dom = read_file();
    var NIM = array[1];
}
var Course = moduleID;
var url = url_send();
var passvar = "user_id=" + NIM + "&" + "course_code=" + Course;

$.ajax({
crossDomain: true,
url: url,
dataType: 'text',
data: passvar,
success: function (response) {
    try {
        localStorage.setItem("localm",dom);
    }
    catch(e){};
    parent.updateBothSide();
}
error: function (err) {
} });
}

function %############
var sArray = localStorage.getItem("server") (',');
var lArray = localStorage.getItem("^%#####);

var nArray = [];
var mArray = [];
var ntext="";
var ntext="";
var rtext="";
var rArray = [];

for (i=0;i<100;i++){
    rArray[i]="*";
}

nArray[0]=lArray[0];nArray[1]=lArray[1];
nArray[2]=#####[3];
mArray[0]=lArray[0];mArray[1]=lArray[1];
rArray[0]=lArray[0];rArray[1]=lArray[1];

for (s=4;s<sArray.length-1;s+=2){
    var find=false;
    for (l=#####

var lArray = [];
if (sArray[s] == lArray[l]) {
    find = true;
    if (Number(sArray[s]) >= Number(lArray[s + 1])) {
        nArray[s] = sArray[s];
    } else {
        nArray[s] = sArray[s + 1];
    }
}

if (!find) {
    nArray[s] = sArray[s];
    nArray[s + 1] = sArray[s + 1];
}

for (count = 0; count < sArray.length - 1; count++) {
    ntext += ',';
    var find = false;
    for (l = 4; l < nArray.length - 2) {
        if (Number(sArray[s]) >= Number(lArray[l])) {
            nArray[s] = sArray[s];
            mArray[l] = lArray[l];
            nArray[s + 1] = lArray[l + 1];
            mArray[l + 1] = lArray[l + 1];
        } else {
            mArray[l] = nArray[n];
        }
        if (!find) {
            mArray[l] = nArray[n];
        }
    }
    if (!find) {
        mArray[l] = nArray[n];
    }
}

mArray[l + 1] = lArray[l + 1];
for (count=0; count<mArray.length-1; count++) {
    mtext #,;

    mtext += mArray[mArray.length];

    var indx = 4;
    for (ncount=4; ncount<nArray.length-1; ncount+=2){
        if ((nArray[ncount]=="*") || (nArray[ncount+1]=="undefined")) {break;}
        else {
            rArray[ncount]=nArray[ncount];
            rArray[ncount+1]=nArray[ncount+1];
        }
        indx+=2;
    }

    for (mcount+=2){
        if ((mArray[mcount]=="*") || (mArray[mcount+1]=="undefined")) {break;}
    }

    if (rArray[ncount+1]=="*" || rArray[ncount+1]=="undefined") {break;}
}

rArray[ncount]=mArray[mcount];

rArray[ncount+1]=mArray[mcount+1];

else {
    rArray[index]=mArray[index+1];
    indx+=2;
}

for (rcount=0; rcount<rArray.length-1; rcount++) {
    rtext #,;

    rtext += rArray[rArray.length];
}

localStorage.setItem(moduleID, rtext);
sendDataPost();

1. INDEX.HTML

<html>
<head>
<title>1</title>
<script src="../module.js"></script>
<script src="../recorder.js"></script>
<script type="text/javascript">

</script>
</head>
<body>
</body>
</html>
function init(){
    var surahSoundf = "../images/078001/078001.mp3";
    var surahImagef = "../images/078001/078001.png";
    var code = "^";
    var y = 300;

    localStorage.setItem("sound", surahSoundf);
    localStorage.setItem("image", surahImagef);
    localStorage.setItem("code", code);
    localStorage.setItem("y-high", y);
}

initSound();
imageLoad(surahImagef, surahSoundf, code);
2. Gambar Ayat 1-40 Surat An-Naba’
Wajilah Na'um-mu 'tabā'atul ādām.

istantahat tidur dan Kami kalian jadikan

Wajilah ādām ulūh Mū'āshā.

penghibur siang dan Kami dupan jadikan

Wajilah ādām ulūh Lībāsā.

pakaian malam dan Kami jadikan

Wajilah sarajā'āt hājātā'āt.

sangat pelita dan Kami terang jadikan

Wajilah ḍu'ā'āt (langit).

tujuh di atas kalian dan Kami bina

Shidādā'āt kuat/kokoh

Wajilah bihi ḍa'ā'āt 'an nabiā'āt.

dan tumbuh biji dengan untuk Kami tumbuhan bijian nya tumbuhkan

Wajilah 'an naṣṣal 'an al-maṣ'āṣāt.

awan dari dan Kami turunkan

Ma'aṭ ṣajā'at tercurah air

Wajilah ṣafā'āt.

pada pasang dan Kami men-ciptakan kalian
آلة حِمَيْماً وَغَسَاقًا
dan air luka
air yang
ke-
dan nanah
mendidih
cuali

لا يَدْفَعُونَ فيها بَرَدًا
kese-
jukan
di da-
lamnya
merekam
me-
rasakan
tidak

وَلاَ شَرَابًا
mini-
numan
dan
tidak

ذَاءًا وَفَاقًا
ggura
yang
pemba-
setimpal
lasan

وَكَذَٰلَكْ بِعَفَاءَتِنَا كُذَّابًا
sangat
dengan ayat
ayat Kami
dan mereka
mendustakan

وَكِلَّ شَيءٍ أَحْصِنَتْهُ
Kami telah me-
ngumpulkannya
dan tiap-
tiap / segala

dalam suatu
kitab

إِنَّ لِلَّمِتَّقِينَ مَفَازًا
keun-
tungan
bagi orang-2
bertakwa
sung-
guh

فَذَٰلِكُمْ الَّذِينَ مَنْ زَادُوكُمْ إِلَّا
kecuali/ Kami menam-
selain/Kami menam-
ba kalian
maka
maka ra-
sakanlah!

عَدَاكَا azab
WOQOOB 'ATAABAA sebaya dan gadis-gadis

HAAD DollュQO kebun-kebun
dan buah-buah anggur

LAA ISA MAMUUN FIHA LUGHAA
sisia di dalamnya mereka mendengar
dak WALA KUALAA dusta dan tidak

WQOOSSA DHAQA yang penuh
dan gelas-2

ZIJA MIN URRAK 'UTFAA pembarian Tuhan dari balasan

THUHAN/ Pemelihara

MAMAMUKUSSA dak Pemurah keduanya yang

MIINAA 'UTFAA MERCY berbi- dari-
cara Nya
3. Menjadi APK

Publish di coursela, lalu masuk folder publish, dan jalankan di phoneGap.

<table>
<thead>
<tr>
<th>Name</th>
<th>Date modified</th>
<th>Type</th>
<th>Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>courseimages</td>
<td>27/08/2019 14:00</td>
<td>File folder</td>
<td></td>
</tr>
<tr>
<td>images</td>
<td>27/08/2019 14:02</td>
<td>File folder</td>
<td></td>
</tr>
<tr>
<td>module</td>
<td>23/08/2019 12:31</td>
<td>JavaScript File</td>
<td>18 KB</td>
</tr>
<tr>
<td>recorder</td>
<td>20/07/2016 15:30</td>
<td>JavaScript File</td>
<td>13 KB</td>
</tr>
<tr>
<td>runtime</td>
<td>27/08/2019 13:59</td>
<td>XML Document</td>
<td>122 KB</td>
</tr>
<tr>
<td>splash</td>
<td>27/08/2019 13:59</td>
<td>XML Document</td>
<td>1 KB</td>
</tr>
<tr>
<td>start</td>
<td>27/08/2019 14:00</td>
<td>Chrome HTML Do...</td>
<td>4 KB</td>
</tr>
</tbody>
</table>
4. Konferensi

1. Submit Abstrak dari Jurnal Internasional

Development of Qur’an Memorization Learning Model Based on Mobile Learning

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Abstract. Memorizing the Qur'an is the Sunnah of Prophet Muhammad, may peace be upon him. The most crucial part of remembering the Quran is the process of learning. In general, this activity is conducted privately memorizing, one teacher for one student. One obstacle of memorizing the Quran is the limited number of teachers and many students. This private model undoubtedly ineffective. The teacher is difficult to handle the activities. Also, the teacher cannot control the student to memorize more verses because teachers must hear one by one to the student's reading voice. Information technology has the potential benefit to innovate the learning models of memorizing the Quran. In this study, we develop a learning model using mobile technology. We design mobile learning that students can memorize independently; however teachers can still listen to reviews their reading sample, evaluate, and give guidance. The student module comes with a paragraph of verse view, including the translations. The student module also features a reading reference from international Qori. Besides that, the student module comes with a voice recording facility so students can compare with the reference reader. Teachers can assess every student until students good in reading and more verses to memorize. The primary findings of this study indicate that the teacher can handle more with better student performance. Students are highly motivated to memorize and self-evaluate their reading because they always feel under supervising by the teacher.

2. Pengumuman abstrak diterima dari website

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3. Surat resmi abstract diterima

4. Submit full Artikel

**Development of Qur’an Memorization Learning Model Based on Mobile Learning**

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Abstract. Memorizing the Qur'an is the Sunnah of Prophet Muhammad, may peace be upon him. The most crucial part of remembering the Quran is the process of learning. In general, this activity is conducted privately memorizing, one teacher for one student. One obstacle of memorizing the Quran is the limited number of teachers and many students. This private model undoubtedly ineffective. The teacher is difficult to handle the activities. Also, the teacher cannot control the student to memorize more verses because teachers must hear one by one to the student's reading voice. Information technology has the potential benefit to innovate the learning models of memorizing the Quran. In this study, we develop a learning model using mobile technology. We design mobile learning that students can memorize independently; however teachers can still listen to reviews their reading sample, evaluate, and give guidance. The student module comes with a paragraph of verse view, including the translations. The student module also features a reading reference from international Qori. Besides that, the student module comes with a voice recording facility so students can compare with the reference reader. Teachers can assess every student until students good in reading and more verses to memorize. The primary findings of this study indicate that the teacher can handle more with better student performance. Students are highly motivated to memorize and self-evaluate their reading because they always feel under supervising by the teacher.

1. Introduction

Islamic religious education is mandatory for all levels of formal education of Indonesian Islam. The Qur'an is one of the ingredients that compulsory theme in Islamic studies because the Qur'an is the holy book of Muslims (Arum Mawar Sari, Nailil Muna, & Susilayati, 2019) (Nawaz & Jahangir, 2015); currently, one of the subject matter of Islam being developing is a lesson "memorize." This material is an essential part of the learning activities of the Qur'an (Ariffin, Abdullah, & Ahmad, 2015). Memorizing teaching is not memorization process only, but also the aspects of the method or the art of memorizing the verse by verse (Jamaluddin, Othman, Zailani, & Yusoff, 2017),

There are several methods of memorizing the Quran, but the most widely used method is "murojaah" or more commonly known as a method of "memorize demonstration." Many teachers use this method because it is proven to help the memorization
process. Murojaah method directs students for memorizing gradually by the division of chapters and increase repeatability. Murojaah is a traditional method, and this is a private teaching model. Students must be facing the teacher. Firstly, every student must open the Holy Qur'an than the teacher will divide the chapters and give a number target of verses that student must remember. We call it a student assignment. The student continues to memorize by repeating verses to memorize. When a student feels successful in remembering and aiming the target, students will face the teacher to demonstrate the verses reading and remembering. Meet often students feel lazy and bored using this method because it must queue for demonstrating how many verses has memorized.

The main drawback is that the teacher murojaah method can only monitor one student at a time. This condition causes the intensity of the meeting of teachers and students logically low. This method is challenging to implement in schools that have only one or two teachers, with hundred of the student. In order to memorize culture can implement widely in school, mostly rote learning and innovation is needed, one of them by utilizing smartphone and internet technology. In this study developed a mobile learning technology as a new way to memorize the Qur'an to the school with a limited number of religious teachers.

Mobile Learning (M-Learning) is a technique that uses mobile technology and the Internet for learning and education. M-Learning allows students to build their learning experience in a group learning environment (Sarrab, Elgamel, & Aldabbas, 2012). Learning innovation is indispensable because information technology plays a beneficial role to work and learn, information technology must be optimized to bring progress in the education system (Bahera, 2013). The education must be able to absorb new technologies to improve the quality of learning (Camilleri &
Camilleri, 2017). Further, M-Learning is one manifestation of an irreversible change due to the influence of smartphone technology and the Internet (Delgado Cepeda, 2017). Several studies have shown that many learners who tend to use their mobile devices for music, social media/networking, and gaming but not for education (Li (Michael), 2017); therefore, we need a system that is designed to be efficient to be able to resolve the problems of education problems (Hajri, Hafeez, & Azhar NV, 2019). People adopt technology to blend in or connect with others (P & R, 2002), so we need a unique design for rote learning to be active and efficient. Teachers can handle many students to optimize the timing of holidays or when the student at home. Expectations of effort confirm that when technology is easy to use and requires less effort is one reason why users adopt a system (J, M, & A, 2011).

2. DESIGN AND ARCHITECTURE

Research into design has been approached both from the general perspective of design guidelines and frameworks (Parsons, Ryu & Cranshaw, 2007) (Parsons, Sebuah Pembelajaran Tentang Seluler oleh Timeline dan Mind Map, 2014). We use architecture as the fundament of the mobile learning environment at the beginning of the study. Another goal is to attract the interest of students in memorizing the Quran and improve its capabilities. In fact, when smart phones and tablets land in the hands of teachers and students and a number of sites offer on-line education at no cost, there is an assumption that adopting for it will take a leap. However when EDX was launched even Har-vard's faculty argued about its impact on the current system (RJ, 2012). In addition, because technological gadgets can influence students' social emotions, balancing and controlling that use is necessary (Ashari, 2018). Teachers can handle many
students by optimizing the free time at home with formed mobile devices, the internet, and social media. In this study, the system is designed to create mobile applications that are connected and controlled to the server (Figure 1). There are two modules, the first so-called mobile application or modules. There are two modules, namely students module that used for memorizing and the other module called the teacher module that used for monitoring.

Figure 1. M-Learning Architecture

We design the student module, as shown in Figure 2.A. Social influence technology is no longer significant (Hao, et al., 2014). The designed is unique which student can be used to memorize repeatedly. While the student is practicing, the system randomly sampling the student's voice. The sampling voice automatically sends to the server as the MP3 file. Student module have a recording system and international qory sound. Student can replay the recording voice for self-evaluating by comparing with the reading voice of international qory; it is mean that student can do the self-voice correction. The module also records the mouse "click" as student activity detection.
Teacher module (Figure 2b) have the facility to view a listing of students who are monitored and mentored teachers. We call this module as a monitoring module. In recent years, projects that have been carried out for the purpose of both instructional support and improving functionality have increased interactions between teachers and students (Göksu & Atici b). This module, equipped with a button for verse selection a verse and assignment link for detail checking. In the list of students, there is a link to activate WhatsApp API as a means to communicate privately. Teachers can monitor and check the details of student activities, including sampling sound rote. The teacher can see the time, the number of clicks, and which verse already read by the students. We design the interface as simple as possible but handy to carry out monitoring and mentoring activities. Teachers are very free to provide feedback, confirming readings, motivating individually on each student by using WhatsApp.
Figure 3. Activity Diagram

Figure 3 shows the activity diagram of the modules. There is three essential part of the diagram activity, including user, system, and server. Those three components are inter-related; the user can select multiple menus in the system. The system implements the method using some features; the first feature is images showing, how to display an image is using the HTML code. The "<img src='">" is very useful here for connecting the image and an action. There is so many "action," one of its is to hide or show the image. We can see in the mobile display the red and black loudspeaker. The black image is for playing the core's sound while the red one for playing the recording. In this module, we cannot hear the qory sound and recording sound together. One image disables other images and vice versa. This feature is very use full when the user will make memorization. When we press the button to record the user voice automatically picture paragraph hide. The steps to hide the image of the verse the image hide and show mechanism. We also use a try-catch. This mechanism removes error state, which can stop the application. Another feature is the sound randomly sampling system. This mechanism will initiate if the phone detects a specific minimal sound level. The system saves the sound as an MP3 file and sends it to the server using AJAX mechanism. The system using Javascript code for all mechanism handling, including multimedia
controlling, file saving, file reading, synchronization, and mouse action-response mechanism.

3. Result

Research carried out by tests on 32 students in the school as a user. Before students use the application, the teacher asks her students to use Manuscripts memorize then deposited rote. Here are the results of a comparison test using the Manuscripts and applications.

**Experiment Result**

We see in the control group. Figure 4 shows a standard measurement from points 0 to 4. The average student memorizing using the Qur'an book gets point 2 for reading speed. It was seen that there was change from point 3.5 to 2, meaning that students had not fully memorized using the Mushaf.

Meanwhile for reading comprehension using Manuscripts students get point 3; there seems to be a decrease from point 3.5 to 3. This means that the level of reading comprehension of students is good though not perfect. If they can master reading and reading correctly, it is very likely that students' memorization will be correct. For self-memorization, the average student gets point 1. There is a decrease from point 3.5 to 1, it means that the level of correction of students is practically low. For the average interest students get point 2; seen a decrease from point 3.5 to 2 means that their level of interest is still lacking. The average memorizing frequency students get point 2, from point 3.5 to 2 means the memorization frequency is less.
Interviews with teachers to know their response after the use of the application. We obtained information from the teacher after running the system.

They expressed interest to use because it is an alternative to conducting recitation of the Qur'an. Students will use current technology to improve their efficiency (Tarhini, El-Masri, ali, & Serrano, 2016). However, it is still not fluent because the first time using a system like this. There is no obligation or additional work of teachers to supervise and inspect the activities and results of student records. For teachers who try this application are happy to use because it allows present, but they still thinking about how to start its program, mainly related to the school's academic rules.

4. Discussion

The purpose of this study was to gather information about the effectiveness of the application for students that includes speed memorization, reading comprehension, error correction, interest memorize, and frequency (activity). Students taught in traditional methods are less enthusiastic and motivated during the learning
process. Tests conducted for a middle school learning group in two days activity. We divided the activity into two different class activities, those act as a control group and an experiment group. The control group teaches using mushaf (book) and murojaah method, while the experiment group teaches using mobile learning system (application). After all the experiments done, we summarize the performance of students verses memorizing. Figure 4 shows the experiment result. The average student from control group using the "murojaah" method is slower than the experiment group.

Next we look at the group experiments to see memorization performance using the application. Figure 5 shows the average student gained point 2.5 for speed; seen changes in data from point 3.5 to 2.5. This shows the speed at which students memorize better than the control group at position 2. For reading comprehension the average student gets point 3, there appears to be a change from point 3.5 to 3. This means that students have a pretty good reading comprehension; from the results of the trial using the Manuscripts and the application there is no difference because getting the same point is 3. For the point of reading errors using the application the average student gets 2, while in the control group students get point 1. This shows the qori reading facility is useful for correcting memorization mistakes. For students' interest in getting point 3, it means that students are more interested in using the application compared to books because of some features that facilitate the memorization process. Finally, for the frequency of memorization activities using the application the average student gets point 2.5; this is higher than using books where student points are 2; it means students memorize using the application more often than using books.
Figure 5. Result Rate Memorization Students

In Figure 5 described the average deposit rote students during the experiment, from experiments conducted over four days, we specify the hour intensifies About 5 hours, start from 0 to 300 minutes, the experiment results using the Manuscripts minute average 0-60 students can collect as much as 1 verse memorization, at 60-120 minutes Stratas average students can deposit as much as 2 verse memorization, in minutes to 120-180 students can deposit as much as 3 verse memorization, at minute average 180-240 students can deposit as much as 5 verse memorization, at minute average 240-300 students can deposit rote 7 paragraph. Of the two pictures data image number 4 and 5 can be concluded that the effectiveness of the application does not need to doubt, in addition to the two above data, the results of our review of the student feels supervised by teachers, because there are features that send the rote last into the server, then connect to the teacher module.

From the experimental results, we conclude that the student module in the form of mobile learning to memorize the Koran has the potential to increase the speed of memorizing, increasing the frequency of memorizing, making students more actively to try the application, make it easier for teacher performance, and increase
students' understanding of how to read Qur'an is excellent and accurate. In general, students memorize not monitored by anyone; it is most likely with the development of mobile learning to memorize the Koran can help students to be more frequent. Mobile devices have various distinctive features such as individualized interfaces, real-time access to information, context sensitivity, instant communication, and feedback (Sung, Chang, & Liu, 2016). The experimental results are consistent with the user's comments that the student after trying, comment students when compared to using the old methods, modules, students will be more promising. After seeing the test results of students feel motivated, they will use this application as well as possible.

Features of the module students are still in the development stage, there are still many in need of testing and analysis of data, so far there has been no shortage of significant applications, but we need to add the feature to display the score or similarity value with a qory, so students do not need to be corrected by means of manual. With features that are currently available, the student measure his ability to listen to the recording, while hearing students also sometimes no harm, for example, the reading "wamaa" requires two beats long, but by the students only read one beats long, and most students do not realize their mistakes, so that if one reads it will happen when the correct on memorization,

In the development of mobile applications that are used to memorize the Holy Qur'an. Studies report that resistance to change plays an important role in accepting technology in education (Al-Hunaiyyan, Alhajri, & Al-Sharhan, 2018). the ultimate goal is to increase students' interest in memorizing, increase the frequency of memorization, and increase the speed of memorizing. So with this study, students are expected to be motivated in the process of
memorizing the Quran. Coupled with the advantages of using mobile learning as described previously, this application quiet intended for students, so that can be used anywhere and anytime, especially outside of school hours. Making these applications, we use Courselab software to integrate the learning material in a learning module. Besides that, the framework to convert from the desktop to mobile use software framework PhoneGap and HTML5 + JavaScript as the programming language.

5. References


Ibid. (n.d.). Ibid.


Ibid. (n.d.). Ibid.


*"13th International Conference Mobile Learning, pp. 84-88, 2017."*
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1. Presentasi Hasil Research