Assignment 3

User Research & Analysis

GROUP 3
RUI QIU #999292509

1. Summary of Research Results

1.1 Executive Summary

Using the questionnaire we designed in Phase II, I conducted an online survey in this semester's CSC207 class. Since version control is one of the early topic in this course, all students in this class have more or less some experience in command-line interface (CLI). So the response from this cluster would somehow reflect common problems encountered in learning and using command-line interface. And according to the survey, the major problems of command-line interface are its error forgiveness and rather steep learning curve. On the other hand, it is commonly agreed that CLI is a very efficient and simplified tool once used proficiently by the user.

1.2 Methodology Section

The questionnaires were designed for a face-to-face sampling procedure, but due to some personal reasons (not in Toronto during reading week), I made it online instead. Considering the fact that this does not involve any participation of researchers, the result should be as accurate as desired. The sampling subjects are all in CSC207 session, with a certain level of experience in CLI (mostly less than 3 years).

The questionnaire has three major parts: personal information, rating scales and subjective questions. The first part is used to divide our sample into different clusters. As this survey is conducted intentionally in a computer science class, the test subjects share lots of similarities, this part does not fully utilizes except we can divide our samples into different groups by their experience, and we also get to know what their most used CLIs are. The second part is used to quantify users' responses toward distinct aspects of CLI. Specifically, this part includes overall reaction, screen and appearance, terminology and system information, learning, last but not least, interface capabilities. Each aspect contains several features which need to be judged separately. The last part contains three questions, asking for users' subjective view over CLI. And some extra good / bad points of CLI are expected to be mentioned in the answers as well.

1.3 Results

There is only one artifact that needs to be pointed out: since the survey results heavily depend on sampling subjects' usual experience on CLI, especially the ones they use most, then the user experience would be different to some extent. In other words, we are not doing the survey in a completely controlled environment.

The general result of data is concluded in the following table:

Aspect	Feature	Average Score
Overall reaction	Wonderfulness	2.83
	Easiness	2.83
	Satisfaction	2.67
	Adequate Power	2.83
	Stimulation	2.33
Screen and appearance	Reading the screen	3
	Organization of information	2
Terminology and system information	Use of terms in the system	2.83
	Is terminology related to task?	2.83
	Position of message on screen	2.5
	Prompts for input	3.17
	Error messages	2.17
Learning	Exploring new features by trial and error	2.83
	Learning to operate the system	2.83
	Remembering names and use of commands	2.33
	Performing tasks is straightforward	3
Interface capabilities	Speed	3.17
	Reliability	3.17
	Mistake correction	2.17
	Designed for all levels of users	1.83

Based on data, the following problems are revealed:

- the organization of information in CLI is not clear;
- the way to deal with error is convenient (both error message displaying and correction);
- CLI is also not very user-friendly to all levels of users, particularly to amateurs.

However, on the other hand, we have to admit that CLI is a very efficient and effective tool when one user becomes proficient with it. So conclusively, CLI still receives acceptable overall scores. Besides, a sample subject also points out that customization is one of advantages of CLI.

Generally speaking, the scores of a selected feature centralize at a certain point, hence the data we collect are not quite polarized. But scores divide greatly in some features, such as **easiness, exploring new features by trial and error etc.** So, considering the years of experience the users have, we can assume that they are grouped into two main groups: amateur users and skilled users.

2. User Needs List

- To organize information on screen clearly (so that user can locate their desired information quickly)
- To improve error display (location on screen, highlight, with correction advice?)
- To remember and use commands more easily (probably with command input suggestion, auto correction?)
- To correct mistake smartly.
- To be more amateur-friendly.
- To be more 'tiredness-proof'.

3. Stakeholder Descriptions

The stakeholders of our system are all computer users who need to issue commands to control a program or an operating system and those prospective computer science students who will learn to use CLI in the future.

4. Personas

4.1 Primary Persona

CS freshman Eric (19)

Our primary persona is a frosh year student in university with limited programming knowledge and great eager to learn new stuffs. He also lacks of experience in CLI, therefore what often happens to him is that he always does not know what to input when he wants to perform a certain action.

4.2 Additional Persona

CS nerd Jason (23)
Forgetful Azu (30)
High school student Alice (16)

5. Scenario

Eric spent hours in his programming assignment, and finally finished it before the deadline. He was using svn to version control his files. He first wanted to move the files to the local copy folder. But unluckily he forgot the command and the detailed location of it. So he opened Finder to look for the address, afterwards he googled the internet and found the command he needed was '`mv dir1 dir2`'. Then he typed '`svn commit -m`' (which was wrong), but the error message returned. He typed '`svn commit m-`' (without changelog). Of course, the commitment is still unsuccessful, because he forgot the changelog. After retyping it again, because he did not know he can use up arrow to repeat previous command, adding the changlog 'Updated assignment 1', the commitment failed again, indicating his files are not under version control. Eric struggled with this problem for a while, finally resolved it with the help from one of his classmates. It turned out that he forgot to '`svn add filename`' before committing.

6. Task analysis

- Open Terminal.
- Move files into local copy.
  - Use `ls` and `cd` commands to locate the local copy.
  - Use `mv dir1 dir2` to move files to desired location.
- Commit the changes.
  - Use `svn add filename` to add files to version control.
  - Use `svn commit m- ‘updated assignment 1’` to commit the changes made and comment with what changes were made in English.
- Close Terminal.

7. Appendix

This part includes the research protocol, questionnaire and sample raw data.

Research Protocol

1. **Project Title:** Interviews and Observations of Command Line Interface User Experience.

2. **Investigators:**
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3. **Purpose:** The purpose of our research is to understand the learning curve and usability of CLIs for all computer users, to help us derive requirements for the design of novel interactive computational media that are intended to be useful to users of all levels. A brief description of our design concept is a CLI assistance software which provides visual cues and intuitive features to help usability.

4. **Process to be followed:** We will brief the participants about the purpose of the study, explain the consent form to them, and ensure that they sign the consent form. We will then engage the participants in observed command line usage tests, short follow-up questionnaires, and opinion based interview questions. We will also, with their permission, make observations as follows: observe participant performance during use of the command line and note down things such as requests for help, number of mistakes made, etc. The workspace will vary, but will be in generally quieter locations to allow participants to concentrate. The terminal they will work in will be controlled using our standardized terminal settings.

5. **Participant selection:** Participants will be chosen from students around U of T campus. They will be identified via observation, and students who have finished class and are on break will be requested to participate. The location we hold the study in will influence the likelihood of whether or not they use computers on a regular basis. In general, they will be characterized by age, program of study, and level of previous experience with command line interfaces.

6. **Relationships:** Our relationship to the participants may be described as follows: No relationship.

7. **Risk and benefit:** There will be minimal risk to the participants, for example that they will only feel that they have wasted their time. The only benefit will be to contribute to the education of the investigators. Participants are free to withdraw before or at any time during the study without the need to give any explanation.

8. **Consent details:** We will brief the participants about the purpose of the study, and explain the attached consent form to them, and ensure that they consent to participate and sign the consent form.

9. **Compensation:** Participants will receive no compensation or a small snack food.

10. **Information sought:** The information to be sought is described in the attached questionnaire, interview script, or observation protocol.

11. **Confidentiality:** Information will be kept confidential by the investigators. Names or other identifying or identified information will not be kept with the data. The only other use will be to include excerpts or copies in the assignment submitted, but names and other identifying or identified information will not be submitted.

Terminal / CLI Usage Questionnaire

(Follow up to the interactive trial)

Education

High School / Below	Undergraduate	Graduate	Working

Gender _____

What is your area of specialization / program of study? _____

Do you know what a Command Line Interface is? Yes / No

Have you ever used one? If yes:

How many years have you been using a CLI? _____

Which CLI do you have the most experience with? _____

Otherwise,

Have you ever considered learning a CLI in the past? for what?

Overall Reaction

Terrible					Wonderful
Difficult					Easy
Frustrating					Satisfying
Inadequate Power					Adequate Power
Dull					Stimulating

Screen and Appearance

Reading the Screen	Hard					Easy
Organization of Information	Confusing					Simple

Terminology and system information

Use of terms in the system	Inconsistent					Consistent
Is terminology related to task?	Never					Always
Position of message on screen	Inconsistent					Consistent
Prompts for input	Confusing					Clear
Error Messages	Unhelpful					Helpful

Learning

Exploring new features by trial and error	Difficult					Easy
Learning to operate the system	Difficult					Easy
Remembering names and use of commands	Difficult					Easy
Performing tasks is straightforward	Agree					Disagree

Interface Capabilities

Speed	Slow					Fast
Reliability	Unreliable					Reliable
Mistake Correction	Difficult					Easy
Designed for all levels of users	Disagree					Agree

What is your general impression of Command Line Interfaces?

What are the most negative things you have to say about this Command Line Interface?

What are the most positive things you have to say about this Command Line Interface?

当前已收集答卷 （6份） 最后更新时间：2015-02-21 16:09:41 停止收集

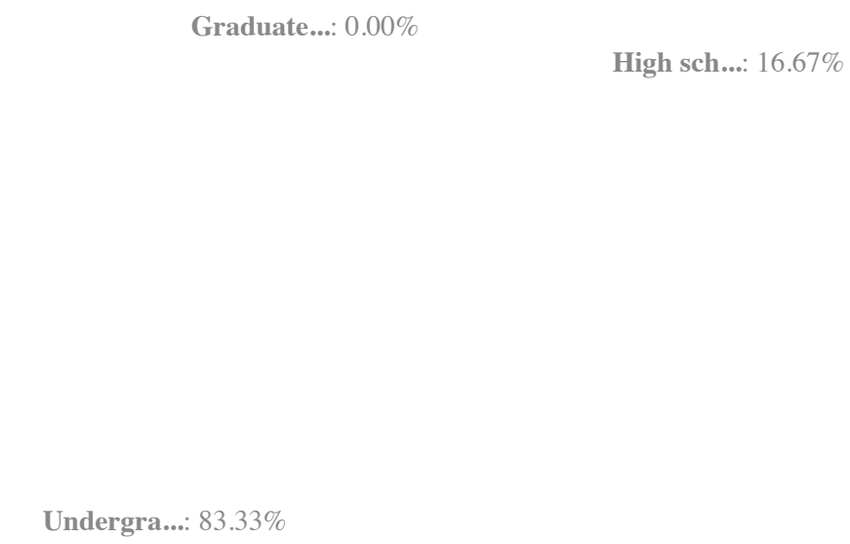
Command-Line Interface Questionnaire

全部导出 分享

Q1:Education(单选题)

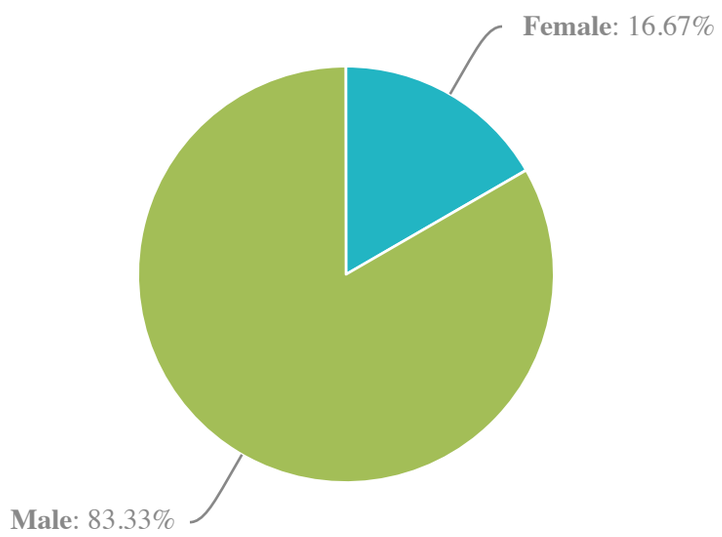
结果排序 图表类型 显示设置 导出

Education
答题人数 6



答案选项	回复情况
High school or below	16.67%
Undergraduate	83.33%
Graduate or above	0.0%
受访人数：6	

Q2:Gender(单选题)



答案选项	回复情况
Female	16.67%
Male	83.33%
受访人数：6	

Q3:What is your area of specialization / pro...(填空题)

答案
Computer Science
CS
Computer Science, Psychology, Environmental Biology
CS/Math
Computer Science / Human Biology
Maths and CS
受访人数：6

Q4:How many years have you been using a CLI?(填空题)

答案
2
<1
On and off for 25 years.
3
2

Less than 1 year

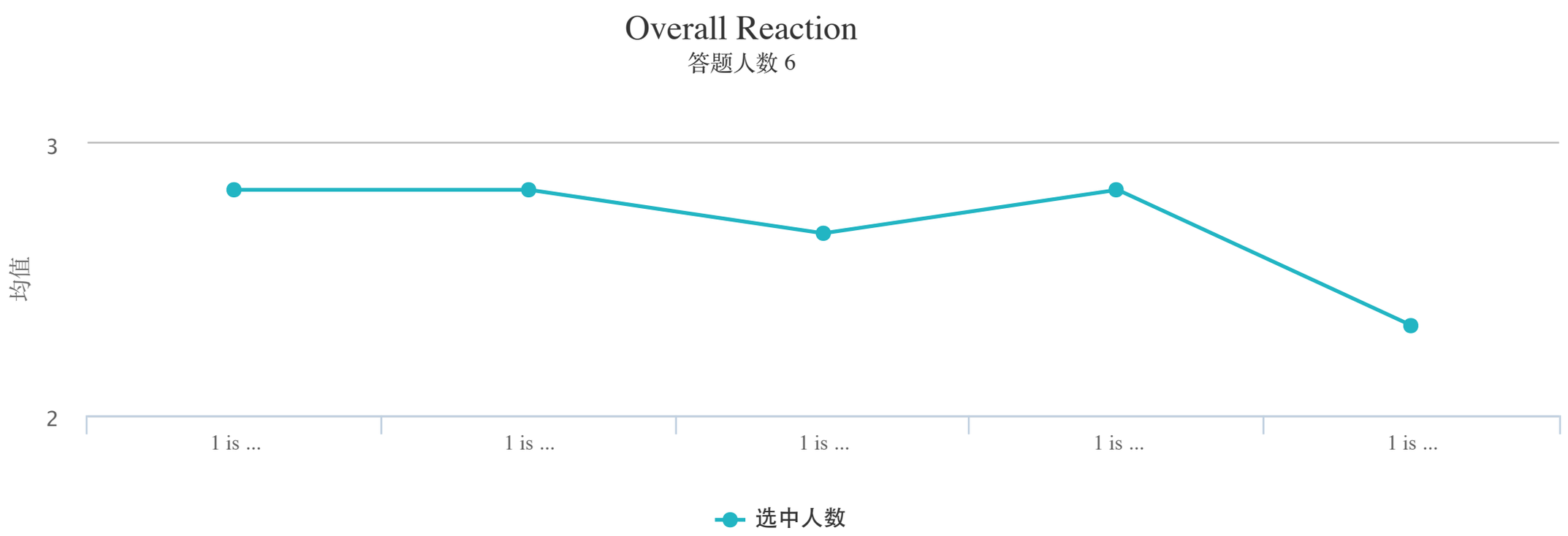
受访人数：6　　1 / 1　跳转

Q5:Which CLI do you have the most experience...(填空题)

答案
CMD
Bash
MSDOS
Command Prompt
Windows Command Prompt / Terminal
Terminal

受访人数：6　　1 / 1　跳转

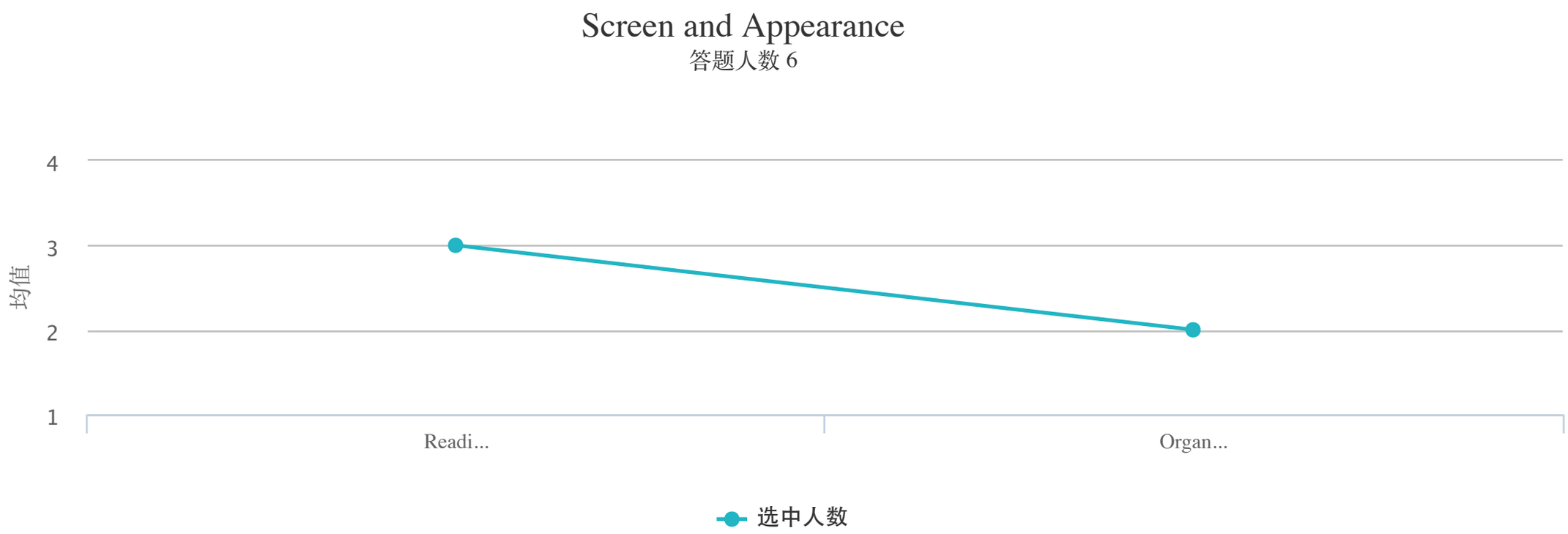
Q6:Overall Reaction(打分题)



	1分	2分	3分	4分	平均分数
1 is Terrible, 4 is Wonderful	0.0% 0	16.67% 1	83.33% 5	0.0% 0	2.83
1 is Difficult, 4 is Easy	0.0% 0	50.0% 3	16.67% 1	33.33% 2	2.83
1 is Frustrating, 4 is Satisfying	0.0% 0	50.0% 3	33.33% 2	16.67% 1	2.67
1 is Inadequate Power,	0.0%	16.67%	83.33%	0.0%	2.83

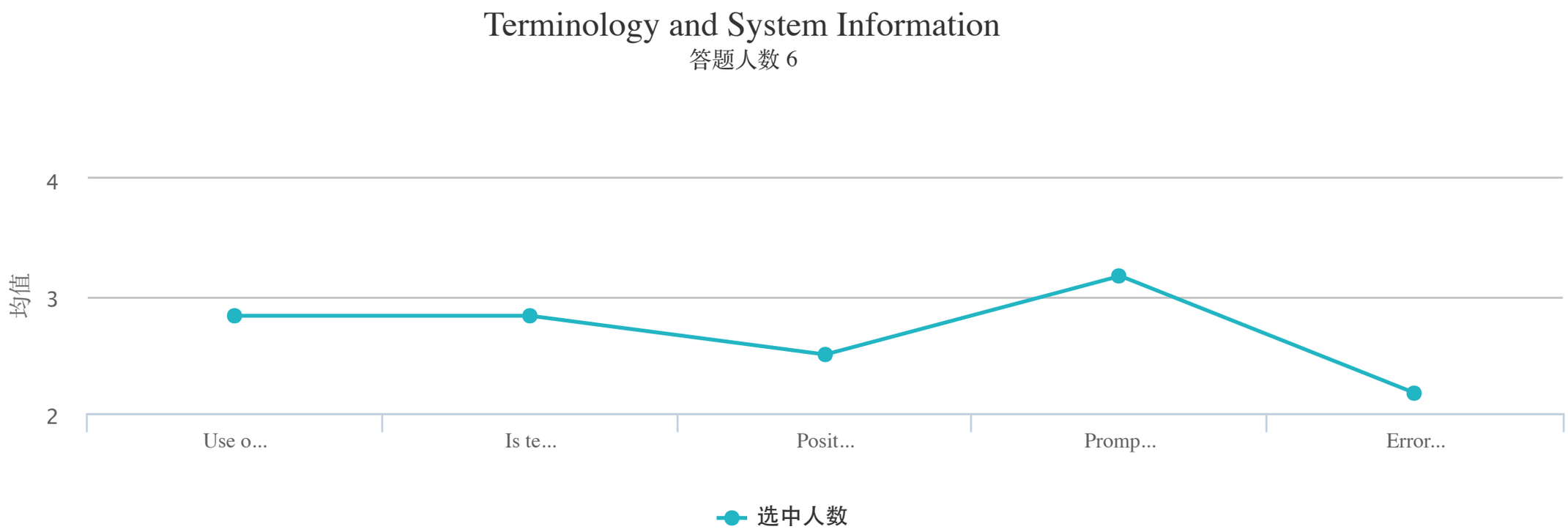
4 is Adequate Power	0	1	5	0	
1 is Dull, 4 is Stimulating	0.0% 0	66.67% 4	33.33% 2	0.0% 0	2.33
受访人数：6					

Q8:Screen and Appearance(打分题)



	1分	2分	3分	4分	平均分数
Reading the screen	0.0% 0	33.33% 2	33.33% 2	33.33% 2	3
Organization of information	33.33% 2	33.33% 2	33.33% 2	0.0% 0	2
受访人数：6					

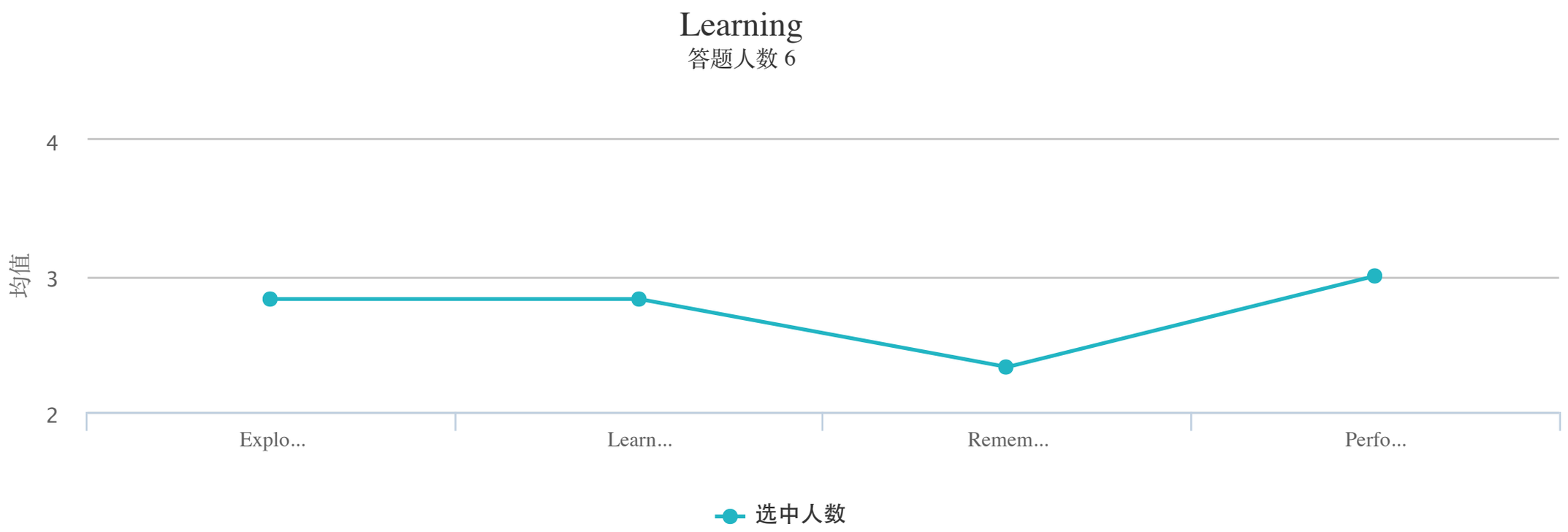
Q9:Terminology and System Information(打分题)



	1分	2分	3分	4分	平均分数
Use of terms in the system	0.0% 0	33.33% 2	50.0% 3	16.67% 1	2.83
Is terminology related	0.0%	33.33%	50.0%	16.67%	

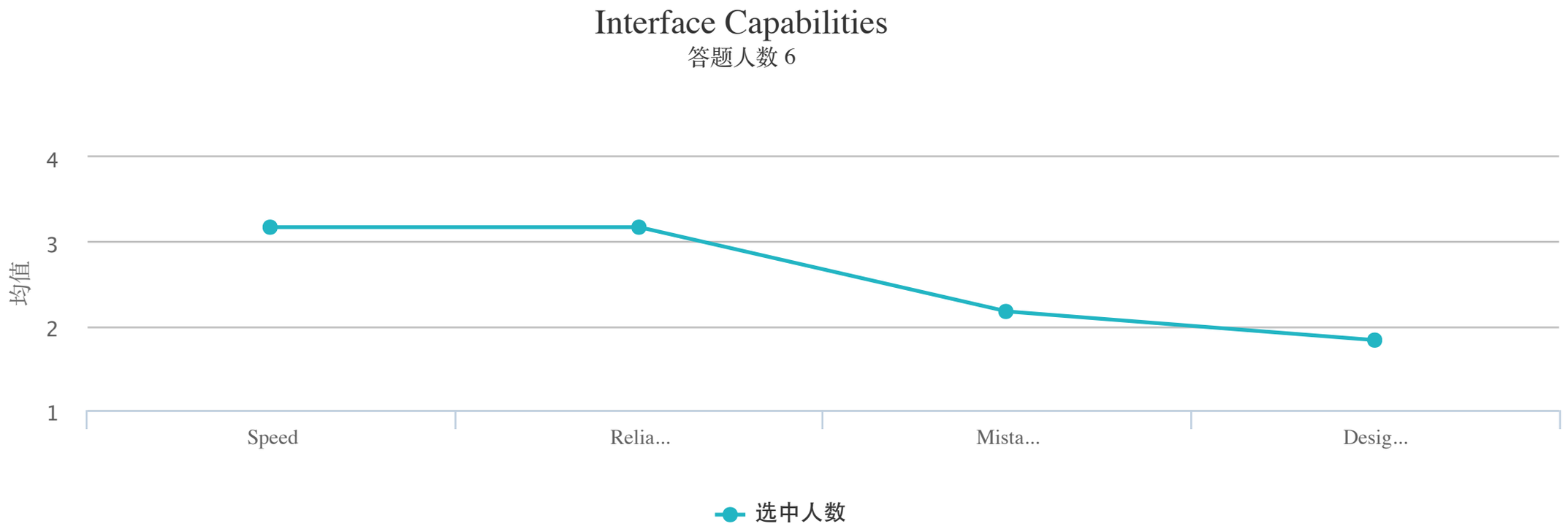
to task?	0	2	3	1	2.83
Position of message on screen	0.0% 0	66.67% 4	16.67% 1	16.67% 1	2.5
Prompts for input	0.0% 0	16.67% 1	50.0% 3	33.33% 2	3.17
Error messages	16.67% 1	66.67% 4	0.0% 0	16.67% 1	2.17
受访人数：6					

Q10:Learning(打分题)



	1分	2分	3分	4分	平均分数
Exploring new features by trial and error	0.0% 0	50.0% 3	16.67% 1	33.33% 2	2.83
Learning to operate the system	0.0% 0	33.33% 2	50.0% 3	16.67% 1	2.83
Remembering names and use of commands	33.33% 2	16.67% 1	33.33% 2	16.67% 1	2.33
Performing tasks is straightforward	0.0% 0	16.67% 1	66.67% 4	16.67% 1	3
受访人数：6					

Q11:Interface Capabilities(打分题)



	1分	2分	3分	4分	平均分数
Speed	0.0% 0	16.67% 1	50.0% 3	33.33% 2	3.17
Reliability	0.0% 0	16.67% 1	50.0% 3	33.33% 2	3.17
Mistake correction	16.67% 1	50.0% 3	33.33% 2	0.0% 0	2.17
Designed for all levels of users	50.0% 3	16.67% 1	33.33% 2	0.0% 0	1.83
受访人数：6					

Q12:What is your general impression of Comman...(填空题)

答案
They have their good and bad points.
They're fun and very usefull.
They're pretty cool
None.
受访人数：4

Q13:What are the most negative things you hav...(填空题)

答案

It's easier to really screw things up with a single mistake than in most GUIs.#Harder to present a large amount of information persistently and simultaneously.
using "dir" to list files makes no sense.
Windows has stupid prompts
None.
受访人数：4 1 / 1 跳转

Q14:What are the most positive things you hav...(填空题)

加载中...