

## LAMPIRAN

PRETEST (Pada tanggal \_\_/\_\_/\_\_\_\_)

### KUESIONER

#### *THE INTEGRATION OF GAMES FOR COLLABORATIVE LEARNING*

Saya mengucapkan terima kasih atas kesediaan Anda mengisi kuesioner ini. Tujuan kuesioner ini adalah mengetahui pendapat Anda mengenai penggunaan permainan (*games*) untuk pembelajaran kolaboratif. Segala informasi yang Anda berikan dalam kuesioner ini bersifat konfidensial.

Atas kesediaan dan kerjasama Anda, saya mengucapkan terima kasih.

---

---

#### **Petunjuk:**

Berilah tanda centang (✓) pada jawaban yang menurut Anda paling tepat.

#### **Data Responden**

Jenis Kelamin :  Perempuan  Laki-laki  
Angkatan :  2013  2014  2015

#### **Pertanyaan**

1. Bagaimana perasaan Anda setelah membuat *game* bersama-sama?  
 Sangat Senang  Senang  Biasa  Kurang Senang  Tidak Senang
2. Apakah Anda suka membuat pertanyaan di dalam *game*?  
 Sangat Suka  Suka  Biasa  Kurang Suka  Tidak Suka
3. Bagaimana tingkat kesulitan pembuatan *game* ini?  
 Sangat Mudah  Mudah  Biasa  Sulit  Sangat Sulit
4. Seberapa jauh *template* yang disediakan membantu Anda dalam pembuatan *game*?  
 Sangat Terbantu  Terbantu  Biasa  Kurang Terbantu  Tidak Terbantu
5. Apakah Anda setuju pembuatan *game* dipakai untuk belajar bersama?  
 Sangat Setuju  Setuju  Biasa  Kurang Setuju  Tidak Setuju
6. Apakah Anda tertarik untuk membuat *game* lainnya dengan topik bahasan yang berbeda?

Sangat Tertarik  Tertarik  Biasa  Kurang Tertarik  Tidak Tertarik

7. Apakah metode belajar dengan cara membuat *game* membuat Anda bersemangat?

Sangat Semangat  Semangat  Biasa  Kurang Semangat  Tidak Semangat

8. Apakah pembuatan *game* dapat memenuhi kebutuhan Anda untuk dalam belajar akan suatu hal?

Sangat Terpenuhi  Terpenuhi  Biasa  Kurang Terpenuhi  Tidak Terpenuhi

9. Apakah Anda tertarik mengajarkan cara pembuatan *game* untuk belajar bersama?

Sangat Tertarik  Tertarik  Biasa  Kurang Tertarik  Tidak Tertarik

10. Apakah Anda tertarik membagikan hasil *game* yang telah dibuat kepada orang lain?

Sangat Tertarik  Tertarik  Biasa  Kurang Tertarik  Tidak Tertarik

11. Menurut Anda, seberapa yakinkah *game* yang Anda hasilkan tersebut dapat digunakan untuk belajar oleh orang lain?

Sangat Yakin  Yakin  Biasa  Kurang Yakin  Tidak Yakin

12. Menurut Anda, seberapa menarik jika *game* yang telah dibuat dapat dimainkan di gadget (tablet/smartphone)?

Sangat Menarik  Menarik  Biasa  Kurang Menarik  Tidak Menarik

13. Menurut Anda, menarikkah penggunaan karakter kartun di dalam *game*?

Sangat Menarik  Menarik  Biasa  Kurang Menarik  Tidak Menarik

14. Menurut Anda, apakah *game* dengan jenis *game Role Playing Game* (RPG) menarik untuk dimainkan?

Sangat Menarik  Menarik  Biasa  Kurang Menarik  Tidak Menarik

15. Apakah Anda tertarik jika diajarkan untuk membuat *game* dengan jenis selain RPG untuk belajar bersama?

Sangat Tertarik  Tertarik  Biasa  Kurang Tertarik  Tidak Tertarik

1. Tuliskan kendala dalam pembuatan *game* untuk belajar bersama.

---

---

2. Tuliskan komponen dalam pembuatan *game* apa saja yang menurut Anda kurang untuk keperluan belajar bersama.

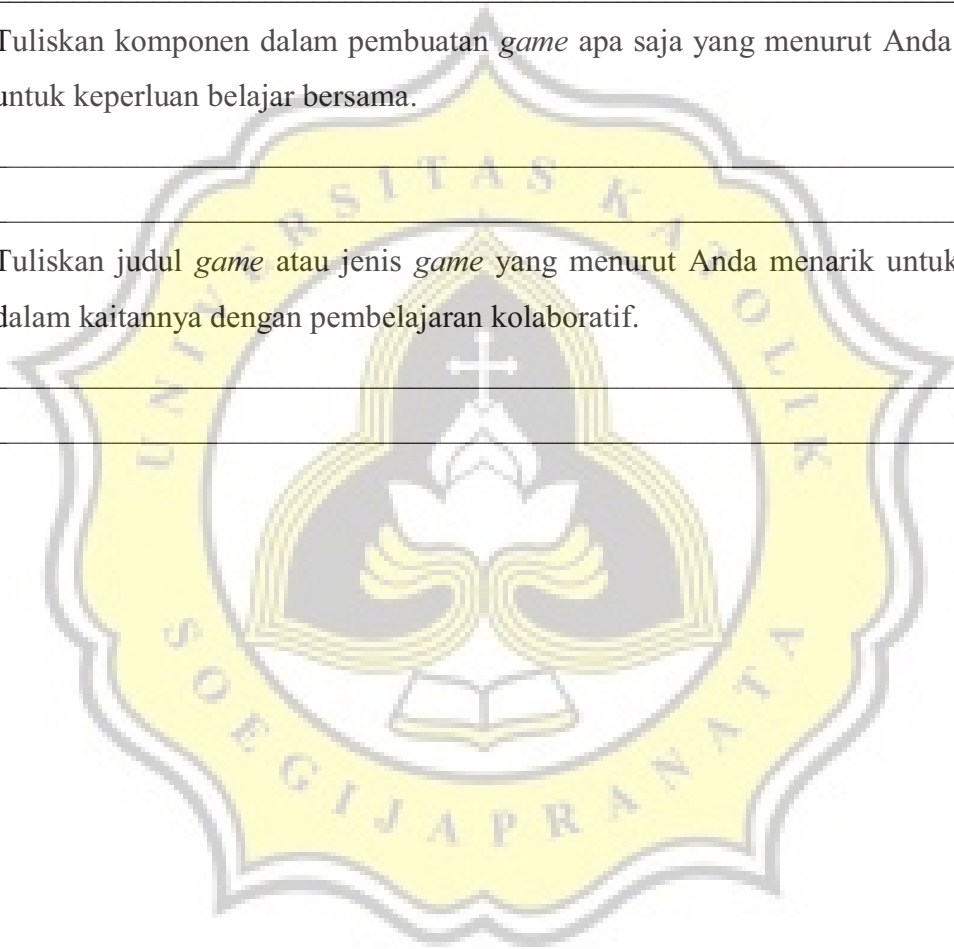
---

---

3. Tuliskan judul *game* atau jenis *game* yang menurut Anda menarik untuk dibuat dalam kaitannya dengan pembelajaran kolaboratif.

---

---



POSTTEST (Pada tanggal \_\_/\_\_/\_\_)

**KUESIONER PENELITIAN**  
**“GAME MAKING FRAMEWORK DEVELOPMENT FOR**  
**COLLABORATIVE LEARNING”**

Peneliti mengucapkan terima kasih atas kesediaan Anda mengisi kuesioner di bawah ini sesuai dengan kondisi yang sebenarnya. Tujuan kuesioner ini yaitu mengetahui pendapat Anda mengenai dampak dari penggunaan *framework* yang dibuat oleh peneliti untuk membantu pengembangan *game* sebagai sarana pembelajaran kolaboratif.

Terima kasih atas kesediaan dan kerjasama Anda.

---

**Petunjuk:**

Berilah tanda silang (X) pada kolom yang telah tersedia dengan memilih sesuai dengan kondisi sebenarnya.

**Data Responden**

Jenis Kelamin :  Perempuan  Laki-laki  
Angkatan :  2013  2014  2015  2016

**Pertanyaan**

1. Apakah Anda senang membuat *game* RPG secara bersama-sama?  
 Sangat Senang  Senang  Biasa  Kurang Senang  Tidak Senang
2. Apakah Anda setuju pembuatan *game* dipakai untuk belajar bersama?  
 Sangat Setuju  Setuju  Biasa  Kurang Setuju  Tidak Setuju
3. Seberapa jauh penggunaan *framework* yang dikembangkan peneliti membantu Anda untuk membuat *game* secara bersama?  
 Sangat Terbantu  Terbantu  Biasa  Kurang Terbantu  Tidak Terbantu
4. Apakah metode belajar dengan cara membuat *game* dengan bantuan *framework* membuat Anda bersemangat?  
 Sangat Semangat  Semangat  Biasa  Kurang Semangat  Tidak Semangat
5. Bagaimana tingkat kemudahan dari fitur yang tersedia di dalam *framework*?  
 Sangat Mudah  Mudah  Biasa  Sulit  Sangat Sulit
6. Apakah fitur-fitur yang tersedia di aplikasi *framework* yang diberikan memenuhi semua kebutuhan Anda dalam pengembangan *game*?

Sangat Terpenuhi  Terpenuhi  Biasa  Kurang Terpenuhi  Tidak Terpenuhi

7. Seberapa besar fitur instalasi yang tersedia di *framework* membantu Anda dalam pengembangan *game*?

Sangat Terbantu  Terbantu  Biasa  Kurang Terbantu  Tidak Terbantu

8. Apakah adanya fitur *add member* (menambahkan anggota) semakin memudahkan Anda dalam membuat *game* secara bersama-sama?

Sangat Mudah  Mudah  Biasa  Sulit  Sangat Sulit

9. Apakah fasilitas *editing* yang disuguhkan yaitu *upload*, *download*, *delete*, dan *synchronize* sangat membantu dalam membuat *game* secara kolaboratif?

Sangat Terbantu  Terbantu  Biasa  Kurang Terbantu  Tidak Terbantu

10. Seberapa jauh *template game* yang disediakan membantu Anda dalam pengembangan *game* untuk materi belajar yang diberikan?

Sangat Terbantu  Terbantu  Biasa  Kurang Terbantu  Tidak Terbantu

12. Apakah Anda tertarik untuk mengembangkan *game* lainnya secara bersama dengan bantuan *framework*?

Sangat Tertarik  Tertarik  Biasa  Kurang Tertarik  Tidak Tertarik

13. Menurut Anda, seberapa menarik jika *game* RPG yang telah Anda buat dapat dimainkan di gadget (tablet/smartphone)?

Sangat Menarik  Menarik  Biasa  Kurang Menarik  Tidak Menarik

14. Apakah Anda sering menggunakan aplikasi *Dropbox*?

Sangat Sering  Sering  Biasa  Jarang  Tidak Pernah

15. Menurut Anda, apakah penggunaan *cloud storage* sebagai tempat penyimpanan sangat memudahkan?

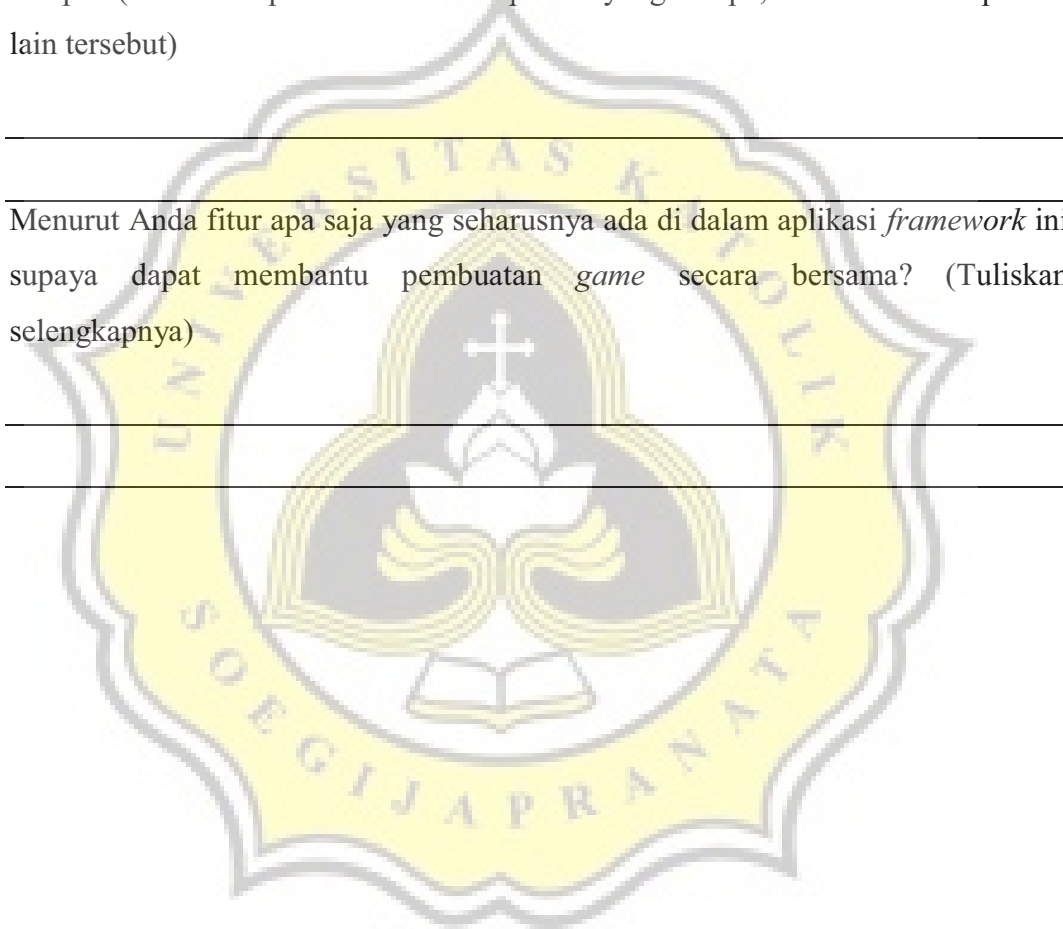
Sangat Mudah  Mudah  Biasa  Sulit  Sangat Sulit

1. Menurut Anda, kekurangan apa saja dari *framework* ini? (Tuliskan selengkapnya)

- 
2. Menurut Anda, fitur apa sajakah yang mempermudah pengembangan *game*?  
(Tuliskan selengkapnya)

- 
3. Apakah Anda pernah menemui atau menggunakan aplikasi *framework* yang serupa? (Jika Anda pernah menemui aplikasi yang serupa, tuliskan nama aplikasi lain tersebut)

- 
4. Menurut Anda fitur apa saja yang seharusnya ada di dalam aplikasi *framework* ini supaya dapat membantu pembuatan *game* secara bersama? (Tuliskan selengkapnya)





Judul Buku: **Mudah Membuat Game Edukasi Berbasis Android**

Tanggal Terbit: 22 Februari 2016

ISBN: 9786020281049

Penulis: Ridwan Sanjaya, Aprilia Ratna Christanti, Michael Satrio Prayogo

Abstrak:

Materi pelajaran akan lebih mudah diserap siswa jika disampaikan dalam bentuk game edukasi. Pertanyaannya, bisakah para pendidik tanpa kemampuan pemrograman membuat game edukasi? Jawabnya, bisa! Dengan RPG Maker MV. RPG Maker MV bisa dipelajari dalam waktu relatif singkat oleh pengguna awam sekalipun. Dengan RPG Maker MV, Anda dapat membuat game edukasi yang dapat dijalankan di gadget berbasis Android.

Berbagai materi pelajaran dapat disampaikan secara lebih menarik, bergantung imajinasi dan kreativitas Anda. Buku ini mengajak Anda untuk menguasai penggunaan RPG Maker MV mulai dari instalasi sampai mengubah aplikasi menjadi paket APK yang bisa disebarakan melalui Google Play.

Meskipun awalnya disusun untuk guru dan praktisi pendidikan, buku ini dapat digunakan oleh siswa, mahasiswa, dan para orangtua yang ingin membuat game berbasis edukasi bagi anak-anaknya. Mari kita sampaikan pelajaran dengan cara yang lebih menyenangkan!



Code form Login:

```
Public Class Login
    Public storedaccestoken As String
    Dim path As String
    Dim FILE_NAME As String
    Dim menuutama As New menuutama
    Dim folderpath As String
    Private Sub Form1_Load(sender As Object, e As EventArgs) Handles MyBase.Load
        Dim registrybrowser As RegistryKey =
Registry.CurrentUser.OpenSubKey("SOFTWARE\Microsoft\Internet
Explorer\Main\FeatureControl\FEATURE_BROWSER_EMULATION", True)
        registrybrowser.SetValue("RPGMakerGameMakingKit.exe", 8000,
RegistryValueKind.DWord)
        Dim clientID = "j6hi200n0ktjexg"
        path =
System.Environment.GetFolderPath(Environment.SpecialFolder.MyDocuments)
        folderpath = path & "RPG development kit"
        FILE_NAME = folderpath & "\myaccestoken.txt"
        Dim logfile = folderpath & "\logfile.txt"
        Dim redirectUri = New Uri("https://www.dropbox.com/1/oauth2/redirect_receiver")
        Dim uri =
String.Format("https://www.dropbox.com/oauth2/authorize?response_type=token&redirec
t_uri={0}&client_id={1}&force_reapprove=true", redirectUri, clientID)
        If System.IO.Directory.Exists(folderpath) = False Then
            System.IO.Directory.CreateDirectory(folderpath)
        End If
        If System.IO.File.Exists(FILE_NAME) = False Then
            System.IO.File.Create(FILE_NAME).Dispose()
        End If
        If System.IO.File.Exists(logfile) = False Then
            System.IO.File.Create(logfile).Dispose()
        End If
        If My.Computer.Network.IsAvailable Then
            If FileLen(FILE_NAME) = 0 Then
                WebBrowser1.Navigate(uri)
            Else
                menuutama.Show()
                Me.Close()
            End If
        Else
            MessageBox.Show("Internet Connection Needed, Please Check you internet
connection or contact your network administrator")
            Me.Close()
        End If
    End Sub
    Private Sub WebBrowser1_DocumentCompleted(sender As Object, e As
WebBrowserDocumentCompletedEventArgs) Handles
WebBrowser1.DocumentCompleted
        If (e.Url.AbsoluteUri.Contains("#access_token")) Then
            Dim accessToken =
HttpUtility.ParseQueryString(e.Url.Fragment.Substring(1))("access_token")
            MessageBox.Show("Synchronizing" + Environment.NewLine + "Please wait")
            If System.IO.File.Exists(FILE_NAME) = False Then
                System.IO.File.Create(FILE_NAME).Dispose()
            End If
            Dim objWriter As New System.IO.StreamWriter(FILE_NAME, False)
            objWriter.Write(accessToken)
            objWriter.Close()
        End If
    End Sub
End Class
```



```

        MessageBox.Show("Your account has been synchronized")
        menuutama.Show()
        Me.Close()
        Me.Cursor = Cursors.AppStarting
    End If
End Sub
End Class

```

Code form Menu Utama:

```

Public Class menuutama
    Private A As DropboxClient
    Dim IList As Object
    Dim sourcepath As String
    Dim FILE_NAME As String
    Dim storedaccesstoken As String
    Dim root
    Dim folder
    Dim foldername
    Dim logfile
    Dim updatestate
    Dim byteuploaded
    Dim sendbasicsize As Integer
    Dim logstrg As String
    Dim info
    Dim totalsize As Integer
    Dim secs As Integer
    Dim constat As Integer
    Sub New()
        InitializeComponent()
        sourcepath =
System.Environment.GetFolderPath(Environment.SpecialFolder.MyDocuments)
        Dim folderpath = sourcepath & "\RPG development kit"
        FILE_NAME = folderpath & "\myaccestoken.txt"
        root = System.Environment.GetFolderPath(Environment.SpecialFolder.UserProfile)
        folder = root & "\Dropbox"
        Dim folders = folder & "\templateCL" & "\Game.rpgproject"
        logfile = folderpath & "\logfile.txt"
        If System.IO.File.Exists(folders) = False Then
            GameEngineToolStripMenuItem.Enabled = False
        Else
            GameEngineToolStripMenuItem.Enabled = True
        End If
        Me.Cursor = Cursors.Default
    End Sub
    Private Sub menuutama_Load(sender As Object, e As EventArgs) Handles
MyBase.Load
        storedaccesstoken = My.Computer.FileSystem.ReadAllText(FILE_NAME)
        If Not FileLen(FILE_NAME) = 0 Then
            If My.Computer.Network.IsAvailable Then
                constat = 1
                checkcon()
                Timer1.Interval = 1000
                Timer1.Start()
                If constat = 1 Then
                    A = New DropboxClient(storedaccesstoken)
                    info = A.Users.GetCurrentAccountAsync
                    akun.Text = "Name : " & info.Result.Name.DisplayName & vbCrLf
                    akun.Text += "Email : " & info.Result.Email & vbCrLf
                End If
            End If
        End If
    End Sub
End Class

```

```

Dim Space = A.Users.GetSpaceUsageAsync
ruangkosong.Text = "Used Spaces : " & filesize(Space.Result.Used) & "
From " & filesize(Space.Result.Allocation.AsIndividual.Value.Allocated)
For Each File In A.Files.ListFolderAsync(String.Empty).Result.Entries()
Dim NewItem As New ListViewItem
NewItem.Text = Path.GetFileName(File.Name)
If File.IsFolder Then
If File.AsFolder.SharedFolderId = String.Empty Then
NewItem.SubItems.Add("Directory")
NewItem.SubItems.Add("-")
NewItem.SubItems.Add("Not shared")
NewItem.ImageIndex = 1
NewItem.Tag = 0
ElseIf File.IsFolder Then
NewItem.SubItems.Add("Directory")
NewItem.SubItems.Add("-")
NewItem.SubItems.Add("shared")
NewItem.ImageIndex = 1
NewItem.Tag = 1
End If
End If
If File.IsFile Then
NewItem.SubItems.Add("File")
NewItem.SubItems.Add(filesize(File.AsFile.Size))
NewItem.ImageIndex = 2
End If
listfile.Items.Add(NewItem)
NewItem.EnsureVisible()
Next
write_log(Date.Now.ToString("dd:MM:yyyy - HH:mm:ss") & "|" & "Login as : "
& " " & info.Result.Email)
End If
Else
MessageBox.Show("Internet Connection Needed, Please Check you internet
connection or contact your network administrator")
Me.Close()
End If
End If
End Sub

Function filesize(ByVal size As Double) As String
Dim type As String() = {"B", "KB", "MB", "GB"}
Dim sizedouble As Double = size
Dim CSA As Integer = 0
While sizedouble >= 1024 AndAlso CSA + 1 < type.Length
CSA += 1
sizedouble = sizedouble / 1024
End While
Return [String].Format("{0:0.##} {1}", sizedouble, type(CSA))
End Function

Private Sub listfile_DoubleClick(sender As Object, e As EventArgs) Handles
listfile.DoubleClick
For Each C As ListViewItem In listfile.SelectedItems
On Error Resume Next
If C.Text = ".." Then
listfile.Items.Clear()
If Not direktori.Text.Substring(0, direktori.Text.LastIndexOf("/") = Nothing Then

```

```

Dim NewItem As New ListViewItem
NewItem.Text = "... "
NewItem.ImageIndex = 2
listfile.Items.Add(NewItem)
End If
direktori.Text = direktori.Text.Substring(0, direktori.Text.LastIndexOf("/"))
write_log(Date.Now.ToString("dd:MM:yyyy - HH:mm:ss") & "|" & "Opening
Directory " & " " & C.Text)
For Each File In A.Files.ListFolderAsync(direktori.Text).Result.Entries
Dim NewItem As New ListViewItem
NewItem.Text = Path.GetFileName(File.Name)
If File.IsFolder Then
If File.AsFolder.SharedFolderId = String.Empty Then
NewItem.SubItems.Add("Directory")
NewItem.SubItems.Add("-")
NewItem.SubItems.Add("Not shared")
NewItem.Tag = 2
NewItem.ImageIndex = 1
Elseif File.IsFolder Then
NewItem.SubItems.Add("Directory")
NewItem.SubItems.Add("-")
NewItem.SubItems.Add("shared")
NewItem.Tag = 1
NewItem.ImageIndex = 1
End If
End If
If File.IsFile Then
NewItem.SubItems.Add("File")
NewItem.SubItems.Add(filesize(File.AsFile.Size))
NewItem.ImageIndex = 2
End If
listfile.Items.Add(NewItem)
NewItem.EnsureVisible()
Next
Else
listfile.Items.Clear()
Dim back As New ListViewItem
back.Text = "... "
back.ImageIndex = 2
listfile.Items.Add(back)
direktori.Text += "/" & C.Text
For Each File In A.Files.ListFolderAsync(direktori.Text).Result.Entries
Dim NewItem As New ListViewItem
NewItem.Text = Path.GetFileName(File.Name)
If File.IsFolder Then
If File.AsFolder.SharedFolderId = String.Empty Then
NewItem.SubItems.Add("Directory")
NewItem.SubItems.Add("-")
NewItem.SubItems.Add("Not shared")
NewItem.ImageIndex = 2
NewItem.Tag = 2
Elseif File.IsFolder Then
NewItem.SubItems.Add("Directory")
NewItem.SubItems.Add("-")
NewItem.SubItems.Add("shared")
NewItem.ImageIndex = 1
NewItem.Tag = 1
End If
End If

```

```

End If
If File.IsFile Then
   NewItem.SubItems.Add("File")
   NewItem.SubItems.Add(filesize(File.AsFile.Size))
   NewItem.ImageIndex = 2
End If
listfile.Items.Add(NewItem)
NewItem.EnsureVisible()
Next
End If
Next
End Sub

Private Async Sub LogoutToolStripMenuItem_Click(sender As Object, e As EventArgs)
Handles LogoutToolStripMenuItem.Click
    write_log(Date.Now.ToString("dd:MM:yyyy - HH:mm:ss") & "|" & "Logging Out as : " &
" " & info.Result.Email)
    write_log("-----")
    Timer1.Stop()
    Await A.Auth.TokenRevokeAsync
    If System.IO.File.Exists(FILE_NAME) = True Then
        System.IO.File.Delete(FILE_NAME)
    End If
    Dim login As New Login
    login.Show()
    Me.Close()
End Sub

Private Sub DeleteToolStripMenuItem_Click(sender As Object, e As EventArgs)
Handles DeleteToolStripMenuItem.Click
    For Each C As ListViewItem In listfile.SelectedItems
        write_log(Date.Now.ToString("dd:MM:yyyy - HH:mm:ss") & "|" & "Deleting" & " " &
C.Text)
        Dim Del = A.Files.DeleteAsync(direktori.Text & "/" & C.Text)
        C.Remove()
        write_log(Date.Now.ToString("dd:MM:yyyy - HH:mm:ss") & "|" & C.Text & " " &
"Deleted")
        MsgBox("Successfully Deleted")
    Next
End Sub

Public Async Sub UploadToolStripMenuItem1_Click(sender As Object, e As
EventArgs) Handles UploadToolStripMenuItem1.Click
    Using FolderBrowserDialog As New FolderBrowserDialog
        If FolderBrowserDialog.ShowDialog() <> Windows.Forms.DialogResult.OK Then
Return
        Dim alamat As String = FolderBrowserDialog.SelectedPath
        Dim rootname As String = Path.GetFileName(alamat).ToString
        Dim hitungawal = Directory.EnumerateDirectories(alamat)
        write_log(Date.Now.ToString("dd:MM:yyyy - HH:mm:ss") & "|" & "Upload Folder "
& " " & rootname)
        If Not hitungawal.Any() Then
            MsgBox("Mulai")
            Await uploadberkas(alamat, rootname)
        Else
            Dim toproot As String = Directory.GetParent(alamat).ToString
            Dim folderlist = Directory.GetDirectories(alamat)
            Dim foldersize As New DirectoryInfo(alamat)

```

```

Dim size As Integer
Dim total As Integer
For Each fileorfolder In foldersize.GetFiles("*.**", SearchOption.AllDirectories)
    size += fileorfolder.Length
    total += 1
Next
totalsize = total
Dim filelist = Directory.GetFiles(alamat)

For Each arsip As String In folderlist
    Await LoadSubDirs(arsip, toproot, rootname, size)
Next
For Each berkas As String In filelist
    totalsize -= 1
    Dim fileinfos = Path.GetFileName(berkas)
    Dim basicsize = My.Computer.FileSystem.GetFileInfo(berkas)
    sendbasicsize = basicsize.Length
    Dim jalur = Path.GetFullPath(berkas)
    Dim tujuan = direktori.Text & "/" & jalur.Substring(toproot.Length +
1).Replace("\", "/")
    Await UploadFileforfolder(berkas, tujuan, sendbasicsize, size, rootname,
fileinfos, totalsize)
Next
End If
End Using
End Sub

Private Async Function LoadSubDirs(dir As String, topdir As String, rootname As
String, size As Integer) As Task
    Dim subdirectoryEntries As String() = Directory.GetDirectories(dir)
    Dim filelist = Directory.GetFiles(dir)
    For Each subdirectory As String In subdirectoryEntries
        Await LoadSubDirs(subdirectory, topdir, rootname, size)
    Next
    For Each berkas As String In filelist
        totalsize -= 1
        Dim fileinfos = Path.GetFileName(berkas)
        Dim basicsize = My.Computer.FileSystem.GetFileInfo(berkas)
        sendbasicsize = basicsize.Length
        Dim jalur = Path.GetFullPath(berkas)
        Dim tujuan = direktori.Text & "/" & jalur.Substring(topdir.Length + 1).Replace("\",
"/")
        Await UploadFileforfolder(berkas, tujuan, sendbasicsize, size, rootname, fileinfos,
totalsize)
    Next
End Function

Private Async Function uploadberkas(alamat, rootname) As Task
    Dim nama As String = New DirectoryInfo(alamat).Name.ToString
    Dim Createfolder = A.Files.CreateFolderAsync(direktori.Text & "/" & nama)
    foldername = Path.GetFileName(Createfolder.Result.Name)
    Dim hitungfile = Directory.EnumerateFiles(alamat)
    Dim foldersize As New DirectoryInfo(alamat)
    Dim size As Integer
    Dim total As Integer
    For Each fileorfolder In foldersize.GetFiles("*.**", SearchOption.AllDirectories)
        size += fileorfolder.Length
        total += 1
    
```



```

Next
formrefresh(1)
For Each berkas As String In hitungfile
    total -= 1
    Dim namaberkas = berkas
    Dim fileinfos = Path.GetFileName(berkas)
    Dim filetempat = Path.GetFullPath(berkas)
    Dim basicsize = My.Computer.FileSystem.GetFileInfo(filetempat)
    sendbasicsize = basicsize.Length
    Dim tujuan = direktori.Text & "/" & foldername & "/" & Path.GetFileName(berkas)
    Await UploadFileforfolder(berkas, tujuan, sendbasicsize, size, rootname, fileinfos,
total)
Next
End Function

```

```

Async Function UploadFileforfolder(localPath As String, remotePath As String,
filebasicsize As Integer, size As Integer, rootname As String, filenames As String, total As
Integer) As Task

```

```

    Me.Cursor = Cursors.WaitCursor
    Me.Enabled = True
    Const ChunkSize As Integer = 1024 * 1024
    Using fileStream = File.Open(localPath, FileMode.Open)
        If fileStream.Length <= ChunkSize Then
            count.Text = total & " Left"
            Await A.Files.UploadAsync(remotePath, body:=fileStream)
            write_log(Date.Now.ToString("dd:MM:yyyy - HH:mm:ss") & "|" & filenames & "
Uploaded")
        Else
            Await Me.ChunkUploadfolder(remotePath, fileStream, ChunkSize, filebasicsize,
rootname, filenames, total)
        End If
        If total = 0 Then
            write_log(Date.Now.ToString("dd:MM:yyyy - HH:mm:ss") & "|" & rootname &
"Folder Uploaded")
            MessageBox.Show("Succesfully uploaded")
            Me.Cursor = Cursors.Default
            Me.Enabled = True
            formrefresh(1)
        End If
    End Using
End Function

```

```

Private Async Function ChunkUploadfolder(path As [String], stream As FileStream,
chunkSize As Integer, filebasic As Integer, rootname As String, filename As String, total
As Integer) As Task

```

```

    Dim numChunks As Integer = CInt(Math.Ceiling(CDbl(stream.Length) / chunkSize))
    Dim buffer As Byte() = New Byte(chunkSize - 1) {}
    Dim sessionId As String = Nothing
    For idx As Integer = 0 To numChunks - 1
        Dim bytesRead = stream.Read(buffer, 0, chunkSize)
        Using memStream = New MemoryStream(buffer, 0, bytesRead)
            If idx = 0 Then
                Dim result = Await A.Files.UploadSessionStartAsync(False, memStream)
                sessionId = result.SessionId
            Else
                Dim cursor = New UploadSessionCursor(sessionId,
CULng(CUInt(chunkSize) * CUInt(idx)))
                byteuploaded = cursor.Offset
            End If
        End Using
    Next
End Function

```

```

        kondisi.Text = filesize(byteuploaded) & " From " & filesize(filebasic)
        count.Text = path & filename & " " & total & " Left"
        If idx = numChunks - 1 Then
            Dim fileMetadata As FileMetadata = Await
A.Files.UploadSessionFinishAsync(cursor, New CommitInfo(path), memStream)
            write_log(Date.Now.ToString("dd:MM:yyyy - HH:mm:ss") & "|" & filename
& "File Uploaded")
            kondisi.Text = filesize(filebasic) & " Uploaded"
        Else
            Await A.Files.UploadSessionAppendV2Async(cursor, False, memStream)
        End If
    End If
End If
If total = 0 Then
    MessageBox.Show("Folder Uploaded")
    kondisi.Text = filesize(filebasic) & " Has been Uploaded"
    Me.Cursor = Cursors.Default
    Me.Enabled = True
    formrefresh(1)
End If
End Using
Next
End Function

Private Async Sub UploadToolStripMenuItem2_Click(sender As Object, e As
EventArgs) Handles UploadToolStripMenuItem2.Click
    Dim C As New OpenFileDialog
    C.Title = "Choose File"
    C.Filter = "All Files (*.*)|*.*"
    If C.ShowDialog = Windows.Forms.DialogResult.OK Then
        Dim fileinfos = Path.GetFileName(C.FileName)
        Dim filetempat = Path.GetFullPath(C.FileName)
        Dim basicsize = My.Computer.FileSystem.GetFileInfo(filetempat)
        sendbasicsize = basicsize.Length
        Dim tempat As String = direktori.Text & "/" & fileinfos
        write_log(Date.Now.ToString("dd:MM:yyyy - HH:mm:ss") & "|" & "Upload" & " " &
C.FileName)
        Await Upload(filetempat, tempat, sendbasicsize, fileinfos)
    End If
End Sub

Async Function Upload(localPath As String, remotePath As String, filebasicsize As
Integer, filename As String) As Task
    Const ChunkSize As Integer = 4096 * 1024
    Me.Cursor = Cursors.WaitCursor
    Using fileStream = File.Open(localPath, FileMode.Open)
        If fileStream.Length <= ChunkSize Then
            Await A.Files.UploadAsync(remotePath, body:=fileStream)
            MessageBox.Show("Upload Complete")
            write_log(Date.Now.ToString("dd:MM:yyyy - HH:mm:ss") & "|" & filename & " "
& "Uploaded")
            Me.Cursor = Cursors.Default
            formrefresh(1)
        Else
            Await Me.ChunkUpload(remotePath, fileStream, ChunkSize, filebasicsize,
filename)
        End If
    End Using
End Function

```



```

Private Async Function ChunkUpload(path As [String], stream As FileStream,
chunkSize As Integer, filebasic As Integer, filename As String) As Task
    Dim numChunks As Integer = CInt(Math.Ceiling(CDbl(stream.Length) / chunkSize))
    Dim buffer As Byte() = New Byte(chunkSize - 1) {}
    Dim sessionId As String = Nothing
    For idx As Integer = 0 To numChunks - 1
        Dim bytesRead = stream.Read(buffer, 0, chunkSize)
        Using memStream = New MemoryStream(buffer, 0, bytesRead)
            If idx = 0 Then
                Dim result = Await A.Files.UploadSessionStartAsync(False, memStream)
                sessionId = result.SessionId
            Else
                Dim cursor = New UploadSessionCursor(sessionId,
CUlng(CUInt(chunkSize) * CUInt(idx)))
                byteuploaded = cursor.Offset
                MsgBox.Show("Upload Starting")
                kondisi.Text = filesize(byteuploaded) & "From" & filesize(filebasic)
                If idx = numChunks - 1 Then
                    Dim fileMetadata As FileMetadata = Await
A.Files.UploadSessionFinishAsync(cursor, New CommitInfo(path), memStream)
                    write_log(Date.Now.ToString("dd:MM:yyyy - HH:mm:ss") & "|" & filename
& " " & "Uploaded")
                    rightclick.Enabled = True
                    Me.Cursor = Cursors.Default
                Else
                    Await A.Files.UploadSessionAppendV2Async(cursor, False, memStream)
                End If
            End If
        End Using
    Next
    MsgBox.Show("Upload Complete")
    kondisi.Text = "upload complete" & filesize(filebasic) & " has been uploaded"
    formrefresh(1)
End Function

```

```

Private Sub DownloadToolStripMenuItem2_Click(sender As Object, e As EventArgs)
Handles DownloadToolStripMenuItem2.Click
    For Each D As ListViewItem In listfile.SelectedItems
        Dim C As New SaveFileDialog
        C.Title = "Save File To"
        C.Filter = "All Files (*.*)|*.*"
        C.FileName = Path.GetFileName(D.Text)
        If C.ShowDialog = Windows.Forms.DialogResult.OK Then
            DownloadFile(D.Text, C.FileName)
        End If
    Next
End Sub

```

```

Async Sub DownloadFile(Filepath As String, Final As String)
    Dim Down = Await A.Files.DownloadAsync(direktori.Text & "/" &
Path.GetFileName(Filepath))
    File.WriteAllBytes(Final, Await Down.GetContentAsByteArrayAsync)
    MsgBox("Successfully Downloaded")
End Sub

```

```

Private Async Sub ShareToolStripMenuItem2_Click(sender As Object, e As
EventArgs) Handles ShareToolStripMenuItem2.Click

```

```

For Each C As ListViewItem In listfile.SelectedItems
    Dim isfoldershared = C.Tag
    If isfoldershared = 1 Then
        MessageBox.Show("Folder already Shared please add the member of the
folder")
    Else
        Dim sharefolder = Await A.Sharing.ShareFolderAsync(direktori.Text & "/" &
C.Text)
        Dim sharedfolderid = ""
        If (sharefolder.IsAsyncJobId) Then
            While (True)
                Dim shareFolderJobStatus = Await
A.Sharing.CheckShareJobStatusAsync(sharefolder.AsAsyncJobId.Value)
                If (shareFolderJobStatus.IsFailed) Then
                    MessageBox.Show("Sharing folder failed: ",
shareFolderJobStatus.IsFailed.ToString)
                    Return
                ElseIf (shareFolderJobStatus.IsInProgress) Then
                    Console.WriteLine("Sharing folder in progress...")
                    System.Threading.Thread.Sleep(500)
                ElseIf (shareFolderJobStatus.IsComplete) Then
                    MessageBox.Show("Sharing folder complete.")
                    sharedfolderid =
shareFolderJobStatus.AsComplete.Value.SharedFolderId
                End If
            End While
            ElseIf (sharefolder.IsComplete) Then
                sharedfolderid = sharefolder.AsComplete.Value.SharedFolderId
            Else
                Return
            End If
            Dim email = InputBox("Please input the member dropbox email", "email")
            If Not email = String.Empty Then
                Dim member = {New AddMember(New MemberSelector.Email(email),
accessLevel:=AccessLevel.Editor.Instance)}
                Await A.Sharing.AddFolderMemberAsync(sharedFolderId:=sharedfolderid,
members:=member)
                MessageBox.Show("Member Added to the Folder")
                write_log(Date.Now.ToString("dd:MM:yyyy - HH:mm:ss") & "|" & C.Text & "
Shared " & email & " Added as First member")
                formrefresh(1)
            End If
        End If
    Next
End Sub

```

```

Private Async Sub UnshareToolStripMenuItem_Click(sender As Object, e As
EventArgs) Handles UnshareToolStripMenuItem.Click
    For Each C As ListViewItem In listfile.SelectedItems
        Dim sharefolder = Await A.Files.GetMetadataAsync(direktori.Text & "/" & C.Text)
        Dim sharedfolderid = sharefolder.AsFolder.SharedFolderId.ToString
        If sharedfolderid = String.Empty Then
            MessageBox.Show("Not Shared Folder")
        Else
            Dim member = A.Sharing.ListFolderMembersAsync(sharedfolderid,
limit:=100).Result.Users
            Dim usersOutput = member.First(Function(i) i.AccessType.IsOwner)
            Dim owner = usersOutput.User.AccountId

```

```

Dim loggedaccount = A.Users.GetCurrentAccountAsync
Dim id = loggedaccount.Result.AccountId
If owner = id Then
    Await A.Sharing.UnshareFolderAsync(sharedfolderid, False)
    MessageBox.Show("Folder Unshared")
    write_log(Date.Now.ToString("dd:MM:yyyy - HH:mm:ss") & "|" & C.Text & "
Unshared ")
    formrefresh(1)
Else
    MessageBox.Show(" You dont Have Permission")
End If
End If
Next
End Sub

```

```

Private Async Sub AddMemberToolStripMenuItem1_Click(sender As Object, e As
EventArgs) Handles AddMemberToolStripMenuItem1.Click
    For Each C As ListViewItem In listfile.SelectedItems
        Dim sharefolder = Await A.Files.GetMetadataAsync(direktori.Text & "/" &
C.Text)
        Dim sharedfolderid = sharefolder.AsFolder.SharedFolderId.ToString
        Dim email = InputBox("Please input the member dropbox email", "email")
        If Not email = String.Empty Then
            Dim member = {New AddMember(New MemberSelector.Email(email),
accessLevel:=AccessLevel.Editor.Instance)}
            Await A.Sharing.AddFolderMemberAsync(sharedFolderId:=sharedfolderid,
members:=member)
            MessageBox.Show("Member Added to Folder")
            write_log(Date.Now.ToString("dd:MM:yyyy - HH:mm:ss") & "|" & email &
"Added member To " & C.Text)
        End If
    Next
End Sub

```

```

Private Async Sub AddMemberToolStripMenuItem_Click(sender As Object, e As
EventArgs)
    For Each C As ListViewItem In listfile.SelectedItems
        Dim filepath As String = direktori.Text & "/" & C.Text
        Dim email = InputBox("Please input the member dropbox email", "email")
        If Not C.Name.EndsWith(".jpg") And C.Name.EndsWith(".mp3") And
C.Name.EndsWith(".zip") And Not email = String.Empty Then
            Dim memberfile = {New MemberSelector.Email("email")}
            Dim process = Await A.Sharing.AddFileMemberAsync(filepath, memberfile,
accessLevel:=AccessLevel.Editor.Instance)
            MessageBox.Show("Member Added to the file")
            write_log(Date.Now.ToString("dd:MM:yyyy - HH:mm:ss") & "|" & email & "
Member Added")
        Else
            MessageBox.Show("Incompatible file format to upload, Please upload this file
to a folder and share it")
        End If
    Next
End Sub

```

```

Private Sub NotifToolStripMenuItem_Click(sender As Object, e As EventArgs) Handles
NotifToolStripMenuItem.Click
    write_log(Date.Now.ToString("dd:MM:yyyy - HH:mm:ss") & "|" & "Opening
Invitation")

```

```
Dim notif As New notif
notif.Show()
Me.Hide()
End Sub
```

```
Private Sub CreateFolderToolStripMenuItem_Click(sender As Object, e As EventArgs)
Handles CreateFolderToolStripMenuItem.Click
Dim Name As String = InputBox("Folder Name", "Create Folder", , -1, -1)
Dim Create = A.Files.CreateFolderAsync(direktori.Text & "/" & Name)
write_log(Date.Now.ToString("dd:MM:yyyy - HH:mm:ss") & "|" & "Folder" & Name &
" Member Added")
Dim NewItem As New ListViewItem
NewItem.Text = Path.GetFileName(Create.Result.Name)
NewItem.SubItems.Add("Directory")
NewItem.ImageIndex = 0
listfile.Items.Add(NewItem)
MsgBox("Successfully Created Folder")
End Sub
```

```
Private Sub RefreshToolStripMenuItem_Click(sender As Object, e As EventArgs)
Handles RefreshToolStripMenuItem.Click
listfile.Items.Clear()
For Each File In A.Files.ListFolderAsync(String.Empty).Result.Entries()
Dim NewItem As New ListViewItem
NewItem.Text = Path.GetFileName(File.Name)
If File.IsFolder Then
If File.AsFolder.SharedFolderId = String.Empty Then
NewItem.SubItems.Add("Directory")
NewItem.SubItems.Add("-")
NewItem.SubItems.Add("Not shared")
NewItem.ImageIndex = 1
Elseif File.IsFolder Then
NewItem.SubItems.Add("Directory")
NewItem.SubItems.Add("-")
NewItem.SubItems.Add("shared")
NewItem.ImageIndex = 1
End If
End If
If File.IsFile Then
NewItem.SubItems.Add("File")
NewItem.SubItems.Add(filesize(File.AsFile.Size))
NewItem.ImageIndex = 2
End If
listfile.Items.Add(NewItem)
NewItem.EnsureVisible()
Next
End Sub
```

```
Private Sub AboutToolStripMenuItem_Click(sender As Object, e As EventArgs)
Handles AboutToolStripMenuItem.Click
Dim about As New AboutBox1
about.Show()
Me.Hide()
End Sub
```

```
Private Sub OpenFolderToolStripMenuItem_Click(sender As Object, e As EventArgs)
Handles OpenFolderToolStripMenuItem.Click
For Each C As ListViewItem In listfile.SelectedItems
```



```

        Dim filepath As String = folder
        write_log(Date.Now.ToString("dd:MM:yyyy - HH:mm:ss") & "|" & "Opening " &
filepath)
        Process.Start(filepath)
    Next
End Sub

Private Sub GameEngineToolStripMenuItem_Click(sender As Object, e As EventArgs)
Handles GameEngineToolStripMenuItem.Click
    Dim folders = folder & "templateCL" & "\Game.rpgproject"
    write_log(Date.Now.ToString("dd:MM:yyyy - HH:mm:ss") & "|" & "Opening " &
folders)
    Process.Start(folders)
End Sub

Private Sub OpenRPGMakerToolStripMenuItem_Click(sender As Object, e As
EventArgs) Handles OpenRPGMakerToolStripMenuItem.Click
    Dim rpg =
System.Environment.GetFolderPath(Environment.SpecialFolder.ProgramFilesX86)
    Dim file = rpg & "KADOKAWA\RPGMV" & "\RPGMV.exe"
    write_log(Date.Now.ToString("dd:MM:yyyy - HH:mm:ss") & "|" & "Opening " & file)
    Shell(file)
End Sub

Private Sub DropboxDekstopToolStripMenuItem_Click(sender As Object, e As
EventArgs) Handles DropboxDekstopToolStripMenuItem.Click
    Dim drop =
System.Environment.GetFolderPath(Environment.SpecialFolder.ProgramFilesX86)
    Dim file = drop & "\Dropbox\Client" & "\Dropbox.exe"
    write_log(Date.Now.ToString("dd:MM:yyyy - HH:mm:ss") & "|" & "Opening " & file)
    Shell(file)
End Sub

Private Async Sub ShowMemberToolStripMenuItem1_Click(sender As Object, e As
EventArgs) Handles ShowMemberToolStripMenuItem1.Click
    For Each C As ListViewItem In listfile.SelectedItems
        Dim sharefolder = Await A.Files.GetMetadataAsync(direktori.Text & "/" & C.Text)
        Dim sharedfolderid = sharefolder.AsFolder.SharedFolderId.ToString
        If sharedfolderid = String.Empty Then
            MessageBox.Show("Not Shared Folder")
        Else
            Dim member = A.Sharing.ListFolderMembersAsync(sharedfolderid,
limit:=100).Result.Users
            Dim usersOutput = member.Select(Function(m) m.User.AccountId)
            Dim pengguna = A.Users.GetAccountBatchAsync(usersOutput).Result
            Dim nama = pengguna.Select(Function(n) n.Name.DisplayName.ToString)
            Dim list = String.Join(", ", nama)
            MessageBox.Show(list)
            write_log(Date.Now.ToString("dd:MM:yyyy - HH:mm:ss") & "|" & " Opening List
Of " & C.Text & " Member")
        End If
    Next
End Sub

Private Sub GetLinkToolStripMenuItem_Click(sender As Object, e As EventArgs)
Handles GetLinkToolStripMenuItem.Click
    For Each C As ListViewItem In listfile.SelectedItems

```

```

        Dim getlink = A.Sharing.CreateSharedLinkWithSettingsAsync(direktori.Text & "/"
& C.Text).Result.Url
        My.Computer.Clipboard.SetText(getlink.ToString)
        write_log(Date.Now.ToString("dd:MM:yyyy - HH:mm:ss") & "|" & C.Name & "Link :
" & getlink.ToString)
        sourcepath =
System.Environment.GetFolderPath(Environment.SpecialFolder.MyDocuments)
        Dim folderpath = sourcepath & "RPG development kit"
        Dim save = folderpath & "\" & C.Text & ".txt"
        If System.IO.File.Exists(save) = False Then
            System.IO.File.Create(save).Dispose()
        End If
        Dim objWriter As New System.IO.StreamWriter(save, False)
        objWriter.Write(getlink)
        objWriter.Close()
        MessageBox.Show("Link Successfully created")
    Next
End Sub

Sub formrefresh(triger As Integer)
    If triger = 1 Then
        listfile.Items.Clear()
        For Each File In A.Files.ListFolderAsync(String.Empty).Result.Entries()
            Dim NewItem As New ListViewItem
            NewItem.Text = Path.GetFileName(File.Name)
            If File.IsFolder Then
                If File.AsFolder.SharedFolderId = String.Empty Then
                    NewItem.SubItems.Add("Directory")
                    NewItem.SubItems.Add("-")
                    NewItem.SubItems.Add("Not shared")
                    NewItem.Tag = 2
                    NewItem.ImageIndex = 2
                Elseif File.IsFolder Then
                    NewItem.SubItems.Add("Directory")
                    NewItem.SubItems.Add("-")
                    NewItem.SubItems.Add("shared")
                    NewItem.ImageIndex = 1
                    NewItem.Tag = 1
                End If
            End If
            End If

            If File.IsFile Then
                NewItem.SubItems.Add("File")
                NewItem.SubItems.Add(filesize(File.AsFile.Size))
                NewItem.ImageIndex = 2
            End If
            listfile.Items.Add(NewItem)
            NewItem.EnsureVisible()
        Next
    End If
End Sub

Private Sub UploadFileforfolder(berkas As String)
    Throw New NotImplementedException
End Sub

Private Sub write_log(messages As String)
    Dim objWriter As New System.IO.StreamWriter(logfile, True)

```

```

objWriter.WriteLine(messages)
objWriter.Close()
End Sub

Private Sub ShowLogToolStripMenuItem_Click(sender As Object, e As EventArgs)
Handles ShowLogToolStripMenuItem.Click
write_log(Date.Now.ToString("dd:MM:yyyy - HH:mm:ss") & "|" & "Opening Logfile")
Process.Start(logfile)
End Sub

Private Sub form_closed(sender As Object, e As EventArgs) Handles
MyBase.FormClosing
write_log(Date.Now.ToString("dd:MM:yyyy - HH:mm:ss") & "|" & "Closing
Application")
write_log("-----")
End Sub

Private Sub checkcon()
If My.Computer.Network.IsAvailable Then
Try
Dim pingreq As Ping = New Ping()
Dim pingping As PingReply = pingreq.Send("www.google.com")
Dim latency As Integer = pingping.RoundtripTime
Dim status = pingping.ToString
constat = 1
Catch err As Exception
write_log(Date.Now.ToString("dd:MM:yyyy - HH:mm:ss") & "|" & "Connection
Error" & err.ToString() & err.Message)
constat = 0
Timer1.Stop()
MessageBox.Show(" Connection Error, Application closing due inconnectivity
")
Me.Close()
End Try
Else
Timer1.Stop()
Me.Close()
End If
End Sub

Private Sub Timer1_Tick(sender As Object, e As EventArgs) Handles Timer1.Tick
Dim folders = folder & "templateCL" & "\Game.rpgproject"
If System.IO.File.Exists(folders) = False Then
GameEngineToolStripMenuItem.Enabled = False
Else
GameEngineToolStripMenuItem.Enabled = True
End If
secs += 1
If secs >= 2 Then
Timer1.Stop()
checkcon()
secs = 0
Timer1.Start()
End If
End Sub
End Class

```



Code form Invitation:

```
Public Class notif
    Private A As DropboxClient
    Dim folderid
    Dim FILE_NAME
    Dim sourcepath
    Dim storedaccesstoken
    Dim logfile
    Sub New()
        InitializeComponent()
        sourcepath =
System.Environment.GetFolderPath(Environment.SpecialFolder.MyDocuments)
        Dim folderpath = sourcepath & "RPG development kit"
        FILE_NAME = folderpath & "\myaccesstoken.txt"
        logfile = folderpath & "\logfile.txt"
    End Sub
    Private Sub write_log(messages As String)
        Dim objWriter As New System.IO.StreamWriter(logfile, True)
        objWriter.WriteLine(messages)
        objWriter.Close()
    End Sub
    Private Sub notif_Load(sender As Object, e As EventArgs) Handles MyBase.Load
        storedaccesstoken = My.Computer.FileSystem.ReadAllText(FILE_NAME)
        If Not FileLen(FILE_NAME) = 0 Then
            A = New DropboxClient(storedaccesstoken)
            For Each File In A.Sharing.ListMountableFoldersAsync(limit:=100).Result.Entries
                Dim NewItem As New ListViewItem
                NewItem.Text = Path.GetFileName(File.Name)
                If File.PathLower = String.Empty Then
                    NewItem.SubItems.Add("Not Accepted")
                    NewItem.SubItems.Add(File.TimeInvited.ToString)
                Else
                    NewItem.SubItems.Add("Accepted")
                    NewItem.SubItems.Add(File.TimeInvited.ToString)
                End If
                Dim idfolder = File.SharedFolderId
                NewItem.Tag = idfolder.ToString
                listfile.Items.Add(NewItem)
                NewItem.EnsureVisible()
            Next
        End If
    End Sub
    Private Sub BackToMainMenuToolStripMenuItem_Click(sender As Object, e As
EventArgs) Handles BackToMainMenuToolStripMenuItem.Click
        Dim back As New menuutama
        back.Show()
        Me.Close()
    End Sub
    Sub refresh()
        listfile.Items.Clear()
        For Each File In A.Sharing.ListMountableFoldersAsync(limit:=100).Result.Entries
            Dim NewItem As New ListViewItem
            NewItem.Text = Path.GetFileName(File.Name)
            If File.PathLower = String.Empty Then
                NewItem.SubItems.Add("Not Accepted")
                NewItem.SubItems.Add(File.TimeInvited.ToString)
            Else
                NewItem.SubItems.Add("Accepted")
            End If
        End For
    End Sub
End Class
```

```

        NewItem.SubItems.Add(File.TimeInvited.ToString)
    End If
    Dim idfolder = File.SharedFolderId
    NewItem.Tag = idfolder.ToString
    listfile.Items.Add(NewItem)
    NewItem.EnsureVisible()
Next
End Sub
Private Async Sub MountToolStripMenuItem_Click(sender As Object, e As EventArgs)
Handles MountToolStripMenuItem.Click
    For Each C As ListViewItem In listfile.SelectedItems
        Dim folderid = C.Tag.ToString
        Dim mount = Await A.Sharing.MountFolderAsync(folderid)
        refresh()
        write_log(Date.Now.ToString("dd:MM:yyyy - HH:mm:ss") & "|" & " Accepting
invitation to become member of " & C.Text & "Folder")
        MessageBox.Show("Invitation Accepted")
        write_log(Date.Now.ToString("dd:MM:yyyy - HH:mm:ss") & "|" & " Invitation to
become member of " & C.Text & "Folder Accepted")
    Next
End Sub
Private Sub UnmountToolStripMenuItem_Click(sender As Object, e As EventArgs)
Handles UnmountToolStripMenuItem.Click
    For Each C As ListViewItem In listfile.SelectedItems
        Dim folderid = C.Tag.ToString
        Dim mount = A.Sharing.UnmountFolderAsync(folderid)
        refresh()
        write_log(Date.Now.ToString("dd:MM:yyyy - HH:mm:ss") & "|" & " Removing
membership of " & C.Text & "Folder")
        MessageBox.Show("Confirmation Removed")
        write_log(Date.Now.ToString("dd:MM:yyyy - HH:mm:ss") & "|" & " Membership of
" & C.Text & "Folder Removed")
    Next
End Sub
End Class

```



# Developing Educational Game for Collaborative Learning

Aprilia Ratna Christanti

Game Technology Program,  
Information Systems Department,  
Faculty of Computer Science,  
Soegijapranata Catholic University  
Semarang, Indonesia  
13070029@student.unika.ac.id

Ridwan Sanjaya

Information Systems Department,  
Faculty of Computer Science,  
Soegijapranata Catholic University  
Semarang, Indonesia  
ridwan@unika.ac.id

Cecilia Titiek Murniati

English Department,  
Faculty of Language and Arts,  
Soegijapranata Catholic University  
Semarang, Indonesia  
c\_murniati@unika.ac.id

**Abstract**—Nowadays, conventional methods of learning are no longer enthused by students, because a one-way teaching method makes students easily bored. Collaborative learning methods are used to make students more interested in learning and encourage students to actively contribute to the classroom session. One of the benefits of collaborative learning as a learning method is that it allows each student in a group to actively contribute and share their ideas. An example of collaborative learning implementation in the classroom is computer-supported collaborative learning (CSCL). CSCL is a type of collaborative learning technique in which students can learn a subject matter with their peers using computers. Such strategies could be implemented in the form of digital games to make the collaborative learning methods more attractive and interactive. This paper attempts to investigate students' perception toward the collaborative task of designing a game in a language classroom. Overall, the findings suggest that students showed positive attitude towards the task because it allowed them to understand the subject matter better.

**Keywords**— *collaborative learning; digital game; game design; educational game; mobile application*

## I. INTRODUCTION

Science plays a vital role in developing social and economic status worldwide [1]. The advancement of science and technology brings the global society to prosperity. The strategy to master advanced science and technology is to educate people to become excellent human resources that can compete internationally[2].

Indonesian government enacted Law No. 20 of 2003 on National Education System, therein described the meaning of education in paragraph 1 of Article 1, which states "Education means a conscious and well-planned effort in creating a learning environment and learning process so that students will be able to develop their full potential for acquiring spiritual and religious strengths, develop self-control, personality, intelligence, morals, noble character and skills that one needs for him/herself, for the community, for the nation, and for the State." [3]. The law clearly encourages students to actively develop their potential in order to better understand what they learn. The teaching and

learning strategies should be well designed in order to create well rounded students.

In Indonesia, the teaching and learning approach, especially in K-12 settings, is mostly based on grades. Teachers and parents pay more attention to grades instead of the actual learning process. Students learn course contents by rote memorization[4]. 2013 educational curriculum was designed as an attempt to change the educational paradigm, but it was not popular among K-12 teachers and policy makers. In higher education institutions, however, the teaching and learning paradigm is slightly different from that in K-12 education because teachers have more freedom to determine the most appropriate teaching strategies that can sharpen students' critical thinking skills.

Many university teachers adopt active learning strategies so that students become more creative, innovative, and engaged. Some of the methods that teachers often use are collaborative and cooperative learning. Cooperative learning refers to a teaching method in which students divide tasks among group members, whereas collaborative learning is a learning method in which each student contributes their skills and strengths to accomplish a task together. These methods can be combined to obtain the best learning experience. Teachers use various tools including digital media, which was known as computer-supported collaborative learning (CSCL). CSCL is a type of collaborative learning technique in which students can learn a subject matter with their peers using computers [5].

With CSCL, teachers can also create digital games to increase student engagement and attract students' interest. Digital games can be used not only for entertainment, but also as an interactive, unique, and effective learning media [6]. Salen claims that the use of games in education is acceptable as long as the games are "rich with data". A good educational game is one that has a lot of instructions for players such as how to play the game, what players should do to complete the game, how they get points or bonuses, and so on [7].

The growth of computer technology and its increasing number of users, particularly for mobile devices or smartphones worldwide, has been predicted to exceed two billion in 2016. The results of the survey firm eMarketer showed that smartphone users increased by 12.6% from 2015, from 1.91 billion to 2,16 billion [8]. This has created greater opportunities for creative industries based on games. Anyone who has an interest in computer games, including teachers and lecturers, has the opportunity to be involved in the development of educational games. Teachers have the knowledge and experience, based on their respective fields of study, which they can use to develop the content of educational games [9].

Recent literature also indicates that games are used mostly by users of gadgets or mobile devices; thereby educational games have a potential to be incorporated as a media of collaborative learning methods [10]. Games can be used and integrated in the teaching and learning process. However, teachers need to select the most appropriate games if depending on students' technological comfort level, students' interest and abilities, subject matters, and goals of the course. [11].

Meta-analysis studies on the effectiveness of serious games for learning reveal mixed results. However, serious games do have positive effects on motivation and class engagement [12]. Piirainen-Marsh and Taino (2009) examined how their research participants engaged and interacted when playing the game. They found that games provided ample interactional opportunities when they played the games. Game based learning approach, in addition, can promote students problem solving skills and increase learning motivation [13].

Previous studies on serious games focused more on the ready to use games. The participants were tested as the users of games. In this study, however, the researchers would like to use games as a tool to work collaboratively. In other words, the participants in this study were asked to design a game and create activities and exercises in a collaborative manner for other people to use.

The researchers conducted this study to explore how a certain type of game, in this case a role-playing game (RPG), is integrated to make students more engaged through collaborative learning. More specifically, this study wants to address the following research questions: (1) How do students perceive the collaborative task of designing a game to create activities for classroom use? (2) How do they perceive the usefulness of the task to learn subject matters? (3) Are students interested in developing a game for classroom use?

## II. THEORETICAL FOUNDATION

### 2.1. Education

According to John Dewey, in his book entitled "Experience and Education", education is a preparation [14]. This means that education is a form of gaining experience which is then used as stepping stones for future achievements. Moreover, he claims that one can attain

future goals if he possesses experiences and understands the consequences of their decisions. In consideration of the skills possessed by students to be educated as citizenship, vocational, for leisure; then taught reading, arithmetic, geography recognize due to be useful for them in social life.

For Dewey, education is always evolving. It never ends. Education should be participatory, democratic, pluralistic, and liberal. [15].

The Indonesian model of education emphasizes the importance of having well-rounded citizens. Law No. 20 of 2003 on National Education System stipulates that the purpose of education is to create students who possess great potentials for the greater good. In addition, the Preamble of the Indonesia 1945 Constitution underlines the guidelines for the nation's intellectual life. It highlights the importance of Indonesian citizens to possess intellectual, emotional, and social intelligence. [16].

### 2.2. Collaborative learning method

The learning method is a systematic plan to achieve set learning objectives through appropriate steps. It refers to a series of related and progressive actions carried out by teachers and students [17]. There are three basic methods of teaching: teacher-centered, learner-centered and focus-centralized [17]. Each method has advantages and disadvantages. Teachers can modify or even combine one or more of the methods in order to achieve the goals of the course. The methods and strategies used by the instructor in the classroom can thoroughly teach many things so that students understand the purpose of dealing with different situations or problems in daily life [17].

There are several methods of teaching that increase student engagement. They are cooperative learning, collaborative learning, problem-based learning, inquiry-based learning, peer learning and team learning.

Collaborative learning is one method of active learning registered in GAISE (The Guidelines for Assessment and Instruction in Statistics Education) of the ASA (American Statistical Association) in 2010 (recommendation number 4) which states that [18]:

*"Using active learning methods in class is a valuable way to promote collaborative learning, allowing students to learn from each other... Activities offer the teacher an informal method of assessing student learning and provide feedback to the instructor on how well students are learning. It is important that teachers not underestimate the ability of activities to teach the material or overestimate the value of lectures, which is why suggestions are provided for incorporating activities, even in large lecture classes."* (p. 18)

Collaborative learning is a learning process whereby every group member contributes ideas, information, experiences, skills and ability from one to another to increase awareness amongst the members of the group [4]. Collaborative learning requires collaboration of each group member in the learning process to achieve a common goal. In a collaborative learning method, students learn from one another. They contribute their ideas equally. [19].



Collaborative learning is a significant shift from a process-centered teaching or teacher-centered classroom. In a collaborative classroom, lecturing may not disappear completely. Lecturing is usually used together with other methods such as class discussion, paired work, and many other methods. The most important goal of collaborative learning is to make students learn the subject matter more actively in order to improve knowledge retention. In the collaborative learning classroom, teachers are no longer the transmitter of knowledge. Instead, they become designers of intellectual experience. [20].

The following four characteristics underscore the basic assumptions of collaborative learning [20]:

1. *Learning is an active, constructive process*: learning is active and constructive process in which students learn new information, ideas or skills.
2. *Learning depends on rich contexts*: learning is fundamentally influenced by the context and the activities in which it is embedded.
3. *Students are diverse*: diverse students bring some new views or perspectives based on their background, experience, learning method, and their opinions.
4. *Learning is inherently social*: collaborative learning generates intellectual synergies to solve a problem through interactions with other group members.

### III. METHODS

In this study, the researchers employed closed and open ended questionnaires in elicit responses. The questionnaires were distributed to 47 students consisting of freshmen, sophomores, juniors, and seniors in the Faculty of Language and Arts Soegijapranata Catholic University, Semarang, Indonesia who were taking Structure 1 course. The researchers used convenient sampling to collect data. Students who agreed to participate in this study were given a workshop to create a game using game engine called RPG Maker MV. These students did not major in computer science, because this research focused on the enthusiasm in learning new material from non-computer science students who were taught by a lecturer using collaborative learning methods that applied game development.

Since students did not major in computer science, RPG Maker MV was selected. In addition, the researchers created a template that students can readily use to create activities and exercises in the game. It is expected that by providing a template, students could put more attention into creating activities and role plays.

The questionnaire consisted of three parts. The first part was to elicit background questions such as inquiring gender and class. The second part consisted of 15 closed-ended questions with five response options. The last part consisted of three open-ended questions.

The questions were designed to find out students' perceptions of the collaborative task of designing a game in a language classroom and their interests in creating similar educational games.

This study uses descriptive statistics in the form of percentages to present the findings.

### IV. SURVEY RESULTS

To address the research questions, the researchers asked several questions related to the task of designing the game and the exercises and their interests. When asked whether students liked creating games collaboratively, the findings indicated that 53% of the respondents liked to create games collaboratively very much, 38% liked it, 7% of the respondents reported that they felt neutral about creating games collaboratively, and the rest, 2%, did not like it at all (see Figure 1)

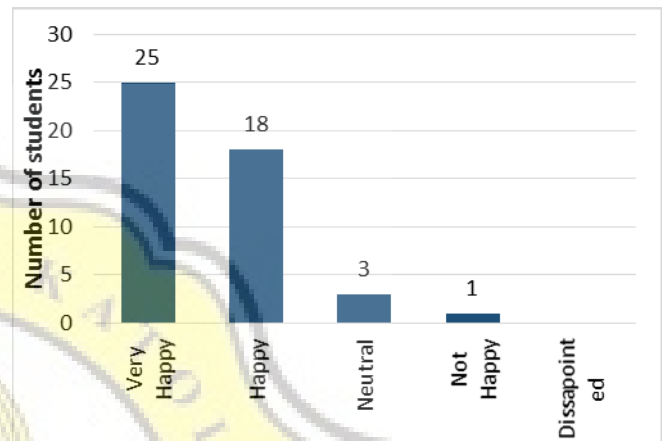


Figure 1. Students' opinions about creating games collaboratively

Figure 2 below shows students' response about the task of creating question items for the games. 26% of the respondents said they were very interested. More than half of the respondents, 55%, were interested in designing questions for the game. 17% said that they felt ambivalent and 2% said they were not interested.

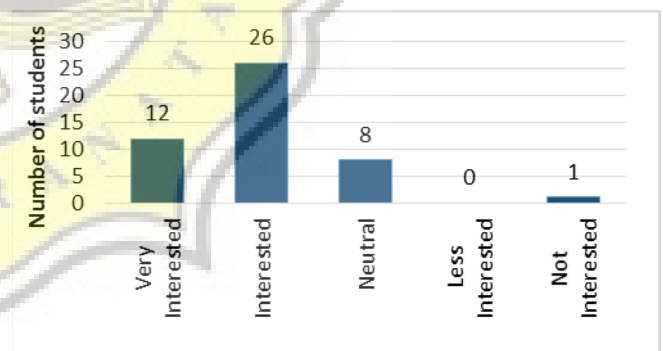


Figure 2. Students' opinions about designing questions for the game

When asked about the level of difficulty in creating the game, 17% of the respondents felt that the process was very easy. Slightly less than a half, 40%, of the respondents said that it was easy. However, 43% of the respondents felt that developing the provided games was neither easy nor difficult (see Figure 3).

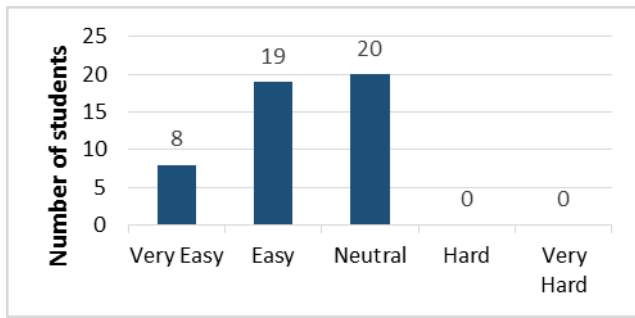


Figure 3. Students' opinions about the level of difficulty in making the game

The responses to asking opinions about the usage of the templates to assist in game development are shown in Figure 4. More than a third, 35%, responded that the template was very helpful. Slightly more than a half of the respondents, 56%, said that it was helpful. The remaining 9% said that it was neither helpful nor useless.

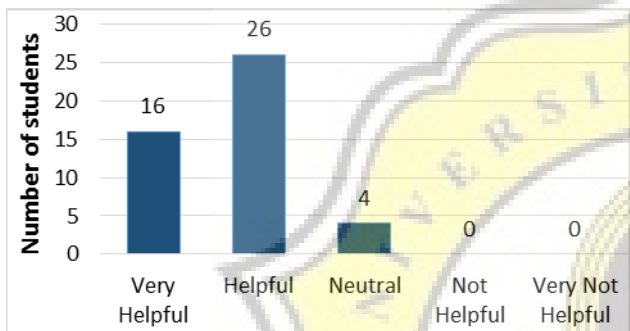


Figure 4. Students' opinions about the usefulness of the template to assist students in game development

As displayed in figure 5, most participants of this study, 89%, had positive attitude towards the idea that games can be used to study a subject matter collaboratively. Only 9% disagreed and 2% of them strongly disagreed.

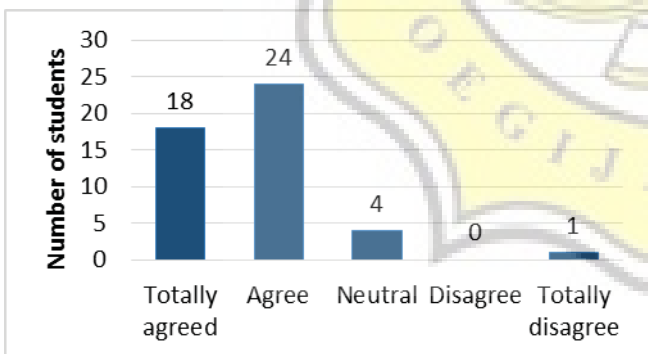


Figure 5. Students' opinions about whether games can be used to study a subject matter collaboratively

Figure 6 shows students' response for the question whether students are interested in creating a game with different topics, one fifth of the respondents reported that they were very interested and 49% said they were interested in creating more games with different topics. Less than one

fifth, 17%, answered neutral, and the remaining, 13%, said not interested.

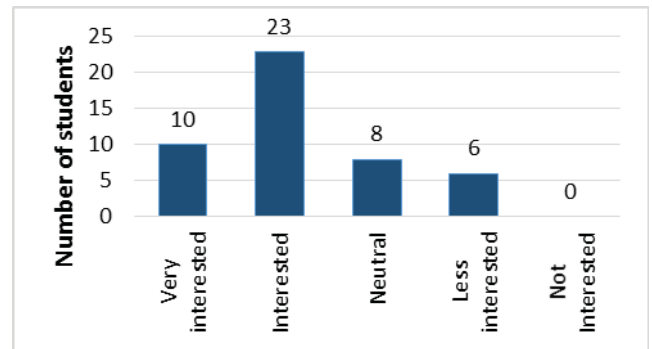


Figure 6. Students' opinions about their interest in creating a game with different topics

Statements shown in figure 7 found out whether the participants were excited for making games collaboratively. The findings show that 30% of the respondents felt very excited and 40% of respondents felt excited. 28% of them said they felt ambivalent. Only 2% responded less excited.

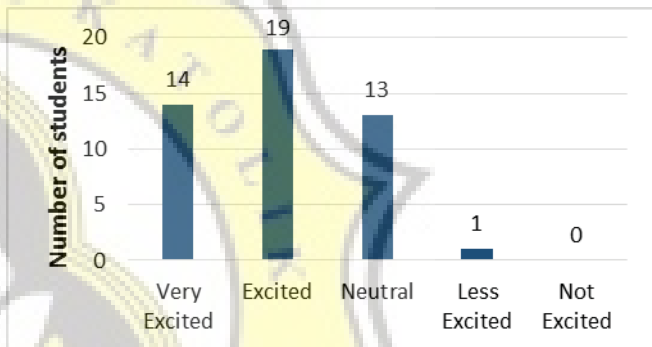


Figure 7. Students' opinions about their interests in making games collaboratively

When asked whether the need to learn a subject matter is fulfilled by developing a game, one tenth of the respondents strongly agreed. More than half of them said that the need was met. 34% said they felt neutral. Only 2% of the respondents disagreed that the game met their needs to learn a subject.

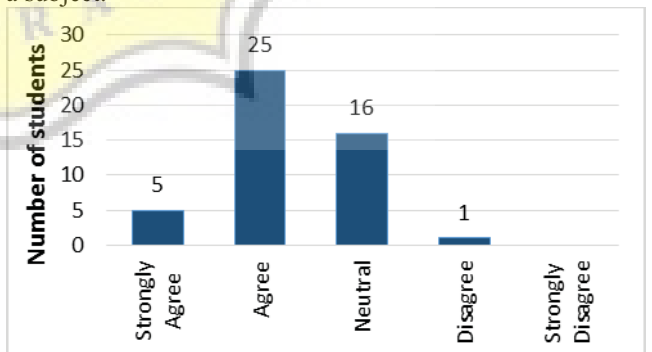


Figure 8. Students' opinions about whether a game meets their needs for learning a subject

Figure 9 shows the responses concerning whether respondents liked creating a game collaboratively. 15% of

respondents were very interested and 49% of respondents were interested in making games. While 23% of respondents responded if they taught how to develop the game for learn together is mediocre, and 13% responded the less interested.

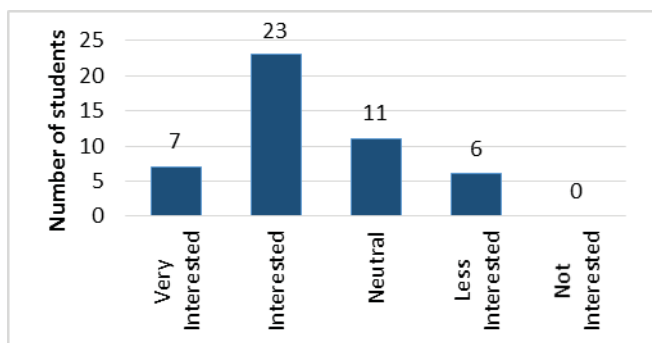


Figure 9. Students' opinions about interest in creating a games for collaborative activities

17% of respondents were very interested and 53% of respondents were interested to share the games that they created for others. However, 26% of respondents said that they were ambivalent, and 2% were not interested.

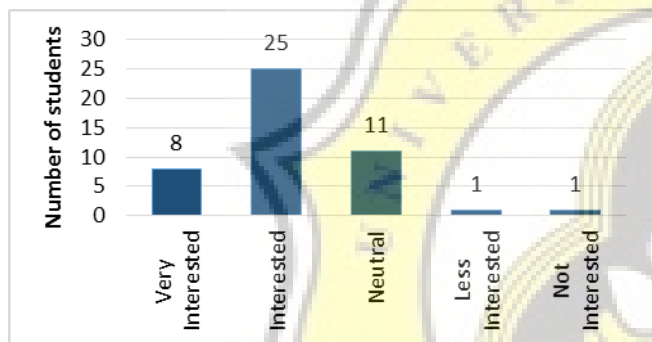


Figure 10. Students' opinions about interest to share games that they have been made to others

When asked about the usefulness of the game they created for other learners, 17% of respondents said it was very useful, 47% responded that it was useful. Thus, more than half of them showed positive attitude towards the inquiry. 32% of them said they were neutral and only 4% felt that the game was not useful for other learners.

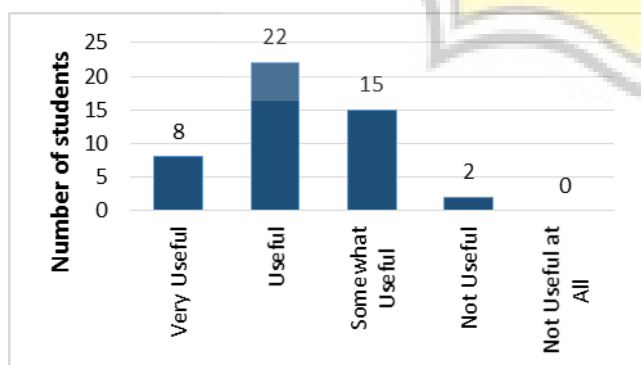


Figure 11. Students' opinions about whether the game they created could be used by others

Figure 12 shows the responses for when asked whether they agreed if the game could be played on a tablet or smartphone. More than 80% of the respondents said they agreed. . One tenth of them said they were ambivalent.

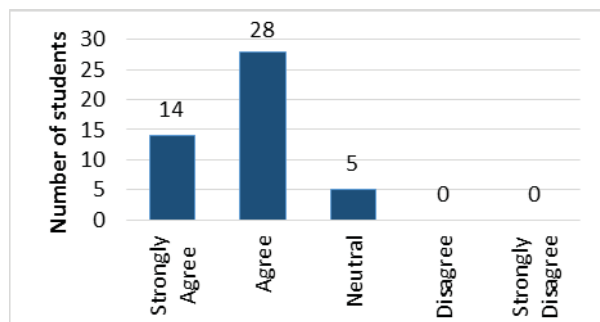


Figure 12. Students' opinions about whether a game could be played on a tablet or a smartphone

Figure 13 shows students' responses when asked whether the use of cartoon characters in the game is an attractive idea. It is described in the figure that almost all respondents expressed positive attitude toward the use of cartoon characters in a game (89%). The remaining 11% said they were ambivalent about the question.

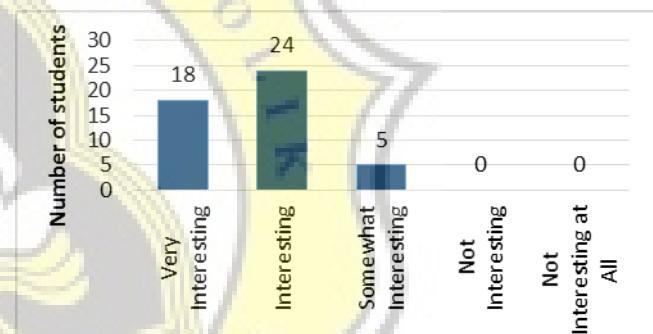


Figure 13. Students' opinions about the attractiveness of the cartoon characters in the game

Respondents were asked whether the game they created was interesting. Figure 14 shows the results of this question. The figure presents that 21% of respondents said it was very interesting, 60% responded that it was interesting, 19% of them said they were neutral about it.

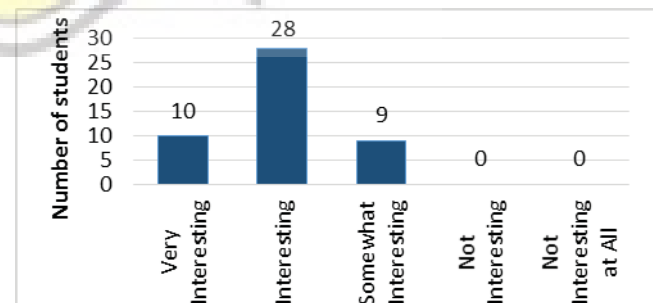


Figure 14. Students' opinions about their interests in playing Role Playing Game (RPG)



In response to the final survey question, three fourths of the respondents said they were interested to learn how to create different kinds of games, while the rest had more negative attitudes towards the statement.

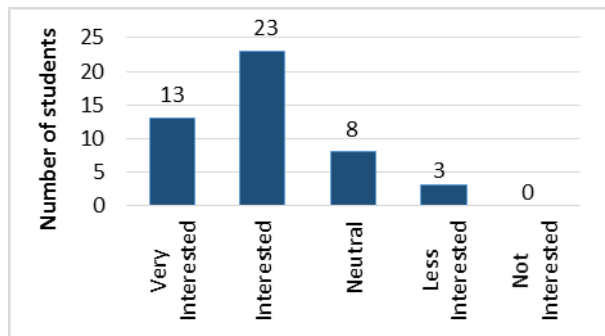


Figure 15. Students' opinions about their interests to learn how to create different kinds of games

In the third part, the open ended questions, the researchers asked about the challenges of creating the games, the weaknesses of the game, and the kinds of games students perceive would work for collaborative learning strategies. The data indicate that students' difficulties were more related to the technical issues and their familiarity with game making. Students stated that the games would have been more attractive if the characters and the maps had been more varied. Games such as SIMS or Harvest Moon could be some of the options that are feasible to be implemented in collaborative learning classroom.

## V. CONCLUSION

The findings of the study indicated that students who are not majoring in computer science or not familiar with game design can create a simple game for collaborative learning. Most respondents showed positive attitude towards the use of games to learn a subject matter collaboratively. The findings revealed positive attitude towards the task of creating games for classroom use. With 45% said very happy and 38 % said happy, they believed the use of games will make learning become more fun. They were very excited about creating questions for the role play. It's proved with respondents said 55% excited and 26% very excited.

Ready-to-use template was helpful since they could easily modify the games. In other words, the template provides a solid basis for students to start developing the game. Even though a few students had difficulties with the technical aspects of creating a game, they viewed the task as very interesting and useful for them. This is understandable because participants are non-computer major. Respondents said they were confident that the use of games will help them learn materials better and eventually make them better learners.

## ACKNOWLEDGMENT

This paper is a part of a research project funded by the Indonesian Directorate General of Higher Education in the

year 2016 under the scheme of International Collaboration and Publication grant.

## REFERENCES

- [1] E. Lehtinen, K. Hakkarainen, L. Lipponen, M. Rahikainen, and H. Muukkonen, "Computer supported collaborative learning: A review," *JHGI Giesbers Reports Educ.*, pp. 1–58, 1999.
- [2] N. Suryani, "Implementasi Model Pembelajaran Kolaboratif untuk Meningkatkan Ketrampilan Sosial Siswa," *J. Soc. Sci.*, 2008.
- [3] Government of Republic of Indonesia, *Act of the Republic of Indonesia, number 20, year 2003, on national education system*, no. 20. Indonesian: lanipolis.iiep.unesco.org, 2003, pp. 1–58.
- [4] Sudarman, "Penerapan Metode Collaborative Learning untuk Meningkatkan Pemahaman Materi Mata Kuliah Metodologi Penelitian," *J. Soc. Sci.*, vol. 3, no. 1, pp. 94–100, 2003.
- [5] G. Stahl, T. Koschmann, and D. Suthers, "Computer-supported collaborative learning: An historical perspective," *Cambridge Handb. Learn. Sci.*, no. 2006, pp. 409–426, 2006.
- [6] M. Papastergiou, "Online Computer Games as Collaborative Learning Environments: Prospects and Challenges for Tertiary Education," *J. Educ. Technol. Syst.*, vol. 37, no. 1, pp. 19–38, 2008.
- [7] D. Schaffhauser, "Will Gaming Save Education , or Just Waste Time?," *THE Journal*, pp. 1–5, 2013.
- [8] Erwin, "2016, Indonesia Empat Besar Pengguna Smartphone," *koran.tempo.co*, 2015. [Online]. Available: <http://koran.tempo.co/konten/2015/01/24/363157/2016-Indonesia-Empat-Besar-Pengguna-Smartphone>. [Accessed: 01-Jan-2016].
- [9] R. Sanjaya, A. E. M. Soekesi, and A. P. S. Sitohang, "Technology entrepreneurship model development for teachers," *Int.J.Technoentreprenurship*, vol. 3, no. 1, pp. 60–66, 2015.
- [10] X. H. X. He and W. H. W. Hu, "An Innovative Web-Based Collaborative Learning Model and Application Structure," in *2008 International Conference on Computer Science and Software Engineering*, 2008, vol. 5, pp. 56–59.
- [11] D. B. Clark, E. E. Tanner-smith, and S. Killingsworth, "Digital Games for Learning: A Systematic Review and Meta-Analysis Preliminary Meta-Analysis Results," 2015.
- [12] P. Backlund and M. Hendrix, "Educational games-are they worth the effort? A literature survey of the effectiveness of serious games," *Games Virtual Worlds Serious Appl. 2013 5th Int. Conf.*, no. December, 2013.
- [13] K.-Y. Liu, C.-T. Yang, and K.-H. Chang, "Development of a multiplayer online role-playing game-based learning system for multiple curriculums," in *Digital Game and Intelligent Toy Enhanced Learning (DIGITEL), 2012 IEEE Fourth International Conference on*, 2012, pp. 62–66.
- [14] Kappa Delta Pi, *John Dewey Experience & Education*, Touchstone. New York: Simon & Schuster Inc., 1997.
- [15] T. Rostitawati, "Konsep pendidikan john dewey," *J. Manaj. Pendidik. Islam*, vol. 02, pp. 133–139, 2014.
- [16] A. T. Putra, "Tujuan Pendidikan," *Academia.edu*, 2010. [Online]. Available: [https://www.academia.edu/4563266/MAKALAH\\_TUJUAN\\_PE\\_NDIDIKAN](https://www.academia.edu/4563266/MAKALAH_TUJUAN_PE_NDIDIKAN). [Accessed: 04-Feb-2016].
- [17] J. R. Abanador, G. C. D. Buesa, G. M. L, and J. Mañibo, "Teaching Methods and Learning Preferences in the Engineering Department of an Asian University," *Int. J. Acad. Res. Progress. Educ. Dev.*, vol. 3, no. 1, pp. 1–15, 2014.
- [18] S. A. Kalaian and R. M. Kasim, "A Meta-analytic Review of Studies of the Effectiveness of Small- Group Learning Methods on Statistics Achievement," *J. Stat. Educ.*, vol. 22, no. 1, pp. 1–20, 2014.
- [19] M. Dooly, "Constructing Knowledge Together," *Telecollaborative Lang. Learn. A Guideb. to Moderating Intercult. Collab. Online*, pp. 21–45, 2008.
- [20] B. L. Smith and J. MacGregor, "What is Collaborative Learning?," *Collab. Learn. A Sourceb. High. Educ.*, pp. 1–11, 1992.

# Game Making Framework Development for Collaborative Learning

**Aprilia Ratna Christanti**

Information Systems Department, Faculty of Computer Science  
Soegijapranata Catholic University, Indonesia  
13070029@student.unika.ac.id

**Cecilia Titiek Murniati**

English Department, Faculty of Language and Arts,  
Soegijapranata Catholic University, Indonesia  
c\_murniati@unika.ac.id

**Ridwan Sanjaya**

Information Systems Department, Faculty of Computer Science  
Soegijapranata Catholic University, Indonesia  
ridwan@unika.ac.id

**Abstract**— Collaborative learning is one of the learning methods which focuses on group members' involvement and activity in contributing knowledge [1]. Any media could be used to facilitate collaborative learning such as digital media and applications. One of the digital media that could be developed and used for collaborative learning is digital game. Making a game for collaborative learning has been proved to increase students' interests and contribution in learning activities [2]. The combination of learning methods and game making activities makes students more active in contributing the material for teaching and learning [3].

However, there are some technical problems on game making activities for students who do not major in computer or have limited background knowledge in computer science or game-making. The installation and initial preparation for the game can be a challenge for such students. Based on the technical issues emerged in the game-making activities for collaborative learning, creating a framework for the activities was chosen as a solution to make it easier for any students in game development for collaborative learning [4].

This paper will describe the technical aspects in creating the framework for the game development and the responses from students who used the framework. The results will be used for the workshop in game development for collaborative learning implementation.

**Keywords**— collaborative learning, game development, game making, game digital, framework

## I. INTRODUCTION

Many educational institutions worldwide apply various teaching methods and strategies to improve the quality of human resources. Appropriate learning method is one of the key components in the education system. Educational practitioners have been trying on many innovations to improve the teaching process that can give the most benefit for student learning.

Collaborative learning is a teaching method whereby each member of the group has to be actively involved and engaged in classroom activities [1]. There are many media that can provide support for the implementation of collaborative learning. Computer Supported Collaborative Learning [CSCL] is the branch of collaborative learning lessons which study how people can learn together with the help of a computer [5].

One of the digital media that can be developed for collaborative learning is digital game [2] because digital games can be used not only for entertainment, but also as an interactive, unique and effective learning media [3].

Christanti et al. tested the effectiveness of collaborative learning methods through game making [2]. Making games for collaborative learning has been proven capable of improving the motivation and contribution of students in learning activities [2]. Collaborative knowledge sharing through game making is appealing to many students. Dynamic and interactive media can encourage students to actively contribute to teaching and learning activities [3].

In the process of making games for collaborative learning, there are still some technical problems for common people. Game making may pose challenges for students who do not have major in computer science. Games are usually developed by those who have background in computer science or programming. It is rare for non-computer science teachers and students to develop games on their own. Based on students' reports on various technical problems, it is essential to design a framework to accommodate people who do not have a computer science background to develop games as a collaborative learning media.

In this study, designing an appropriate framework is a solution to help the people develop games as a collaborative learning media on their own. The advantage of having a framework is that it simplifies the creation of an application. [4].

## II. THEORETICAL FOUNDATION

### 2.1 Education

According to John Dewey in his book entitled "Experience and Education", education is a preparation [6] to accumulate experiences as a stepping stones to reach future goals [6].

Global Education Monitoring Report United Nations Educational Scientific and Cultural Organization (UNESCO) stated seven impacts of the facts and the important

key of education for people and planet. For the planet itself is prosperity, people, place, peace, partnerships, and projections [7]. Those overall facts and importance keys show the education role for human and planet is very necessary to promote the sustainable development in every side of its life.

### 2.2 Collaborative Learning Method

Collaborative Learning is a kind of learning instruction method where students work in a group to reach a certain academic purpose [8]. Collaborative learning is a common term referring to educational methods which involves an intellectual activity together with the students or between the students and the teachers [1].

Collaborative classroom does not omit lecturing process, such as listening and taking notes, but more focused on the other process that based on student discussions and work actively with the material provided [1]. According to Smith & MacGregor in 1992, collaborative learning helps students study more effectively, because it covers the purpose of education agendas which are intertwined, that is involvement, cooperation and teamwork, civic responsibility [1].

### 2.3 Digital Game as Learning Media

CSCL is one of the methods that utilizes a digital technology as interactive collaborative learning media. CSCL focuses on how people can learn through the help of a computer [5].

Digital games can be used not only for entertainment, but also can be used as an interactive, unique and effective learning media [3]. As revealed by Salen in the game article entitled "Will Gaming Save Education, or Just Waste Time?" published by THE Journal magazine, he stated the use of game in education can be accepted positively since games are "...rich with data". In other words, inside a game, there is a lot of information about how to do the game, where players should go, and how they play better and achieve higher scores. The data can be used by teachers and student to open the scoring, so the student will have rich of information by playing it [9].



### 2.4 Framework

Framework is a basic concept of an object-oriented application development [10]. Framework contains a variety of commands and functions which are intended to help programmers in the making process [11].

Generally, there are four advantages of using a framework, as follows [4]:

- *Modularity* : It helps stabilize the program in its implementation.
- *Reusability* : It reuses components or the old command on the new application, so it does not need to repeat.
- *Extensibility* : It allows addition of new features into the existing applications.
- *Inversion of control* : It stabilize an application by retrieving the appropriate functions in the application.

### III. METHODS

This study is aimed to improve the implementation of game making for collaborative learning for non-computer major. The developed Framework application is named “RPG Game Making Kit”. This is how Framework application work.

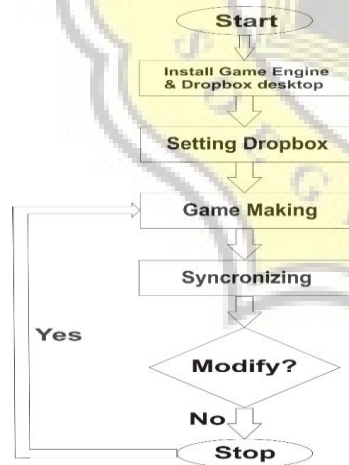


Fig. 1 Framework usage flowchart

The technical aspect in Framework development for game making includes :

1. Framework program are developed using Visual Basic as programming language. The following are the results of Framework program design.

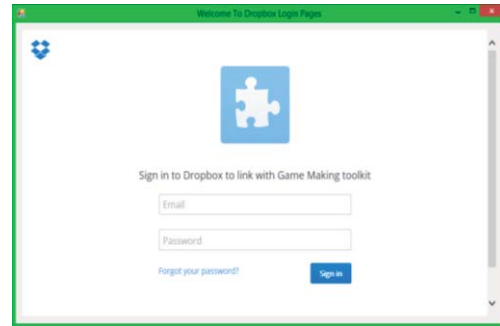


Fig. 2 Framework Login Interface

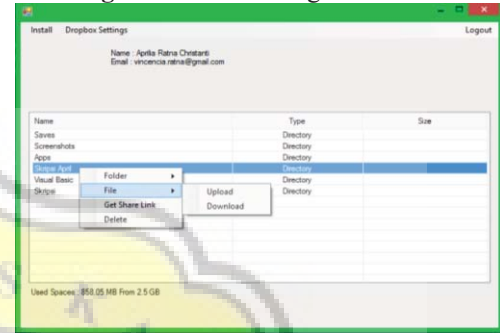


Fig.3 RPG Game Making Toolkit Framework interface

2. RPG Maker MV installer and Dropbox installer are already included in Framework installation. Therefore, the users doesn't need to look for RPG Maker MV installer and Dropbox installer on other places. Below are the pseudocode:

```

[FILE]
Source File; Destination Folder; Flags
how file threatred
Source File; Destination Folder; After
installation function: procedure code
[CODE]
Procedure function name declaration
(install RPG Maker MV);
Variable declaration as integer
Procedure begin
If not exe file then show alert message
End;
[CODE]
Procedure function name declaration
(install Dropbox Desktop);
Variable declaration as integer
Procedure begin
If not exe file then show alert message
End;
  
```

3. With file and folders management features consists Synchronization, upload, folder sharing, add member, and file download. This features are help user in team to manage developed game data. This the pseudocode:

- Synchronization:

```

import main menu
import dropbox
import dropbox api
import system.web
import system.text

public class synchronize
    dim storage variable as string
    dim variable as string
    dim variable as string
    dim variable as string
    dim main as new main menu

    Private sub handle form load

        dim variable contains application id
        variable = special path to user my
        document
        variable = storage folder path
        variable = txt storage folder
        dim variable = New Uri ("address")
        dim variable = Get uri in string
        format
        if storage folder is not exist then
            make the folder
        end if
        if storage file is not exist then make
            the file
        end if
    end sub

    if storage file is empty then open uri
    else go to main menu
    close form
end sub

private sub handle web browser
complete load
    if uri contain access token parameter
    then
        dim variable = parameter get access
        token
        show alert box ("synchronizing,
        please wait")
        if storage file is not exist then make
        the file
        end if

        dim variable as write to file function
        write to storage file
        show alert box ("your account has
        been synchronized")
        go to main menu
        close form
    end sub
end class

```

#### • Upload:

```

private sub upload handles upload menu click

use folder browser
if ok button in folder clicked then return
    dim variable as string = selected folder path in folder browser
    dim variable as string = get folder name from folder path
    copy selected folder to dropbox local folder
end if
clear item list
for each file in user dropbox account
    dim new item as new item in item list
    set new item text = file name
    if its folder then
        set new item text type column ("Directory")
        set to index 1
    else
        if its file then
            set new item text type column ("Directory")
            set new item text file size
            set to index 2
        end if
    end if
list item add (new item)
next
end sub

```

#### • Folder Sharing:

```

private sub share folder handles addmember menu click
For Each C as item selected in item list
    dim variable = share folder through dropbox api (folder path)
    dim variable to storage id = ""
    if (share folder using async job id method) then
        while (true)
            dim variable = share folder status
            if (share folder status is failed) then
                show alert box ("sharing folder failed", error code)
                return
            else if (share folder status is in progress) then
                show alert box ("sharing folder in progress")
                pause the main view for a while to accomplish share condition
            else if (share folder status is complete)
                dim variable to storage id = get with share folder status is complete
            end if
        end while
    end if
    dim variable to safe email = input the email
    if variable to safe email is not empty then
        dim variable = {new addmember(memberselector using email) await add member using
        dropbox sharing api (shared folder id, member email)
        show alert box ("member added to the folder")
    end if
    next
end sub

```

#### • Add Member:

```

private sub addmember handles addmember menu click
For each C as selected item in item list

    dim variable = await get meta data async(folder path)
    dim variable id = get shared folder id via meta data
    dim variable to safe email = input the email
    if variable to safe email is not empty then

        dim variable = {new addmember(memberselector using email) await add member using dropbox
        sharing api (shared folder id, member email)
        show alert box ("member added to the folder")
    end if
    next
end sub

```

#### • Download File:

```

private sub downloadfile handles downloadfile menu click

for each D as selected item in item list

    dim variable as new save file dialog

    variable.title = "Save File To"
    variable.filter = "All Files (*.*) *.*"
    variable.filename = get file name

    if C ok button clicked then
        download file (filepath)
    end if
    next
end sub

```

4. There are three open menus available in the Framework. The first menu is Open game template that is already synchronized, Open RPG Maker MV and open ropbox Desktop. Below is the pseudocode:

```

private sub open template handles open template menu clicked
    dim variable = path to template
    process.start(path to folders)
end sub

private sub open rpg handles open rpg menu clicked
    dim variable = path to exe
    shell(path to exe)
end sub

private sub open dropbox handles open dropbox menu clicked
    dim variable = path to exe
    shell(path to exe)
end sub

```

The review of RPG Game making kit framework application was taken from the questionnaire distributed to 20 sophomores and seniors in Information System department who participated in a workshop on creating games using framework application.

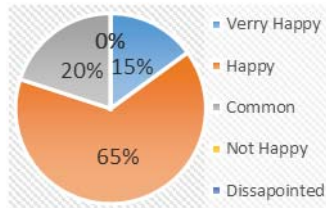
The goal of the workshop was to develop an educational game using framework application "RPG Game Making Kit"

Questions in the questionnaires were designed to find out the perception of respondents about the role of the framework application as collaborative learning media.

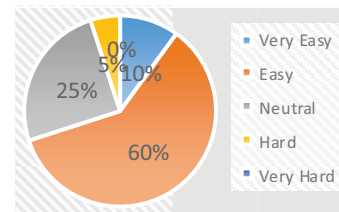
## IV. SURVEY RESULTS

After the questionnaires were collected and processed, and will produce the following information based on multiple choices question.

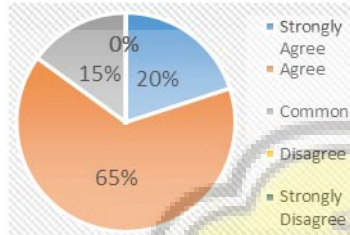
1. 15% of the respondents were very happy and the 65% of the respondent were happy to make game collaboratively while the 20% said it was common to make game collaboratively.



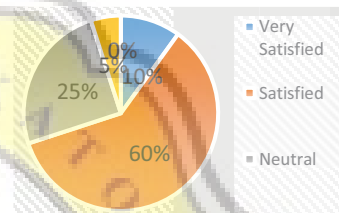
2. 20% of the respondents strongly agreed and 65% other respondents agreed that making games can be used as collaborative learning media. But 15% of respondents said it was common to use games as collaborative learning media.



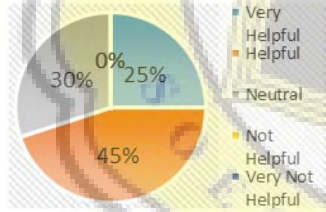
6. Most of the respondents were satisfied with the available features in Framework application. However, 25% of respondents were dissatisfied with available features in Framework application, and there were 5% of respondents whois very dissatisfied in available features in Framework application.



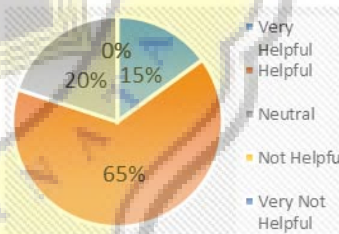
3. 25% of respondents said it was very helpful to use the framework and 45% of respondents said it was helpful when they used the framework developed by the researchers to make a game collaboratively. While 30% of respondents said it was common to use framework as a supporting tool for game development.



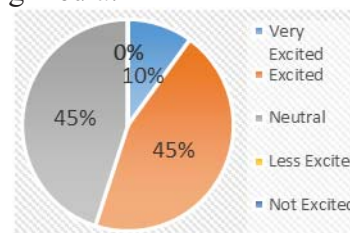
7. When asked whether ...almost all 15 % of respondents said it's very helpful and 65 % of respondents said it was helpful because of automatic installation features in Framework for collaborative learning. 20% of respondents said it was a common feature.



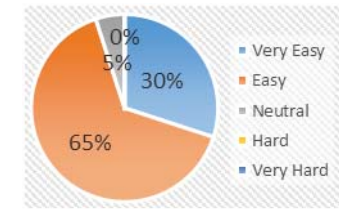
4. 10% of the respondents were very excited and the 45% respondents were excited when they made games as collaborative learning media with framework support. But the other 45% of respondents said it was common to use game as collaborative learning media.



8. The majority of the respondents reported that adding member features was easy (95%) while the rest of them reported that adding member features was common.

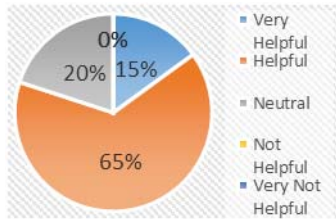


5. More than half of the respondent (70%) said that the features allowed them to create games easily.

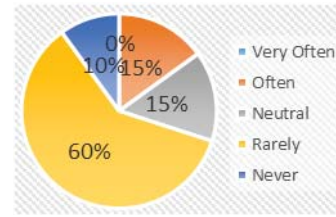


9. Editing features such as uploading, downloading, deleting was considered useful by the majority of the respondents. However, 20% of respondents said the editing features that are served is not useful.

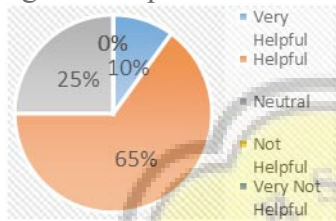




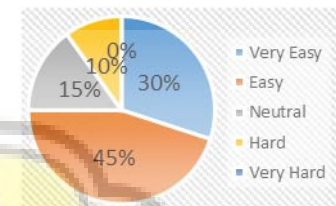
10. Responding to a question whether game template is useful, 10% of the respondents said it was very useful in the games development as learning media. 65% of respondents said it was useful. While 25% of the other respondents said that this game template is common.



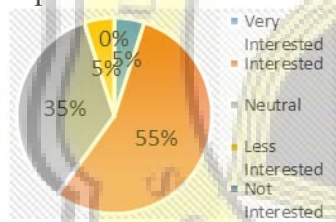
14. Three fourth of the respondents reported that it was easy to use cloud storage as a storage. However, 15% of the respondents said that using cloud storage is common. 10% of respondents said it's hard.



11. More than a half of the respondents wanted to develop other games using the framework. However, 35% of respondents are willing to developing more games with the framework. And 5% of respondents are less interested.

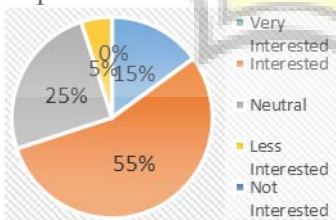


In addition to the close ended question items, we also asked students to describe their opinions in more detail. They said that the framework needs to be developed much better to make it easier for any programmer to install the framework. During installation, a stable Internet connection for data synchronization was key. Our respondents suggested that useful framework features for game development include a menu that said "Open game's templates" that are available after installing framework, and menus for easy data management such as Upload, Download, Delete, and Sync files), automatic installation of RPG and Dropbox.



12. Most of the respondents had a favorable view when asked whether it was more interesting to have RPG game across different platforms. The figure below shows respondents' answer. .

All respondents said they never saw an application like framework "RPG Game Maker Kit" for making a game in other places. They would like to see features like History in order to be able to check which team members have edited the file..



13. 15% of the respondents reported that they often used Dropbox application whereas 15% of the respondents used Dropbox application occasionally. The rest of them had no experience using Dropbox.

## V. CONCLUSION

The results from this study indicated that most of resepondents had favorable view towards collaborative game making using "RPG Game Making Kit" Framework.

They reported that games could be used as collaborative media for learning.

The framework was considered very helpful for game development. The features made it easier for the management of file sharing among team members.

## ACKNOWLEDGMENT

I am very much obliged and very proud for the Beasiswa Unggulan scholarship from Bureau for Planning and International Cooperation, the Indonesian Ministry of Education and Culture of Indonesia who believed that I deserved this scholarship. This scholarship is a great help for me to finish my study in due time.

## REFERENCES

- [1] B. L. Smith and J. MacGregor, "What is Collaborative Learning?," *Collab. Learn. A Sourceb. High. Educ.*, pp. 1–11, 1992.
- [2] A. R. Christanti, R. Sanjaya, and C. T. Murniati, "Developing Educational Game for Collaborative Learning," *Int. Semin. Appl. Technol. Inf. Commun.*, pp. 1–6, 2016.
- [3] M. Papastergiou, "Online Computer Games as Collaborative Learning Environments: Prospects and Challenges for Tertiary Education," *J. Educ. Technol. Syst.*, vol. 37, no. 1, pp. 19–38, 2008.
- [4] T. Lewis, L. Rosentein, W. Pree, A. Weinand, E. Gamma, P. Calder, G. Andert, J. Vlissides, and K. Schmucker, "Object Oriented Application Frameworks," pp. 1–8, 1995.
- [5] G. Stahl, T. Koschmann, and D. Suthers, "Computer-supported collaborative learning: An historical perspective," *Cambridge Handb. Learn. Sci.*, no. 2006, pp. 409–426, 2006.
- [6] Kappa Delta Pi, *John Dewey Experience & Education*, Touchstone. New York: Simon & Schuster Inc., 1997.
- [7] UNESCO, *Education for people and planet : Creating Sustainable Futures For All*, Second Edi. Paris: the United Nations Educational, Scientific and Cultural Organization, 2016.
- [8] A. G. Anuradha, "Collaborative Learning Enhances Critical Thinking," *J. Technol. Educ.*, vol. 7, no. 1, 1995.
- [9] D. Schaffhauser, "Will Gaming Save Education , or Just Waste Time?," *THE Journal*, pp. 1–5, 2013.
- [10] D. Riehle and T. Gross, "Role model based framework design and integration," *ACM SIGPLAN Not.*, vol. 33, no. 10, pp. 117–133, 1998.
- [11] P. Terbaru and K. Terbaru, "Apa Itu Framework?," 2016. [Online]. Available: <http://www.devaradise.com/id/2013/12/mengenal-pengertian-framework-website.html>. [Accessed: 01-Jan-2016].