

Appendix A: G-Jigsaw Object-Oriented Analysis and Design

This appendix depicts all the UML diagrams used for G-Jigsaw's object-oriented analysis and design. These diagrams include Use Case Diagrams, Class Diagrams, Sequential Diagrams and Activity Diagrams.

A-1 G-Jigsaw Use Cases and Use Case Diagrams

This section shows the use cases for G-Jigsaw in both teacher mode and student mode. Generally, 15 common use cases are identified throughout the jigsaw process. Most of these use cases interact with different objects in different stages. For instance, the read/view use case is applied to read or view a jigsaw task in teacher mode, while the same use case also apply to read or view responses, summaries or reports in student mode. As a result, there are all together 26 specific use cases derived from the common use cases. Besides, there are two actors involved in G-Jigsaw, teacher and student. The common use cases are listed below:

1. Login [success/failure]
2. Navigate [Jigsaw Task, Completed Task, G-jigsaw Homepage]
3. Read/View [Jigsaw Tasks, Responses, Summaries, Reports and Final Reports]
4. Compose [Jigsaw Tasks, Responses, Summaries, Reports and Final Reports]
5. Preview & Load Templates [Template1, Template2, Template3, Template4]
6. Upload Graphic [Jigsaw Tasks]
7. Submit/Post [Jigsaw Tasks, Profiles, Responses, Summaries, Reports]
8. Edit [Jigsaw Tasks, Reports]
9. Delete [Jigsaw Tasks, Reports]
10. Retrieve [Jigsaw Tasks Questions, Responses, Summaries]
11. Start/Continue [Jigsaw Tasks]
12. Set profile
13. Respond [Responses, Summaries]
14. Integrate [Reports]
15. Switch [Groups]

The following use case diagrams demonstrate all the use cases in G-Jigsaw:

A-1-1 Accessing G-Jigsaw

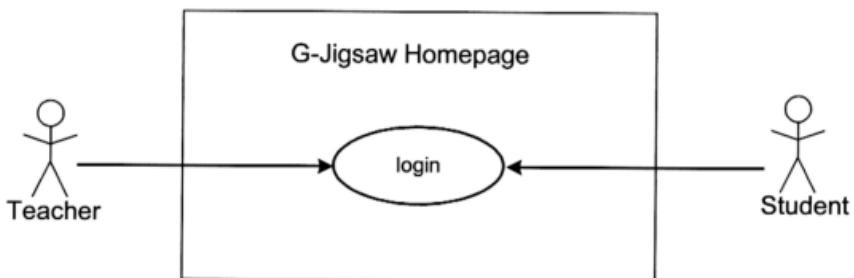


Figure A-1-1 Accessing G-Jigsaw Use Case Diagram

A-1-2 Accessing Jigsaw Task Module

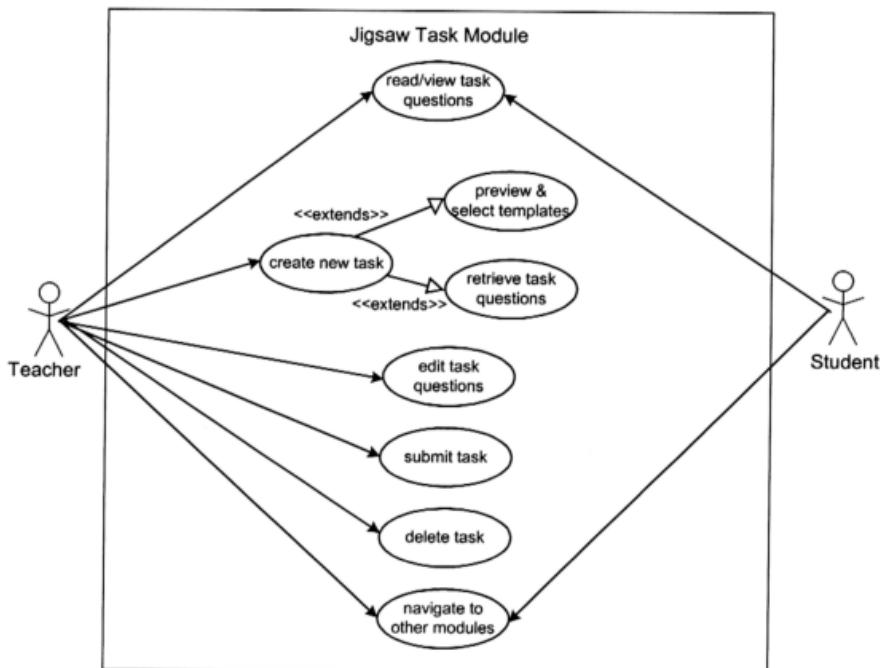


Figure A-1-2 Accessing Jigsaw Task Module Use Case Diagram

A-1-3 Accessing Initial Group Module

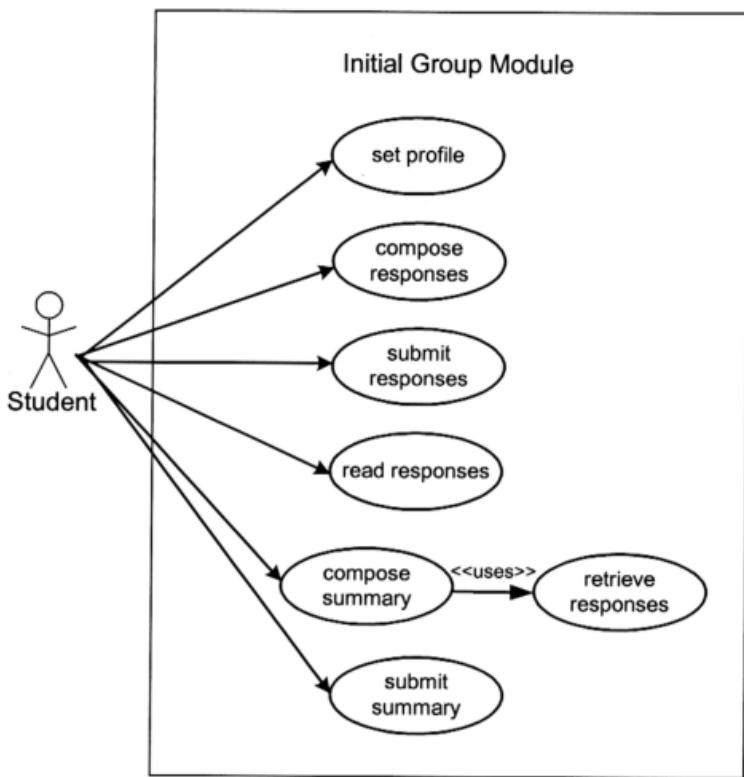


Figure A-1-3 Accessing Initial Group Module Use Case Diagram

A-1-4 Accessing Expert Group Module

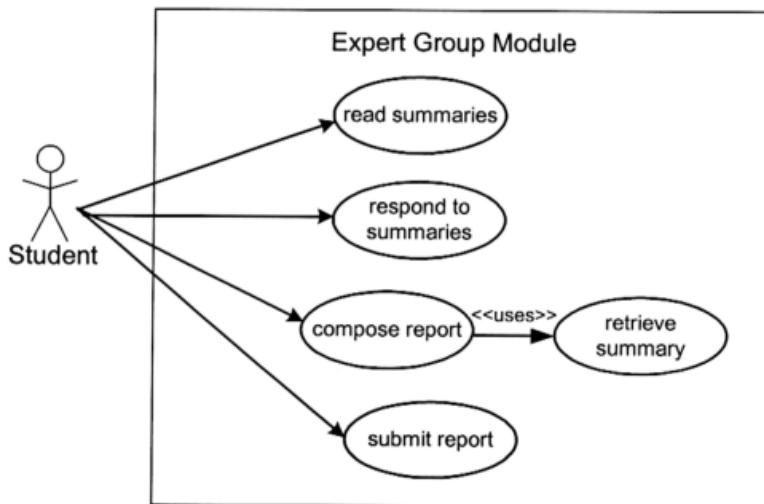


Figure A-1-4 Accessing Expert Group Module Use Case Diagram

A.1.5 Accessing Jigsaw Group Module

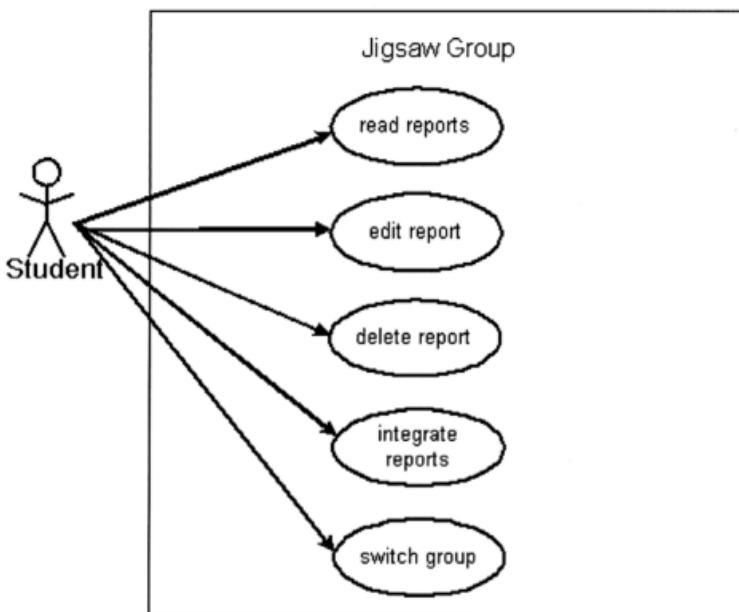


Figure A-1-5 Accessing Jigsaw Group Module Use Case Diagram

A-2 G-Jigsaw Class Diagram

This section shows the class diagram of G-Jigsaw. Generally, there are 4 major classes in G-Jigsaw namely User, Browser (Client), Server (Server) and Database. Teacher and Student are two subclass derived from User to represent two types of user. The Database class consists of 7 design elements classes. How each of these classes connect to each other are shown in figure A-2-1 below:

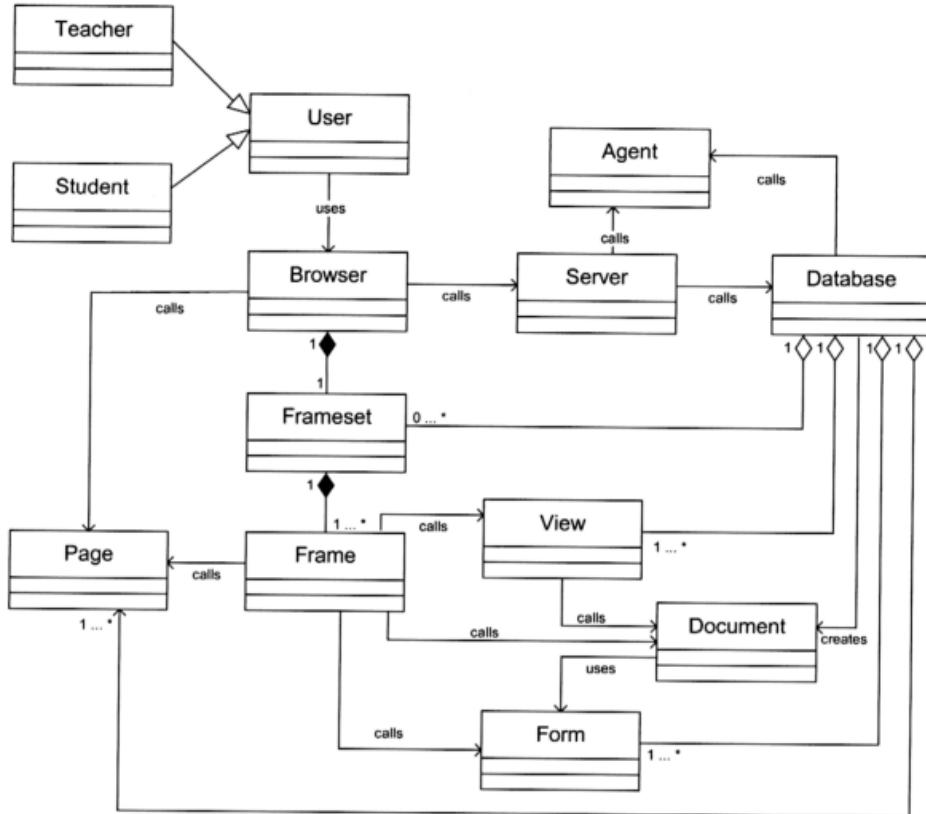


Figure A-2-1 G-Jigsaw Class Diagram

A-3 G-Jigsaw Scenarios and Sequential Diagrams

This section describes the detailed interaction of each use case depicted in section A-1. Sequential diagrams are used together with its scenario descriptions to illustrate each use case's interaction.

A-3-1 Scenario 1: Successful Login

1. User (student or teacher) opens a web browser
 2. User enters homepage URL
 3. Browser connects to web server
 4. Browser requests homepage from server
 5. Server requests username and password from user
 6. User enters correct username and password
 7. Server verifies username and password
 8. Server accepts username and password

9. Server retrieves homepage from server database
10. Server database sends the required page to browser
11. Browser displays homepage on the screen

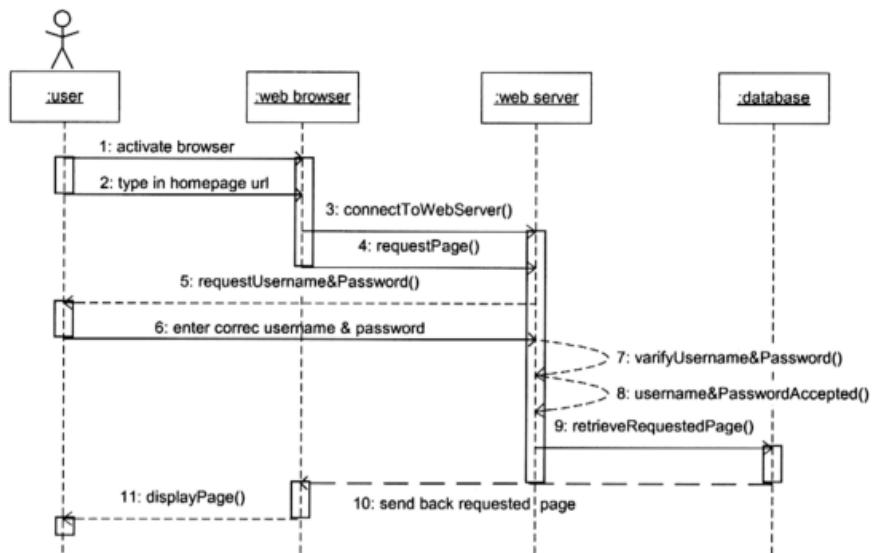


Figure A-3-1 Successful Login Sequential Diagram

A-3-2 Scenario 2: Login Failure - Invalid username/password

1. User (student or teacher) opens a web browser
2. User enters homepage URL
3. Browser connects to web server
4. Browser requests homepage from server
5. Server requests username and password from user
6. User enters invalid username and password
7. Server verifies username and password
8. Server rejects username and password
9. Server prompts user for reentering username and password
10. User cancels the request
11. Server sends unauthorized error message to browser
12. Browser displays error message on the screen to user

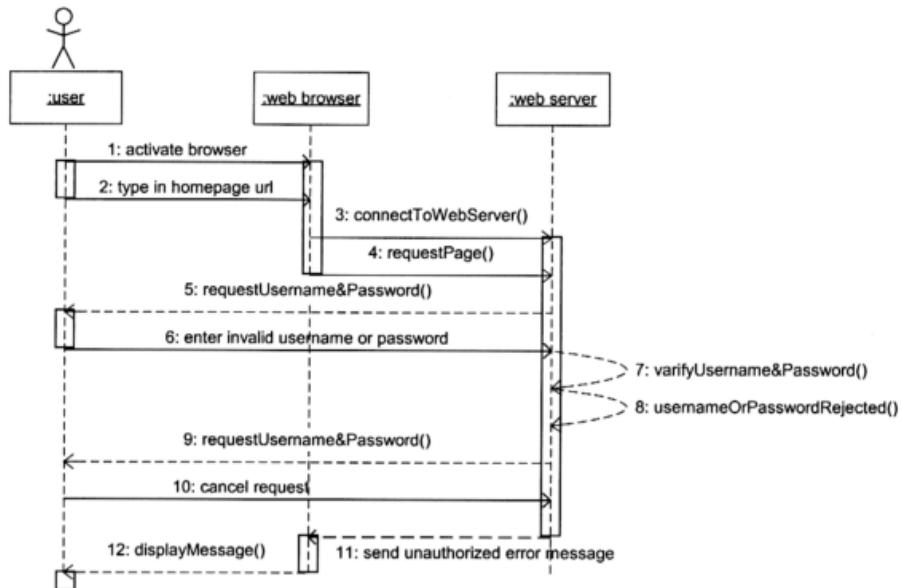


Figure A-3-2 Login Failure Sequential Diagram

A-3-3 Scenario 3: Navigate to other task modules

1. User (student or teacher) selects a task module
2. Browser requests for the selected page from server
3. Server retrieves the page from server database
4. Server database sends the requested page to browser
5. Browser displays the selected page to user

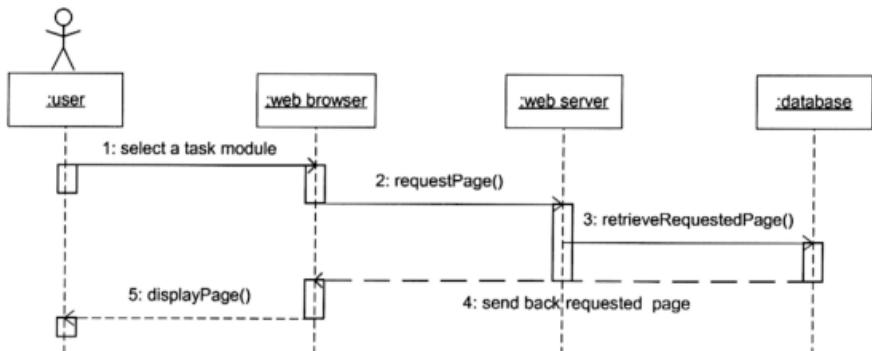


Figure A-3-3 Navigate to other Task Modules Sequential Diagram

A-3-4 Scenario 4: Read/View Jigsaw Tasks

1. User (student or teacher) clicks on the link to read or view the jigsaw task questions
2. Browser requests for the required document from server
3. Server retrieves requested document from server database
4. Server database sends the requested document to browser
5. Browser displays the requested document to user

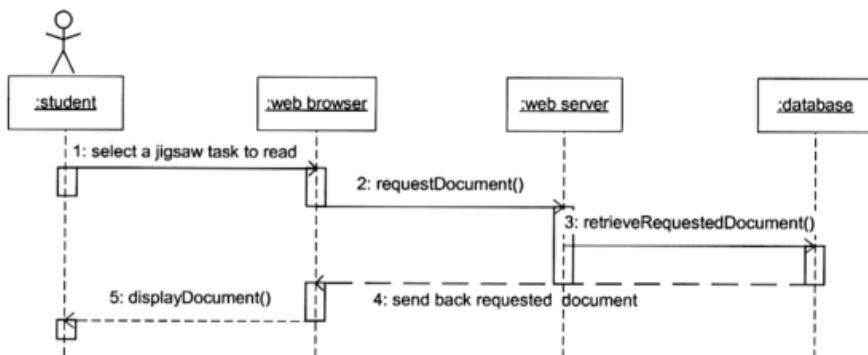


Figure A-3-4 Read/View Jigsaw Tasks Sequential Diagram

A-3-5 Scenario 5: Compose New Jigsaw Task

1. Teacher clicks on the create new task link
2. Browser requests question template form from server
3. Server retrieves template form from server database
4. Server database searches for requested template form
5. Template form is sent to browser
6. Browser displays template form to teacher
7. Teacher previews and selects template
8. Teacher set questions
9. Teacher retrieves questions
10. Teacher modifies questions
11. Teacher submits task questions to server database
12. Server database activates the web agent
13. Web agent filters the submitted questions
14. Web agent categorizes the task questions
15. Web agent updates the server database
16. Server database sends confirmation message to browser
17. Browser displays message to teacher

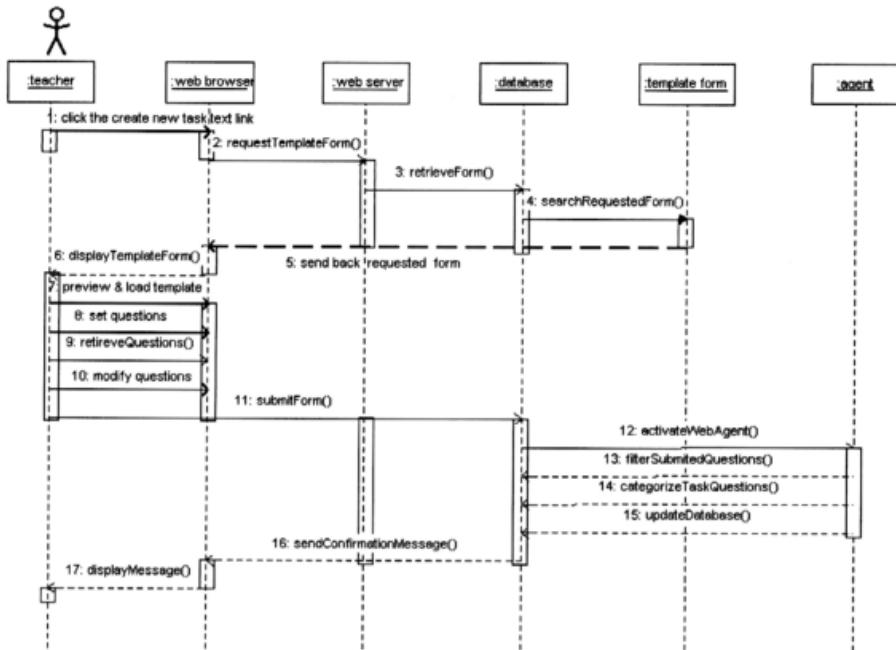


Figure A-3-5 Compose New Jigsaw Task Sequential Diagram

A-3-6 Scenario 6: Preview and Select Templates

1. Teacher browses the template options from browser
2. Browser requests selected template's layout and description from server for teacher to preview
3. Server retrieves the requested information from server database
4. Server database search the requested layout from template forms collection
5. Template form collection sends the template layout and its description to browser
6. Browser displays the layout and description to teacher
7. Teacher selects a template
8. Browser requests the selected template from server
9. Server retrieves the requested template from server database
10. Server database creates new task form
11. Server database embeds the selected template in the newly created form
12. Task form with the requested template is sent to browser
13. Browser displays task form with selected template to teacher

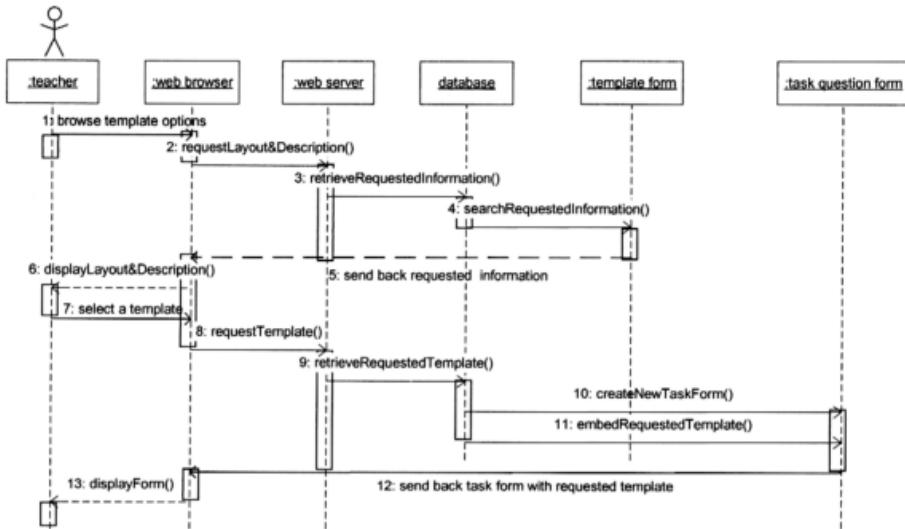


Figure A-3-6 Preview and Select Templates Sequential Diagram

A-3-7 Scenario 7: Retrieve Jigsaw Task Questions

1. Teacher clicks the retrieve button
2. Browser requests questions available for retrieval from server
3. Server activates web agent to retrieve related questions
4. Web agent retrieves available questions from server database
5. Web agent sends a list of all available questions to browser
6. Browser displays a pop up window with a list of questions for retrieval
7. Teacher browses to select questions to be retrieved
8. Teacher retrieves the question.
9. Browser closes the pop up window after the retrieval

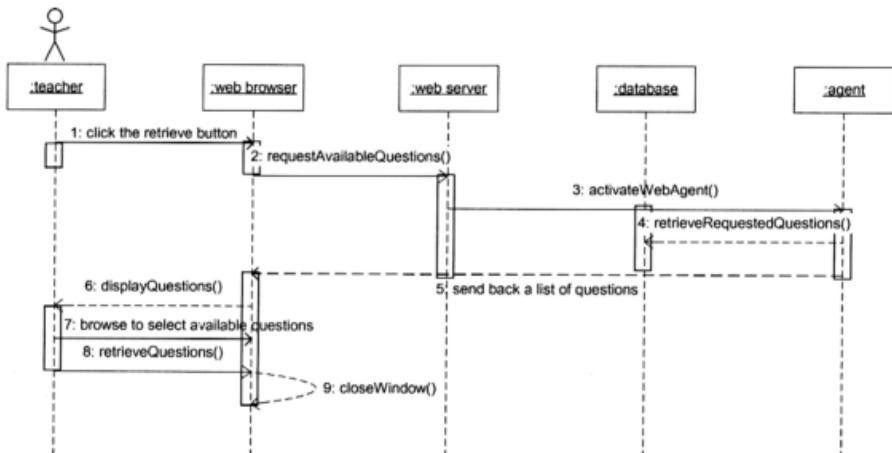


Figure A-3-7 Retrieve Jigsaw Task Questions Sequential Diagram

A-3-8 Scenario 8: Edit Jigsaw Task

1. Teacher clicks on the jigsaw task to be edited
2. Browser requests for the required document from server
3. Server retrieves requested document from server database
4. Server database sends the requested document to browser
5. Browser displays the requested document to teacher in read mode
6. Teacher clicks on the edit button
7. Browser requests server database to open document in edit mode
8. Server database changes the document to edit mode
9. Teacher edits the jigsaw task in browser

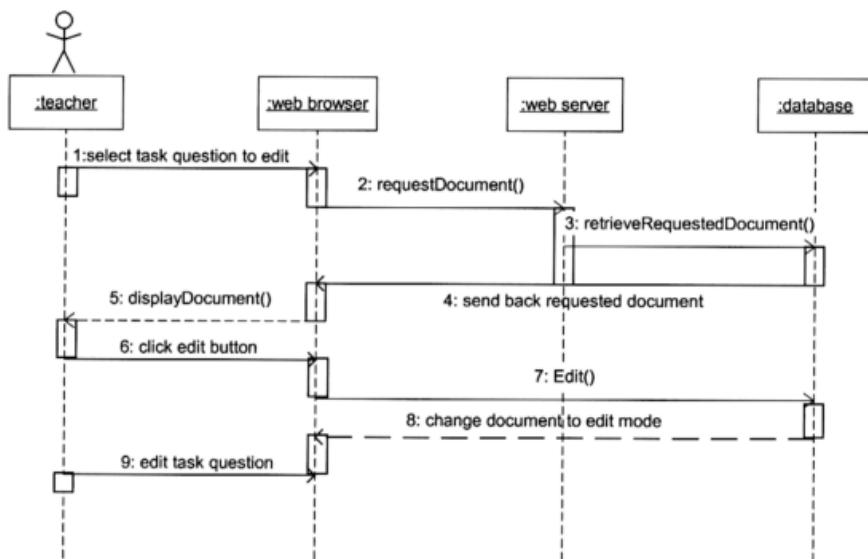


Figure A-3-8 Edit Jigsaw Task Sequential Diagram

A-3-9 Scenario 9: Delete Jigsaw Task

1. Teacher clicks on the jigsaw task to be deleted
2. Browser requests for the required document from server
3. Server retrieves requested document from server database
4. Server database sends the requested document to browser
5. Browser displays the requested document to teacher in read mode
6. Teacher clicks on the delete button
7. Browser requests server database to delete the document
8. Server database deletes the document
9. Server database sends deleted message to browser

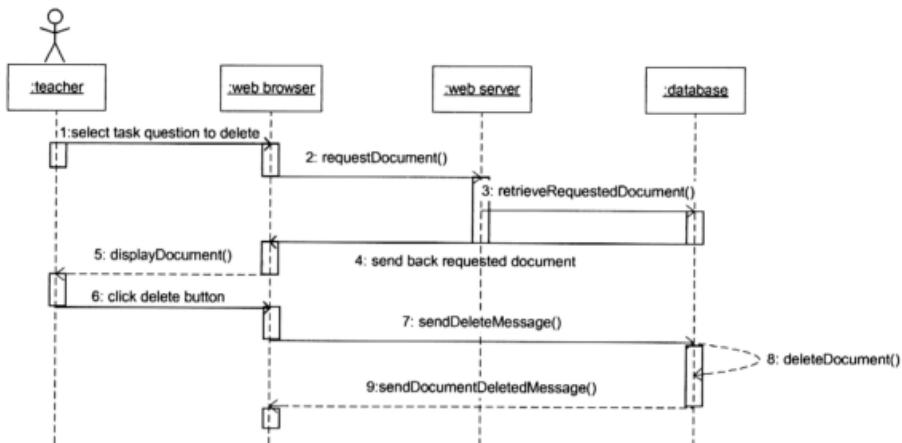


Figure A-3-9 Delete Jigsaw Task Sequential Diagram

A-3-10 Scenario 10: Submit Jigsaw Task

1. Teacher clicks the submit button
2. Browser sends submitted information to server
3. Server saves the information in server database
4. Server database returns confirmation message to browser
5. Browser displays confirmation message to teacher

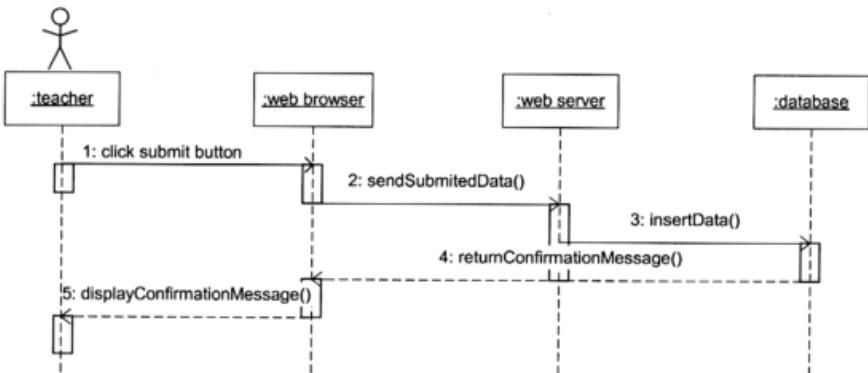


Figure A-3-10 Submit Jigsaw Task Sequential Diagram

A-3-11 Scenario 11: Set Profile

1. Student selects group and task question
2. Student clicks the continue button
3. Browser sends student profile to server
4. Server activates web agent (profile agent)
5. Web agent creates a profile document
6. Web agent saves the profile document in server database

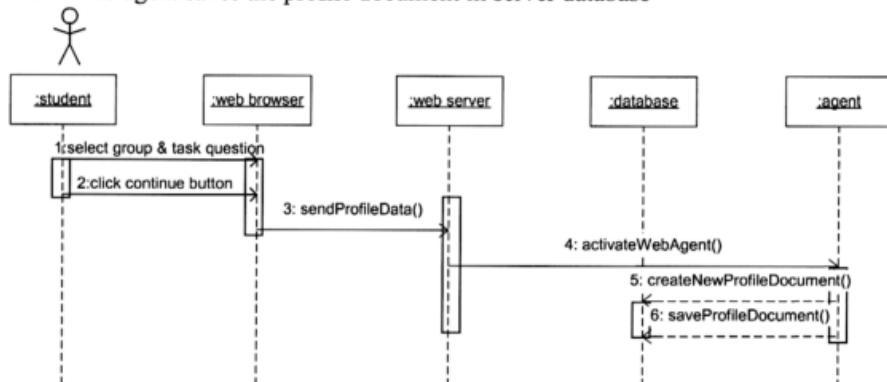


Figure A-3-11 Set Profile Sequential Diagram

A-3-12 Scenario 12: Compose Response

1. Student clicks the Post Response button
2. Browser requests the response form
3. Server retrieves the requested form from server database
4. Server database searches for the requested form
5. Response form is sent to the browser
6. Browser displays response form to the student

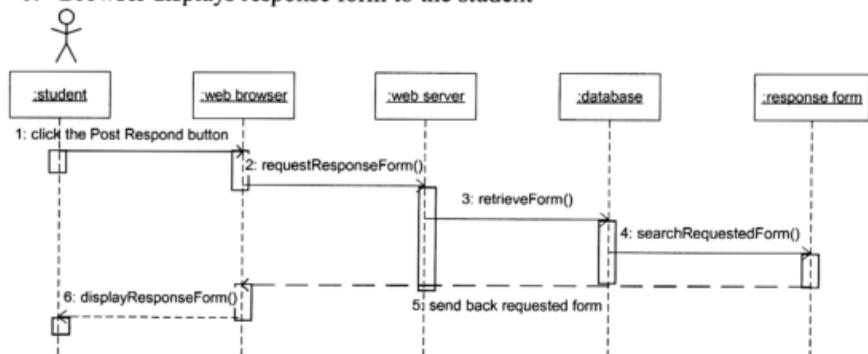


Figure A-3-12 Compose Response Sequential Diagram

A-3-13 Scenario 13: Submit Response

1. Student clicks the post button
2. Browser sends submitted information to server
3. Server saves the information in server database
4. Server database returns confirmation message to browser
5. Browser displays confirmation message to student

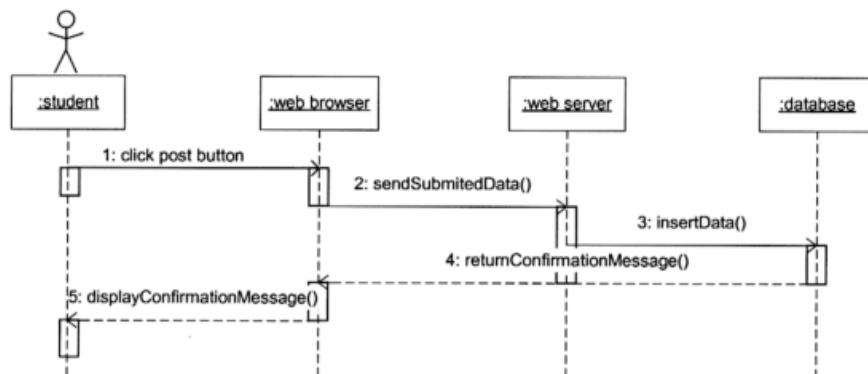


Figure A-3-13 Submit Response Sequential Diagram

A-3-14 Scenario 14: Read/View Responses

1. Student clicks on the link to read or view the responses
2. Browser requests for the required document from server
3. Server retrieves requested document from server database
4. Server database sends the requested document to browser
5. Browser displays the requested document to student

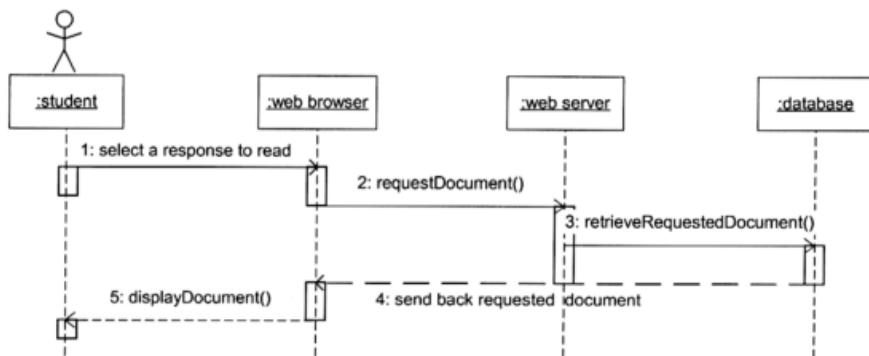


Figure A-3-14 Read/View Responses Sequential Diagram

A-3-15 Scenario 15: Compose Summary

1. Student clicks the summary button
2. Browser requests for the summary form
3. Server retrieves the requested form from server database
4. Server database searches for the requested form
5. Summary form is sent to the browser
6. Browser displays summary form to the student

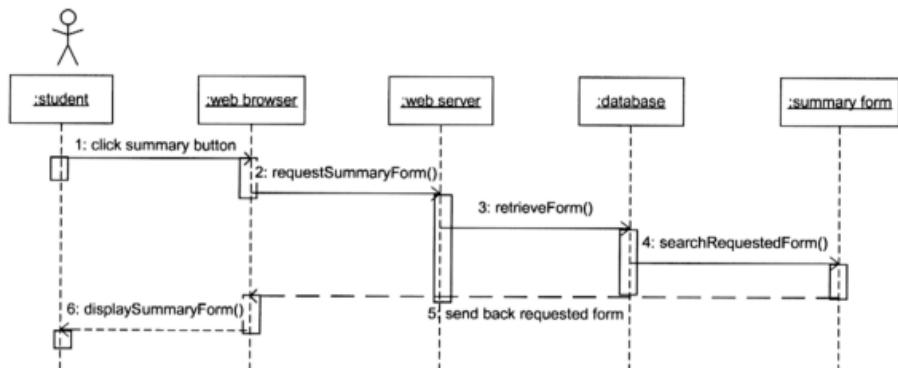


Figure A-3-15 Compose Summary Sequential Diagram

A-3-16 Scenario 16: Retrieve Responses

1. Student selects the author of the response in a dropdown list
2. Browser requests a search on server
3. Server runs a search in server database based on the keyword received
4. Server database returns the search results to browser
5. Browser extracts the data sent by server and set the data in the form's field
6. Browsers display the retrieved data for student

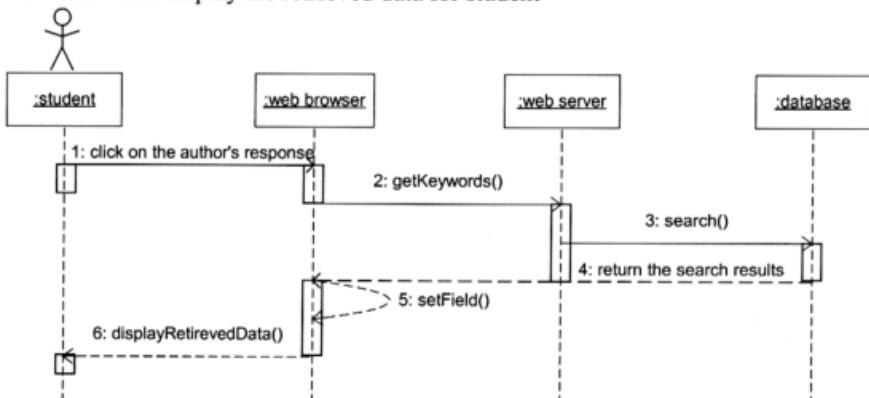


Figure A-3-16 Retrieve Responses Sequential Diagram

A-3-17 Scenario 17: Submit Summary

1. Student clicks the post button
2. Browser sends submitted information to server
3. Server saves the information in server database
4. Server database returns confirmation message to browser
5. Browser displays confirmation message to student

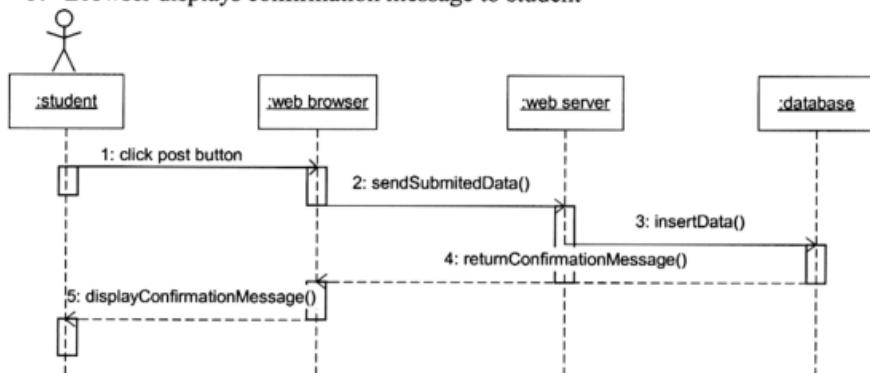


Figure A-3-17 Submit Summary Sequential Diagram

A-3-18 Scenario 18: Read/View Summaries

1. Student clicks on the link to read or view the summaries
2. Browser requests for the required document from server
3. Server retrieves requested document from server database
4. Server database sends the requested document to browser
5. Browser displays the requested document to user

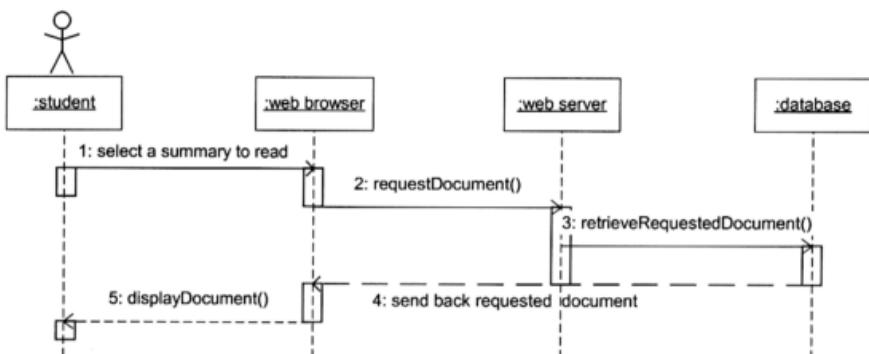


Figure A-3-18 Read/View Summaries Sequential Diagram

A-3-19 Scenario 19: Respond to Summaries

1. Student types in the comments/feedback
2. Student clicks the response button
3. Browser sends the information to server
4. Server updates the document in server database
5. Server database returns the updated document to browser
6. Browser displays the summary with updated response for student

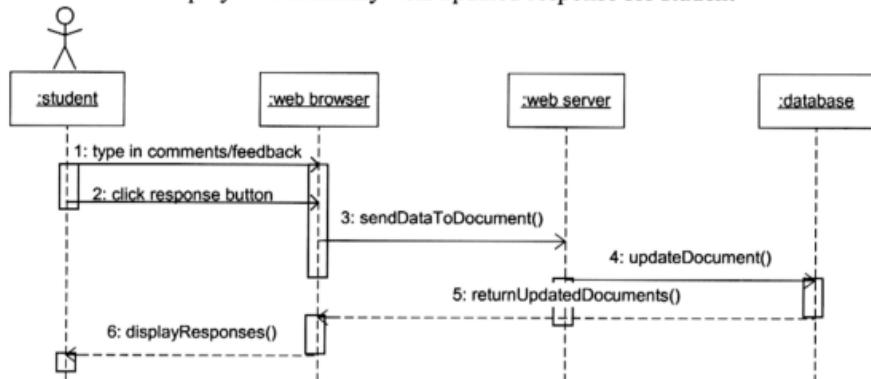


Figure A-3-19 Respond to Summaries Sequential Diagram

A-3-20 Scenario 20: Compose Report

1. Student clicks the create report button
2. Browser requests for the report form
3. Server retrieves the requested form from server database
4. Server database searches for the requested form
5. Report form is sent to the browser
6. Browser displays report form to the student

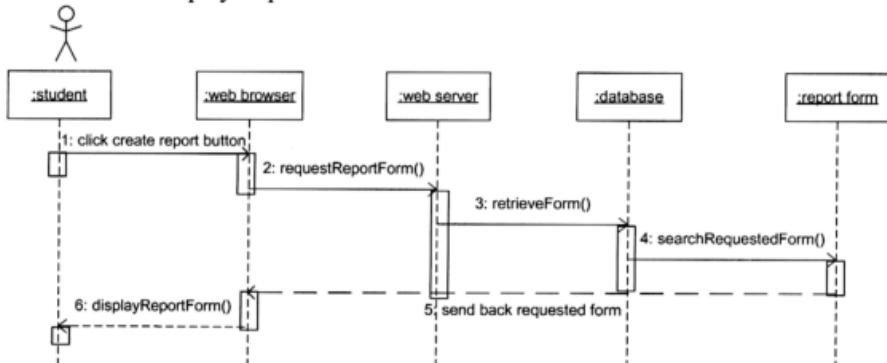


Figure A-3-20 Compose Report Sequential Diagram

A-3-21 Scenario 21: Retrieve Summary

1. Student clicks the copy button
2. Browser a requests a search on server
3. Server runs a search in server database based on the student's profile
4. Server database returns the search document to browser
5. Browser extracts the data sent by server and set the data in the form's field
6. Browsers display the retrieved data for student

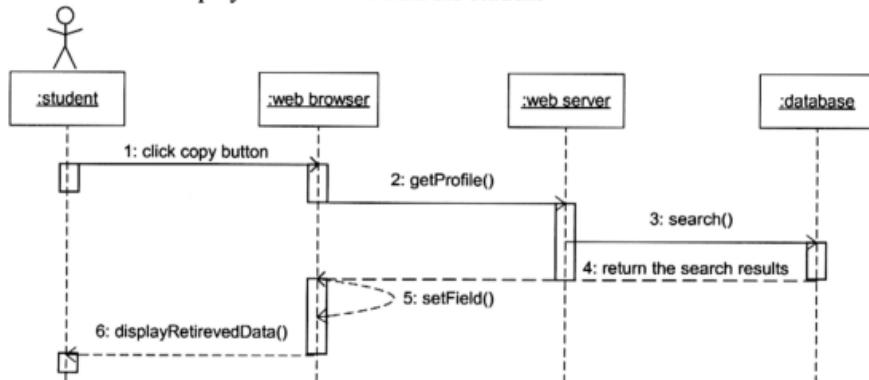


Figure A-3-21 Retrieve Summary Sequential Diagram

A-3-22 Scenario 22: Submit Report

1. Student clicks the post button
2. Browser sends submitted information to server
3. Server saves the information in server database
4. Server database returns confirmation message to browser
5. Browser displays confirmation message to student

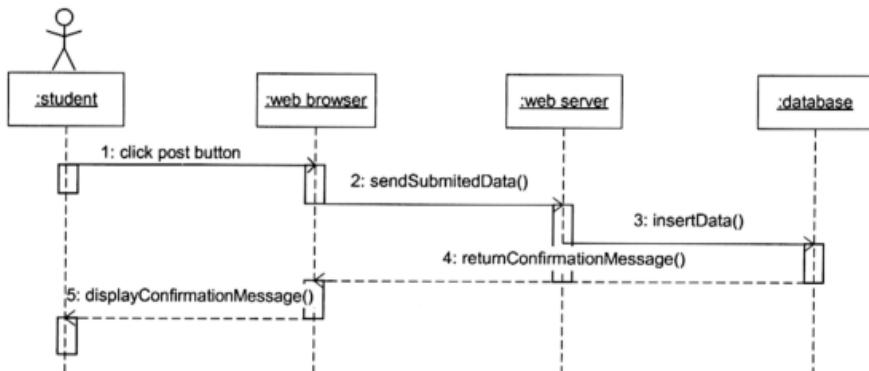


Figure A-3-22 Submit Report Sequential Diagram

A-3-23 Scenario 23: Read/View Reports

1. Student clicks on the link to read or view the reports
2. Browser requests for the required document from server
3. Server retrieves requested document from server database
4. Server database sends the requested document to browser
5. Browser displays the requested document to student

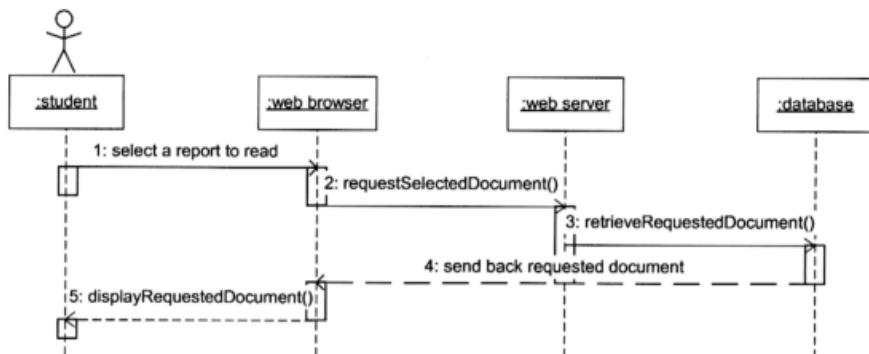


Figure A-3-23 Read/View Reports Sequential Diagram

A-3-24 Scenario 24: Edit Report

1. Student clicks on the report to be edited
2. Browser requests for the required document from server
3. Server retrieves requested document from server database
4. Server database sends the requested document to browser
5. Browser displays the requested document to student in read mode
6. Student clicks on the edit button
7. Browser requests server database to open document in edit mode
8. Server database changes the document to edit mode
9. Student edits the jigsaw task in browser

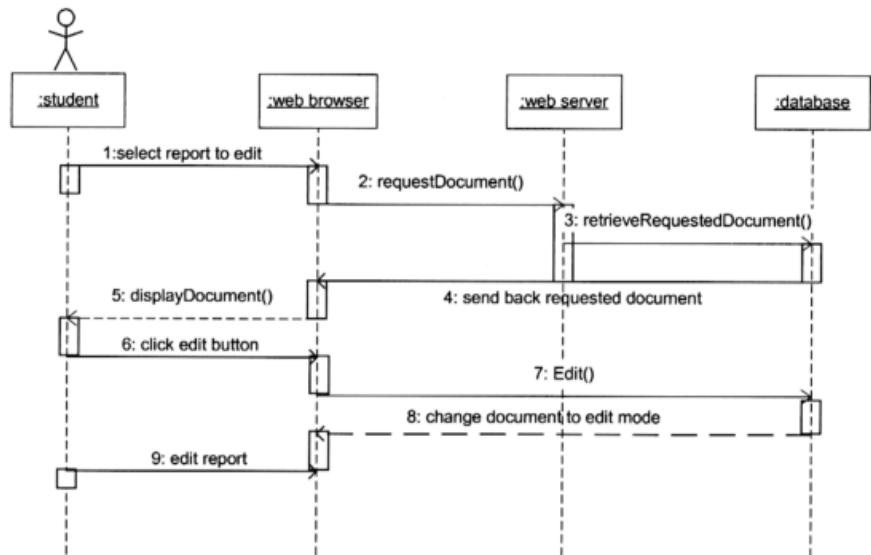


Figure A-3-24 Edit Report Sequential Diagram

A-3-25 Scenario 25: Delete Report

1. Student clicks on the report to be deleted
2. Browser requests for the required document from server
3. Server retrieves requested document from server database
4. Server database sends the requested document to browser
5. Browser displays the requested document to student in read mode
6. Teacher clicks on the delete button
7. Browser requests server database to delete the document
8. Server database deletes the document
9. Server database sends deleted message to browser

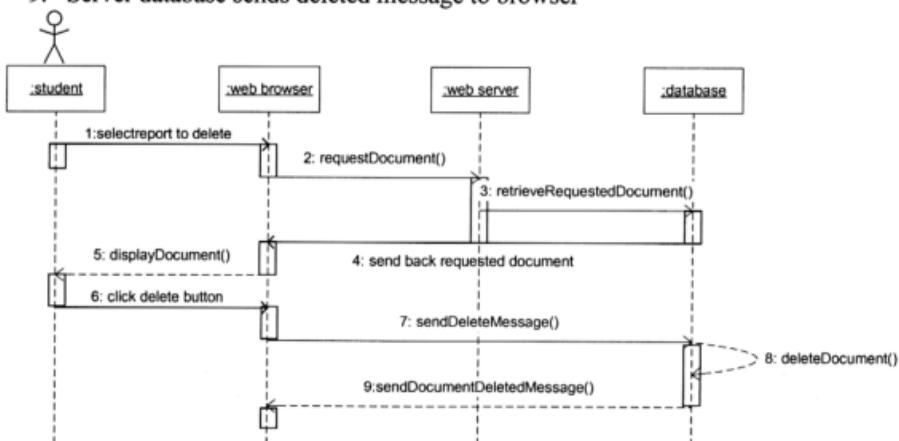


Figure A-3-25 Delete Report Sequential Diagram

A-3-26 Scenario 26: Integrate Reports

1. Student clicks the integrate reports button
2. Browser requests for report integration from server
3. Server activates web agent (integration agent)
4. Web agent integrates all related reports in server database
5. Server database sends integrated report to browser
6. Browser displays the integrated report to student

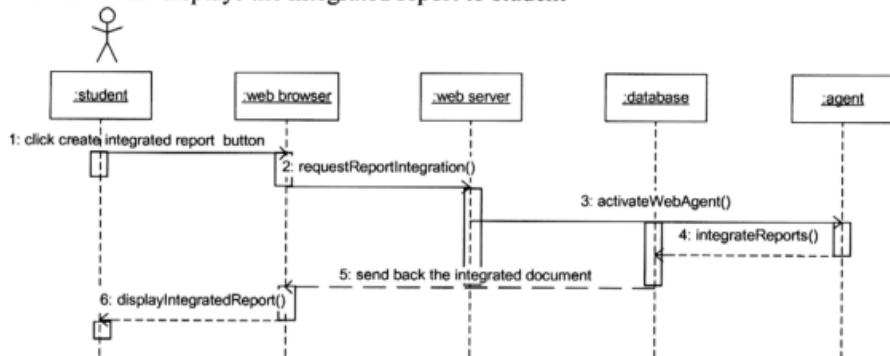


Figure A-3-26 Integrate Reports Sequential Diagram

A-3-27 Scenario 27: Switch Group

1. Student places the cursor over the Switch Group link
2. Browser displays a dropdown list with available groups to student
3. Student selects and clicks on the group to be switched
4. Browser requests the page from server
5. Server retrieves the page from server database
6. Server database sends the requested page to browser
7. Browser displays the selected page to student

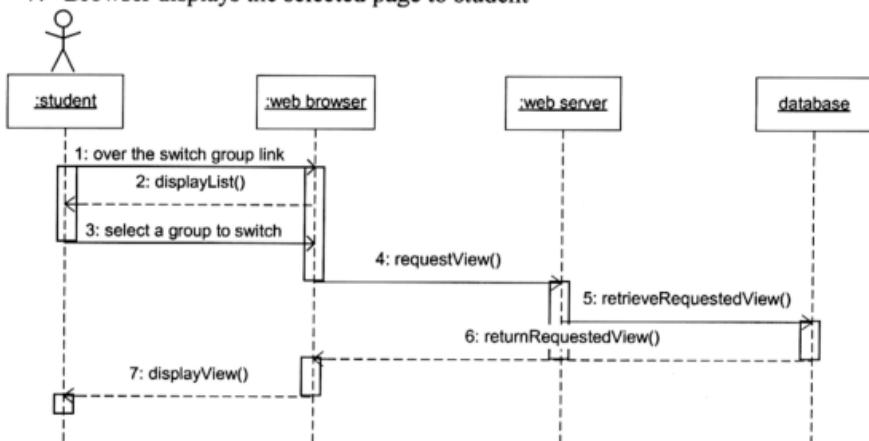


Figure A-3-27 Switch Group Sequential Diagram

A-4 G-Jigsaw Activities Diagrams

This section depicts the jigsaw processes using the Activity Diagram. There are 7 Activity Diagrams for illustrating each level of jigsaw activity's processes.

A-4-1 Create New Jigsaw Task

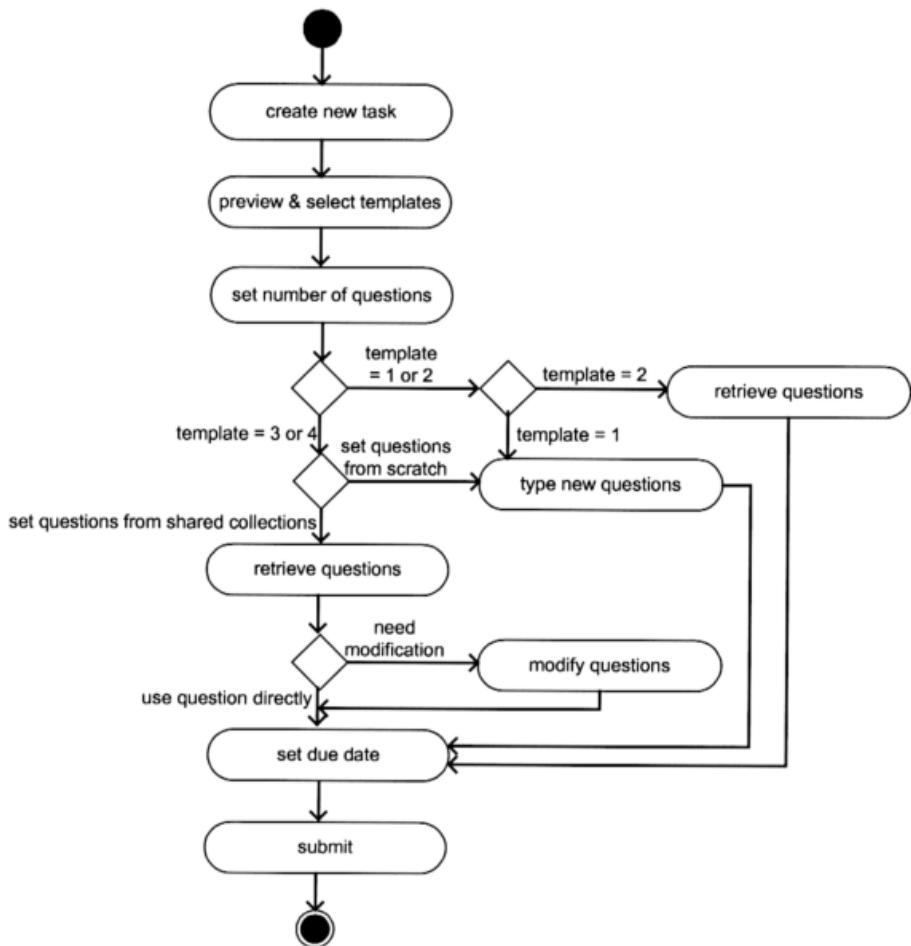


Figure A-4-1 Create New Jigsaw Task Activity Diagram

A-4-2 Read and/or Edit Jigsaw Task

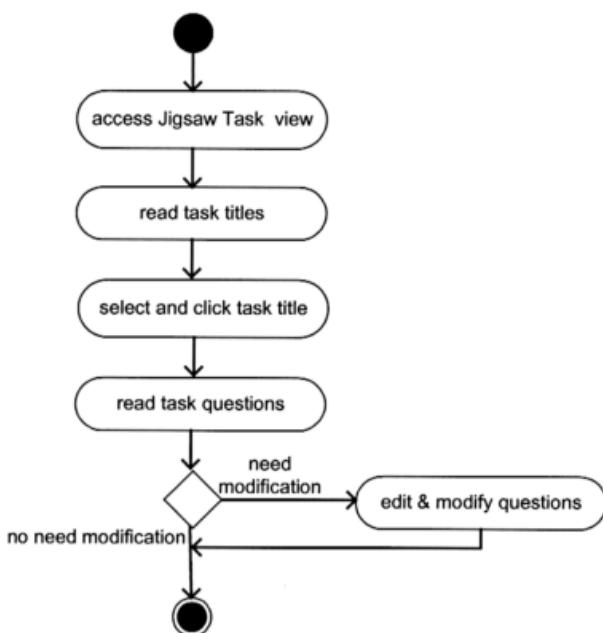


Figure A-4-2 Read and/or Edit Jigsaw Task Activity Diagram

A-4-3 Respond to Group Members in Initial Group

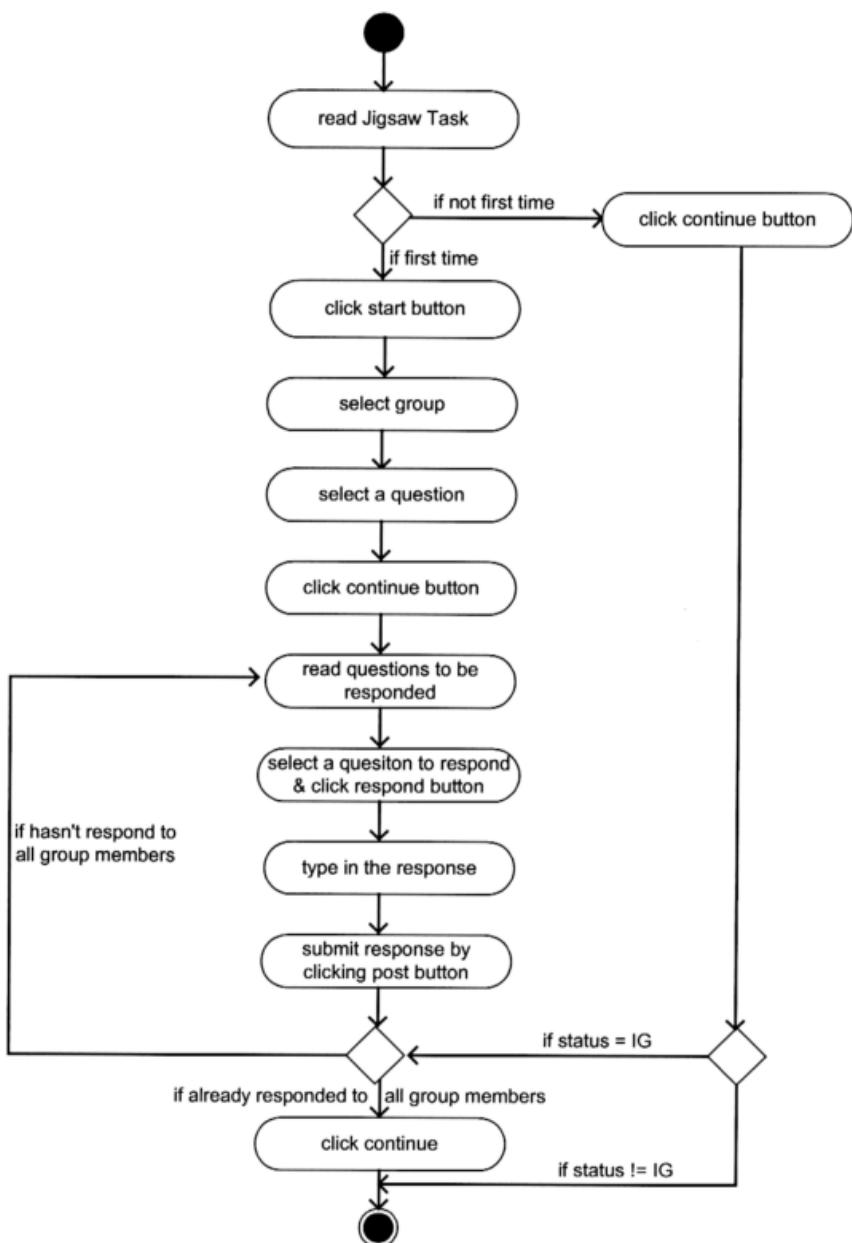


Figure A-4-3 Respond to Group Members Activity Diagram

A-4-4 Compose Summary in Initial Group

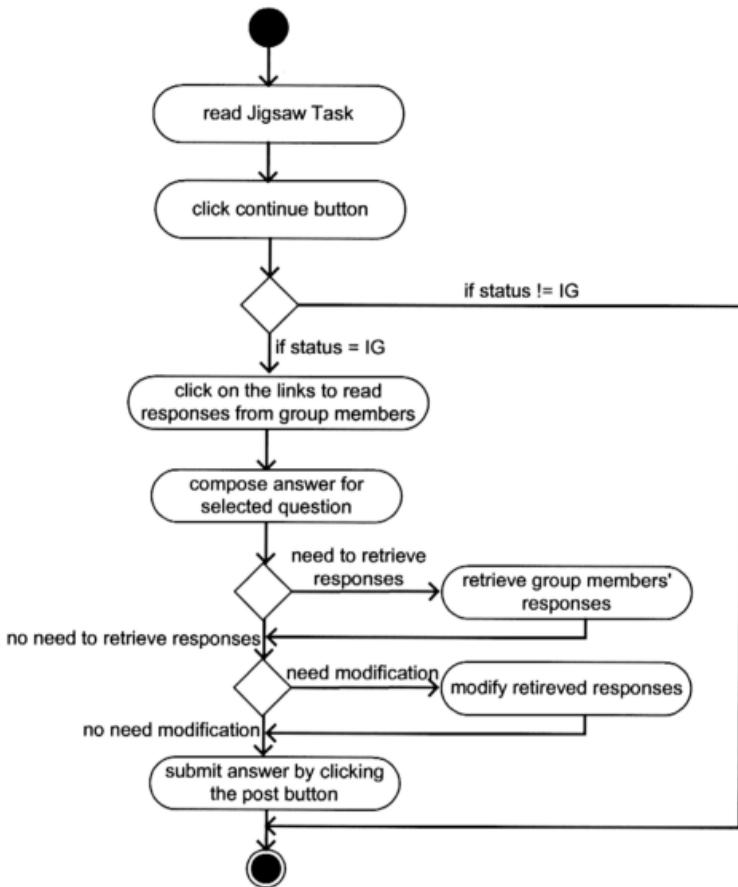


Figure A-4-4 Compose Summary Activity Diagram

A-4-5 Provide Comments and Compose Report in Expert Group

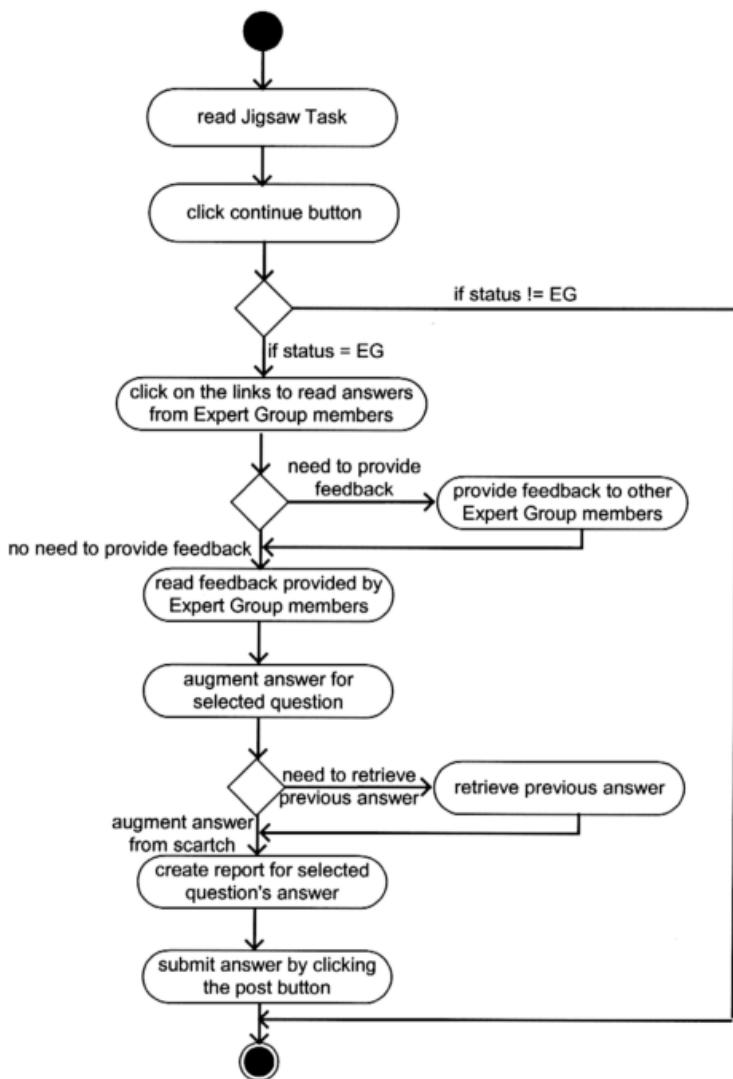


Figure A-4-5 Provide Comments and Compose Report Activity Diagram

A-4-6 Read, Edit and Integrate Group Reports in Jigsaw Group

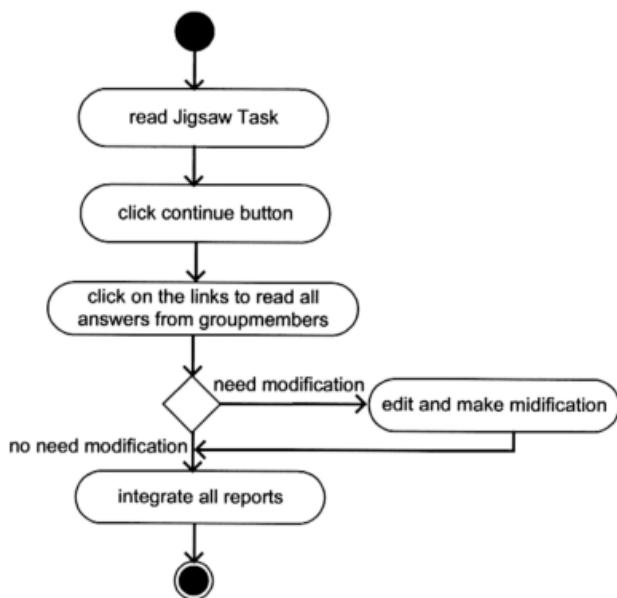


Figure A-4-6 Read, Edit and Integrate Group Reports Activity Diagram

A-4-7 The Entire Session of Jigsaw Activity

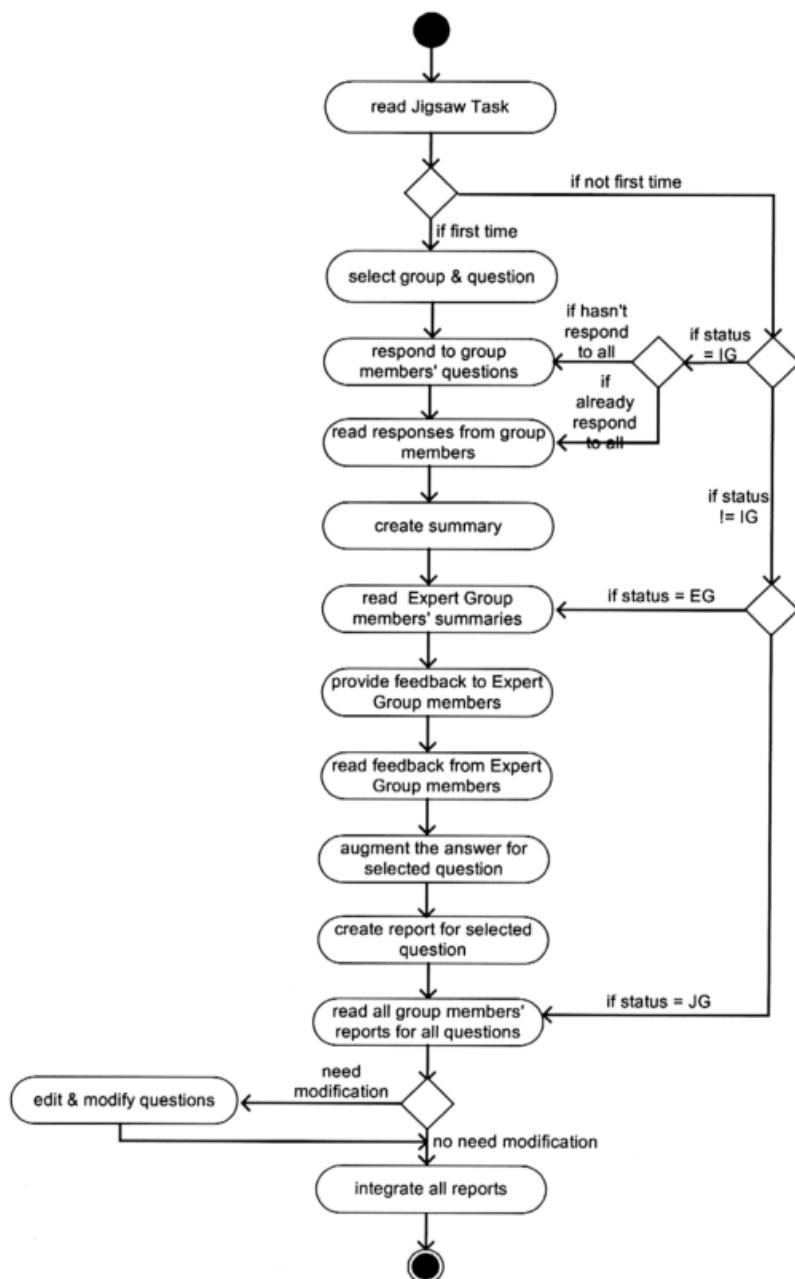


Figure A-4-7 The Entire Jigsaw Session Activity Diagram

Appendix B: G-Jigsaw Evaluation Task Scenarios

B-1 Pilot Test Task Scenarios

Instructions: Follow the test scenario instructions for each module. Upon completion, please fill up the questionnaire provided. Thank you for your participation.

Section A:

I. Test Scenario For Jigsaw Task module (without agent)

Activity 1: Setting a new jigsaw task

1. Open the Internet Explorer browser in your Desktop.
2. On the Browser's Address bar, type in the following URL and press enter.
<http://202.185.109.65/Hybrid/GTSimulate.nsf/>
3. When the dialog box prompt for username and password, fill in the correct username and password and click ok.
4. Now, you are at the Group Task Simulation's homepage.
5. Click on the Tasks button to proceed.
6. Now, you are able to view the list of Simulation Tasks and the Quick Help. Click on the New Simulation Task text link at the 3rd bullet of Quick Help to create a new task for your students.
7. Set your question by following the instructions displayed in Quick Help.
8. Upon completion, click the submit button.
9. Click OK to go back to Simulation Task View.

Activity 2: Responding to all group members

1. From the Simulation Task View, select the Simulation Task title and click on its link.
2. Read the task questions carefully.
3. Click the Response button (which is at the bottom-right of the page) to start responding to your group members' questions.
4. Select the question to be responded and fill in your group. (You must remember questions that you must respond, questions to be responded, and questions that already responded in order to participate this task. You also need to understand the concept of Jigsaw method in order to know how and which to respond.)
5. Type your response in the text area.
6. Upon completion, click the Post button.
7. Click Continue to response to other questions. (Repeat steps 3 to 6)
8. Upon completion, click the OK button.

Activity 3: Composing a summary

1. When you have responded to all your group members, click on the Simulation Group button.
2. Move your mouse's cursor over to "Switch SubQuestion". Then, a dropdown menu will appear.
3. Select your own question by clicking on the dropdown menu item. (you have to remember your own question.)
4. Now, you should be able to see your group members and their responses. (Responses of other group member are there too.)
5. Click on your group members' name to view their responses.
6. After reading the response, use the browser's back button to view other members' responses and repeat steps 5 and 6.
7. When you have finished reading all your group members' responses, click on the Summary button to compose a summary.
8. Type your summary in the provided text area.
9. Upon completion, click the Post button.
10. Click the OK button to proceed to Expert Group.

Activity 4: Composing a report

1. Move your mouse's cursor over to "Switch SubQuestion". Then, a dropdown menu will appear.
2. Select your own question by clicking on the dropdown menu item. (you have to remember your own question)
3. Now, you should be able to see your own summary and your group members' summary.
4. Click on your group member's name to view their summary.
5. Type in your comments and feedback. Upon completion, click the "Response" button.
6. After reading the summary, use the browser's back button to view other members' summary and repeat steps 5 and 6.
7. When you have finished reading all your group members' summary, click on the 'Create Report' button to compose a report.
8. Type your report in the provided text area.
9. Upon completion, click the Post button.
10. Click the OK button to proceed to Jigsaw Group.

Activity 5: Integrating a group report

1. Move your mouse's cursor over to "Switch Group". Then, a dropdown menu will appear.
2. Select your own group by clicking on the dropdown menu item. (You have to remember your own group)
3. Now, you should be able to see your group members' report.
4. To integrate all reports, you must be the group leader.
5. Click on one of the reports and click the 'Integrate Reports' button. Then, an integrated report form is opened.
6. Copy each of your group members' report into the integrated report form one by one.
7. Upon completion, click the Post button.
8. Click on the integrated report to view the final outcome.

II. Test Scenario For Jigsaw Task module (with agent)

Activity 1: Setting a new jigsaw task

1. Open the Internet Explorer browser in your Desktop.
2. On the Browser's Address bar, type in the following URL and press enter.
<http://202.185.109.65/Hybrid/GJigsaw.nsf/GJigsawHome?OpenPage>
3. When the dialog box prompt for username and password, fill in the correct username and password and click ok.
4. Now you are at the G-Jigsaw's homepage.
5. Click on the Jigsaw Task button to proceed.
6. Now, you are able to view the list of Jigsaw Tasks and the Quick Help. Click on the New Jigsaw Task text link at the 3rd bullet of Quick help to create a new task for your students.
7. There are four template options available to set a task question.

Using Template 2:

1. Select Template 2 and view its template description. Then, click the Enter button.
2. Set your questions by following the instructions displayed in Quick Help.
3. Upon completion, click the submit button.
4. Click OK to go back to Jigsaw Task View.

Using Template 3 or 4

1. Click on the New Jigsaw Task text link at the 3rd bullet of Quick help to create a new task for your students.
2. Select template 4 and view its description. Then, click the Enter button.
3. Set your question by following the instructions (steps 5 to 11) displayed in Quick Help.
5. Upon completion, click the submit button.
6. Click OK to go back to Jigsaw Task View.

Activity 2: Responding to all group members

1. At the Jigsaw Task View, select the Jigsaw Task title and click on its link.
2. Read the task questions carefully.
3. Click the Start button (found on the bottom-right of the page) to start the Jigsaw Task session.
4. Fill in your group and select a question. Then, click the Continue button. (Once you have clicked the Continue button, agent will automate the entire session for this task).
5. Then, the system will display the questions that you need to respond.
6. Select a question and click its Post Response button.
7. Type your response in the provided text area.
8. Upon completion, click the Post button.
9. Repeat steps 6 to 8 until you have finished responding to all the questions.

Activity 3: Composing a summary

- Once you have responded to all your group members, the system will inform you that there are no more responses. (Controlled by agent)
- Click the Continue button to proceed.
- If your group members have finished their responses, you should be able to view their responses at the bottom of the page automatically. (If they have not finished, you have to wait for them in order to see their responses towards your question. This is controlled by agent).
- Click on each of the link to read their responses.
- When finished reading each of the responses, use the back button to read other responses.
- When you have read all your group members' responses, click on the Summary button to compose a summary.
- Follow the instructions displayed in Quick Help to compose a summary.
- Upon completion, click the Post button.
- Now, you should be able to see your own summary and your group members' summary. (If you can only see your own summary that means other group members have not completed their summaries. Wait until they finished composing a summary. This is controlled by agent).

Activity 4: Composing a report

- Click on the links to view other group members' summary.
- Type in your comments and feedback. Then, click the "Response" button.
- To read another summary, use the 'back' button to go back to the Expert Group view.
- Repeat steps 1, 2 and 3 until you have view all your group members' summaries.
- Click on the 'Create Report' button to compose a report.
- Follow the instructions displayed in Quick Help to compose a report.
- Upon completion, click the Post button.
- Now, you should be able to see your own report and your group members' report. (If you can only see your own report that means other group members have completed their reports. Wait until they finished composing a report. This is controlled by agent).

Activity 5: Integrating a group report

- To integrate all group members' reports, you must be the group leader.
- Click on the 'Create Integrated Report' button.
- The system's agent will perform the integration.
- Click on the integrated report link to view the final group report.

1. Saya tidak pernah
2. Saya belum mencoba
3. Saya belum tahu
4. Perbaikan belum

Thank you for your participation. Please answer the following Questionnaire to complete the testing.

B-2 Hands-on Testing Task Scenarios

Kumpulan: _____

Nombor Soalan: _____

Username: _____

Katalaluan: _____

Aktiviti Group Jigsaw

Pelajar diminta untuk melaksanakan aktiviti Group Jigsaw mengikut langkah-langkah yang disenaraikan di bawah. Pelajar juga diminta untuk menjawab beberapa soalan bagi setiap aktiviti (bila perlu).

A. Masuk ke halaman utama Group Jigsaw

Langkah-langkahnya:

1. Sila klik pada Group Jigsaw.
2. Sila masukkan “username” dan katalaluan anda seperti di atas.
3. Kini anda berada di halaman utama Group Jigsaw.

B. Memulakan aktiviti Jigsaw

Langkah-langkahnya:

1. Sila klik pada “Jigsaw Task” untuk membaca soalan yang disediakan oleh guru anda.
2. Sila klik pada tajuk soalan.
3. Sila klik pada “Start” untuk memulakan aktiviti Jigsaw.
4. Sila pilih kumpulan dan nombor soalan seperti yang diberikan di atas.
5. Sila klik pada “Continue”.
6. Kini anda berada di halaman soalan yang perlu dijawab.

C. Memberi maklumat kepada ahli kumpulan anda

Langkah-Langkahnya:

1. Sila klik pada “Post response” di bawah soalan yang anda ingin jawab.
2. Sila beri maklumat anda dalam tempat yang disediakan dan klik pada “Post” apabila selesai.
3. Perhatikan bahawa soalan yang telah anda jawab akan ditanda (✓).
4. Ulangi langkah-langkah 1 dan 2 untuk memberi maklumat pada soalan-soalan yang seterusnya.

5. Apabila semua soalan telah dijawab, mesej “No more responses” akan dipaparkan di bawah halaman soalan.
6. Sila klik pada “Continue”.
7. Kini, anda dapat melihat maklumat-maklumat yang diberikan oleh ahli kumpulan anda.
8. Sekiranya anda terlihat mesej “No document found”, ini bermaksud ahli kumpulan anda belum lagi menyiapkan maklumat mereka.
9. Sila tunggu sehingga mereka selesai.
10. Sila klik pada “Refresh” untuk mengemaskini halaman maklumat anda.

D. Membaca maklumat-maklumat yang diberikan oleh ahli kumpulan anda.

Langkah-langkahnya:

1. Sila klik pada nama ahli kumpulan anda untuk membaca maklumat mereka.
2. Sila klik pada “Back” untuk kembali ke halaman maklumat.
3. Ulangi langkah 1 and 2 untuk membaca maklumat yang seterusnya sehingga semua maklumat telah dibaca.

E. Menyediakan ringkasan bagi soalan anda

Langkah-langkahnya:

1. Sila klik pada “Summary” untuk menjawab soalan anda.
2. Anda boleh menaip jawapan anda pada tempat yang disediakan
ATAU
menggunakan maklumat dari ahli kumpulan anda dengan memilih nama mereka dan mengubahsuainya.
3. Klik pada “Post” setelah selesai membuat ringkasan bagi soalan anda.
4. Kini, anda dapat melihat ringkasan anda dan juga ringkasan daripada ahli kumpulan lain yang menjawab soalan yang sama dengan anda.
5. Sekiranya anda hanya dapat melihat ringkasan sendiri, ini bermaksud ahli kumpulan lain belum lagi menyiapkan ringkasan mereka.
6. Sila tunggu sehingga mereka selesai.
7. Sila klik pada “Refresh” untuk mengemaskini halaman anda.

F. Membaca ringkasan dan memberi komen

Langkah-langkahnya:

1. Sila klik pada nama ahli kumpulan lain untuk membaca ringkasan mereka.
2. Sila taipkan komen anda di tempat yang disediakan.
3. Sila klik pada “Respond” setelah selesai.

4. Anda dapat melihat komen anda wujud di bawah ringkasan yang sedang dibaca.
5. Sila gunakan “Back” untuk membaca ringkasan yang seterusnya.
6. Ulangi langkah-langkah 1 hingga 5 sehingga semua ringkasan telah dibaca dan dikomen.

G. Menyediakan laporan anda

Langkah-langkahnya:

1. Sila klik pada “Create Report” untuk membuat laporan bagi soalan anda.
2. Anda boleh meniap jawapan anda pada tempat yang disediakan
ATAU
menggunakan semula ringkasan anda dengan klik pada “Copy” dan mengubahsuainya.
3. Klik pada “Post” setelah laporan disiapkan.
4. Kini, anda dapat melihat laporan anda sendiri dan juga laporan daripada ahli kumpulan anda.
5. Sekiranya anda hanya dapat melihat laporan sendiri, ini bermaksud ahli kumpulan anda belum lagi menyiapkan laporan mereka.
6. Sila tunggu sehingga mereka selesai.
7. Sila klik pada “Refresh” untuk mengemaskini halaman anda.

H. Menggabungkan semua laporan Jigsaw (Untuk Ketua Kumpulan sahaja)

Langkah-langkahnya:

1. Sila klik pada “Create Integrated Report”.
2. Untuk membaca laporan lengkap tersebut, klik pada tajuk “View Full Report”.



Terima kasih atas penyertaan anda dalam aktiviti ini.

Appendix C: G-Jigsaw Questionnaires

C-1 Pilot Testing Questionnaire (for Teachers)

Research Question:

Will there be a significant difference of performance and achievement in implementing Web Agents to support collaborative learning activities.

Section A: Experiment

Instructions: This section consists of 7 questions. The first 2 questions compare two modules, one without web agents and the other one with web agents. The following 5 questions are based on the activity below. You are required to carry out the activities below before you can proceed to answer question 1. To carry out the activities, please follow instructions provided in Task Scenarios.

Activity	Time spent in G-Jigsaw module (without web agents)		Time spent in G-Jigsaw module (with web agents)	
	Using Default Template	Using Template 2	Using Template 3/4	
1. Enter questions for new task				
2. Respond to all group members				
3. Compose a summary				
4. Compose a report				
5. Integrate all reports			1 minute	

1. Rate the difficulty level of the 5 activity you carried out.

For G-Jigsaw without web agents
(Difficult)

(Easy)

Activity 1:	1	2	3	4	5
Activity 2:	1	2	3	4	5
Activity 3:	1	2	3	4	5
Activity 4:	1	2	3	4	5
Activity 5:	1	2	3	4	5

b. Answer

how

DN

For G-Jigsaw with web agents

(Difficult)

(Easy)

Activity 1:	1	2	3	4	5
Activity 2:	1	2	3	4	5
Activity 3:	1	2	3	4	5
Activity 4:	1	2	3	4	5
Activity 5:	1	2	3	4	5

2. How easy was it for you to learn to use the system for this testing?

For G-Jigsaw without web agents

(Difficult)

1

2

3

4

(Easy)

5

For G-Jigsaw with web agents

(Difficult)

1

2

3

4

(Easy)

5

3. For activity 1 : G-Jigsaw with web agents

- a. How the shared questions helped you in setting new questions?

(Not helpful)

1

2

3

4

(Very helpful)

5

- b. Are the shared questions reducing your time in setting new questions?

No

Undecided

Yes

For activity 2

- c. How effective is the sharing facility in promoting collaboration among teachers?

(Not effective)

1

2

3

4

(Very effective)

5

4. For activity 2 : G-Jigsaw with web agents

- a. Did you find it easy to respond to all your members?

No

Undecided

Yes

- b. Are the instructions provided helping you to know where you are and how you should proceed?

(Not helpful)

1

2

3

4

(Very helpful)

5

Section B: Usability Test

Instructions: This section consists of 10 statement based on the module with web agents. Please answer each question carefully and tick your answers accordingly.

8. The instructions are helpful

Agree Undecided Disagree

9. I enjoy my session on this software

Agree Undecided Disagree

10. Working with this software is satisfying

Agree Undecided Disagree

11. The information provided in this software is clear and easy to understand

Agree Undecided Disagree

12. The instructions provided in this software is easy to follow

Agree Undecided Disagree

13. Tasks can be easily performed in this software

Agree Undecided Disagree

14. I need to go back and forth to look at the instructions

Agree Undecided Disagree

15. It is difficult to learn how to use new functions

Agree Undecided Disagree

16. This software has a very attractive presentation

Agree Undecided Disagree

17. It is relatively easy to move from one part of a task to another

Agree Undecided Disagree

Section C: Opinions and Feedback

18. List out the most negative aspect(s) you found in this system (if any)

19. List out the most positive aspect(s) you found in this system (if any)

20. General comments and opinions:

1. Sharp

2. Good

3. True

6. Satisfaction

7.

8. Ya, ker...

9. True

8. Kompeten

Ya, ker...

True

9. Saya m...

Kumpul

Thank you very much for your participation in this testing. All the information given is solely for research purposes only.

C-2 Hands-On Testing Questionnaire (for Students)

Kumpulan: _____

Nombor Soalan: _____

Username: _____

Katalaluan: _____

Soal selidik Aktiviti Group Jigsaw

Soalab-soalan mengenai aktiviti Jigsaw yang telah dijalankan:

1. Saya dapat memulakan aktiviti jigsaw dengan mudah.
Ya _____ Tidak _____
2. Saya dapat memberikan maklumat kepada ahli kumpulan dengan mudah.
Ya _____ Tidak _____
3. Saya berasa gembira kerana dapat menyumbangkan maklumat kepada ahli kumpulan saya.
Ya _____ Tidak _____
4. Saya dapat membaca maklumat yang diberikan dengan mudah.
Ya _____ Tidak _____
5. Maklumat yang diberikan oleh ahli sekumpulan dapat membantu saya menjawab soalan.
Ya, kerana _____
Tidak, kerana _____
6. Saya dapat memberi komen kepada “Expert Group” dengan mudah.
Ya _____ Tidak _____
7. Saya dapat lebih maklumat dengan membaca jawapan dari “Expert Group”.
Ya, kerana _____
Tidak, kerana _____
8. Komen yang diterima membantu saya memperbaiki jawapan.
Ya, kerana _____
Tidak, kerana _____
9. Saya dapat menggabungkan semua jawapan dengan mudah. (Untuk Ketua Kumpulan sahaja)
Ya _____ Tidak _____

Soalan-soalan Umum

1. Aktiviti Jigsaw membantu saya berkongsi maklumat dengan rakan-rakan.
Ya Tidak
 2. Saya memahami jawapan bagi semua soalan yang disediakan oleh guru.
Ya Tidak
 3. Sistem ini sesuai untuk digunakan dalam aktiviti pembelajaran di sekolah.
Ya Tidak
 4. Saya suka menggunakan system Jigsaw kerana

5. Sila berikan komen dan pandangan lain tentang system ini:

3 11

Terima kasih atas penyertaan anda dalam aktiviti ini.

Appendix D: G-Jigsaw Web Agents' Algorithm

Sharing Agent Algorithms:

```
SharingAgent (message As Integer)
```

```
{  
    If message = 1 Or message = 10 Or message = 14 Then  
        Call RetrievingAgent (1, message, username, task_id)  
    ElseIf message = 2 Then  
        Call FilteringAgent (3)  
    ElseIf message = 20 Then  
        Call ClusteringAgent (4)  
    Else  
        If message = 19 Then  
            report (2)  
        Else  
            report (5)  
        End If  
    End If  
}
```

```
RetrievingAgent (message As Integer, type As Integer, name As String, id As Integer)
```

```
{  
    If message = 1 Then  
        If type = 1 Then  
            retrieve ("question", name, id)  
        ElseIf type = 10 Then  
            retrieve ("response", name, id)  
        Else  
            retrieve ("summary", name, id)  
        End If  
  
        report (19)  
    End If  
}
```

```
FilteringAgent (message As Integer)
```

```
{  
    If message = 3 Then  
        Dim aryQuestion As Variant  
        aryQuestion = getNewQuestion () 'Extract new Questions into an array  
        ' Loop through the questions and filter existing questions  
        ForAll question In aryQuestion  
            filter (question)  
        End ForAll  
  
        report (20)  
    End If  
}
```

```
ClusteringAgent (message As Integer)
```

```
{  
    If message = 4 Then  
        Dim category As String  
        Dim categories As Variant  
        Dim isExist As Integer  
  
        isExist = False  
        category = getTitle () 'Extract submitted task title as category  
        categories = getCategories () 'Extract all existing categories in the database  
        ' Loop through the categories in database to perform clustering
```

```

ForAll item In categories
    If item = category Then
        isExist = True
        insertQuestions ()
        sort ()
        exit ()
    End If
End ForAll

If Not isExist Then
    createNewCategory ()
    insertQuestions ()
    sort ()
End If

    report (21)
End If
}

```

Navigation Agent:

```

NavigationAgent (message As Integer)
{
    If message = 5 Or message = 25 Then
        Call LoadProfileAgent (1)
    ElseIf message = 22 Then
        Call MapProfileAgent (2, message, username, level, status)
    ElseIf message = 23 Then
        Call NavigateAgent (3, location)
    ElseIf message = 3 Or message = 4 Or message = 6 Or message = 7 Or message = 8
        Or message = 9 Or message = 11 Or message = 12 Or message = 13
        Or message = 15 Or message = 16 Or message = 18 Then
        Call UpdateProfileAgent (5, message, username)
    ElseIf message = 24 Then
        report (4)
    End If
}

```

```

LoadProfileAgent (message As Integer)
{
    Dim key As String
    Dim profile As NotesDocument
    If message = 1 Then
        key = getUserName ()
        Set profile = getProfile ()
        setStatus ()
        report (22)
    End If
}

```

```

MapProfileAgent (message As Integer, name As String, level As Integer, status As Integer)
{
    Dim location As String
    If message = 2 Then
        getProfile (name)
    If level = 0 Then
        If status = 0 Then
            location = "Jigsaw Task"
        ElseIf status = 1 Then
            location = "Profile Form"
        End If
    ElseIf level = 1 Then

```

```

If status = 2 Then
    location = "Question View"
ElseIf status = 3 Then
    location = "Response Form"
ElseIf status = 4 Or status = 5 Then
    location = "Responses View"
ElseIf status = 6 Then
    location = "Summary Form"
End If
ElseIf level = 2 Then
    If status = 7 Or status = 8 Then
        location = "Summaries View"
    ElseIf status = 9 Then
        location = "Report Form"
    End If
ElseIf level = 3 Then
    If status = 10 Or status = 11 Then
        location = "Report View"
    ElseIf status = 12 Then
        location = "Integrated Report View"
    End If
End If
return (location)
report (23)
End If
}

```

```

NavigateAgent (message As Integer, location As String)
{
    If message = 3 Then
        redirect (location);
        displayInstructions (location)
        report (23)
    End If
}

```

```

UpdateProfileAgent (message As Integer, type As Integer, name As String)
{
    Dim profile As NotesDocument
    If message = 5 Then
        Set profile = getProfile (name)
        If isProfileExist (profile) Then
            If type = 3 Then
                status = 1
            ElseIf type = 4 Then
                status = 2
                level = 1
            ElseIf type = 6 Then
                status = 3
            ElseIf type = 7 Then
                If isRespondDone() Then
                    status = 4
                Else
                    status = 2
                End If
            ElseIf type = 8 Then
                If isReadDone() Then
                    status = 5
                End If
            ElseIf type = 9 Then
                status = 6
            ElseIf type = 11 Then
                status = 7
            End If
        End If
    End If
}

```

```

        level = 2
    ElseIf type = 12 Then
        If isReadDone() Then
            status = 8
        End If
    ElseIf type = 13 Then
        status = 9
    ElseIf type = 15 Then
        status = 10
        level = 3
    ElseIf type = 16 Then
        If isReadDone() And isLeader(name) Then
            status = 11
        End If
    ElseIf type = 18 Then
        status = 12
    End If
    saveProfile ()
End If

        report (25)
End If
}

```

Integration Agent:

```

IntegrationAgent (message As Integer)
{
    If message = 17 Then
        Call QueryProfileAgent (1, username)
    ElseIf message = 26 Then
        Call IntegrateAgent (2, group, NULL)
    ElseIf message = 27 Then
        suspendIntegrateAgent (3)
        Call SearchAgent (3, group, task id)
    ElseIf message = 28 Then
        Call IntegrateAgent (4, group, document)
    ElseIf message = 29 Then
        report (5)
    End If
}

```

```

QueryProfileAgent (message As Integer, name As String)
{
    Dim profile As NotesDocument
    If message = 1 Then
        Set profile = getProfile (name)
        return (getGroup (), getTaskid ())

        report (26)
    End If
}

```

```

IntegrateAgent (message As Integer, group As String, document As Variant)
{
    If message = 2 Then
        createNew ()
        taskTitle = getTaskTitle ()
        groupName = getGroup ()
        report (27)
        suspend ()
    ElseIf message = 4 Then
        resume ()
}

```

```
ForAll doc In document
    TaskQuestion = document.getItemValue("TaskQuestion")
    TaskAnswer = document.getItemValue ("ReportContent")
End ForAll
save ()
report (29)
End If
}

SearchAgent (message As Integer, group As String, id As String)
{
    Dim document As NotesDocumentCollection

If message = 3 Then
    Set document = getGroupReports (group, id)
    return (document)
    report (28)
End If
}
```