february 2012

MinecraftEdu User Testing
Server Tool and Game Menus

Contents

About this Project

Pixel Pushers, a team operating out of Carnegie Mellon University's Entertainment Technology Center, carried out user testing of the MinecraftEdu Server Tool and MinecraftEdu in-game menu to identify problem areas of the user interface. Testing was carried out at the Elizabeth Forward School District Middle School in Allegheny county, Pennsylvania, on February 8th, 2012.

Test Purpose & Objectives

Purpose: The purpose of this initial testing session session was to test the ease of use regarding...

- Server set up using the wiki and associated documentation
- Opening MinecraftEdu and launching a local host world
- Performing basic functions to demonstrate fundamental comprehension of the tool set

This session was oriented specifically for teachers and the process of getting started with MinecraftEdu. This session was not intended to test the teaching capabilities of the software.

Test Objectives: The objective of this testing session was to task naive users with common operations that must be carried out to operate the MinecraftEdu software and record what these users did while attempting to accomplish each task . Data was gathered through direct observation, formal questioning, and informal interviewing.

Testing Environment and Equipment

Environment: The tests were carried out at the Elizabeth Forward Middle School (EFMS) in Allegheny County, Pennsylvania. EFMS allowed Pixel Pushers use of their board room to conduct the tests.

Equipment: The tests were conducted on Apple Macbooks running OSX 10.6. Screen resolution was 1440x900. It is notable that users one and two did not use a mouse. iShowU HD Pro screen capture software was used to make a recording of the users' screens. Two cameras were set up to record the users from the front and from over the shoulder. The user's computers were hooked up to the overhead projector in the board room so everyone in the room could clearly see what the user was doing on screen and take notes.

Test Participants

Six people participated in this user testing. All formal testing participants were teachers with teaching experience ranging from one to 13 years. School subjects taught by the participants included Physical Science, Chemistry & Physics, Earth & Space Science, American History I & II, and World Geography. One participant was female, the rest were male. Computer experience ranged from moderate to high, all participants were comfortable using computers. All participants had used both Apple and Windows operating systems.

None of the participants had heard about Minecraft or MinecraftEdu before hearing about participating in testing the week prior. None of the participants had played Minecraft or MinecraftEdu before doing so at the testing session. Only one of our testers had ever thought of themselves as a gamer, although there were a number of participants that had played electronic games at least once in the past. Two participants had very limited experience with educational games in the form of educational Jeopardy and Oregon Trail. All of the participants had played with Legos at some point in their life.

Testing Rolls

The tests were administered by Dave Faulkner. The testing proceedings, observations, and data capture

were recorded by Yotam Haimberg and Anthony Hildebrand. Task list timing and general support was provided by Scott Chen.

Testing Process and Materials

First, two cameras were set up to record the testing sessions while the necessary computer equipment was checked to ensure everything needed for testing was present and operational. Yotam then gave a brief presentation to the faculty and staff of EFMS - including the six testing participants. Yotam covered what MinecraftEdu is, why we were testing, and what we hoped to learn. All of the people from EFMS then left the room and we then began testing users one at a time.

Over the next four hours we were able to get through three complete formal user tests. A checklist was used with each participant to ensure every step of the testing was conducted in the correct order and nothing was missed. The participant was welcomed and was asked a series of general pre-test questions. The participant was then read instructions from a script to make sure that the same words were being spoken to each of the participants. The participants were introduced to the the list of tasks they would be attempting and asked if they had any questions. The participants were encouraged to talk aloud as they worked through each task so the note takers had insight to their thought process. The participants were then asked to read the tasks aloud to get them used to talking out loud. The formal testing then began.

Participants went through the task lists item by item and spoke aloud their thought process. The time it took to complete each task was recorded and notes were taken on difficulties the participants had, things they said, and how they navigated the software. Special notice was given when a participant could not complete a task and had to ask the test administrator for help. After the participants completed the task lists they were asked a series of post-test questions and an informal interview was conducted. Any questions the participants had were answered and the participants were thanked and excused.

After the first three tests were conducted, Pixel Pushers ran a MinecraftEdu tutorial session with three fresh participants. After the tutorial session an extended informal interview was conducted. After the informal interview was over we presented all of the participants with gift bags containing various ETC branded goodies. We then packed up the equipment and cleaned the board room.

Results - Evaluation Measures

Several methods of evaluation were used during our testing. The usability of the system was primarily based on the ability of the participants to complete a task without help, errors made when completing tasks, and the time required for testers to complete each scenario and task. The participants' responses to the post-testing questionnaire and post-test interview comments were heavily considered in evaluating the ease of use of the software. Another factor that was considered during the evaluation of our usability testing sessions was the frequency and circumstances of tester hesitation and the use of verbal feedback during the testing.

Results - Analysis and Suggestions

A number of problems with the launcher, server tool, and in-game menu structure were discovered and noted. A list of the major problems follows. For a more comprehensive look at the suggested changes to the interface please see the document 'MinecraftEdu Launcher and Server Tool Wireframes and Flows V1.0'. It is our conclusion that the launcher tool needs an overhaul to simplify the process of selecting a lesson, starting a server, and then launching MinecraftEdu. We also suggest a new way to handle saving MinecraftEdu worlds/ lessons, and to reorganize the menu structure inside of MinecraftEdu also need to be reorganized. Please note that the suggested menu structure changes to the server tool should also be mirrored in the MinecraftEdu software.

Note: Part one and part two below are based off of the testing of the first three participants. As time did not permit us to get through full user testing with the final three participants their testing is not covered. The answers of all six participants are considered in the question response section.

Part One:
-All participants had significant problems understanding the process of launching the server tool and launching the MinecraftEdu software. Participants had problems understanding that the server tool and MinecraftEdu were different pieces of software. The entire process of launching the server tool and launching MinecraftEdu needs to be revamped. See the launcher redesign document for our recommendations; users need to be walked through the process step-by-step by the software.

-Most participants had problems understanding how to load a specific map (lesson) from the server tool. These issues were tied into the larger issue of not understanding the server tool set up process. Again, the software needs to make it simple and obvious what the users need to do step-by-step to load a lesson.

-All participants had significant problems understanding that the IP address of the server needed to be taken note of and then used to log into the server once in MinecraftEdu. The IP address needs to be named consistently throughout the software and its function and use needs to be obvious to the user.

-Most participants had significant problems understanding how to log into MinecraftEdu once the server was running and enter in the server address to start local host world. Although we did not test the scenario of having students log into the world the participants launched, it can be assumed that there would be significant problems getting the students to log into the newly created world. Again, the software needs to make it simple and obvious what the users need to do to log into a MinecraftEdu world.

-Not one of our test participants used the MinecraftEdu wiki for help setting up the server or launching a world. In the beginning of the test there were instructions that explicitly stated that using the wiki was allowed and encouraged. In the Server Tool redesign, a link to the wiki has been added to the interface

at a number of key locations.

Part Two:
-Even after having gone through the process of setting up a server once, most of our participants still had problems launching the server tool and starting a server with an empty map.

-All participants had significant problems understanding how to read the buttons to enable and disable world options. The participants did not understand how to enable animals and disable the nether. All of the options in the server tool user interface need to be made more clear, see the redesign document for our suggestions.

-All users either failed the task or had significant hesitation when returning to MinecraftEdu and rejoining the same server as before. Even though it was their second time launching the MinecraftEdu software and joining the server, two of the three participants failed to do this without help from the test administrator. This underscores the need for a simplified process of launching and joining a world.

-All participants had significant problems understanding how to navigate and use the build menu. These problems may have partially stemmed from the participants' larger unfamiliarity with Minecraft and MinecraftEdu.

-All users failed to realize that contextual help was available for the different functionalities of the interface. No participant realized that there was a text readout at the top of the page when hovering over a button. The text help for all of the functions of the interface need to be written next to the buttons, see the redesign doc for our layout suggestions.

-Most participants had significant problems finding, turning on, and understanding the functionality of long distance building. Moving the contextual help so that it is visible without hovering over a button will significantly reduce these problems, as will reorganizing the menu structure inside of MinecraftEdu.

-All participants had significant problems finding and understanding the functionality of horizontal build mode. Moving the contextual help so that it is visible without hovering over a button will significantly reduce these problems, as will reorganizing the menu structure inside of MinecraftEdu.

-Most participants had significant problems finding and operating the button to remove an assignment. This is partly due to unfamiliarity with the system, moving the contextual help so that it is visible without hovering over a button and reorganizing the menu structure inside of MinecraftEdu should reduce these problems.

Question Responses
All participants thought that MinecraftEdu was fun and had potential to be used as a teaching tool

inside the classroom. It is notable that all of our participants felt that they would not have time to create lessons inside of MinecraftEdu themselves, although they all would be willing to teach if lessons were already created for them. All participants had different ideas about what could be taught with MinecrafteEdu. This suggests that different teachers will see different potential in the software and there may be a broad number of classroom applications for MinecraftEdu. The teachers felt that a question block would be very useful.

Appendix A - User Testing Checklist

User #

1   2   3   4

☐ ☐ ☐ ☐   ✓ Make sure MCEdu software is installed on test computer.

☐ ☐ ☐ ☐   ✓ Prepare screen and audio capture software to be started.

☐ ☐ ☐ ☐   ✓ Ensure the Internet connection is functioning.

☐ ☐ ☐ ☐   ✓ Welcome participant.

☐ ☐ ☐ ☐   ✓ Ask participant pre-test questions.

☐ ☐ ☐ ☐   ✓ Read test script to participant.

☐ ☐ ☐ ☐   ✓ Introduce participant to scenarios/tasks.

☐ ☐ ☐ ☐   ✓ Does the participant have any questions.

☐ ☐ ☐ ☐   ✓ Begin screen capture.

☐ ☐ ☐ ☐   ✓ (Repeat Start) Ask participant to begin and read current task out loud.

☐ ☐ ☐ ☐   ✓ Allow user to work through current task.

☐ ☐ ☐ ☐   ✓ Ask participant to wait as test observers complete note-taking (Repeat End).

☐ ☐ ☐ ☐   ✓ Go through (Repeat Start) and (Repeat End) for each task.

☐ ☐ ☐ ☐   ✓ Test administrator will name and save recorded test screen capture video.

☐ ☐ ☐ ☐   ✓ Ask participant post-test questions.

☐ ☐ ☐ ☐   ✓ Ask participant if they have any questions or concerns.

☐ ☐ ☐ ☐   ✓ Say goodbye to the participant.

Appendix B - MinecraftEdu User Testing - Script

As a EFSD faculty member we welcome you to the testing of the MinecraftEdu installation process. Because we are testing our tutorials and want the cleanest data we can get, we will be reading from this script. As you know, we will be testing this software with multiple participants. Nothing you do, say, or ask about the system is 'wrong'. We encourage you to think aloud, move at your own pace, and imagine that we are not here as you navigate the system.

You will be setting up a Minecraft server, launching the MinecraftEdu software, and exploring the tools available to you as a teacher. You will be using the mouse and keyboard to interact with the system.

Nothing you do in this test will be tied to you. The recordings that we capture here today will only be used by the team to improve the software. Your ability at navigating the software in no way implies your overall abilities, your computer abilities, or your teaching ability. If you ever feel even a little bit uncomfortable let us know and we will stop the test, the tape stops, and you are free to go with no hard feelings.

Because we are trying to gather information on the tutorials and software you will be interacting with it would be great if you could talk aloud your internal though process. Remember, there are no wrong answers! The more you vocalize your thoughts, the better notes we take, and the more we can streamline the software. We may remind you to speak your thoughts while you move through the tasks.

We don't want to interfere with the testing by answering questions after the test starts. If something goes really wrong we'll jump in and help you out. Also if you need help from us but don't want to end the test just speak up and we'll of course lend you a hand.

Do you have any questions before we begin?

Let's begin. Please read the task list part 1 out loud. After you have read the task list out loud proceed with task list part 1. Please remember to speak your thought process.

Appendix C - MinecraftEdu User Testing - Pre-Test Questions

Test Environment and Equipment Notes:

Number of years teaching? What subject(s)?

Computer experience?

Played Minecraft? What did you know of it before today?

Previously played games on a computer?

Previously played games on a console or handheld?

Played social games such as Farmville?

Used games for educational purposes? If so which ones?

Played with LEGO as a child?

Appendix D - MinecraftEdu User Testing - Task List Part 1

Your school has purchased MineCraftEdu and it has been installed on the school computers. You have played through the tutorial and seen the game from the student's point of view. You now wish to investigate the teacher controls inside of MinecraftEdu. You first must set up a server for the students to join. Use the MinecraftEdu wiki to find instructions for any task that you cannot figure out.

Tasks:

1. Launch the MinecraftEdu Server Tool
2. Create a teacher password and take note of it
3. Start a server with the Geography assignment Desert to Tropic selected
4. Take note of the IP address at the top of the window
5. Start MinecraftEdu and login
6. Select Multiplayer
7. Add a server named "MinecraftEdu Local Server" with the IP address of the server you set up
8. Join the server
9. After confirming you have joined the world, press "esc" to bring up the game menu
10. Disconnect from the world and return to the MinecraftEdu start screen
11. Return to the MinecraftEdu Server Tool and stop the server

Appendix E - MinecraftEdu User Testing - Task List Part 2

You will now set up a new, unique Minecraft world that you could use to begin constructing your own lesson in. Use the MinecraftEdu wiki to find instructions for any task that you cannot figure out.

Tasks:

1. Launch the MinecraftEdu Server Tool
2. Start a server with an empty map, random map with seed selected
3. Enable Animals but disable the Nether
4. Go back to MinecraftEdu and join the same server as before
5. Press "p" to open the Admin menu
6. Look through the menu and press "esc" to return to the game
7. Press "u" to open the User menu
8. Look through the menu and press "esc" to return to the game
9. Press "b" to open the Build menu
10. Look through the menu and press "esc" to return to the game
11. Give yourself a diamond pickaxe
12. Give yourself a stone axe
13. Turn on Creative Mode for yourself
14. Practice taking off, flying around, and landing
15. Select your pickaxe
16. Dig up ~10 blocks
17. Select your axe
18. Cut down a tree
19. Place ~10 blocks
20. Create an assignment, enter an Assignment Title and Description (anything you want to call it)
21. Turn on the option to allow fire and TNT
22. Turn on Long Distance Building
23. Select your pickaxe
24. Dig up ~25 blocks
25. Place a few blocks
26. Find "Horizontal Build Mode" in the menus and verbally (out loud) describe what is
27. Remove the assignment you earlier set
28. Press "esc" to bring up the game menu
29. Disconnect from the world and return to the MinecraftEdu start screen
30. Return to the MinecraftEdu Server Tool and stop the server

Appendix F - MinecraftEdu User Testing - Post-Test Questions

What do you see as MCEdu's greatest teaching potential?

Can you be more specific? What subjects? What lessons? Can you give an example?

What things did you like about the software?

What things didn't you like about the software? What was difficult? What do you see as a problem?

What would you like to see in the software?

How helpful was the MinecraftEdu Wiki?

Appendix G - MinecraftEdu User Testing Results, EFSD Note Taker #1

TASKS	User 1			User 2			User 3			User 4	
Part 1	Successful by self?	Task Time (seconds)	Notes	Successful by self?	Task Time (seconds)	Notes	Successful by self?	Task Time (seconds)	Notes	Not Tested	Not Tested
1. Launch the MinecraftEdu Server Tool	Significant Hesitation	0:15	Moused over Minecraft Edu, and then went to Server Tool	No	0:34	Launched MinecraftEdu from the launcher	Significant Hesitation	2:40	Eventually found the server tools button		
2. Create a teacher password and take note of it	Yes	0:32	Wrote on paper	Yes	0:41	Wrote on paper	Yes	0:07			
3. Start a server with the Geography assignment Desert to Tropic selected	No	3:18	Started tutorial world, tried to change the assignment with the 'Map Name' drop down. Wrote "Desert to Tropic" in the field	Yes	0:34		No	4:30	Launched a tutorial world and then did not realize the server had started already. Tried to navigate to the "Map Name" drop down to change the map based on the task. Searched through the entire Server Tool UI to check where to start the map		
4. Take note of the IP address at the top of the window	No	0:11	Wrote on paper	Significant Hesitation	0:23	Wrote on paper	No	0:50	Wrote on paper		
5. Start MinecraftEdu and login	Significant Hesitation	0:51	Confused about launching the launcher again and then selecting MinecraftEdu	No	2:15	Could not figure out how to join the recently created server	Yes	0:23			
6. Select Multiplayer	Yes	0:18		Yes	0:02		Yes	0:10			
7. Add a server named "MinecraftEdu Local Server" with the IP address of the server you set up	Yes	0:40		Significant Hesitation	1:12	Unsure where to actually enter the IP	Significant Hesitation	0:23	Unsure where to change the name of the server		
8. Join the server	No	3:00	Entered the IP address incorrectly. Forgot a dot	Yes	0:03		No	0:09	Did not remember teacher password		
9. After confirming you have joined the world, press "esc" to bring up the game menu	Yes	0:29		Yes	0:57		Significant Hesitation	3:22	Did not select "I am a teacher" to actually enter the server		
10. Disconnect from the world and return to the Minecraft Edu start screen	Yes	0:08		Yes	0:12		Yes	0:11			

11. Return to the MinecraftEdu Server Tool and stop the server	Significant Hesitation	0:31	In MinecraftEdu, hesitated on how to quit. Went back to title menu, then back to the main screen and then quit	No	0:33	Was confused about having to quit the game to stop the server	Significant Hesitation	0:12	Was not sure how to quit back to the server tools		
		10:13			7:26			12:57			

Appendix H - MinecraftEdu User Testing Results, EFSD Note Taker #2

User 1 Pre-Test Questions

Environment: Board room, 2 cameras, no mouse
Experience: Physical science, 1 year
Computer Expertise: Comfortable, not with games. Mac at school, PC at home
Knew about Minecraft prior: No
Games: No
Console/Handheld: No
Social: No
Educational Games: Oregon Trail
LEGO: Yes

Task Notes

Hesitation on initial UI trying to find the server tool
Started a server with the tutorial prior to selecting an assignment
    Had no way to select a map after the server is running, attempted to click on Map Name
Could not find the IP address after the server launch; when found had to write it down on paper
Slight confusion about launching MinecraftEdu a second time to join the server
Mistake entering the IP address: Forgot a dot in the address
Returning to the server tool requires an alt tab from the game which slowed the user significantly
Was not sure where animals were enabled or disabled
Heavy confusion regarding returning to MinecraftEdu from the server tool
Difficulty navigating to the multiplayer server
Failed login on the title screen but was able to bypass authentication (offline mode)
Looking for "Give" in the menus; menu order: user, build, admin
Creative Mode: No idea how to start flying because the user neglected the contextual information
    Looked for a "fly" command in the UI
Once the user was flying, there was no indication of altitude controls
The user was not aware the pickaxe was currently selected when trying to dig
The user correctly remembered that 'Assignments' were in the admin (p) menu
When attempting to locate long distance building, the user looked through menus: p -> u -> b
When attempting to place blocks, the user forgot to switch away from the pickaxe
When attempting to locate Horizontal Build mode, the user looked in menus: p -> b
    The user read the tooltip

Post-Test Questions

Greatest Teaching Potential: Student driven interest or children with special needs such as autism
More specific: Science, life skills, chemistry models
Likes: Variety from the normal teaching routine
Dislikes: Menu navigation
Desires: Aspects that appeal to girls that tie into the classroom
Used Wiki: No

Pre-Test Questions

Environment: Board room, 2 cameras, no mouse
Experience: Chemistry & Physics, 11 years
Computer Expertise: Moderate, mostly teaching software such as Keynote, PowerPoint, Clickers
Knew about Minecraft prior: No
Games: Yes, Rollercoaster Tycoon
Console/Handheld: Wii
Social: No
Educational Games: No
LEGO: Yes

Task Notes

Could not locate the server tool, launched MinecraftEdu prior to the server tool
Properly found the geography assignment
When trying to launch MinecraftEdu after the server was running, the user could not locate where to launch MinecraftEdu
      Attempted to click through "Map Name" drop down
      Had to write down the IP address on paper
User navigated to Direct Connect instead of creating a server name
Confusion: Quitting the game and returning to the server tools to stop the server
Confusion: Launcher options (MinecraftEdu, Minecraft, Server tools)
Confusion: Animals enabled button on the map UI. Could not determine if animals were on or off
Expressed an understanding of the admin (p) menu
Expressed confusion about the user (u) menu
Expressed an understanding of the build (b) menu
      Observation: Both 'p' and 'b' menus have contextual help, 'u' does not
On the Give task, the user typed in "pickaxe" but could not locate the Diamond Pickaxe.
      This task requires the user to type "Diamond Pickaxe"
Did not read the tooltip for flight in creative mode
Press and hold to dig did not seem intuitive to this user
Verbally remembered that assignments were in the admin menu, but navigated to the user and build menus first
Navigated to the admin menu when looking for long distance building

Post-Test Questions

Greatest Teaching Potential: Test preparation -> maze with question blocks
More specific: Earth science, wave movement, zooming into an atom, rollercoaster physics
Likes: Potential: physics. It is a tough subject for 6th graders because the math understanding isn't there
Dislikes: Time constraints of class (44 minute periods), orientation to the software was confusing
Desires: Mathematical tools for area or volume, a measuring stick

Used Wiki: No

User 3

Pre-Test Questions

Environment: Board room, 2 cameras, had mouse
Experience: Earth & Space Science, 13 years
Computer Expertise: Decent, Mac at school, PC at home
Knew about Minecraft prior: No
Games: Yes, but not a lot of games
Console/Handheld: iPhone games
Social: No
Educational Games: No
LEGO: Yes, but more with Lincoln Logs

Task Notes

Could not locate server tools from the Launcher
Hesitation on assigning a map for the server; launched a tutorial world and then **did not realize the server had started already**.
Tried to navigate to the "Map Name" drop down to change the map based on the task
Searched through the entire Server Tool UI to check where to start the map
      Selecting an assignment does not indicate a server will be started
Successfully selected the correct assignment
Wrote down the IP address on paper
Renamed the server
Once the user was aware the server had started, the user alt tabbed and was able to properly launch MinecraftEdu
Had to read the 'Animals enabled' and 'Nether disabled' aloud before comprehending the buttons
The user noticed the contextual help on the top of the screen
Was not sure why the User menu was grayed out (the server was empty)
When trying to find the Diamond Pickaxe, the user looked around the game world instead of the menus
When trying to find creative mode, the user hit 'esc' and looked through the game options
The user attempted each key on the keyboard before being reminded of the teacher specific menus
Opened the inventory in creative mode and realized all of the items were here. The user received a pickaxe through this method
Did not read the contextual help for creative mode regarding flying
Remembered assignments were under the admin menu
Clicked "Set Assignment" twice, did not notice the read out at the bottom of the screen

Post-Test Questions

Greatest Teaching Potential: Test preparation -> maze with question blocks
More specific: Concerned about the time commitment for creating content
Likes: Digging was fun, gimmicky

Dislikes: Lack of direction, no time to make content
Desires: Map of the area with students, more direction when the game starts. Fossils, weather events
Used Wiki: No

User 4

Pre-Test Questions

Environment: Board room, 2 cameras, no testing, just a questionnaire
Experience: Earth & Space Science, 1 year. American History I & II, World Geography, 4-5 years
Computer Expertise: High, 5 years with Mac and educational software, 7 years with PC (IT experience)
Knew about Minecraft prior: No
Games: Yes, Myst, Civilization, Caesar
Console/Handheld: Sega, Wii, Xbox, iPhone
Social: No
Educational Games: Jeopardy
LEGO: Yes

Post-Test Questions

Greatest Teaching Potential: Exploratory lessons, Test preparation -> maze with question blocks & consequences for wrong answers such as a lost opportunity for materials or tools
More specific: Greatly concerned about the time commitment for creating content, expressed interest in creating their own questions to suit the needs of the user's class. The user was only interested in using pre-created material if the user had the ability to change the questions
Likes: Exploratory nature of it
Dislikes: Lack of direction, no time to make content
Desires: A north arrow, constellations, a minimap, voice chat, a more direct way to undo
Used Wiki: No

Appendix I - Task List Times

PART 1	User #1	User #2	User #3		PART 2	User #1	User #2	User #3
1	0:15	0:34	2:40		1	0:02	1:50	0:39
2	0:32	0:41	0:07		2	0:07	1:13	0:07
3	3:18	0:34	4:30		3	0:06	0:03	0:06
4	0:11	0:23	0:50		4	6:03	1:23	1:31
5	0:51	2:15	0:23		5	0:03	1:06	0:03
6	0:18	0:02	0:10		6	0:16	0:58	0:41
7	0:40	1:12	0:23		7	0:13	0:04	0:03
8	3:00	0:03	0:09		8	0:06	0:54	0:28
9	0:29	0:57	3:22		9	0:04	0:07	0:04
10	0:08	0:12	0:11		10	0:08	0:25	0:21
11	0:31	0:33	0:12		11	1:15	1:22	0:15
total	10:13	7:26	12:57		12	0:27		0:12
					13	0:04	0:41	4:15
					14	3:12	1:47	1:26
					15	0:15	0:26	0:58
					16	0:50	2:26	0:40
					17	0:05		0:14
					18	0:45		0:10
					19	1:40	2:34	1:27
					20	0:31	1:37	1:15
					21	0:16	0:40	0:15
					22	0:37		0:13
					23	0:03		0:05
					24	1:08		2:22
					25	1:16		
					26	0:38	0:57	
					27		0:58	0:22
					28	0:06	0:06	0:16
					29	0:05	0:09	0:06
					30	0:10	0:10	0:05
					Total	20:31	21:56	18:39