1.1 Company Profile

- **About Harbinger Group**

Founded in 1990, the Harbinger Group is a global provider of software products and services. The Harbinger mission is to enhance business performance through learning technology. The two group companies are Harbinger Knowledge Products and Harbinger Systems.

Harbinger Group has made it to the top twenty lists of Specialized Learning Process Providers brought out by TrainingOutsourcing.com, a leading analyst in business strategies for learning, based in Cary, North Carolina, USA.

- **Harbinger Systems Pvt. Ltd.**

It is the creator of Elicitus, the globally benchmarked, award-wining rapid authoring tool and Raptivity, the world's first rapid interactivity builder, which is based on a patent-pending technology.

The company also provides custom e-learning design and development services to clients worldwide. It offers consulting

services to help clients select optimal packages of learning tools and products.

The Harbinger Knowledge Products team consists of subject experts, instructional designers, writers, graphic artists, animators and programmers who have the experience and expertise to meet e-learning demands from across the world.

The hundred-plus satisfied global clients in over twenty-two countries stand testimony to the team's professional ability.

The Harbinger philosophy is to create value for its clients through a culture of continuous learning, respect for the individual, and innovation.

- **Raptivity**

Raptivity, the world's first rapid interactivity builder, helps you create true learning outcomes with meaningful interactivity.

The Raptivity library of pre-build interactions is based on best practices in instructional design and allows complete customization of each interaction.

Raptivity outputs your interactivity to a single swf file, which fits right into your e-learning tool.

Raptivity tracks completion status, score and responses and provides this information to authoring tools for SCORM/AICC tracking with LMS.

Anyone can use Raptivity with minimal learning and absolutely no programming.

- **Raptivity awards:**

Raptivity wins 2012 Readers' Choice Awards.

Raptivity Wins Platinum and Gold Awards at LearnX 2011.

Raptivity among Software Satisfaction Awards 2011 Finalists.

- **Harbinger Systems Pvt. Ltd.**

Harbinger Systems is a global company providing software technology services. Since 1990, Harbinger has developed a strong customer base worldwide. Our customers are software product companies ranging from hi-tech startups in Silicon Valley to leading product companies in the US and large in-house IT organizations.

We provide focused and specialized skills in Web 2.0, iPhone, eLearning, enterprise product development, performance engineering, systems software and digital marketing. Our services span solution consulting, software design, development, testing and test automation. We are a customer-centric, technology-focused company that thrives on learning and applying next generation technologies quickly and effectively.

Our customers perceive us as a trusted partner in their technology innovation. Harbinger Systems is part of Harbinger Group. Harbinger Group is a leading global provider of innovative software products and services. The Harbinger Group philosophy is to create value for its clients through a culture of continuous learning, respect for the individual, and innovation.

We are a fast growing company with offices in Redmond, Pleasanton and Pune. Harbinger is led by entrepreneurs who guide their team towards creating excellence and absolute customer satisfaction; while achieving growth for everyone in the organization.

The top management at Harbinger Systems has a rich experience in product innovation, product development strategies and cadre building.

1.2 Existing System & Need for System

Existing System-

The existing system refers to the traditional learning system i.e the system which includes Face to face standardized teacher training. Traditional System implies to classroom teaching where there is a Teacher who imparts education to Students through face to face communication. In traditional system, Students are supposed to attend the classroom sessions which are conducted by a teacher.

Need for System-

E-learning refers to the use of various kinds of electronic media and information and communication technologies (ICT) in education. E-learning is an inclusive terminology that encompasses all forms of educational technology that electronically or technologically support learning and teaching. Depending on whether a particular aspect, component or delivery method is given emphasis, e-learning may be termed **technology-enhanced learning** (TEL), **computer-based training** (CBT), **internet-based**

training (IBT), **web-based training** (WBT), **online education**, virtual education, or digital educational collaboration.

E-learning includes numerous types of media that deliver text, audio, images, animation, and streaming video, and includes technology applications and processes such as audio or video tape, satellite TV, CD-ROM, and computer-based learning, as well as local intranet/extranet and web-based learning.

Information and communication systems, whether free-standing or based on either local networks or the Internet in networked learning, underly many e-learning processes.

E-learning can occur in or out of the classroom. It can be self-paced, asynchronous learning or may be instructor-led, synchronous learning. **E-learning** is suited to distance learning and flexible learning, but it can also be used in conjunction with face-to-face teaching, in which case the term blended learning is commonly used.

Advantages of e-learning-

- Class work can be scheduled around work and family
- Reduces travel time and travel costs for off-campus students
- Students may have the option to select learning materials that meets their level of knowledge and interest
- Students can study anywhere they have access to a computer and Internet connection
- Self-paced learning modules allow students to work at their own pace
- Flexibility to join discussions in the bulletin board threaded discussion areas at any hour, or visit with classmates and instructors remotely in chat rooms
- Instructors and students both report eLearning fosters more interaction among students and instructors than in large lecture courses
- eLearning can accommodate different learning styles and facilitate learning through a variety of activities

- Develops knowledge of the Internet and computers skills that will help learners throughout their lives and careers
- Successfully completing online or computer-based courses builds self-knowledge and self-confidence and encourages students to take responsibility for their learning
- Learners can test out of or skim over materials already mastered and concentrate efforts in mastering areas containing new information and/or skills.

1.3 Scope of Work

- In technological parlance, the term 'progress' is associated with technical and scientific advancement, or anything, which enhances the comfort level, provided by the product. Raptivity has made tremendous progress today.
- Raptivity being a product has periodic releases and fortunately we got the chance to work on a module of Raptivity.
- For this proposed system, we have used “ACTION SCRIPT” technology. As ACTION SCRIPT is used primarily for the development of websites and software targeting the Adobe Flash Player platform, used on Web pages in the form of embedded SWF files.
- Raptivity is the system which is a platform for creating various e-learning courses.
- The system consists of more than 180 interactivities(templates) which can be used easily to develop the course material.

- The important feature that system provides is that it makes the course more interactive.
- Each interactivity (template) has number of customizations which allows course creator to design the course according to his & students need.
- After creating a course , creator has to just publish it & he may upload the course on LMS.
- System covers following areas –
    1) Create a new interacttivity.
    2) Customize the interactivity according to the need.
    3) See the preview of the template which will be the course material.
    4) Publish the course i.e after publishing it will be ready to get uploaded on any third party tools.
    5) When the learner starts using or experiencing the course material , his status or score details are tracked.

- Modules –

    1) Interactivity (template) generation module
    2) Customization module
    3) Publishing module which can be –
        - SFO
        - MFO
        - Mobile output
        - SCORM Complient
    4) Tracking Module
    5) Report generation

1.4 Operating Environment – Hardware and Software

- Hardware requirements-
    1. Intel Pentium III Processor or higher
    2. 512 MB RAM or higher
    3. 200 MB free hard disk space
    4. 256-color monitor or better
    5. Mouse or compatible pointing device
    6. CD-ROM or DVD-ROM drive

- Software Requirements-
    1. Flash Player 8 or above.
    2. Microsoft Windows 7 / Vista / Windows XP / Windows 2000.

- Any latest Browser-

    1. Safari
    2. Google chrome
    3. Opera
    4. Mozilla Firefox

1.5 Detailed Description of technology used

1. XML

Xml stands for Extensible Markup Language and is much like HTML. Xml is used to describe data. Therefore its tags are not predefined, you have to define your own tags. Converting the data to XML can greatly reduce complexity and create data that can be read by many different types of applications.

In our system Xml is used for creating storing Interaction data.

Basically-

1) XML stands for EXtensible Markup Language.
2) XML is a markup language much like HTML.
3) XML was designed to carry data, not to display data.
4) XML tags are not predefined. You must define your own tags.
5) XML is designed to be self-descriptive.

(Unicode) Character-

By definition, an XML document is a string of characters. Almost every legal Unicode character may appear in an XML document.

Processor and Application-

The *processor* analyzes the markup and passes structured information to an *application*. The specification places requirements on what an XML processor must do and not do, but the application is outside its scope. The processor (as the specification calls it) is often referred to colloquially as an *XML parser*.

Markup and Content-

The characters which make up an XML document are divided into *markup* and *content*. Markup and content may be distinguished by the application of simple syntactic rules. All strings which constitute markup either begin with the

character < and end with a >, or begin with the character & and end with a ;. Strings of characters which are not markup are content.

Tag-

A markup construct that begins with < and ends with >. Tags come in three flavors:

- *start-tags*; for example: <section>
- *end-tags*; for example: </section>
- *empty-element tags*; for example: <line-break />

Element-

A logical document component either begins with a start-tag and ends with a matching end-tag or consists only of an empty-element tag. The characters between the start- and end-tags, if any, are the element's *content*, and may contain markup, including other elements, which are called *child elements*. An example of an element is

<Greeting>Hello, world.</Greeting> (see hello world). Another is <line-break />.

Attribute-

A markup construct consisting of a name/value pair that exists within a start-tag or empty-element tag.

XML Declaration-

XML documents may begin by declaring some information about themselves, as in the following example:

<?xml version="1.0" encoding="UTF-8" ?>

2. ACTION SCRIPT

ActionScript is an object-oriented language originally developed by Macromedia Inc. (now owned by Adobe Systems). It is a dialect of ECMAScript(meaning it is a superset of the syntax and semantics

of the language more widely known as JavaScript), and is used primarily for the development of websites and software targeting the Adobe Flash Player platform, used on Web pages in the form of embedded SWF files. The language itself is open-source in that its specification is offered free of charge and both an open source compiler (as part of Apache Flex) and open source virtual machine (Mozilla Tamarin) are available.

ActionScript was initially designed for controlling simple 2D vector animations made in Adobe Flash (formerly Macromedia Flash). Initially focused on animation, early versions of Flash content offered few interactivity features and thus had very limited scripting capability. Later versions added functionality allowing for the creation of Web-based games and rich Internet applications with streaming media (such as video and audio). Today, ActionScript is suitable for use in some database applications, and in basic robotics, as with the Make Controller Kit.

Flash MX 2004 introduced ActionScript 2.0, a scripting language more suited to the development of Flash applications. It is

often possible to save time by scripting something rather than animating it, which usually also enables a higher level of flexibility when editing.

Since the arrival of the Flash Player 9 alpha (in 2006) a newer version of ActionScript has been released, ActionScript 3.0. ActionScript 3.0 is anobject-oriented programming language allowing far more control and code reusability when building complex Flash applications. This version of the language is intended to be compiled and run on a version of the ActionScript Virtual Machine that has been itself completely re-written from the ground up (dubbed AVM2).[2] Because of this, code written in ActionScript 3.0 is generally targeted for Flash Player 9 and higher and will not work in previous versions. At the same time, ActionScript 3.0 executes up to 10 times faster than legacy ActionScript code due to the Just-In-Time compiler enhancements.[3]

Flash libraries can be used with the XML capabilities of the browser to render rich content in the browser.

Data types-

ActionScript primarily consists of "fundamental" or "simple" data types which are used to create other data types. These data types are very similar to Java data types. Since ActionScript 3 was a complete rewrite of ActionScript 2, the data types and their inheritances have changed.

Top level data types-

- String - A list of characters such as "Hello World"
- Number - Any Numeric value
- Boolean - A simple binary storage that can only be "true" or "false".
- Object - Object is the data type all complex data types inherit from. It allows for the grouping of methods, functions, parameters, and other objects.

Complex data types-

There are additional "complex" data types. These are more processor and memory intensive and consist of many "simple" data types. For AS2, some of these data types are:

- MovieClip - An ActionScript creation that allows easy usage of visible objects.
- TextField - A simple dynamic or input text field. Inherits the Movieclip type.
- Button - A simple button with 4 frames (states): Up, Over, Down and Hit. Inherits the MovieClip type.
- Date - Allows access to information about a specific point in time.
- Array - Allows linear storage of data.
- XML - An XML object
- XMLNode - An XML node
- LoadVars - A Load Variables object allows for the storing and send of HTTP POST and HTTP GET variables

- Sound
- NetStream
- NetConnection
- MovieClipLoader
- EventListener

Appeared in- 1998

Designed By- Gary Grossman

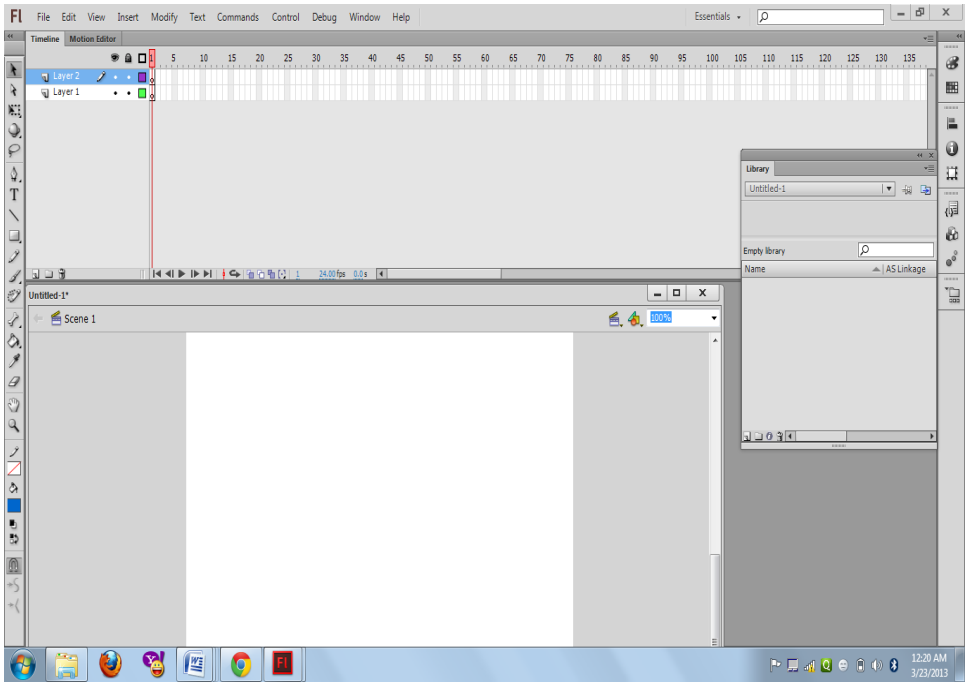
Developer- Macromedia (now Adobe systems)

Major Implementations- Adobe Flash, Apache Flex

O.S – Cross-Platform

File extension- .as

Flash CS4-


File Edit View Insert Modify Text Commands Control Debug Window Help
Essentials
Timeline
Motion Editor
Layer 2
Layer 1
Library
Untitled-1
Empty library
Name
AS Linkage
Untitled-1*
Scene 1
100%
12:20 AM
3/23/2013

2.1 Proposed System

Raptivity for E-learning-

Electronic learning (or **e-Learning** or **eLearning**) is a type of Technology supported education/learning (TSL) where the medium of instruction is through computer technology-learning is used interchangeably in a wide variety of contexts .In companies; it refers to the strategies that use the company network to deliver training courses to employees. Lately in most Universities, e-learning is used to define a specific mode to attend a course or programs of study where the students rarely, if ever, attend face-to-face for on-campus access to educational facilities, because they study online

Features of Raptivity 7.0-

- AS3 published output.
- Flash output is also supported along with HTML5 output.
- Single flash file output- after customization of interactivity, all the customized images, audio and other assets are merged

into a single swf file.

•Multiple File output- one HTML file is created along with all the required assets.

2.2 Objectives of System

- There is a need to view Raptivity output in all IOS devices like iPhone, iPad also in Android. Flash files are not supported on IOS devices. The aim is to remove flash dependency and hence to make Raptivity output compatible with all desktop browsers which support HTML5 features, IOS devices and also all the operating systems.
- Convert existing Raptivity Flash interactions to HTML5.
- Create m-Learning interactions quickly and easily.
- Develop interactions that can play on various devices - laptops, tablets and smart phones.
- Make the interaction models compatible with various third party tools such as third party LMS. Make it work on Different browsers.
- Make the learning more interactive with the use of Action Script.
- Provide the functionality allowing for the creation of

animations with streaming media (such as video and audio).

- enable learner to take the courses offline and publish the various updates like scores or completion status when they are online again.

Tracking Support-

- You can choose to publish the interactivity with tracking. To publish the interactivity with tracking, you need to select the option 'Publish with tracking'.
- The information that is tracked is mentioned in the Output Parameters section for the interactivity. For all interactions, the completion status is tracked. For some of the interactions, score and results are tracked.
- Moodle LMS is SCORM 1.2 and SCORM 2004 compliant. You need to first publish the Raptivity Interaction as SCORM 1.2 or SCORM 2004 compliant. Please ensure that the interaction is published as a HTML5 output. After publishing

the interaction, you can then zip the published output and host it on Moodle. Please follow the below mentioned steps to import the published output to Moodle LMS.

I) Importing the Output:

1. Type the URL Moodle server / URL path in any browser.
2. Home page for the Moodle LMS will be displayed with the login link.
3. By clicking on the login link, the Login page for Moodle LMS will be displayed. Then enter your username and password on this page.
4. Click on the ‘Courses’ on the ‘Site Administration’ panel.
5. Click on the ‘Add/edit courses’ link from the same panel under ‘Courses’.
6. Click on ‘Add a new course’ button.
7. Enter the details about the course.

Note: The value of following parameters should be mentioned as listed below:

1. Format – SCORM format.
2. Availability – This course is available to students
3. Force Language – English

8. Assign the roles to the course.
9. We can assign different roles to the course such as administrator, teacher, student, etc. An access right on the course depends on the role of the user (Description for each role is mentioned on the 'Assign Role' Page).

1 To assign students to the course, click on '**student**' link.

2 Select '**name of user**' from right panel.

3 Click on left arrow to add to the students list.

4 Click on '**Assign roles in Course ID**' button to save (here actual id of course will be displayed).

5 Click on the '**Click here to enter your course**' button.

6 Click on '**continue**' to add SCORM package.

7 Enter name and summary. Then click on '**Choose or update a file**' button.

8 Click on '**upload a file**' button in the displayed window.

9 Click on '**Browse**' and search for '**SCORM.zip**' package.

10 Then click on '**upload this file**' button. (Now you will find the message '**File uploaded successfully**' displayed on top of the window.)

II) To Access the course from admin side:

1. To view the course, click on the course name link under the course structure.

2. Attend the course.

3. Click on '**Exit activity**' link on top right corner to exit from the course.

III) To view reports of the attempted course by the student:

After attempting one or more time, you can find the '**view reports for 1 attempts** (number of attempt)' link on the top right corner of

the course page.

1. Click on '**view reports for 1 attempts**' link
2. You can find the name, attempt, start and end date and score on the displayed page.
3. Click on '**attempt number**' under attempt header.
4. Now, you will find the name, status, total time, score and '**track details**' link. By clicking on the '**track details'** link, you can find all the other details.

2.3 User Requirements

The purpose of requirement analysis is to identify quantities required for the application in terms of functionality, performance, ease of use and so on. The task of developer is at this stage is to determine exactly what it is that the client needs. It is helpful to use requirement's determination through two major activities:

Raptivity is rapid interactivity tool for effective learning.

Raptivity it is product of Harbinger Knowledge product Pvt ltd. This Product is used to create E-learning Content using different interactive module.

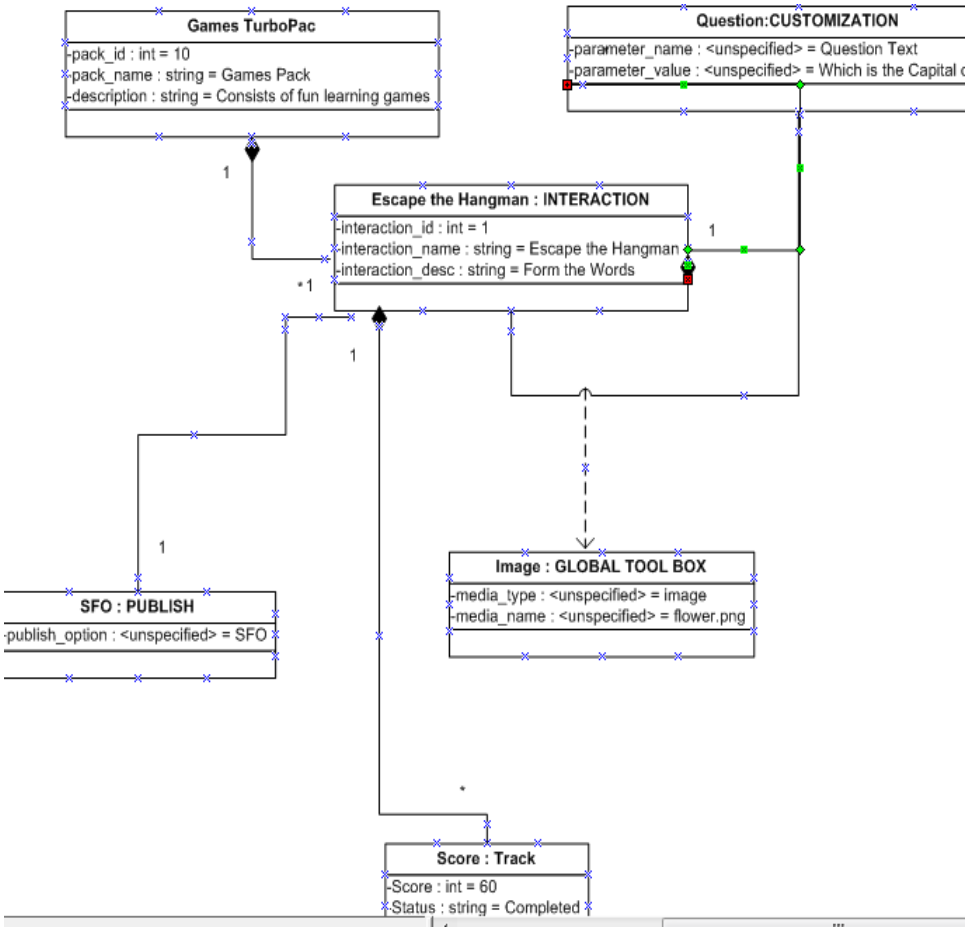
There are total 15 pack of this product . Each pack contains different interactivity module of similar kind. E.g Raptivity Booster Pack1 contains Certificate of Completion Interactivity module. In that user can develop Certificate for there student in there organization with different dynamic future such as

- Company Logo
- Authorized Signature
- Certificate Title
- Certificate Statement
- Certificate Holder Name
- Name of Course Completed
- Date on which course completed.

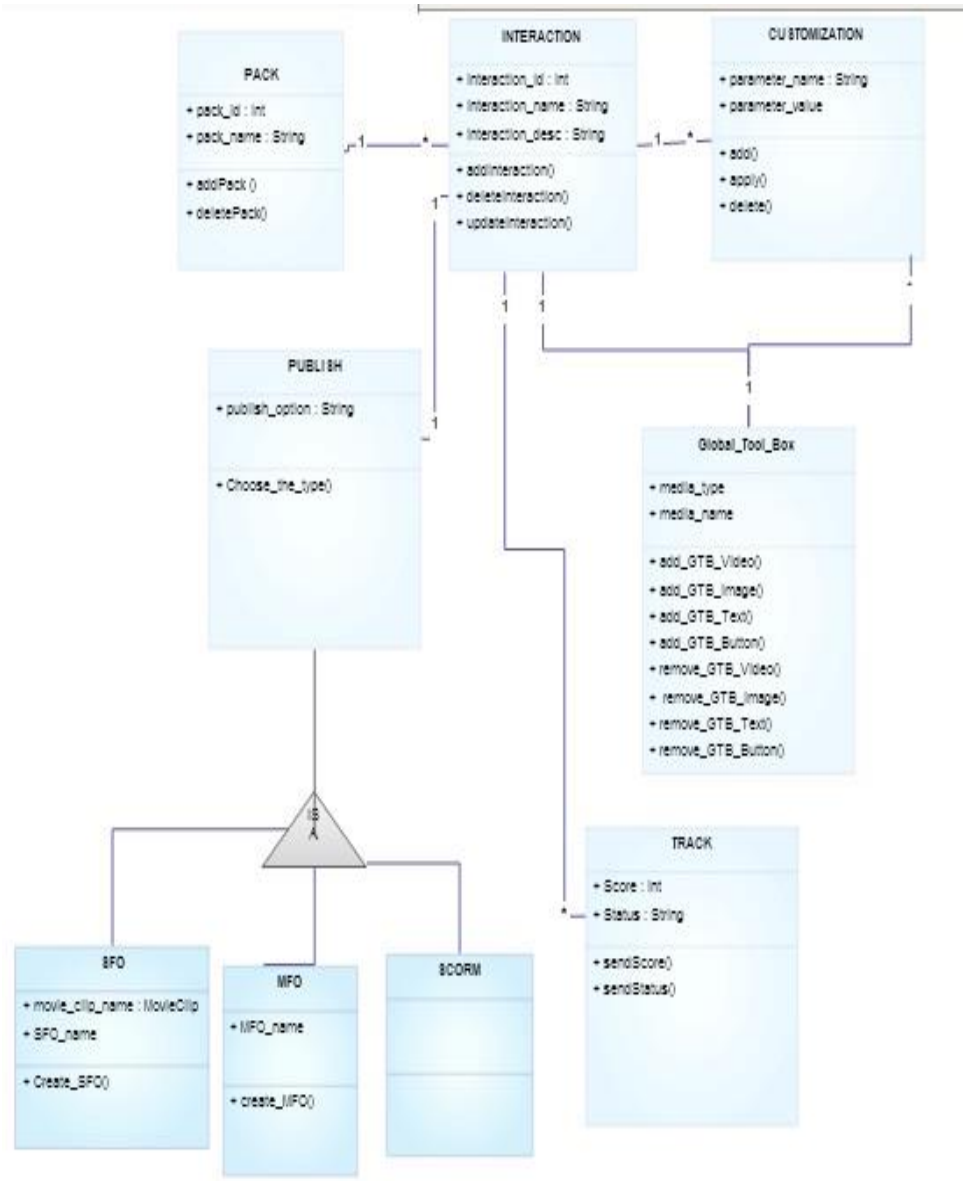
Raptivity Essential

Raptivity Essential Pack contains a dozen different categories which come with 35 interaction models that can be easily customized. The interactions are 508 compliant, SCORM 1.2, SCORM 2004 and AICC compliant. All interaction templates have HTML5 and Flash publishing capability(AS2 and AS3).

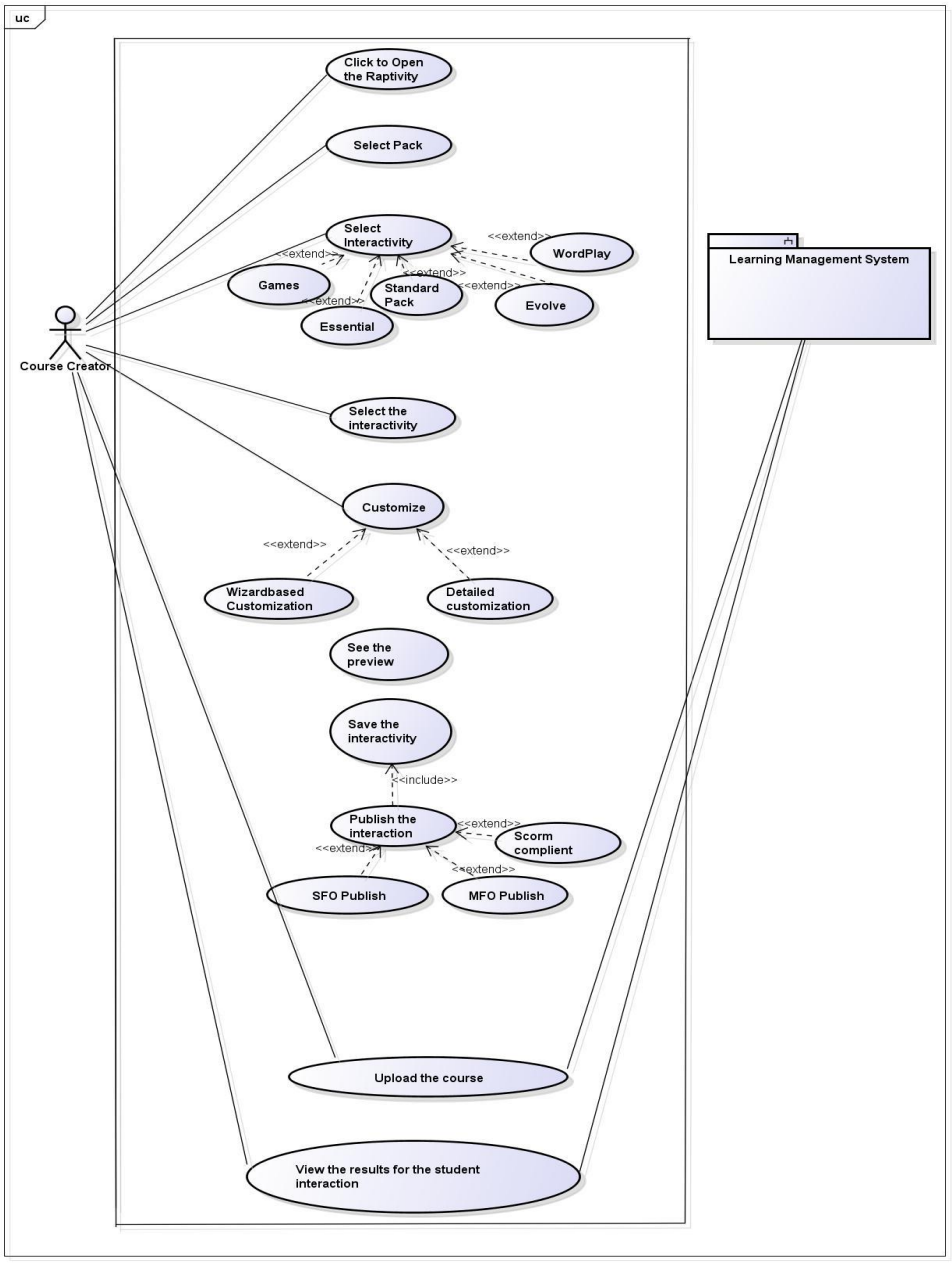
3.1 Object Diagram –



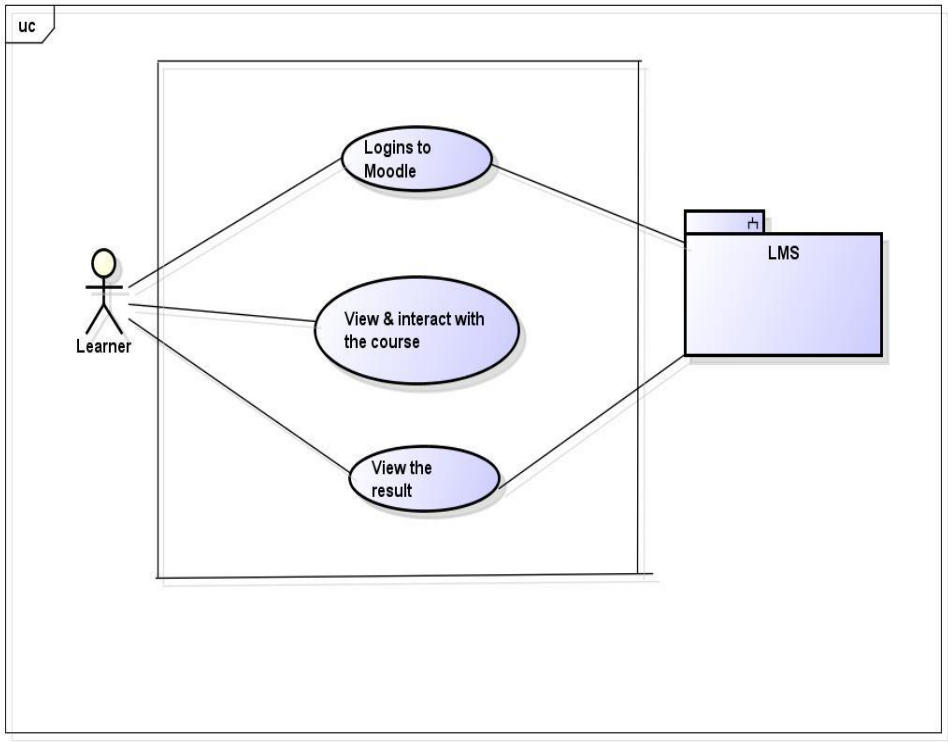
3.2 Class Diagram –



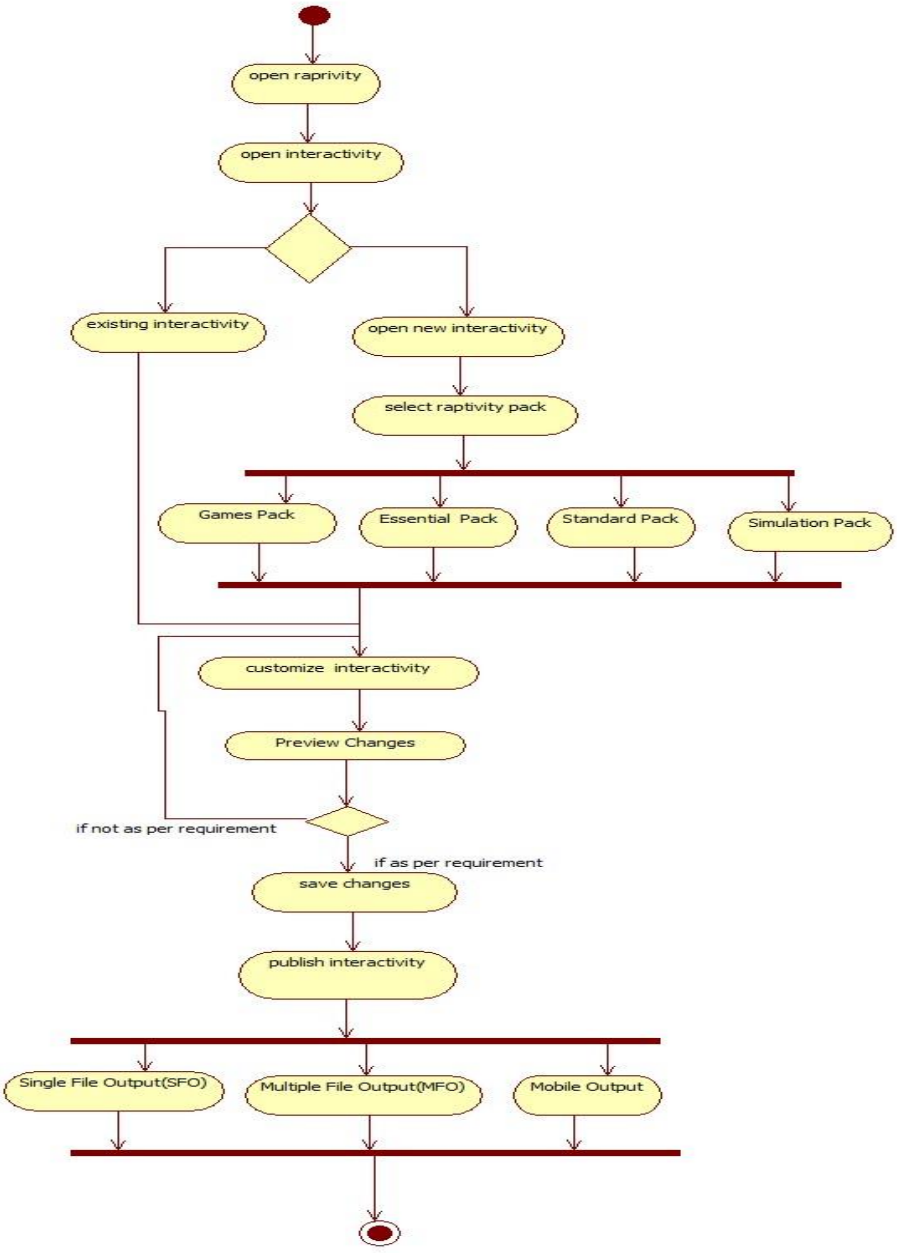
3.3 Use case diagram –



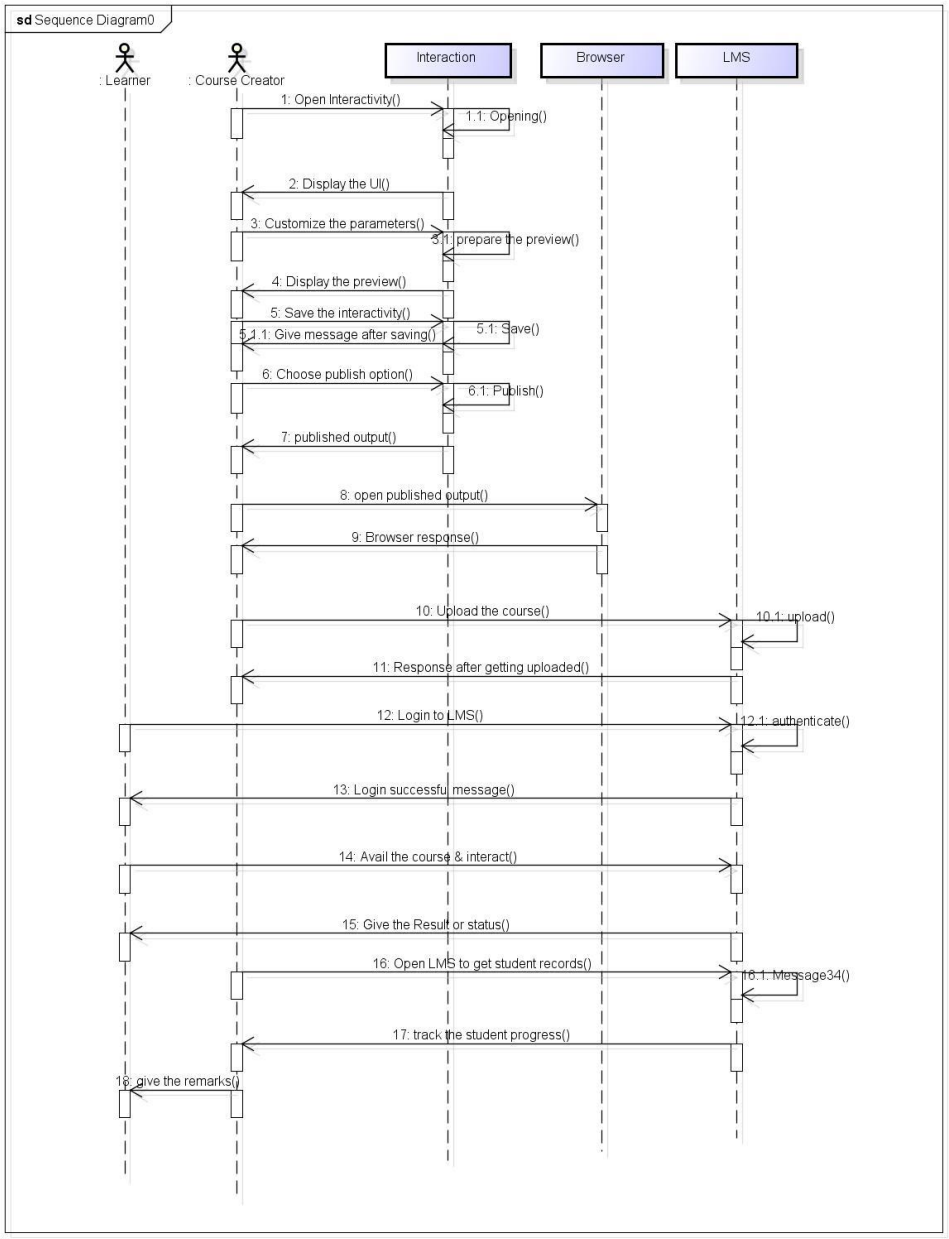
Learner-centric approach-



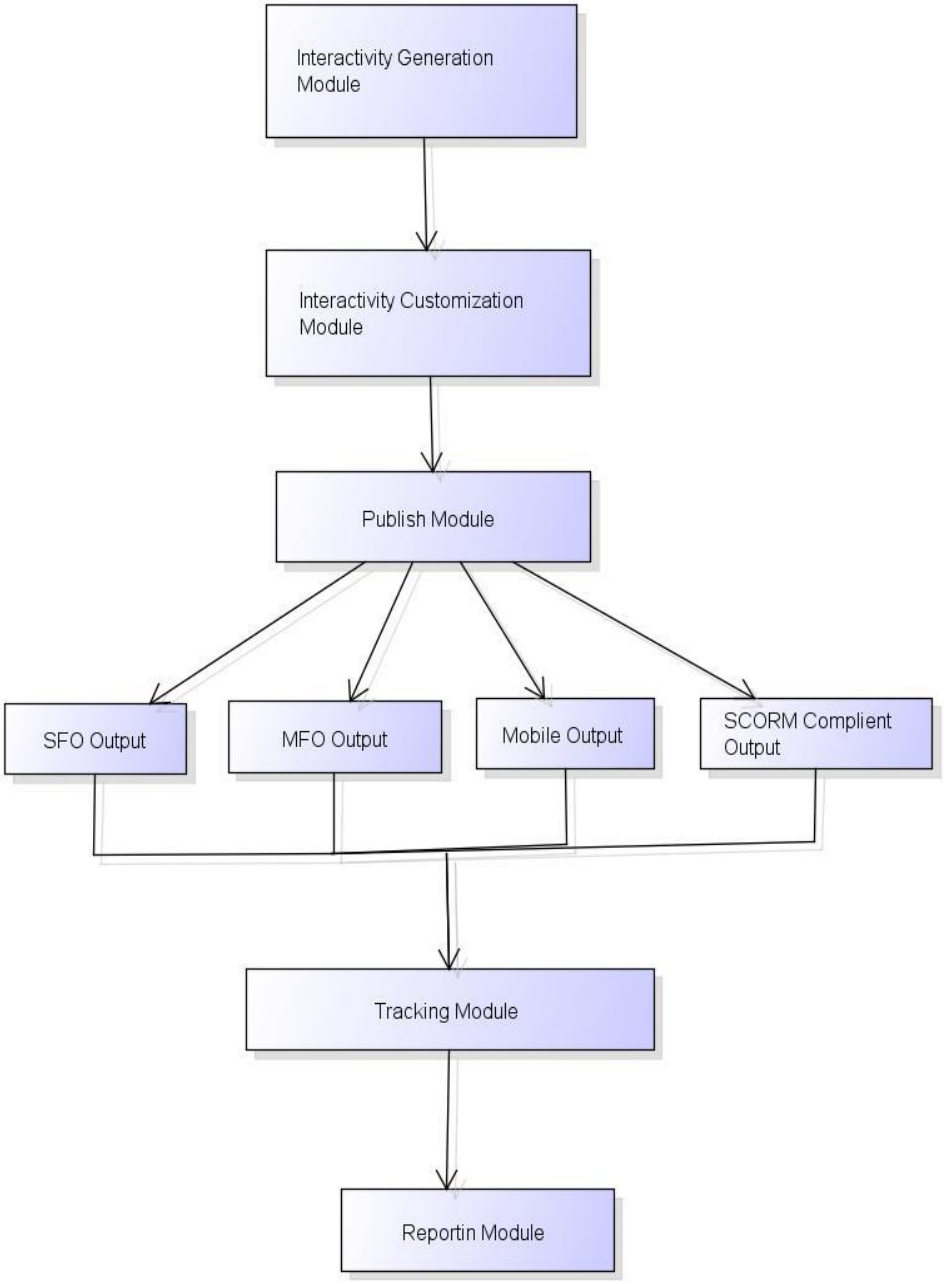
3.4 Activity Diagram-



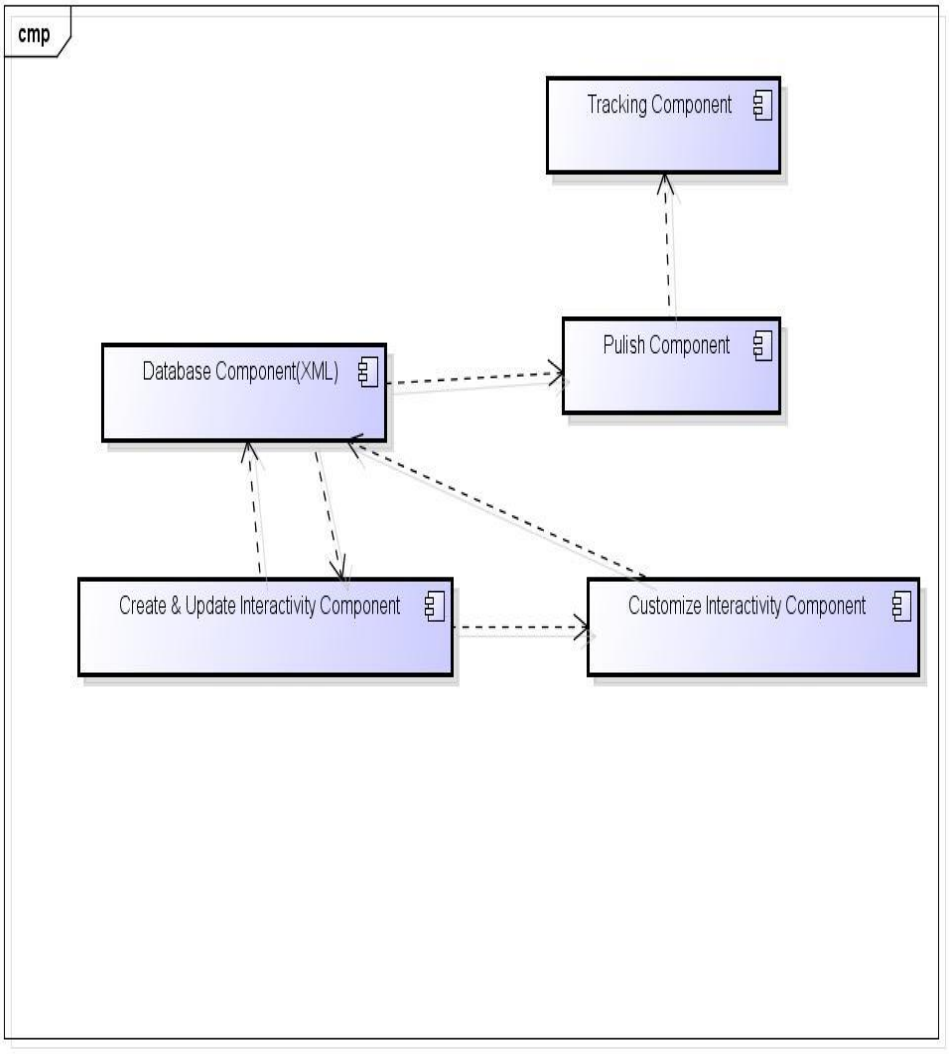
3.5 Sequence Diagram –



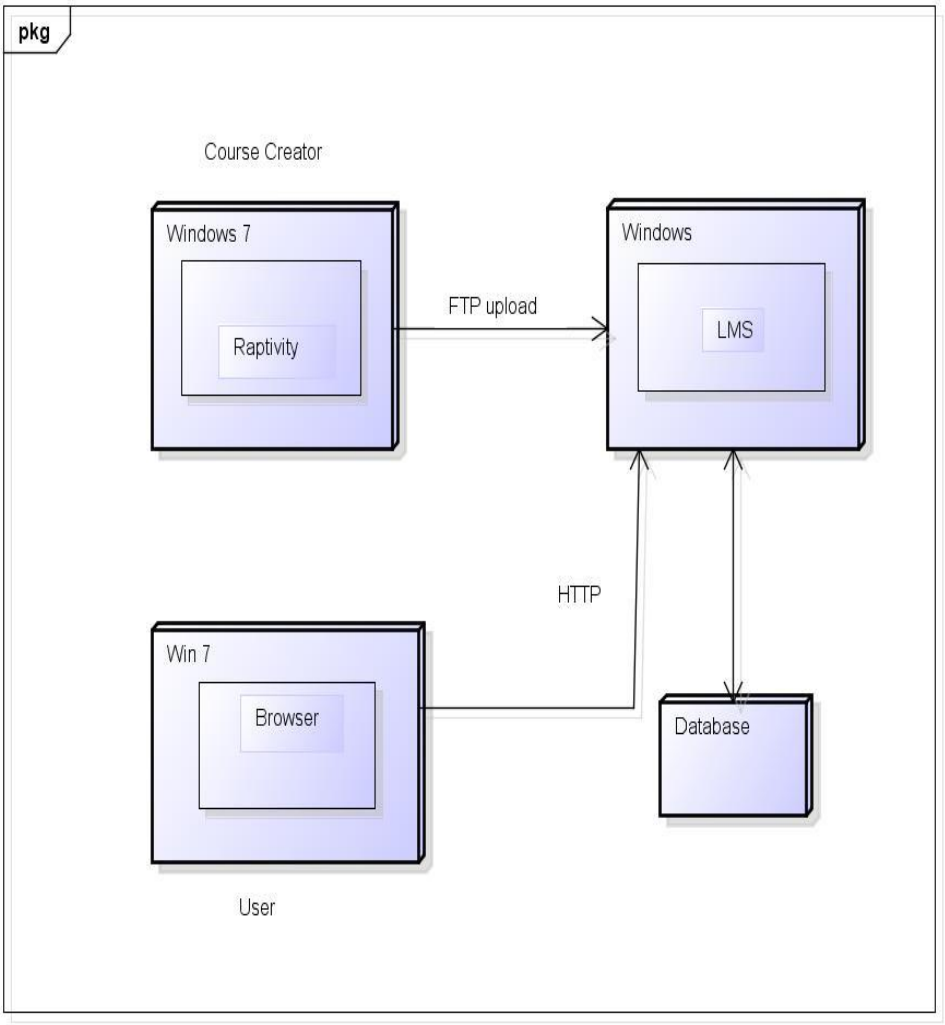
3.6 Module Hierarchy Diagram –



3.7 Component Diagram –



3.8 Deployment Diagram



3.9 Module Specification

- Interactivity generation module –

  It consists of the actions which are performed for choosing the pack & interaction & then saving it.

  Initially the pack is chosen then accordingly the interactivities from that pack are displayed from which user selects the required interactivity.

- Interactivity Customization module-

  It consists of handling all the customizations those are made in the interactivity & showing the preview.

  When customizations are done that time the xml for the particular interactivity is modified accordingly which is further used to produce the required output.

- Publish-

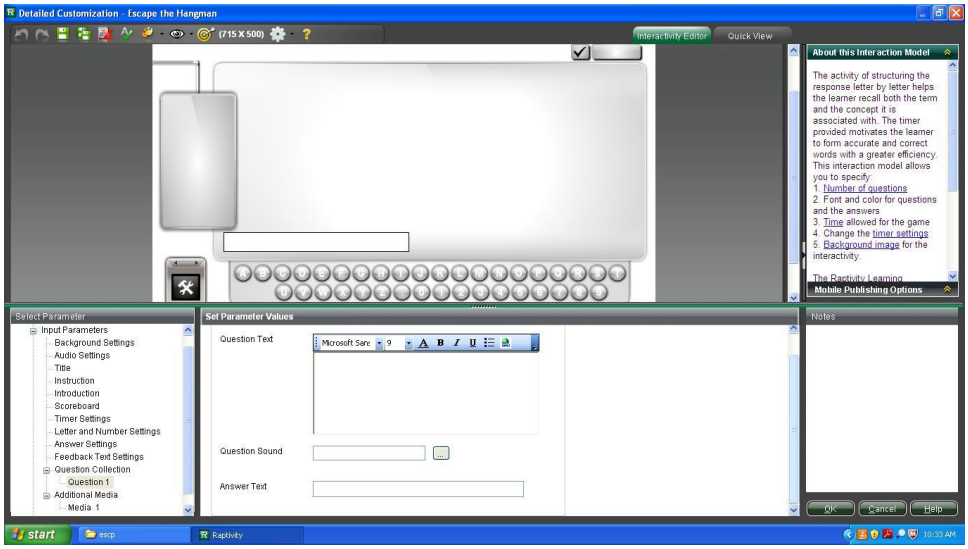
  It deals with applying all the customization through code & generating the output. Here the xml that is created after customization is parsed and the swf file is generated as the output. Here publish can be SFO publish, MFO publish or mobile publish.

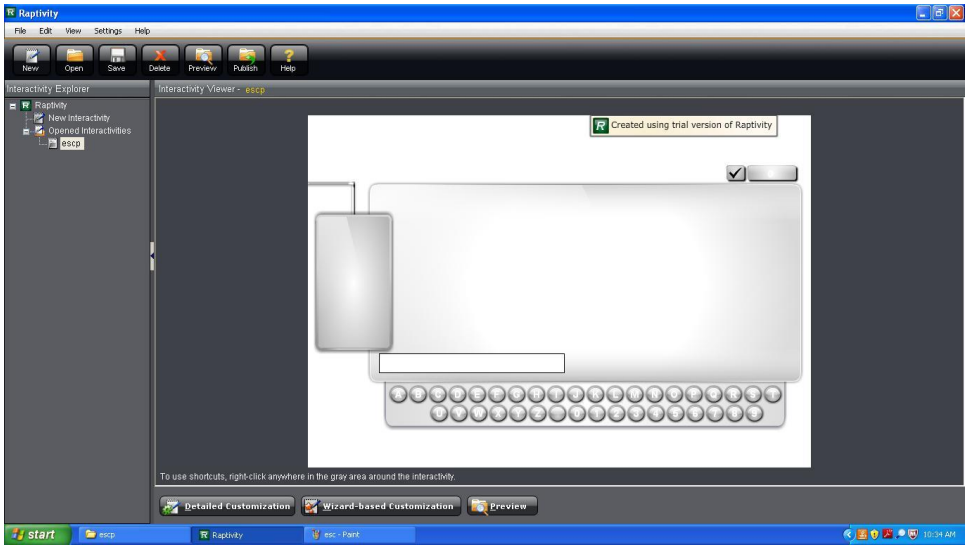
- Track-

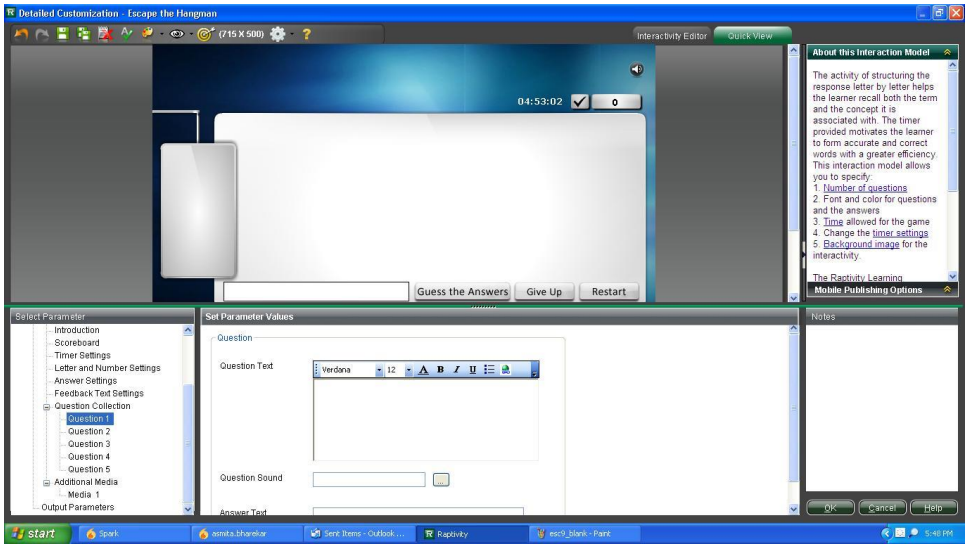
  Its related with SCORM compliance which tracks the learner status & score. Here for each user action while experiencing the interactivity, a track is maintained or particular score is evaluated & it is uploaded on LMS.

3.10 User Interface Design –

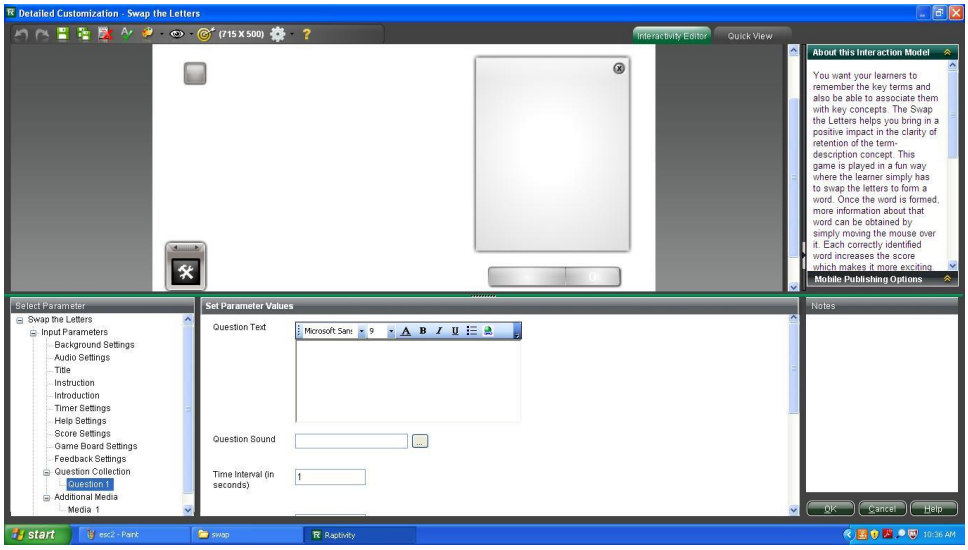
1. Escape the Hangman –

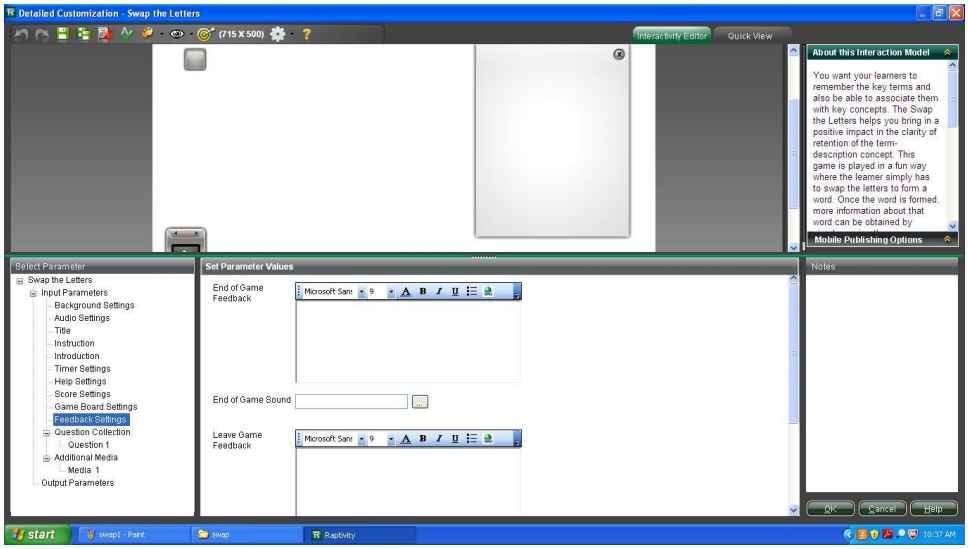


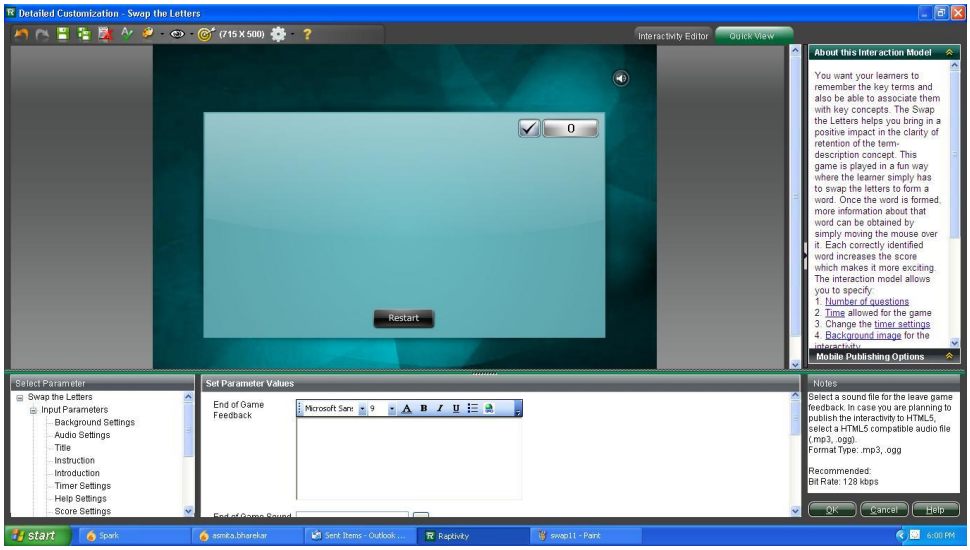



Detailed Customization - Escape the Hangman
(715 X 500)
Interactivity Editor
Quick View
04:53:02
0
Guess the Answers
Give Up
Restart
About this Interaction Model
The activity of structuring the response letter by letter helps the learner recall both the term and the concept it is associated with. The timer provided motivates the learner to form accurate and correct words with a greater efficiency. This interaction model allows you to specify:
1. Number of questions
2. Font and color for questions and the answers
3. Time allowed for the game
4. Change the timer settings
5. Background image for the interactivity.
The Raptivity Learning
Mobile Publishing Options
Select Parameter
Introduction
Scoreboard
Timer Settings
Letter and Number Settings
Answer Settings
Feedback Text Settings
Question Collection
Question 1
Question 2
Question 3
Question 4
Question 5
Additional Media
Media 1
Output Parameters
Set Parameter Values
Question
Question Text
Verdana
12
Question Sound
Answer Text
Notes
OK
Cancel
Help
start
Spark
asmita.bhavekar
Sent Items - Outlook ...
Raptivity
esc9_blank - Paint
5:48 PM

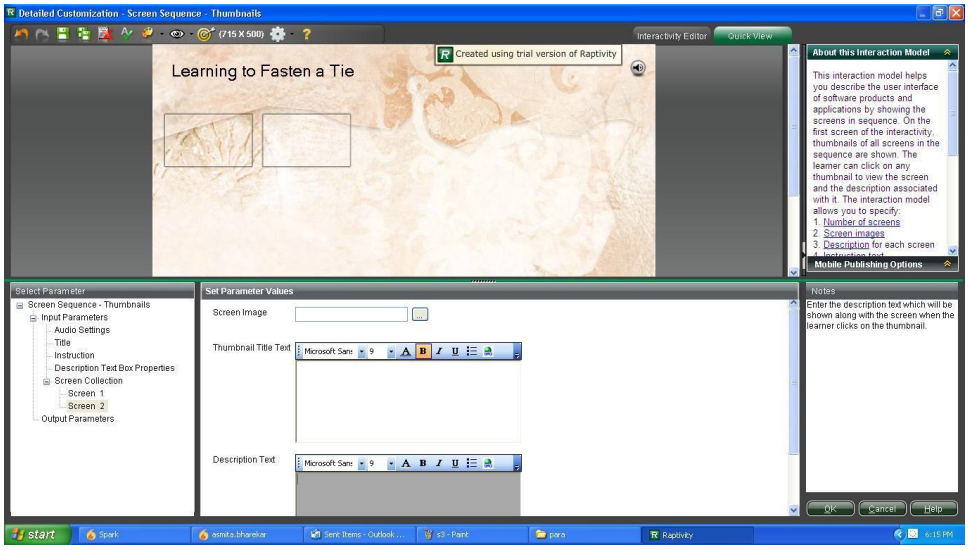
2. Swap the Letters –



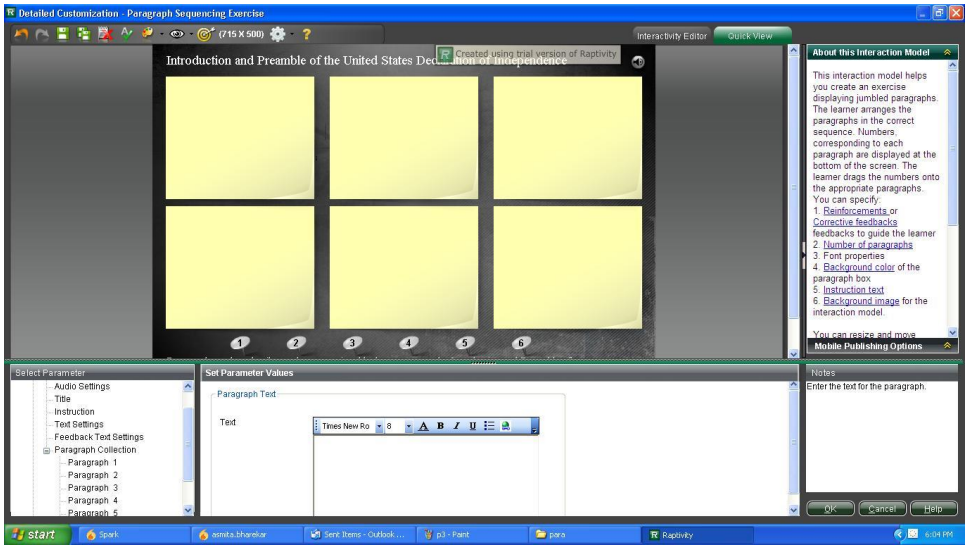



Detailed Customization - Swap the Letters
(715 X 500)
Interactivity Editor
Quick View
About this Interaction Model
You want your learners to remember the key terms and also be able to associate them with key concepts. The Swap the Letters helps you bring in a positive impact in the clarity of retention of the term-description concept. This game is played in a fun way where the learner simply has to swap the letters to form a word. Once the word is formed, more information about that word can be obtained by simply moving the mouse over it. Each correctly identified word increases the score which makes it more exciting. The interaction model allows you to specify:
1. Number of questions
2. Time allowed for the game
3. Change the timer settings
4. Background image for the interactivity
Mobile Publishing Options
0
Restart
Select Parameter
Swap the Letters
Input Parameters
Background Settings
Audio Settings
Title
Instruction
Introduction
Timer Settings
Help Settings
Score Settings
Set Parameter Values
End of Game Feedback
Microsoft Sans
Notes
Select a sound file for the leave game feedback. In case you are planning to publish the interactivity to HTML5, select a HTML5 compatible audio file (.mp3, .ogg).
Format Type: .mp3, .ogg
Recommended:
Bit Rate: 128 kbps
OK
Cancel
Help
start
Spark
asmita.bharekar
Sent Items - Outlook ...
Raptivity
swap11 - Paint
6:00 PM

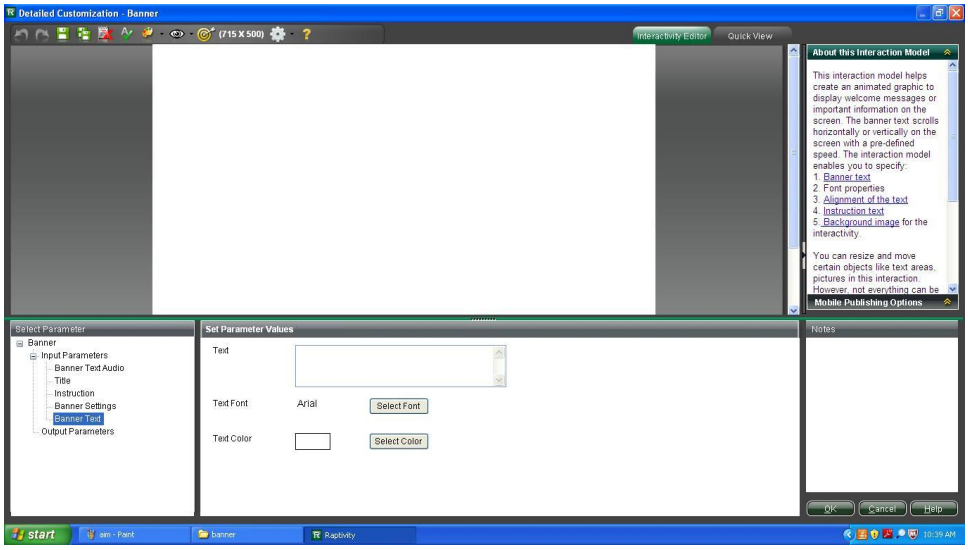
3. Screen Sequence Thumbnails –



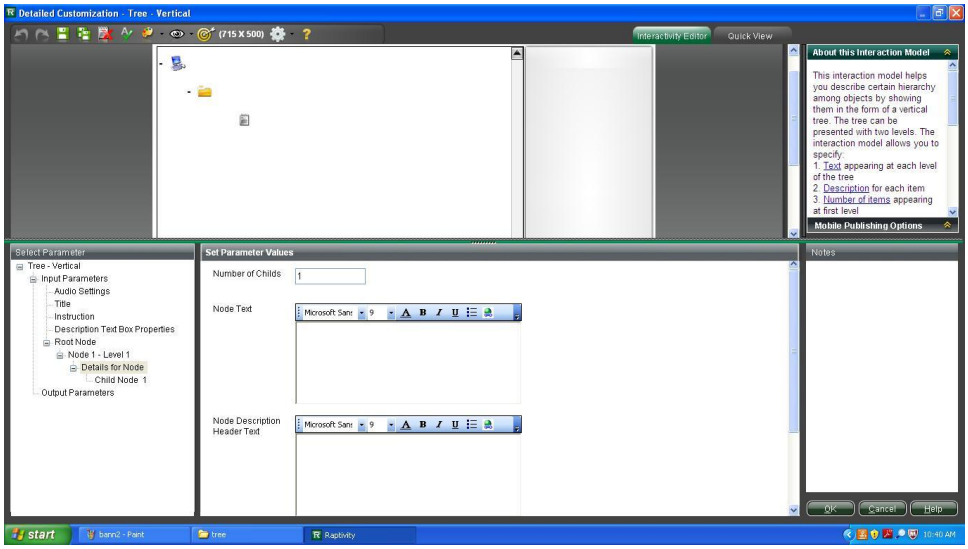
4. Paragraph Sequencing exercise -



5. Banner –



6. Tree Vertical-



3.11 Table Specifications

For global parameters

Sr. No.	Input Parameter	Type	Description
1	Image Scaling	Text	It is either stretch / maintain aspect ration
2	Background Type	Text	Its selects the Background Type i.e either background color/ image/none
3	Background Image	Text	Gives the path of the background image
4	Background ImageWidth	Number	It is the Background Image Width
5	Background ImageHeight	Number	It is the Background Image Height
6	Background Color	Text	It is the Background Color in RGB format
7	Show Audio Control	Boolean	It decides whether to show the audio control or not
8	Audio Control Image Type	Text	It can be Default Audio Graphic or Upload an image
9	Image for audio ON	Text	It's the path for audio control when in unmute state
10	Image for audio OFF	Text	It's the path for audio control when in mute state
11	Title	Text	It's the title text
12	Always display the Instruction	Boolean	It decides whether to show the instruction or not
13	InstructionPosition	Text	It has x, y, height, width for the instruction

Sr. No.	Input Parameter	Type	Description
14	SndPosition	Text	It has x, y, height, width for the audio control
15	TitlePosition	Text	It has x, y, height, width for the Title
16	Number of Nodes	Number	It's the no. of GTB items added
17	ToolBoxPosition	Text	It has x, y, height, width for the GTB
18	Set Image	Text	Gives the path of the GTB image
19	Set Text	Text	It's the GTB text
20	Set Video	Text	Gives the path of the GTB video
21	Mute other Audio	Boolean	If true then mutes all the audio except video
22	Button Image	Text	Gives the path of the GTB button image
23	Button Action Type	Text	Its either text, image or video

For screen sequence thumbnails

Sr. No.	Input Parameter	Type	Description
1	Play Introduction Sound	Boolean	It decides whether to play the introduction sound
2	Introduction Sound File	Text	Gives the path of the intro sound file
3	ThumbnailPosition	Text	It has x, y, height, width for the thumbnail
4	Screen Image	Text	Gives the path of the screen image of the thumbnail
5	Description Text	Text	It's the description text when screen image appears
6	Voiceover	Wave	It's the path for audio file
7	Show Thumbnail Border	Boolean	It decides whether to show the thumbnail border or not

For Banner IM -

Sr. No.	Input Parameter	Type	Description
1	Banner Sound File	Wave	It's the path for audio file
2	Play Banner Sound	Boolean	It decides whether to play the banner sound or not
3	Banner Type	Text	It can be vertical or horizontal
4	Align	Text	Gives the alignment for the banner text
5	Display Choice	Text	It can be entirely/letter by letter
6	Speed of rotation	Text	It can be slow/medium/fast
7	Text	Text	It's the banner text

3.12 Test Procedures and Implementation

1. Test case for global functionality

Test Case ID	Test Case Description	Test steps	Expected Result	Actual result	Status (P/F)
Title_Instruction 1	To check the color & font for the title & instruction	Set color & font style to title	Color & font style must get applied to the title & instruction	Color & font style gets applied	Pass
Title_Instruction 2	Check the scroll	Enter a large text	Scrollbar should appear	Scrollbar appears	Pass
Title_Instruction 3	Check the depth	Adjust the flexi such a way that title or instruction should overlap a button	Depth of title or instruction should be greater	Title & Instruction are at highest Depth	Pass
Background_settings 1	To check the “image scaling-stretch ” option	Apply image scaling as “stretch” & attach image.	Image should get properly stretched	Image got properly stretched	Pass

Test Case ID	Test Case Description	Test steps	Expected Result	Actual result	Status (P/F)
Background_settings 2	To check the "image scaling-maintain aspect ratio" option	Apply image scaling as "maintain aspect ratio" & attach image with small size	Applied image size should be same as that of its actual size	Image applied properly	Pass
Background_settings 3	To check background color	Apply background type as "Background color"	Background color should get applied	Backcol or got applied	Pass
SFO_test	To check if publish with SFO option is working	Publish the output as SFO	All images & sounds should get properly loaded	Images & sounds loaded proprly	Pass
MFO_test	To check if publish with MFO option is working	Publish the output as MFO	File should get published in MFO	File got publishe d in MFO	Pass
Introduction Settings 1	To check the formatting of introducti on text	Apply different formatting to intro text	All the formatting should get applied	Formatti ng is applied properly	Pass

Test Case ID	Test Case Description	Test steps	Expected Result	Actual result	Status (P/F)
Introduction Settings 2	To check the scroll	Add a large intro text	The buttons for scrolling should be visible & on clicking on them text must scroll	Scrollbar appears	Pass
Introduction Settings 3	To check intro image	Apply different types of images i.e .png, .jpeg, .jpg	All images should be attached properly at expected position	Images are at right position	Pass
GTB_test 1	To verify GTB depth	Add GTB items through the toolbox	GTB items should be above all IM specific components except feedback screen	GTB items are at highest depth	Pass

Test Case ID	Test Case Description	Test steps	Expected Result	Actual result	Status (P/F)
GTB_test 2	To verify GTB video & GTB popup video	Add GTB video & GTB popup video	When we open the popup the GTB video should get stopped	GTB video stopped on popup open	Pass
GTB_test 3	To verify GTB popup text scrolling	Add GTB popup text	When we click on popup button GTB text should not be scrollable	GTB popup text is not scrollable	Pass
Button test	To verify button functionality when no image is applied	For all the buttons do not set any image	All the buttons should not be clickable & hand-cursor should not be shown	Buttons are not clickable if no image is attached	Pass

2. Test Case for IM specific functionality of Escape the Hangman IM –

Test Case ID	**Test Case Description**	**Test steps**	**Expected Result**	**Actual result**	**Status (P/F)**
Show_intro screen	To check when intro-Screen appears	Uncheck The show-intro flag	Intro-screen does not appear	Intro screen didn't appear	Pass
ShowTimer	To check when Timer appears	Uncheck The Show Timer flag	Timer should not be displayed	Timer not appeared	Pass
TimeInterval	To check time for the game	Set time in seconds	Timer & Game should be stopped when timeout happens	Timer & game got stopped	Pass
Time Out Feedback	To check if correct time out feedback appears & it is not editable	Set some text to time out feedback	Feedback should be appeared when timeout happens & that	Feedback appeared at the right time & it is not editable	Pass

			feedback should not be editable		
Timer Formatting	To check correct formatting for timer	Apply formatting for few fonts, font sizes, font-colors	All formatting should get applied to the timer	Proper formatting is applied	Pass
Question test1	To check if questions are evaluated properly	Answer a question correctly	The hangman should not be hang	On correct attempt the hangman walks away & didn't get hang	Pass
Question test2	To check if questions are evaluated properly	Answer a question incorrectly	The the hangman should be hanged	The hangman figure is drawn on each incorrect attempt	Pass
Question test2	To check if question text is not editable	Try to edit the question text	It should not be editable	It's not editable	Pass

Test Case ID	Test Case Description	Test steps	Expected Result	Actual result	Status (P/F)
Answer Test1	To check if user is able to answer a question through virtual keyboard	Use virtual keyboard to answer	On click of any letter is should appear in the blanks given for the answer	Virtual keyboard is working properly	Pass
Answer Test2	To check if user is able to answer a question through the text box	Type the answer in the textbox	The typed answer should get submitted & validated properly	User is able to user the textfield for answering the question	Pass
Score Test	To check the score evaluation	Play the questions & check the score	Score should get evaluated according to the max score	Score is evaluated correctly	Pass
Check Answer Btn	To check if on click of check answer	Click on check answer button	All the questions with their	All the questions with their	Pass

	button proper information is displayed		answers should be displayed	answers are displayed	
Next Puzzle Button	To check the functionality of Next Puzzle Button	Click on Next Puzzle Button	Next question should be displayed	Next question is displayed	Pass
Give Up Button	To check the functionality of Give Up Button	Click on Next Puzzle Button	It should display the feedback screen with proper message	Proper message is displayed	Pass
Restart Button	To check the functionality Restart Button	Click on Restart Button	Game should be restarted	Game is restarted	Pass

3. Test Case for IM specific functionality of Screen Sequence Thumbnails IM –

Test Case ID	**Test Case Description**	**Test steps**	**Expected Result**	**Actual result**	**Status (P/F)**
Thumbnail Position	To check the thumbnail position	Publish the IM & see the thumbnail positions	Thumbnails should be at proper place	Thumbnails are at correct position	Pass
Number of Screens	To check the IM with maximum & minimum no. of thumbnails	Set Number of Screens To max no. & min. no.	IM should work properly with max. & min. no of screens	IM works for max. & min. no of screens	Pass
Screen Image	To check .png , .jpg formats for the screen image of the thumbnail	Apply .png or .jpg image as the screen image	Both type of images should get applied properly	Screen images are applied properly for .jpg & .png file	Pass
Description Text	To check if descriptio	Set a large Descripti	It should be visible & not	Description Text is shown	Pass

	n text is visible & not editable & scrollable if required	on Text for a thumbnail	editable & has to be scrollable	properly, & not editable & scrollable	
Voiceover1	To check if sounds attached to thumbnail work fine while navigating through the thumbnails	Set audio files to the thumbnails	When user navigating through the screen images of the thumbnail, one audio should be stopped when next image is visited	One audio is getting stopped when next image is visited	Pass
Voiceover2	To check if no audio file is attached for a thumbnail	Set audio file for 1st thumbnail & don't set it for 2nd.	When 2nd screen image is visited, audio of 1st image should not be continued.	1st image is not continued to the next image	Pass

4. Test Case for IM specific functionality of Banner IM

Test Case ID	**Test Case Description**	**Test steps**	**Expected Result**	**Actual result**	**Status (P/F)**
Vertical scroll1	To check type as vertical	Set type as vertical & align, display choice, speed od rotation	Banner text should rotate vertically with the given alignment, display choice & speed	Banner rotates vertically with the given alignment, display choice & speed	Pass
Vertical scroll2	To check scroll for the banner text	Set a large text to banner text	It should not be scrollable or mouse wheel action is disabled	Text is not scrollable	Pass
Horizontal scroll1	To check type as horizontal	Set type as horizontal & align, speed od rotation	Banner text should rotate horizontally with the given alignmen & speed	Banner text rotates horizontally with the given alignmen & speed	Pass

Test Case ID	**Test Case Description**	**Test steps**	**Expected Result**	**Actual result**	**Status (P/F)**
Banner text formatting	Banner text formatting	Set formatting for banner text	Text should have proper formatting as applied	Text has proper formatting as applied	Pass
Banner sound	To check banner sound	Set the banner sound	Audio should be played only once	Audio is played only once at the start.	Pass

5. Test Case for SCORM testing –

Test Case ID	**Test Case Description**	**Test steps**	**Expected Result**	**Actual result**	**Status (P/F)**
Status1	"In progress" status	Publish the IM	At the beginning In Progress status should be passed to LMS	"In progress" status is passed at the start	Pass
Status2	"Incomplete" status	Publish the IM & interact but don't complete it.	When IM is not completely solved/ navigated, status is incomplete	"Incomplete" status is passed to LMS when IM is incomplete	Pass
Status3	"Completed Successfully" status	Publish & play the IM till the end successfully.	When IM ends, completed successfully status should be passed to LMS	"Completed successfully" status is passed at the end.	Pass

Test Case ID	Test Case Description	Test steps	Expected Result	Actual result	Status (P/F)
Status4	"Completed Unsuccessfully" status	Publish & play the IM till the end Unsuccessfully.	When IM ends, completed unsuccessfully status should be passed to LMS	"Completed unsuccessfully" status is passed at the end.	Pass
Score	To check the score	Publish & play th IM	Check the score when IM is incomplete or completed	Score is calculate correctly when IM is incomplete or completed	Pass

Test Implementation

The Implementation Plan describes how the information system will be deployed, installed and transitioned into an operational system. The plan contains an overview of the system, a brief description of the major tasks involved in the implementation, the overall resources needed to support the implementation effort (such as hardware, software. facilities, materials, and personnel), and any site-specific implementation requirements. The plan is developed during the Design Phase and is updated during the Development Phase; the final version is provided in the Integration and Test Phase and is used for guidance during the Implementation Phase. The outline shows the structure of the Implementation Plan.

Raptivity it the tool for creating the e-learning contents. Initially this product available in the form of bita versions. And released as the free trial version for 14 days along with user manual , some times free workshops and webinars are there to know how to use the tool and ask the user for feedback. If there is positive feedback from the user then final product is sale as licensed copy to client and along with more training.

After successful tesing ,it was decided to implementation of the modules in real-world scenario. The system platform was created for the system and limited number of users were also created so that the pwrformance could be tested as well. The system responded as per the expectation , only some performanace measures were revealed and corrected accordingly.

1. **Acceptance procedure.**

   After the system is completed and proper training is given to the staff the system is run parallel with the existing system and results are compared . When the results will be satisfactory the system will be accepted by the client.

   All the required and critical information regarding the system will be given to the respective personnel.

2.Post implementation review:

Since the system was developed with almost all care , there were not many modifications in the system. The demonstration will be carried out with the manangement and end users, who in turn will also very satisfy with the outcomes of the system.

MAINTAINANCE POLICY:

The maintenance of existing system software can account for over 60% of all developed effort.Because change is inevitable, mechanism must be developed for evaluating controlling and making modifications. Maintenance is a set of software engineering activities that occur after software has been delivered to the customer and put in to operation. 70% of the cost is devoted to maintenance. Maintenance activities cab be divided in to two types:

A. **Modification**

As the specification of computer system change, reflecting changes in the external world , so must the systems themselves.

B. **Debugging**

Removal of errors that should never has been there in the first place . More than two- fifths of maintenance activities are extensions and modifications requested by the users.

The magnitude of this proportion seems to reflect the lack of extendibility of commonly implemented software. Maintenance can be defined as three types:

1.Corrective maintenance

A process which includes diagnosis and correction of errors.

2.Adaptive maintenance

Activity which modifies software which properly interface with a changing environment.

3.Perfective maintenance

Activities which adds new capabilities, modifying ,existing function and making general enhancements.

This accounts for the majority of all the effort expanded on maintenance.

4.1 User Manual

Raptivity is a platform consisting of 180+ templates which allows you to create your own courses very easily.

Following are the steps to be performed-

- Double click on the raptivity shortcut to open the raptivity.
- You will get the following screen –

- Now you many create new interactivity by selecting a pack. So as you click on new interactivity, you will get following screen –

- Now you need to select the pack which will have number of interactivities from which you can choose the required interactivity.

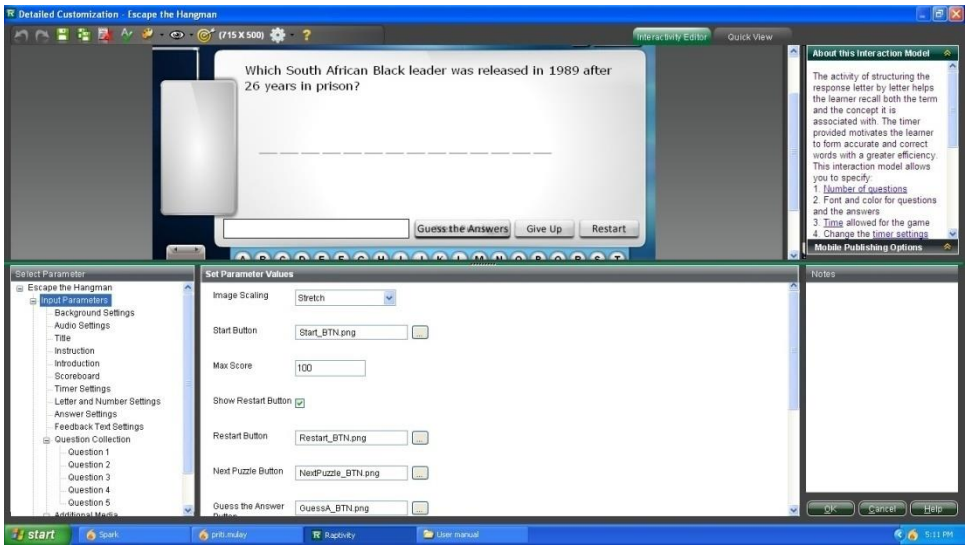
- After selecting the interactivity add contents to it & customize it according to the need.
- When the template/ interactivity is ready, save the interactivity & click on publish option to publish it.
- Choose the appropriate publishing option from SFO, MFO, Mobile output
- When the IM is published you may upload it on LMS.

4.2 Operational Manual / Menu Explaination

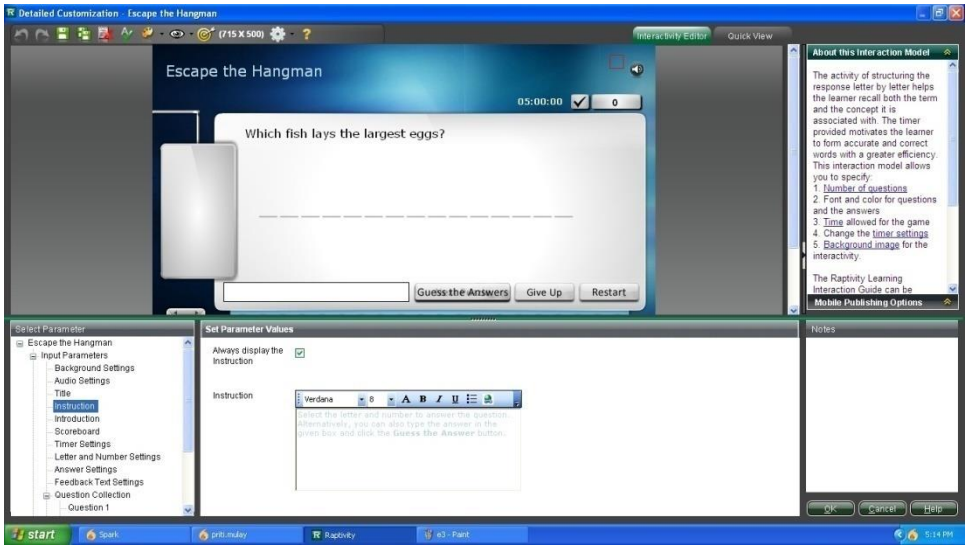
1 .Escape the Hangman

1. Before you begin creating the interactivity you will need to be prepared with:
2. Set of questions you would like to include in the assessment.
3. Answer key for your assessment question set.
4. Sound you would like to include in the interactivity. The sound files must be in .mp3 format.
5. To **design** an Escape the Hangman, you need to:
6. Go to the Detailed Customization view

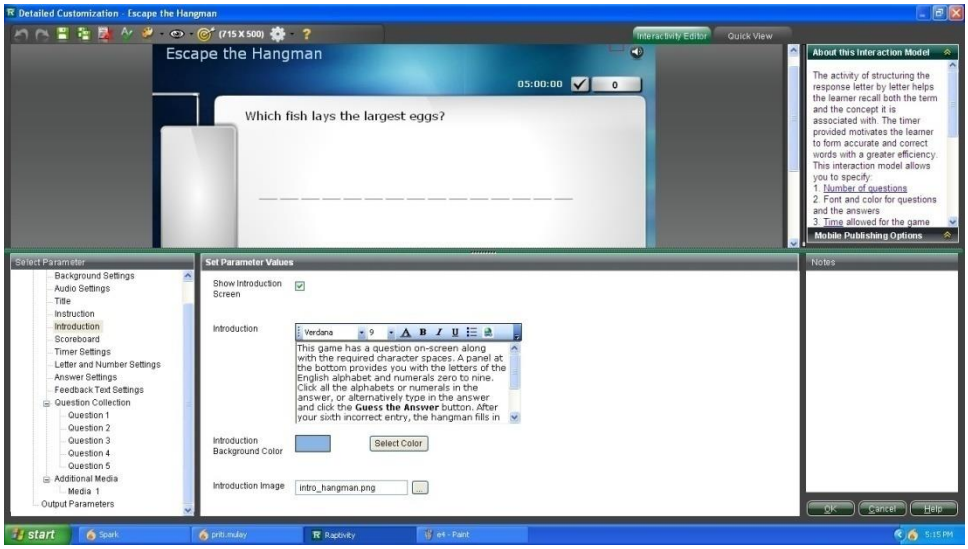
7. From the Select Parameter tree, go to Input Parameters branch.



8. From the Title branch enter the title of the interactivity & from instruction option set the instruction for the interactivity.



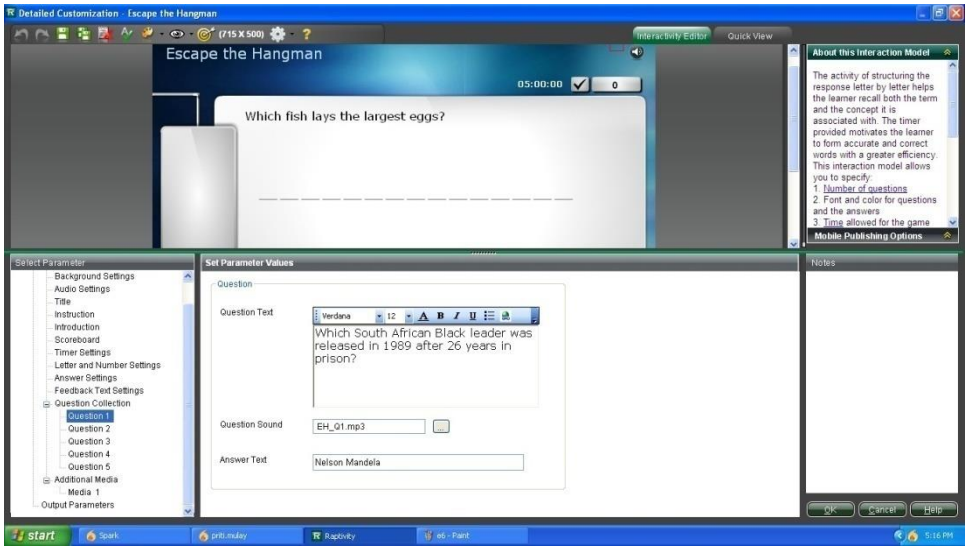
9. Using Introduction option from input parameter, introduction screen can be customized.



10. Then from the Question Information branch enter your preferred settings in the following fields

    a. Question Text (for all the questions)

    b. Correct Answer Text



11. Once you are done with the settings, click OK. From the File menu, select Save As to save the interactivity, and then Publish to use it where you like .

12. To **customize** this interactivity, go to the **Detailed Customization View**. Customizations will be possible through the Select Parameter section on your screen.

13. Parameters you can customize:

    a. Passing Percentage (minimum score to pass the assessment)

    b. Image Scaling Type

       Stretch

       Maintain Aspect Ratio

14. Start Button Image

    Recommended Dimensions : 70X30 pixels

    Recommended Size : 1 MB

15. Submit Button Image

    Recommended Dimensions : 90X30 pixels

Recommended Size : 1 MB

16. Restart Button Image

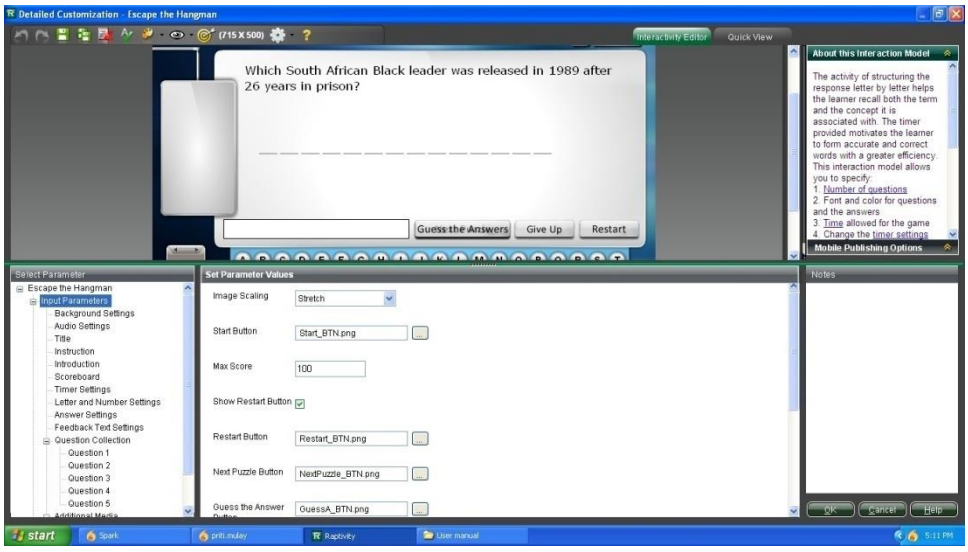
Recommended Dimensions : 90X30 pixels

Recommended Size : 1 MB

17. Give-up Button Image

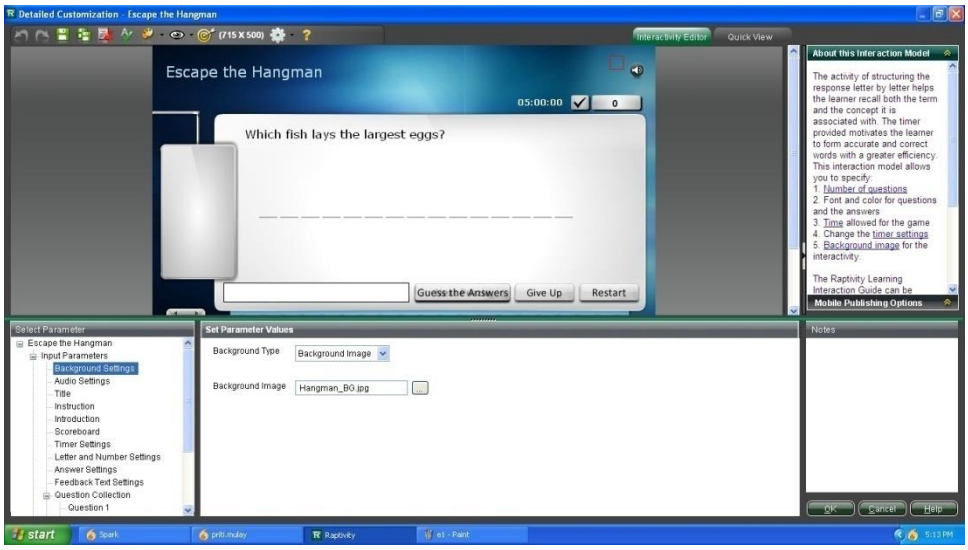
Recommended Dimensions : 90X30 pixels

Recommended Size : 1 MB



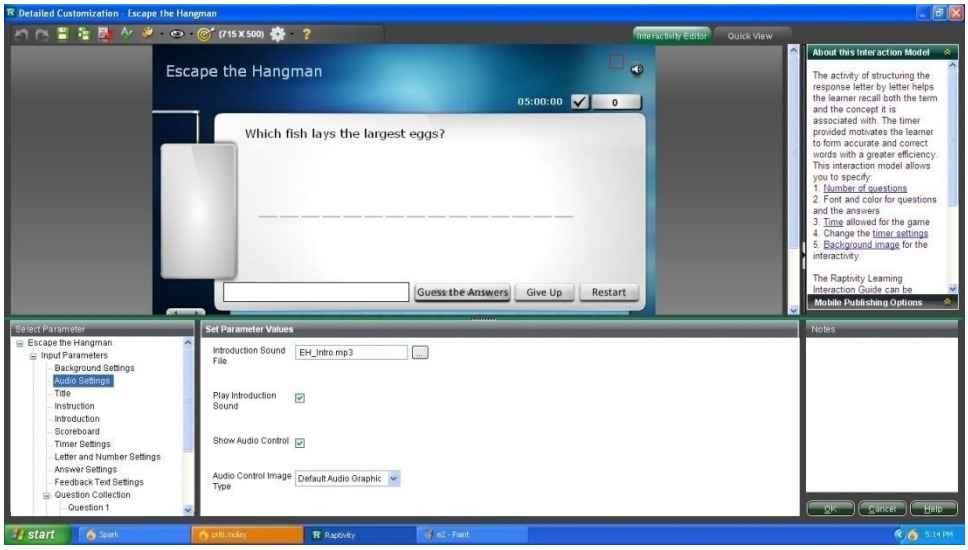
18. Background image

Under Set Parameter Values use the browse button to select images from your local machine.



19. Audio Settings

Audio icon - Default or image (Image - 25X25)



20. Title setting-

i. Title text

ii. Title Position

iii. Title formatting

21. Instruction settings-

i. Instruction text

ii. Instruction Position

iii. Instruction formatting

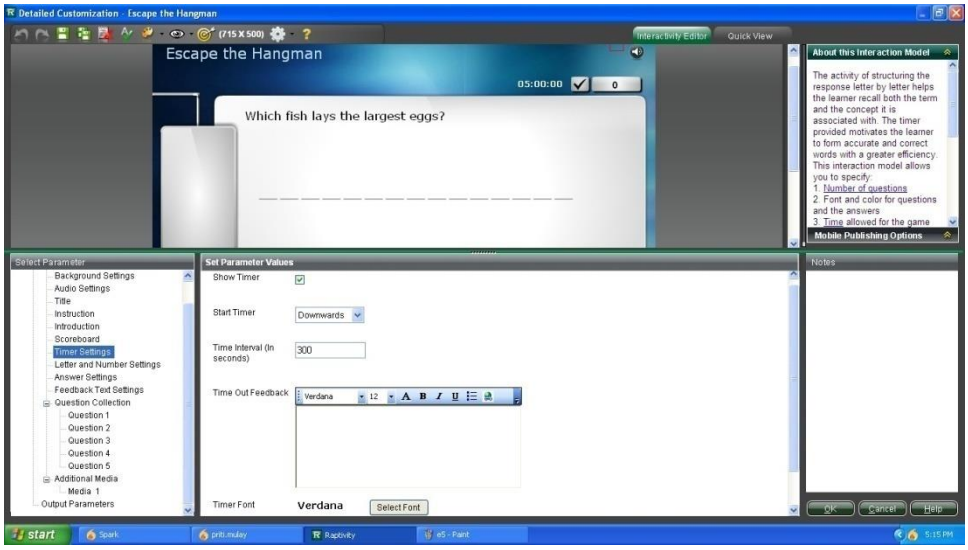
22. Timer settings-

Select type-

Upwards

Downwords

Set Time Interval(In Seconds)



23. Timeout feedback

2 . Swap the Letters

1. Before you begin creating the interactivity you will need to be prepared with:
2. Set of questions you would like to include in the assessment.
3. Answers for your assessment question set.
4. Sound you would like to include in the interactivity. The sound files must be in .mp3 format.
5. To **design** an Swap the Letters , you need to:
6. Go to the Detailed Customization view
7. From the Select Parameter tree, go to Input Parameters branch.
8. From the Title branch enter the title of the interactivity.
9. From the Instruction branch enter the Instruction of the interactivity.
10. Using introduction branch , you can customize the whole

introduction screen.

You can customize-

- Show introduction screen
- Introduction text
- Introduction Image

11. Then for Question Information, enter your preferred settings in the following fields

    a. Question Text (for all the questions)

    b. No. of words for each question.

12. Once you are done with the settings, click OK. From the File menu, select Save As to save the interactivity, and then Publish to use it where you like .

13. Through input Parameters you can customize:

    a. Passing Percentage (minimum score to pass the assessment)

    b. Image Scaling Type

        i. Stretch

        ii. Maintain Aspect Ratio

14. Start Button Image

    1. Recommended Dimensions : 70X30 pixels
    2. Recommended Size : 1 MB

15. Submit Button Image

    1. Recommended Dimensions : 90X30 pixels
    2. Recommended Size : 1 MB

16. Restart Button Image

    1. Recommended Dimensions : 90X30 pixels
    2. Recommended Size : 1 MB

17. Give-up Button Image

    1. Recommended Dimensions : 90X30 pixels
    2. Recommended Size : 1 MB

18. Background image

    Under Set Parameter Values use the browse button to select images from your local machine.

19. Audio Settings

    a. Audio icon - Default or image (Image - 25X25)

    b. Title of the Interactivity: The title appears at the top

20. Title setting-

    i. Title text

    ii. Title Position

    iii. Title formatting

21. Instruction settings-

    a. Instruction text

    b. Instruction Position

    c. Instruction formatting

22. Timer settings-

    i. Select type-

        1. Upwards

        2. Downwords

    ii. Set Time Interval(In Seconds)

23. Timeout feedback

    a) Feedback Background Color

    b) Feedback Text

24. For a Question-

a) A word (max length = 15)

b) Allignment

-Vertical

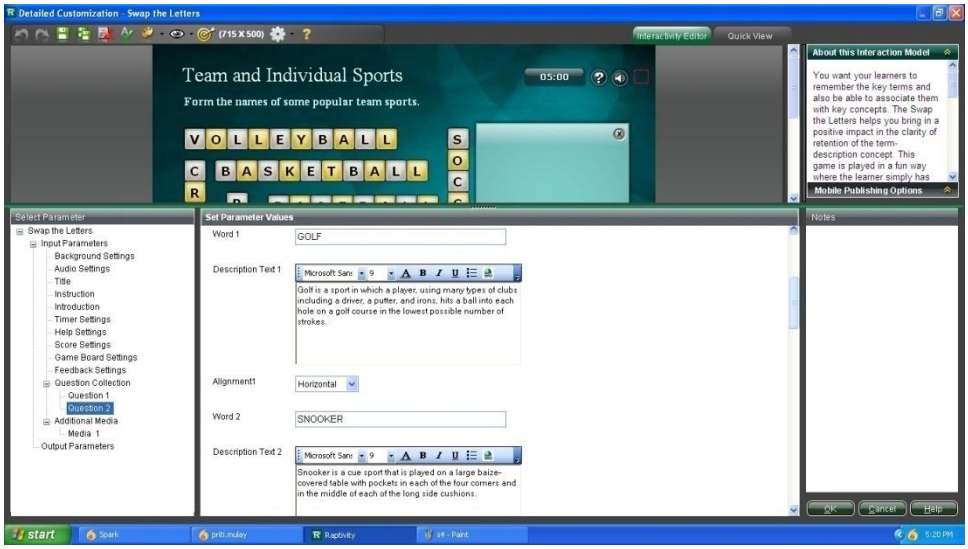
-Horizontal

c) Description show type

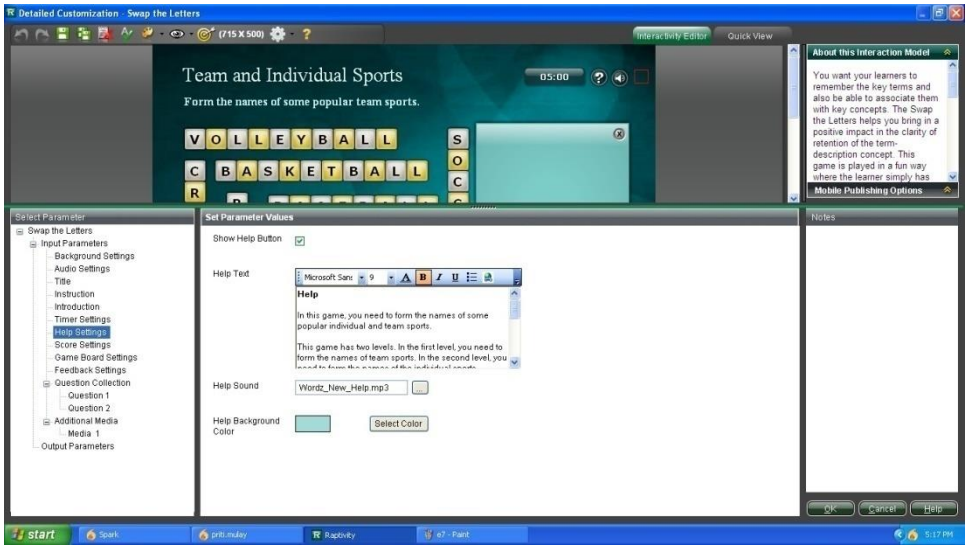
-On mouse ove

-On Click

d) Description Text

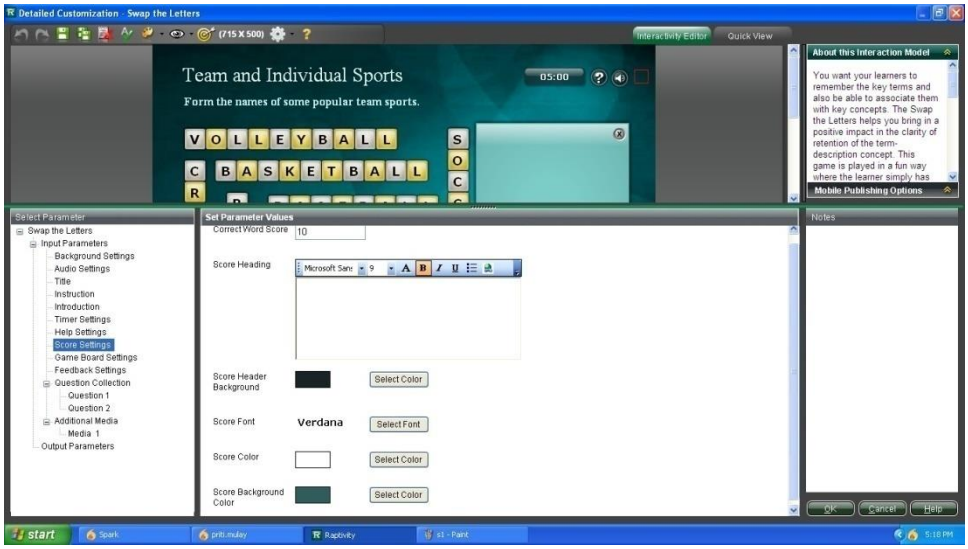


25. Using Help setting, Help text can be set.



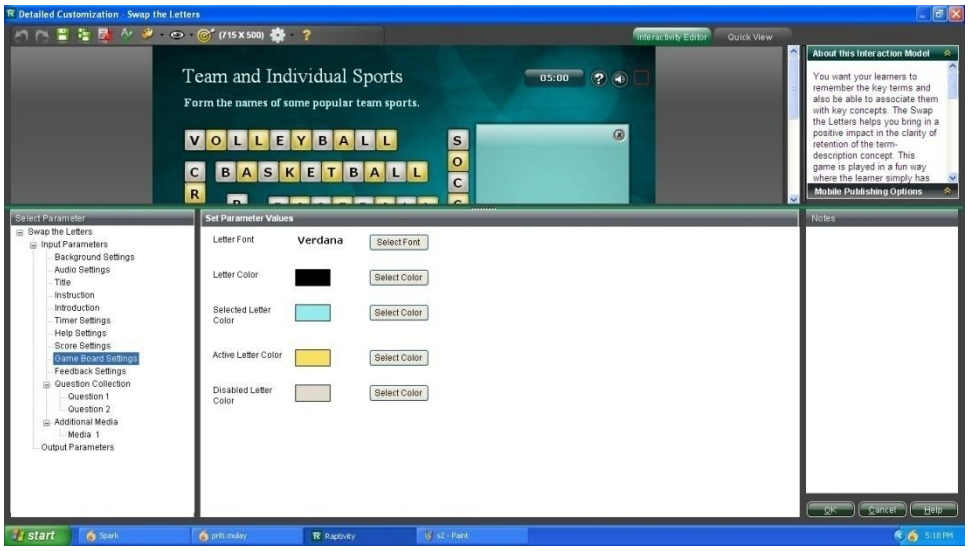
26. Score settings can also be customized with –

- Correct Word Score
- Score Heading
- Score font
- Score color
- Score background color
- Score header background



27. Game board settings can be customized for –

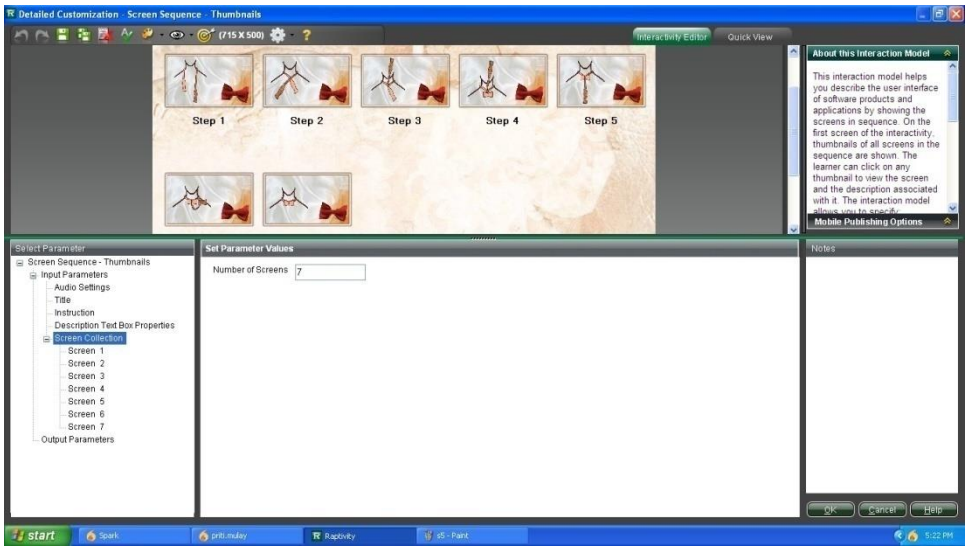
- Letter font
- Letter color
- Selected letter color
- Active letter color
- Disabled letter color



3 . Screen Sequence Thumbnails

1. Before you begin creating the interactivity you will need to be prepared with:
2. Set of images you would like to show as thumbnails.
3. Sound you would like to include in the interactivity. The sound files must be in .mp3 format.
4. To **design** Screen Sequence Thubnails, you need to:
5. Go to the Detailed Customization view
6. From the Title branch enter the title of the interactivity

7. Set the no. of thumbnails (max = 10)



8. Once you are done with the settings, click OK. From the File menu, select Save As to save the interactivity, and then Publish to use it where you like .

9. To **customize** this interactivity, go to the **Detailed Customization View**. Customizations will be possible through the Select Parameter section on your screen.

10. Parameters you can customize:

    1. Image Scaling Type

        i. Stretch

        ii. Maintain Aspect Ratio

2. Background image

   Under Set Parameter Values use the browse button to select images from your local machine

3. Audio Settings

    1. Audio icon - Default or image (Image - 25X25)

    2. Title of the Interactivity: The title appears at the top

4. Title setting-

        i. Title text

        ii. Title Position

        iii. Title formatting

5. Instruction settings-

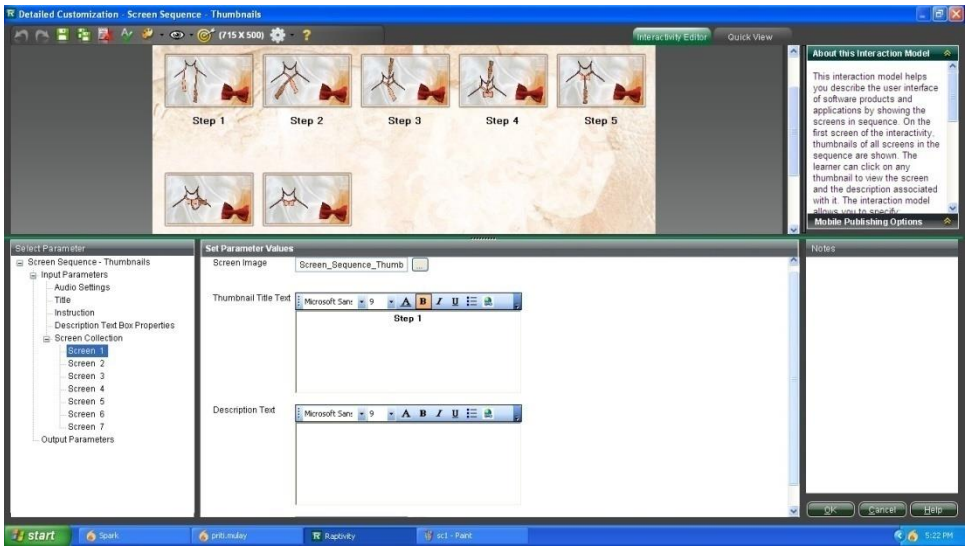
    1. Instruction text

    2. Instruction Position

    3. Instruction formatting

6. For a thumbnail-

    - Image of the thumbnail
    - Voiceover for that thumbnail
    - Thumbnail title text
    - Thumbnail description text



4. Paragraph Sequencing Exercise

4. Before you begin creating the interactivity you will need to be prepared with:
5. Set of paragraphs you would like to add.
6. To **design** Paragraph Sequencing Exercise, you need to.

   Go to the Detailed Customization view.
7. From the Title branch enter the title of the interactivity
8. Set the no. of paragraphs (max = 10)
9. Once you are done with the settings, click OK. From the File menu, select Save As to save the interactivity, and then Publish to use it where you like .
10. To **customize** this interactivity, go to the **Detailed Customization View**. Customizations will be possible through the Select Parameter section on your screen.
11. Parameters you can customize:

    1. Image Scaling Type

i. Stretch

ii. Maintain Aspect Ratio

12. Background image

Under Set Parameter Values use the browse button to select images from your local machine.

13. Audio Settings

- Audio icon - Default or image (Image - 25X25)
- Title of the Interactivity: The title appears at the top

14. Title setting-

- Title text
- Title Position
- Title formatting

15. Instruction settings-

- Instruction text
- Instruction Position
- Instruction formatting

16. For a paragraph-

- Background color
- Paragraph Text
- Paragraph Text formatting

17. Submit button-

- Submit Button image
- Recommended dimensions- 90*30 pixels
- Recommended Size- 1 MB

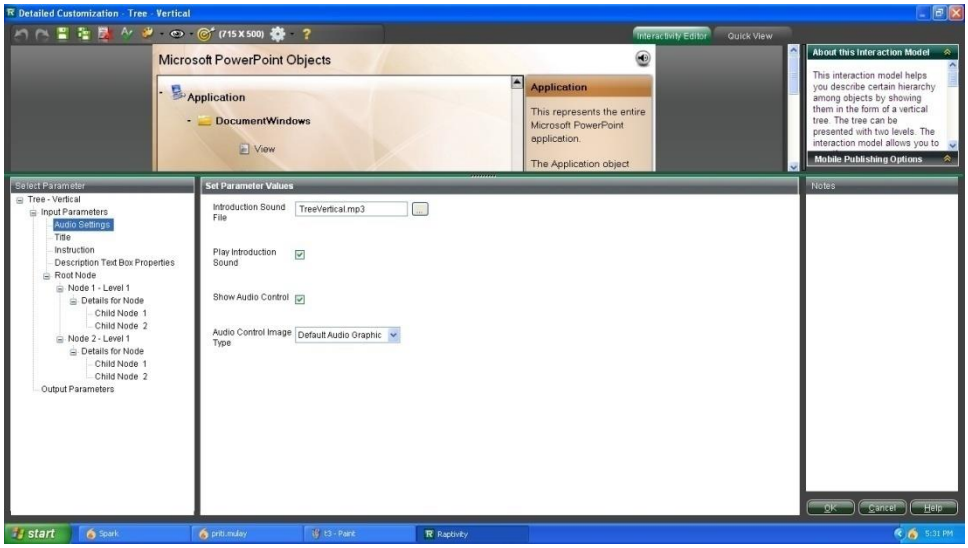
3 . Tree Vertical

1. For designing Tree vertical IM you need to have –
2. The parent node data, in the form of
    - Text
    - Video
3. The child node data, in the form of
    - Text
    - Video

Through input parameters you may customize following parameters

4. Audio Settings

    - Audio icon - Default or image (Image - 25X25)
    - Title of the Interactivity: The title appears at the top



5. Title setting-

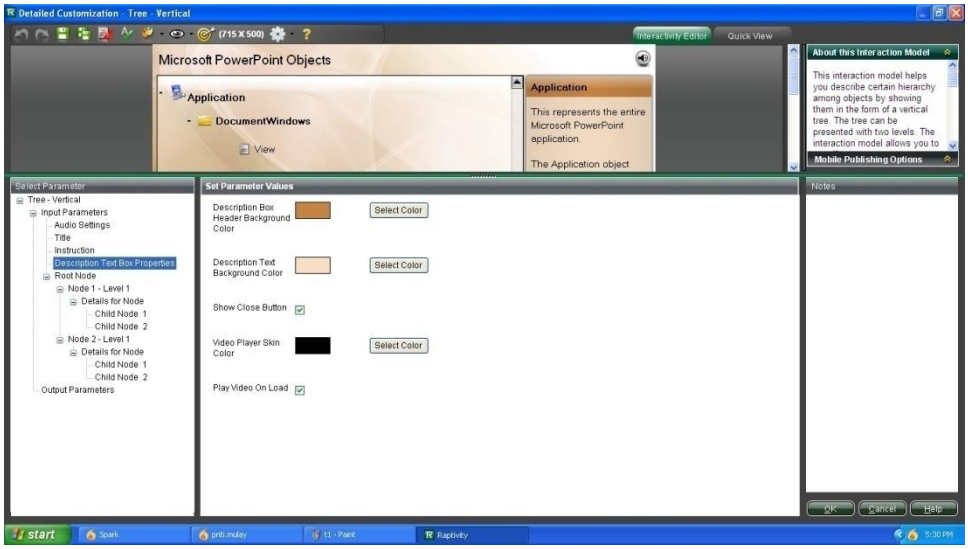
    - Title text
    - Title Position
    - Title formatting

6. Instruction settings-

    - Instruction text
    - Instruction Position
    - Instruction formatting

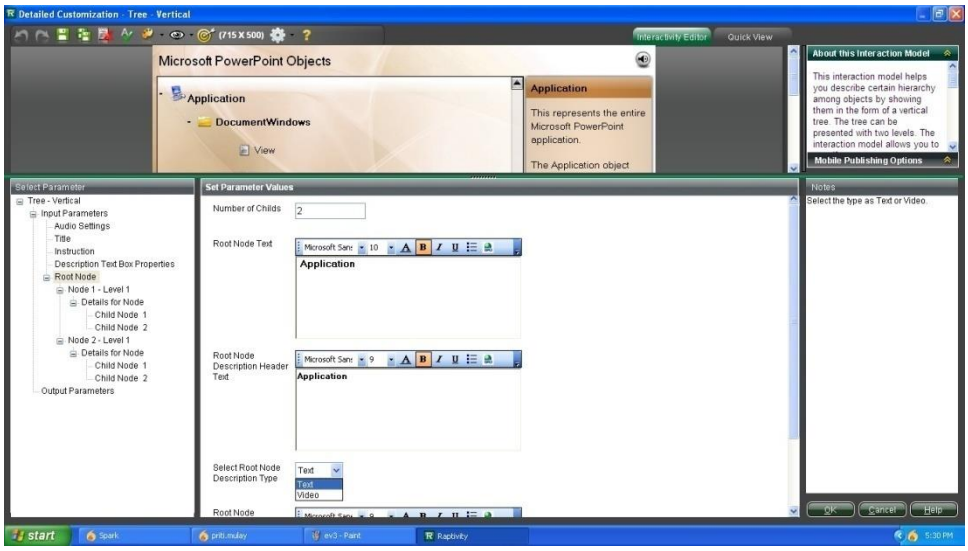
7. Description text box properties –

    - Description text box header background color
    - Description text background color
    - Show close button
    - Video player skin, play video onload



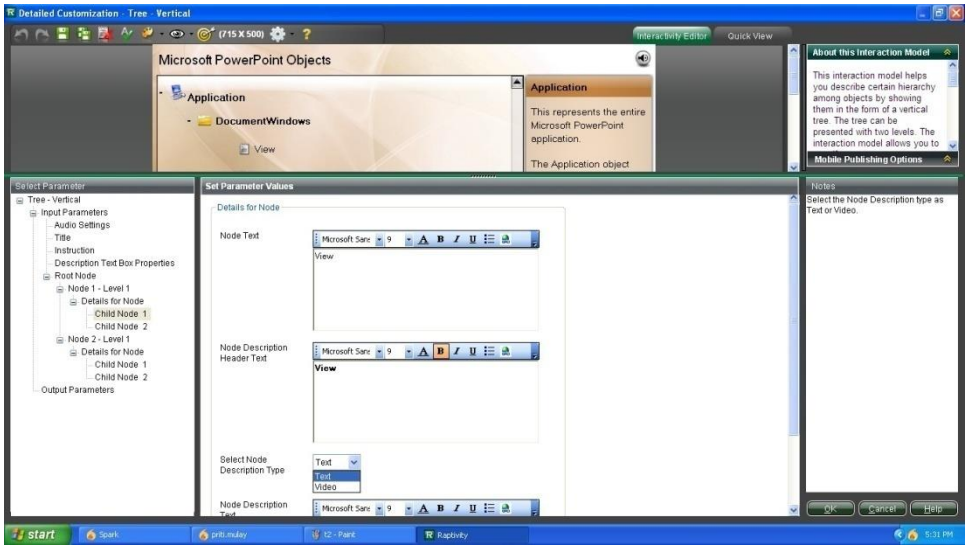
8. Root node properties –

    - No. of children
    - Root node text
    - Select root node type
    - Root node description text
    - Root node description video

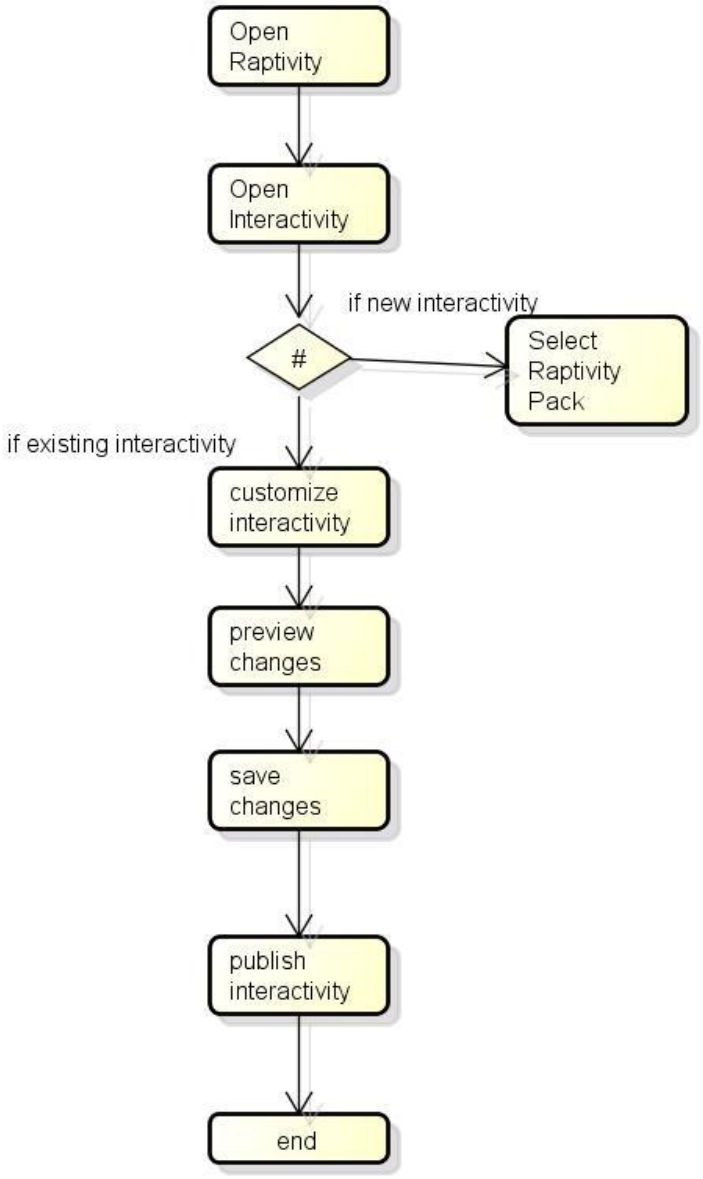


9. Child node properties-

- Node text
- Select node description type
- Node description text
- Node description video



4.3 Flow chart



Drawbacks and Limitations

- **Drawbacks:**

1)For Swap the Letters IM from Wordplay pack,it is expected to have tweening effect but somehow it is not executing as per the requirement of the client.

2)For many IMs from Standard pack,.png images are getting blurred on Mozilla Firefox browser.

3)The Aim and Shoot IM from Booster pack is not working at required speed due to static framerate issue.

4)For many IMs from Simulation pack,hotspots are not getting placed as per the customization.Apart from that,hotspots are not scrollable with respect to textarea.

- **Limitations:**

The AS3 published output can be viewed in desktop browsers and devices. Only the browsers that don't support AS3, Raptivity output cannot be viewed properly. Currently, only Internet Explorer has some limitations of HTML5.

As is true with all tools, I found some limitations in Raptivity. While I don't consider any of these show-stoppers, if any of these are important to you, be aware of them before you begin using Raptivity.

1) No communication between Raptivity interactions-

One interesting omission is the inability to pass information from one Raptivity interaction to another. Let's say that you include 10 interactions, either of the same or differing types, in an e-Learning lesson. It would be very cool to be able to pass information from one interaction to another, for instance the learner's answer on the first interaction to be used in the second interaction. Harbinger has indicated to me that they are considering this feature in a future version.

2) No text-to-speech ability

The interactions do not include the ability to have included text read aloud by text-to-voice utilities. This can be a hindrance if this is a requirement for you.

3) Software simulations may not be what you think

If you've used a product like Adobe Captivate, when you hear *software simulation*, you may immediately think of a fully animated

demonstration that you create by opening the application that you want to simulate and pressing a button to record your movements. Raptivity software simulations are not of this type; they are the simpler types that ask the learner to click a part of a screen capture. These are perfectly good interaction types but if you are accustomed to full-motion types of software simulations, you may need to lower your expectations.

Proposed Enhancements

By considering the above limitation there is scope for enhancement.

- **Allow communication between Raptivity interactions:-**

We can establish the communication between Raptivity intractions. E.g Let's say that you include 10 interactions, either of the same or differing types, in an e-Learning lesson. It would be very cool to be able to pass information from one interaction to another, for instance the learner's answer on the first interaction to be used in the second interaction.

- **Text-to-speech ability:-**

This is new technology belongs to the voice recognition.By using this technology text is converted in to the speech and this will make our intractivity more interactivities.

- **Software simulations may not be what you think:**

When you hear software *simulation*, you may immediately think of a fully animated demonstration that you create by opening the

application that you want to simulate and pressing a button to record your movements. Raptivity software simulations are not of this type; so we can enhance Raptivity to that level.

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Conclusions

Raptivity is can build more interactive courses to make e-learning more interesting & easier. It supports various third party tools. Output is available in various formats such as SFO, MFO, Mobile, HTML5, SCORM complient. Tracking is an important part supported which is very important for tracing the results of students for various courses.

Raptivity has 180+ interactivities to present different types of courses so as to make the content more effective.

- Ever since action script-3(as3) has been emerged as new technology, Raptivity is the first eLearning product which takes the advantage of as3 to make Raptivity output compatible with IOS devices.

- AS3 is fast emerging as the industry standard for building rich interfaces. However, there are quite a few technical challenges while developing content in AS3 and not all browsers support this format consistently for instance; the video support is limited and many more such issues. With Apple's iPad, iPhone, and iPod devices choosing AS3 over Adobe Flash, AS3 has the potential to become an important factor in all the upcoming classes of portable devices.

- Every eLearning developer and course creator today has many queries about AS3 – its usage, benefits, issues, etc. They are in search of a wholesome solution that creates engaging AS3 compliant interactions. Raptivity leads the eLearning domain with its foray in mobile learning.

- This release is the world's largest library of eLearning interactions for iPhone, iPad and other cutting-edge mobile computing products.

- On that account, to get acquainted with the AS3 interactions, Raptivity team has organized a special **webinar** on the **15th April, 2013 in three different time zones.**
- **US**
- **Europe**
- **Australia**