

Usability Test

VRL School Resource Manager (Version 8)

Byron Buckley

RESEARCH METHODS FOR INTERACTION DESIGN | IDIA-642

Purpose, goals, and objectives of the test

School Resource Manager (Version 8) is web application developed and maintained by VRL Software. It has been deployed for use at a number of Jamaican schools.

Purpose, goals, and objectives of the test

The goals of this study are to:

- Assess the effectiveness of the application for performing tasks such as entering grades, viewing reports, etc.
- Identify obstacles teachers experienced during common tasks and determine if there is any correlation to their computer and web use.

Purpose, goals, and objectives of the test

Goals cont'd:

- Identify if a teacher could complete their tasks successfully with little or no exposure to application help documentation.
- Determine if the interface satisfactorily meet Nielsen's ten usability heuristics for user interface design?

Location and Setup

The teachers are allowed to access the application outside of the premises, however for the purposes of the study, tests will take place in a controlled setting at the Queens High School, Kingston, St. Andrew. Participants will use a Windows PC, with Internet Explorer, the browser required for using the application. The PC that the participant uses will also have Morae recorder installed on it and a web camera attached. The web camera will capture the participant's face; the Morae software will record what's happening on the screen (and can collect other data).

Method (test design)

Task lists and scenarios were derived from a help document provided by one of the teachers prior to testing.

Qualitative data about the participants' experiences using the application were collected via surveys and think thinking aloud as they work.

Sessions typically lasted 30 minutes. A few minutes were utilized at the beginning to explain the session to the participant as well as review basic background information with the participant. Each participant performed a pre-test survey, their assigned tasks and then a post-test survey.

Changes and minutiae

- The participant in pilot test revealed that the tests could not be performed on live data, as only the administrator can remove certain entries. Upon request the administrator provided two classes that we could perform the tests on.
- Pilot test revealed that some of the tasks I listed could only be performed by form teachers (teachers with a homeroom) as only they have those responsibilities, for example: marking the register. This also caused me to reorder my questions, grouping them by role, for easier use by participant.

Changes and minutiae

- The pre-test survey was added prior to the pilot test.
- For P2, I had to write down her comments and do an audio recording with my phone. P2 had many comments triggered by the posttest survey, this prompted me to adjust the survey to include “free text” fields for various questions, so that the teacher can elaborate on the question score when necessary.
- Task definitions were added to the Morae Recorder study configuration during the video reviews instead of prior to the tests.

Participant characteristics

Participants were selected from the teaching staff of the Queens High School. According to the criteria below:

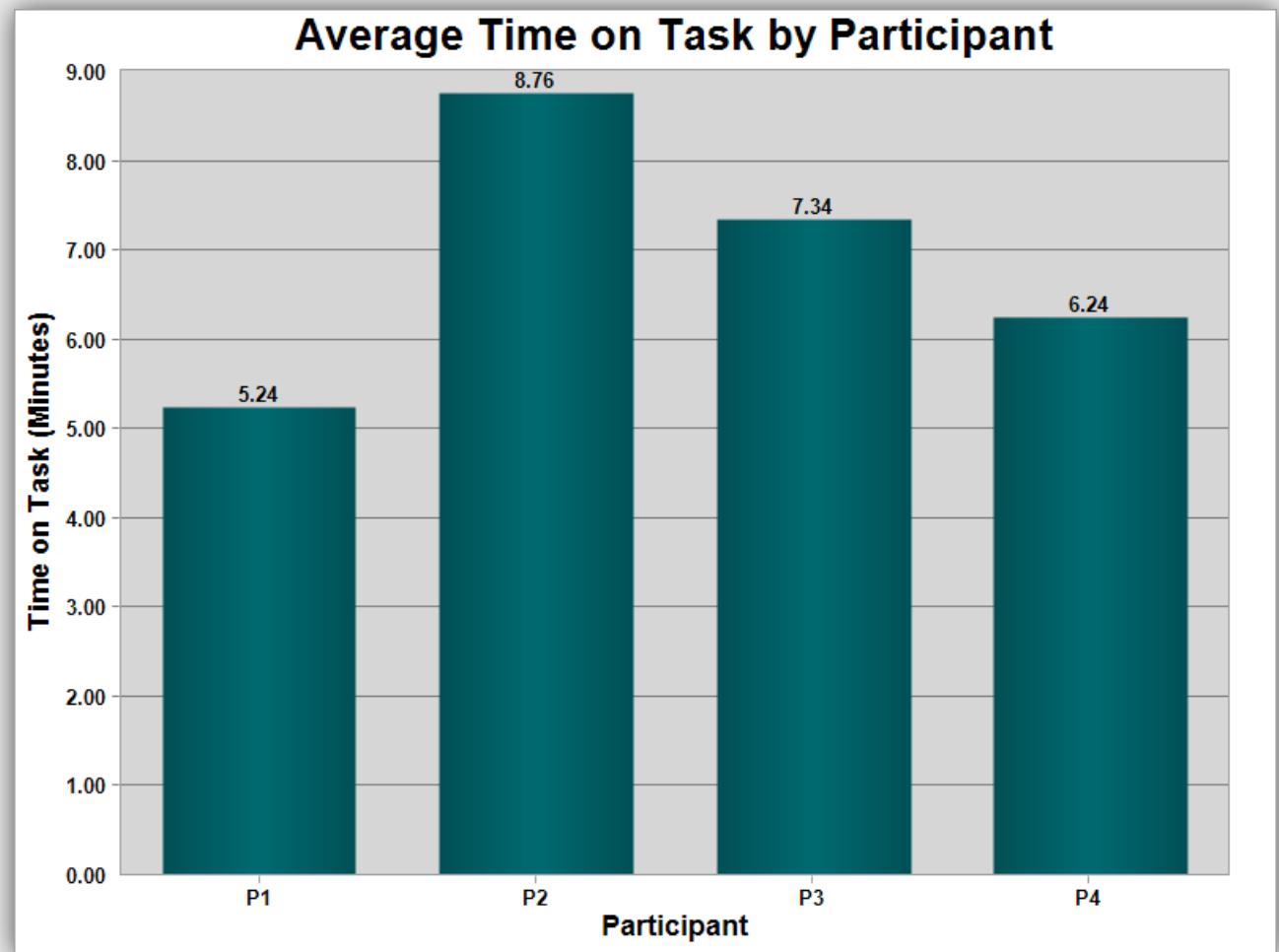
Participant Type	Description	Planned # of Participants	Actual # of Participants
Novice/Beginner	New teacher at school or teacher who has never used the application.	2	2
Intermediate	Intermediate users are those who meet neither novice or expert	2	0
Expert	Expert users' names will be provided by the application administrator at the school.	2	2

Results

Graph based on tasks defined below:

6. Students have just completed their mid-semester exams, and you are required to record their grades.
 - a. Please enter grades for a class that you teach multiple streams.
 - b. Based on the class selected in task 6a, please enter grades for another stream.
 - c. From this screen, please select another class who has completed mid-semester exams and enter the grades.
7. The semester has come to a close and parents must receive their children's report. Please create the reports for the classes you are responsible for.

N.B. P1 actually failed task 1.

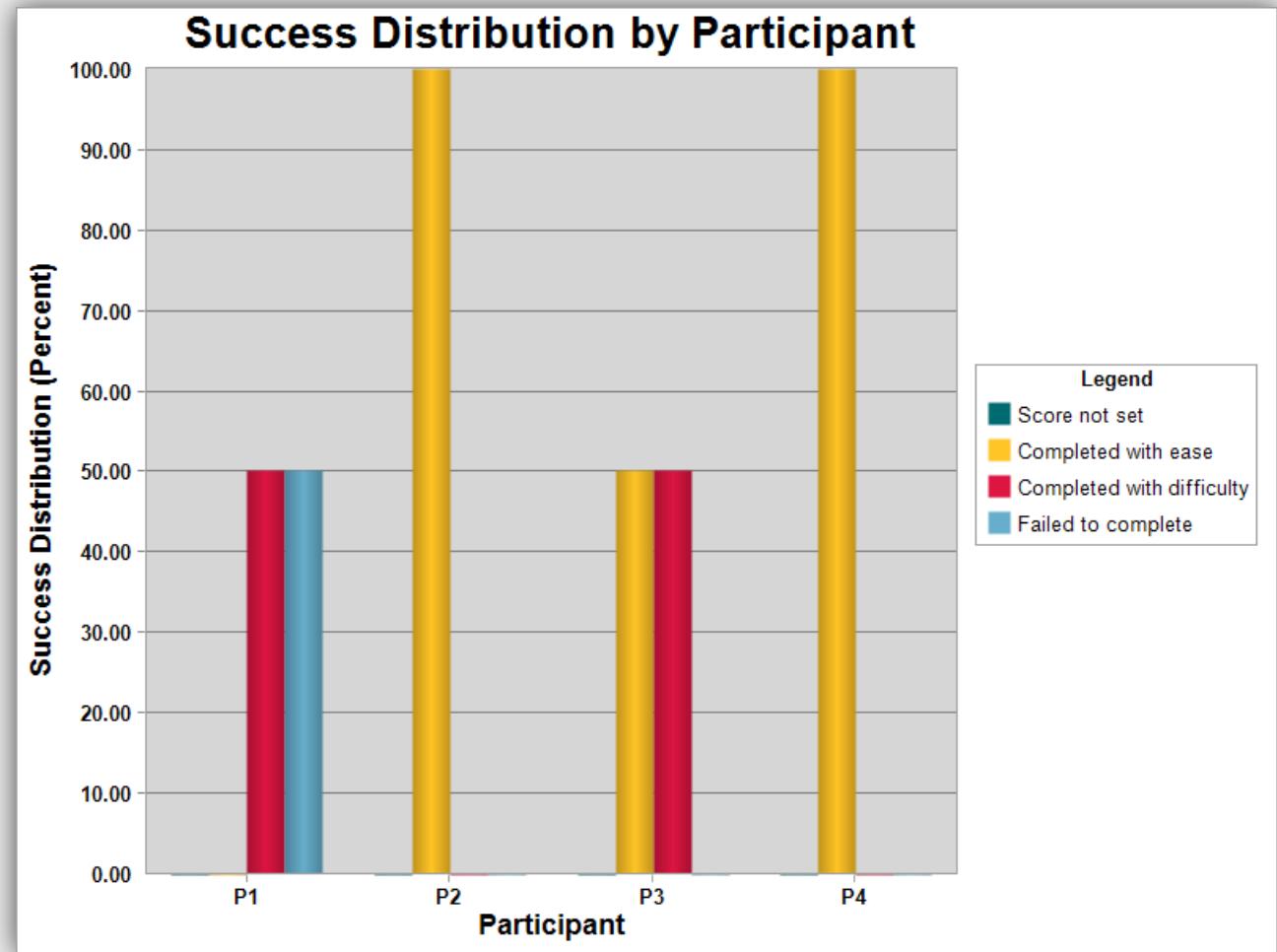


Results

Graph based on tasks defined below:

1. Students have just completed their mid-semester exams, and you are required to record their grades.
 - a. Please enter grades for a class that you teach multiple streams.
 - b. Based on the class selected in task 1a, please enter grades for another stream.
 - c. From this screen, please select another class who has completed mid-semester exams and enter the grades.
2. The semester has come to a close and parents must receive their children's report. Please create the reports for the classes you are responsible for.

N.B. The expert users were the ones that completed their tasks with ease.



Notable Survey Feedback

Question	Answer
I found the system unnecessarily complex. Please elaborate in the section below.	<ul style="list-style-type: none">• It takes too long and the font is too small.• Clear in some areas complex in others.• Documentation could be better• If I set a student as absent, the option to set them as late should be cleared and disabled.
I found the various functions in this system were well integrated. Please elaborate in the section below.	<ul style="list-style-type: none">• Yes, this is so because you can put in your grades and make a comment at the same time.
I found the system very cumbersome to use. Please elaborate in the section below.	<ul style="list-style-type: none">• Not really, you had different options for specific task and all you had to do was to enter the relevant fields.

General Findings

I approached the application with the assumptions:

- ugly application = poor usability
- ugly application = low/poor user buy in
- ugly application = users hate the application

$\frac{3}{4}$ of the test body was able to complete all he tests successfully. With one user describing the application as “very usable” (expert user). Stronger participants typically had been using the application for a long time, and had become accustomed to using it. Actual usability issues were in fact low, and users seemed generally appreciative of the tool. User concerns were more targeted towards application uptime, with one user mentioning that it’s called “the crock” by some teachers.

General Findings

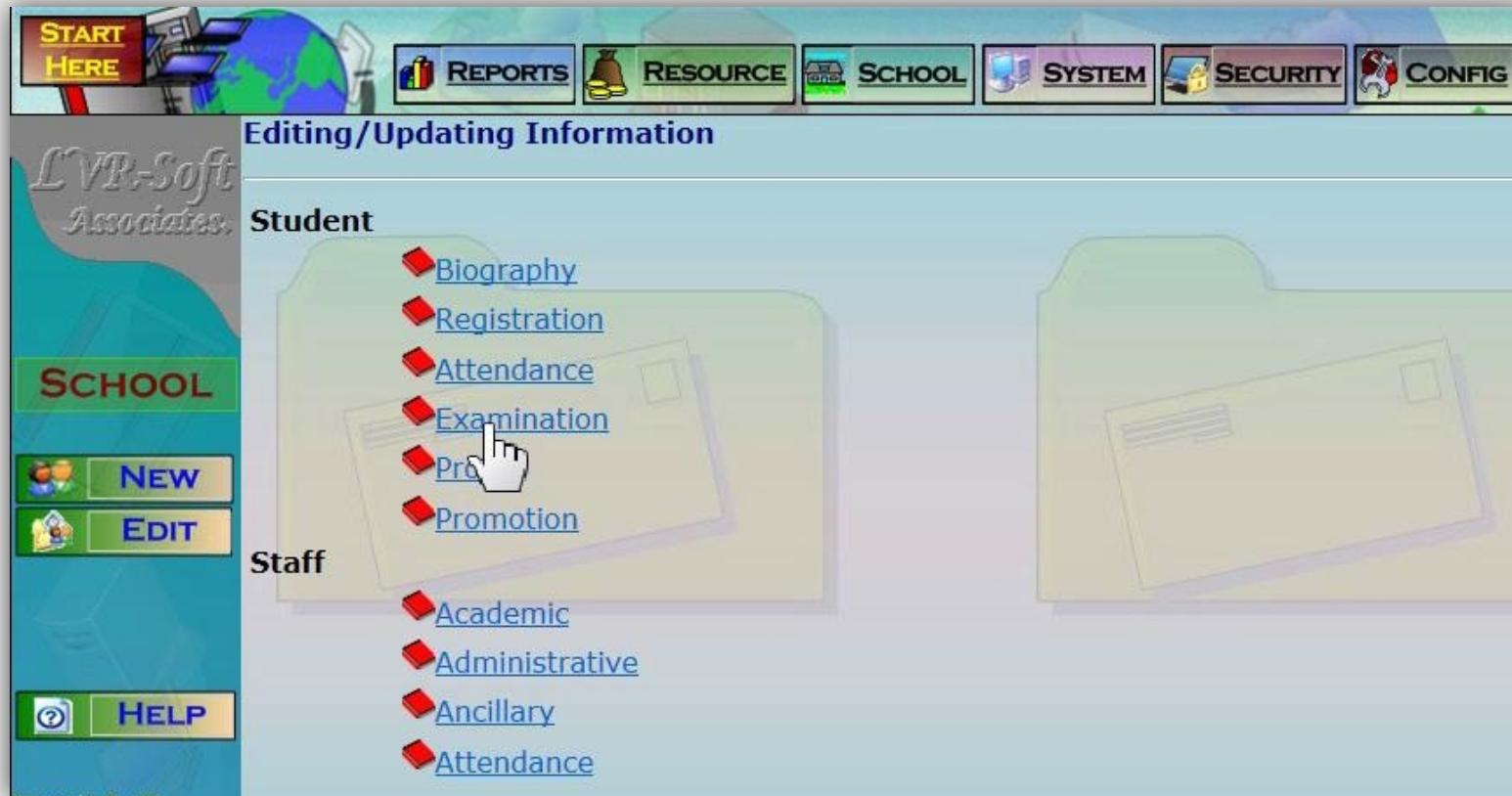
Out of the box task success is not a strength of the application, i.e. documentation use at least at the beginning, is crucial to using the application successfully. Despite navigation labeling that is generally consistent with that of a school, one teacher was unsuccessful in her task due to little exposure to help and documentation in using the app.

Log out links were absent, and labels stating the current user were absent from most pages.

Ultimately my view assumption that the application was not usable, was proven wrong.

Specific Findings and Recommendations

Navigation and labeling is largely adherent to terms associated with teaching and administration at a school.



Specific Findings and Recommendations

Use of Technical Terms:

1. The word “query” should have been omitted from the page label.
2. The “query” label could have been labelled something less technical like “Show List”, “View List”, “View Student List”.

The screenshot shows a software interface for querying examination marksheets. At the top, there's a navigation bar with icons for 'START HERE', 'REPORTS', and 'RESULTS'. Below this is a title 'Examination MarkSheet Query' with a blue circular badge containing the number '1'. The main area has a teal header with 'LVP-Soft Associates.' and 'SCHOOL' text. It includes buttons for 'NEW' and 'EDIT'. On the right, there are several search fields and dropdown menus:

- Category: (Student)
- Surname: [text input]
- Registration ID: [text input]
- *Form/Grade: Grade 12 [dropdown]
- Track/Stream: K [dropdown]
- *Term (Examined): Christmas Term [dropdown]
- *Subject: MATHEMATICS [dropdown]

At the bottom, there are 'Query' and 'Reset' buttons, with a blue circular badge containing the number '2' positioned between them.

Specific Findings and Recommendations

Error Handling:

The error on the right is actually occurring on a field that is auto populated by the application. The application is effectively creating an error for itself that prevents the teacher from entering the correct grade for the student.

A screenshot of a computer screen displaying a student database or report card system. The interface has a light blue header bar with the text "5. Works accurately" and "6. Shows very little effort". Below this is a table with 10 rows, each representing a student. The columns include student ID, name, and various performance metrics. In the first row, the student ID is 7663. In the second row, the student ID is 7711. In the third row, the student ID is 7721. In the fourth row, the student ID is 7723. In the fifth row, the student ID is 7744. In the sixth row, the student ID is 2708. In the seventh row, the student ID is 7758. In the eighth row, the student ID is 7762. In the ninth row, the student ID is 7786. In the tenth row, the student ID is 7797. The table also contains numerical values for other fields like scores (e.g., 65, 43, 51.8, 18) and letter grades (e.g., D). A red border highlights the cell containing the value "51.8" in the third row. A white pop-up window with a black border appears over the table, containing the text "You must enter text with 3 or fewer characters". To the right of the table, there is a vertical list of numbered statements: 10. Needs to submit more work, 11. Much too tall, 12. Can do better, 13. Needs to read more, and 14. Too often absent.

1	7663		65	43	51.8	D	18	5. Works accurately
2	7711							
3	7721							
4	7723							
5	7744							
6	2708							
7	7758							
8	7762							
9	7786							
10	7797							

You must enter text with 3 or fewer characters

- 10. Needs to submit more work
- 11. Much too tall
- 12. Can do better
- 13. Needs to read more
- 14. Too often absent

Specific Findings and Recommendations

Status:

A animated green bar running to the left and right was mistaken to be a status indicator. It is easy to understand why the user was mistaken, the animation is much like today's "AJAX Style" loading indicators. This mistake indicates that:

- Users expect a status indicator
- Users expect almost everything in their application to be useful or provide feedback.
- Never use commonly accepted imagery in an unexpected way.

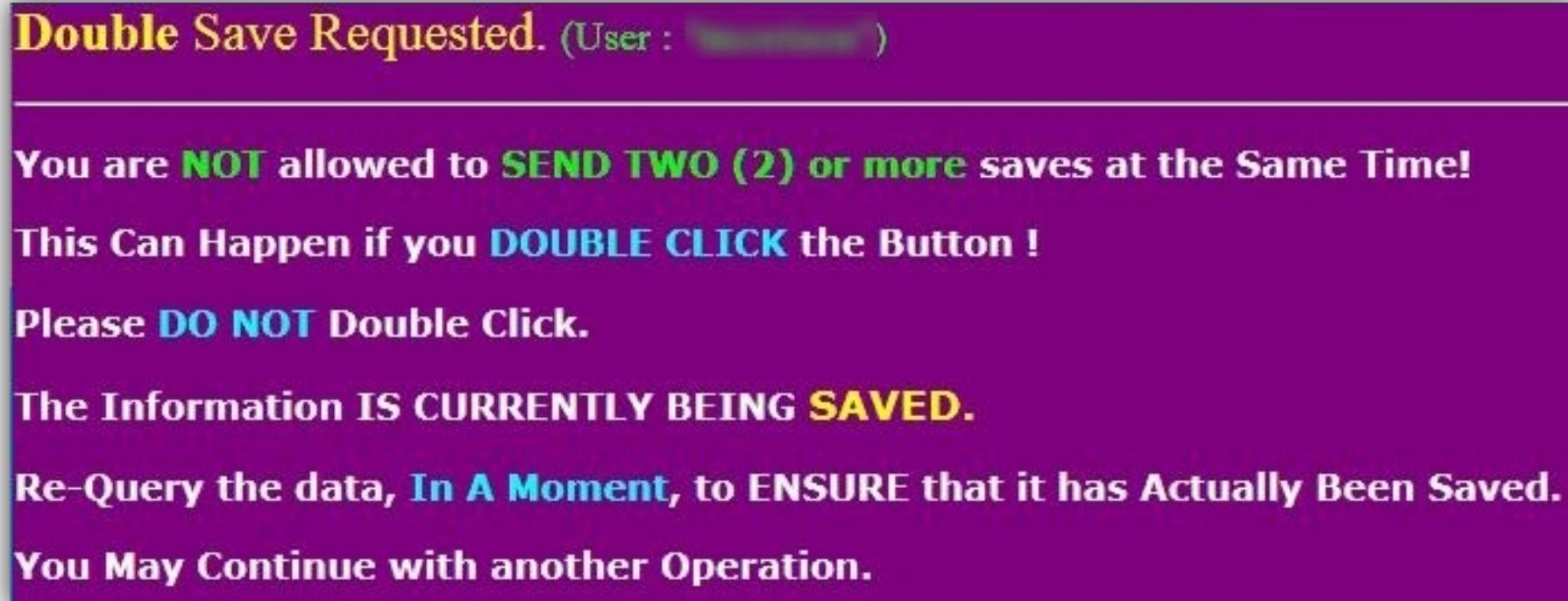


P2 thought the
animation to the left was
a status indicator.

Specific Findings and Recommendations

What's a double save?!?!

This error can be prevented by the developers. I do not believe a user should be seeing this message for accidentally double-clicking a button.



Application's adherence to usability heuristics

Heuristic	Findings
Visibility of system status	The web application does not provide any status of the application state. While the web browser running the application typically shows page activity, the application it self displays nothing to indicate statuses like: loading, waiting, busy, connected, disconnected etc. In fact the navigation bar on the left, contains an animation similar to those used to indicate loading/waiting/busy status.
Match between system and the real world	Main navigation labels match school administration terms for the most part.
User control and freedom	The application does not consistently provide “emergency exit” options via a cancel button, users however have the option to use the browser’s back button to navigate to the previous screen, which allows for partial undo/redo functionality.

Application's adherence to usability heuristics

Heuristic	Findings
Consistency and standards	Conventions within the application typically remain consistent.
Error prevention	<p>Field validation is inconsistent throughout the app. On the grades form, field validation is being applied to a field that is automatically populated by the system and prevents the user from continuing their task the right way.</p> <p>Application does not utilize confirmation messages for actions across the application.</p>
Recognition rather than recall	Contextual help is not available.
Flexibility and efficiency of use	<p>User mentioned that there are sections of the application where they must enter content they had already entered at another part of the application.</p> <p>User mentioned that she has to manually remove extracurricular activities from students each school year. She feels this student info should be reset at the end of each semester.</p>

Application's adherence to usability heuristics

Heuristic	Findings
Aesthetic and minimalist design	The UI is largely utilitarian. Apart from logo placements, the UI is devoted to the current task.
Help users recognize, diagnose, and recover from errors	Error messages are clear.
Help and documentation	System provides help documentation.

APPENDIX

Pre-test Survey

1. How would you describe yourself as a computer user?

Novice 1 2 3 4 5 Expert

2. How long have you been using this application?

0 1 2 3 4 5 Year(s)

3. How good do you think you are at using this application?

Novice 1 2 3 4 5 Expert

4. Can you use this application without help documentation?

- Yes
 No

5. Have you used an application like this before? If yes what was its name?

- Yes
 No

Post-test Survey

1. I think that I would like to use this system frequently

Strongly Disagree 1 2 3 4 5 Strongly Agree

2. I found the system unnecessarily complex. Please elaborate in the section below.

Strongly Disagree 1 2 3 4 5 Strongly Agree

3. I thought that the system was easy to use. Please elaborate in the section below.

Strongly Disagree 1 2 3 4 5 Strongly Agree

4. I think that I would need the support of a technical person to be able to use this system

Strongly Disagree 1 2 3 4 5 Strongly Agree

5. I found the various functions in this system were well integrated. Please elaborate in the section below.

Strongly Disagree 1 2 3 4 5 Strongly Agree

6. I thought there was too much inconsistency in this system. Please elaborate in the section below.

Strongly Disagree 1 2 3 4 5 Strongly Agree

7. I would imagine that most people would learn to use this system very quickly

Strongly Disagree 1 2 3 4 5 Strongly Agree

8. I found the system very cumbersome to use. Please elaborate in the section below.

Strongly Disagree 1 2 3 4 5 Strongly Agree

9. I felt very confident using the system

Strongly Disagree 1 2 3 4 5 Strongly Agree

10. I needed to learn a lot of things before I could get going with this system

Strongly Disagree 1 2 3 4 5 Strongly Agree

Task Scenarios

Task Scenarios

Name: _____

Subject(s): _____

3. A student has red highlights in her hair, which is against the rules for high school students, please assign her a demerit.
4. A group of students were caught cheating in the mid-semester exams; please give them all 3 days suspension and 3 demerits.
5. Please assign 3 merits to the student brave enough to point out the incident outlined in task 4.
6. Students have just completed their mid-semester exams, and you are required to record their grades.
 - a. Please enter grades for a class that you teach multiple streams.
 - b. Based on the class selected in task 6a, please enter grades for another stream.
 - c. From this screen, please select another class who has completed mid-semester exams and enter the grades.
7. The semester has come to a close and parents must receive their children's report. Please create the reports for the classes you are responsible for.

Instructions: If you are a form teacher, please start at number one, otherwise, please start at number six.

Unless specified in the task, please perform instruction on/for 5 students. All tests should be executed on

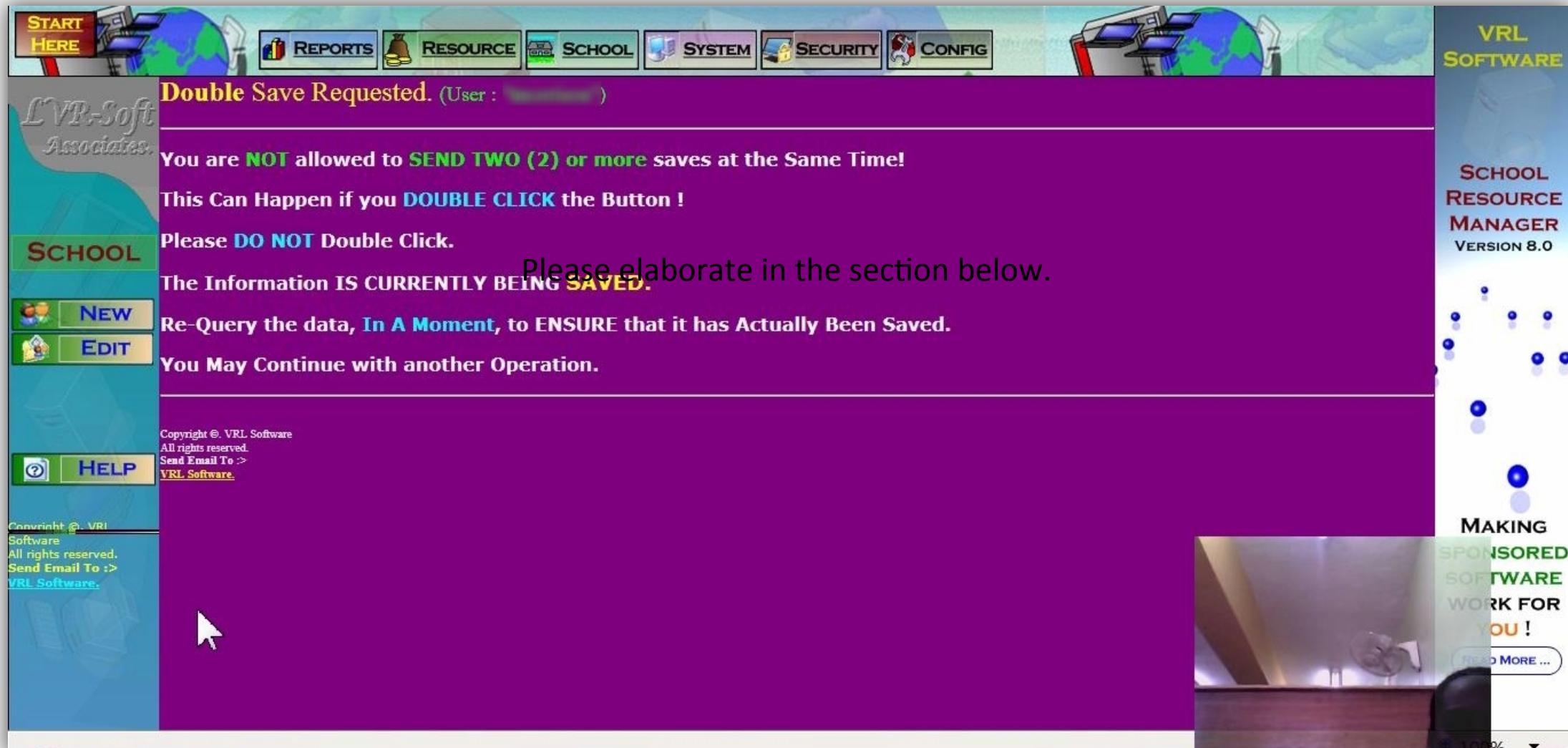
Grade 12 K and J according to task instructions.

1. You are a form teacher.
 - a. From the main screen, please mark the register for the class you are responsible for.
 - b. A student came late for class yesterday; please update the register entry for that student.
2. A student was rude to you in this morning's homeroom session; please record this incident, and give the student a detention.

Participant 1 Doing Task 6



Participant 2 Experiencing a Double Save Error



Participant 2 Experiencing a Field Validation Error during Task 6.



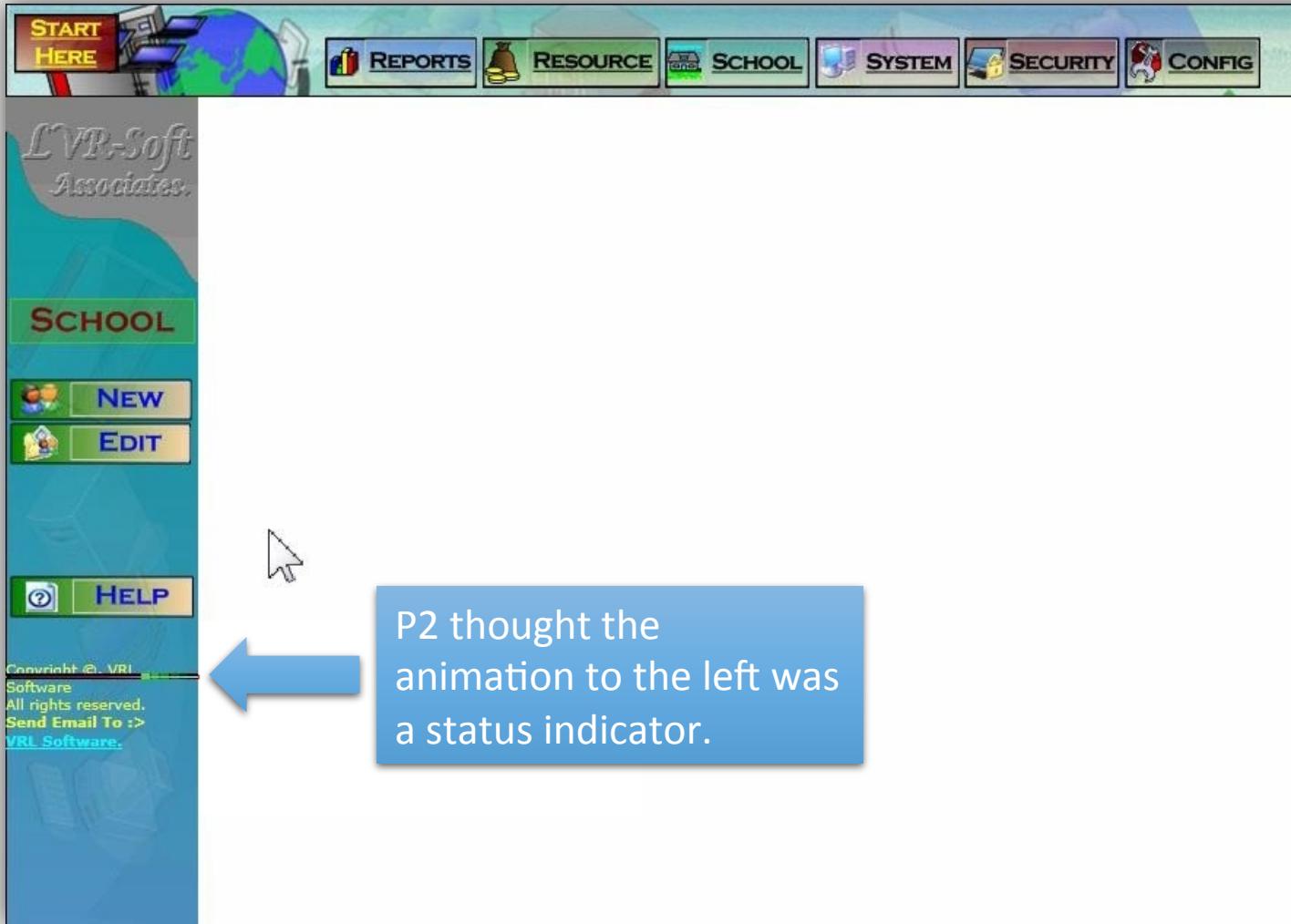
The screenshot shows a software interface for managing student grades. On the left, there's a sidebar with 'START HERE' (highlighted in red), 'REPORTS', 'RESOURCE', 'SCHOOL' (selected), 'SYSTEM', 'SECURITY', and 'CONFIG'. Below these are 'NEW', 'EDIT', and 'HELP' buttons. A copyright notice at the bottom left reads: 'Copyright © - VRI Software All rights reserved. Send Email To :> VRI Software.'

The main area displays a grid of student data. The columns include Student ID, Grade, Marks, and other metrics. A tooltip message 'You must enter text with 3 or fewer characters' appears over a cell in the 'Marks' column for student ID 7723. The row for student ID 7723 has several cells highlighted in red, indicating validation errors.

P2. indicates that she cannot save the grades she has entered because of a field validation error message tied to the automatically generated student column. The error was "You must enter text with 3 or fewer characters". This was resolved by changing the individual grade until a round value was generated in the field.

P4. commented on the field validation issues experienced by users. She informed me that this doesn't happen in all browsers and that she basically inputs the correct grades in one browser and then returns to her preferred browser for the other tasks.

An Observation with Participant 2.



We lost connection to the application server due to poor Wi-Fi connectivity. The teacher is unaware of this and thinks the animated GIF at the bottom left of the screen is a loading/status indicator. I point out to her that it actually means nothing. We resume the tests after I tether my phone to the computer to share its internet connection.



Task 7: Report Generated



P4 shared that some the browsers do not generate the report.

The Queen's School
4-10 Central Avenue Camperdown
Kingston 8
Telephone 9242997/ 9246877

STUDENT [REDACTED]

ID. NO. [REDACTED]

AGE 17 Yrs 1 Mts

AVG. AGE IN CLASS 17 Yrs 4 Mts

GRADE PT. AVG. 2.1 AVG. 53.0

NUMBER IN CLASS 2 AGGREG. 53.0

POSITION IN CLASS 2 CLASS AVG. 55.0

ACADEMICS

COURSE	SUBJECTS	Term Average	Exam Grade	Final Grade	Letter Grade	Position	Class Average	Teachers Comments	INITIAL
LIBERAL	COMMUNICATION STUDIES	65.0	45.0	53.0	D	2	55.0	18	TM

ACADEMIC YEAR 2012/2013
CHRISTMAS TERM 03/09/2012 TO 13/12/2012
NEXT TERM BEGINS 07/01/2013
CLASS 12 T **HOUSE** Alexander
NO. OF POSSIBLE SESSIONS : 146
TIMES ABSENT 0
TIMES LATE 0
MERITS 0 **DETENTIONS** 0
SUSPENSIONS 0

SCHOOL RESOURCE MANAGER VERSION 8.0

KEY TO COMMENTS

1. A very keen student who has maintained a high standard of performance.

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UI to Select Class to Enter Grades

The screenshot shows a software application window titled "Examination MarkSheet Query". The interface is designed for entering student grades.

Toolbar: The top menu bar includes icons for "START HERE", "REPORTS", "RESOURCE", "SCHOOL", "SYSTEM", "SECURITY", and "CONFIG".

Sidebar: On the left, there is a vertical sidebar with the word "SCHOOL" in large letters. Below it are three buttons: "NEW" (with a student icon), "EDIT" (with a pencil icon), and "HELP" (with a question mark icon). The "HELP" button has a tooltip "Copyright © VRL Software All rights reserved. Send Email To :> VRL Software.".

Form Fields: The main form contains the following fields:

- Category:** (Student)
- Physical Entry Column:** (dropdown menu)
- Surname:** (text input field)
- First Name:** (text input field)
- Registration ID:** (text input field)
- *Academic Year:** (text input field, value: 2012)
- *Form/Grade:** Grade 12 (dropdown menu)
- Track/Stream:** K (dropdown menu)
- *Term (Examined):** Christmas Term (dropdown menu)
- *Subject:** MATHEMATICS (dropdown menu)
- Term (Registered):** (dropdown menu, highlighted with a red border)
- *Paper Number/Type:** Paper 1 (dropdown menu)
- Mark Type:** Teacher (dropdown menu)
- Entry Template:** (dropdown menu)

Buttons: At the bottom of the form are two buttons: "Query" and "Reset".

Copyright Information: The bottom left corner displays the copyright notice: "Copyright © VRL Software All rights reserved. Send Email To :> VRL Software.".

UI for Entering Grades

Examination Subject Grade Update

School Name (General School)
Academic Year (2012)
Marks for Subject (MATHEMATICS)
Marks for Term (Christmas Term)
Students in Form (Grade 12)
Students in Stream (K)

Re-Calculate

SCHOOL

NEW

EDIT

HELP

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VRL Software.

#	Student ID	Student Name	Term Avg	Exam Mrk	Final Average	Grade	TeachComm
1	287						
2	3156						
3	7642						
4	7650						
5	7673						
6	7675						
7	7679						
8	7689						
9	2730						
10	7696						
11	7697						
12	7702						
13	7709						
14	7712						
15	8235						
16	2731						
17	8237						
18	7729						
19	7737						
20	7743						
21	7747						
22	3157						

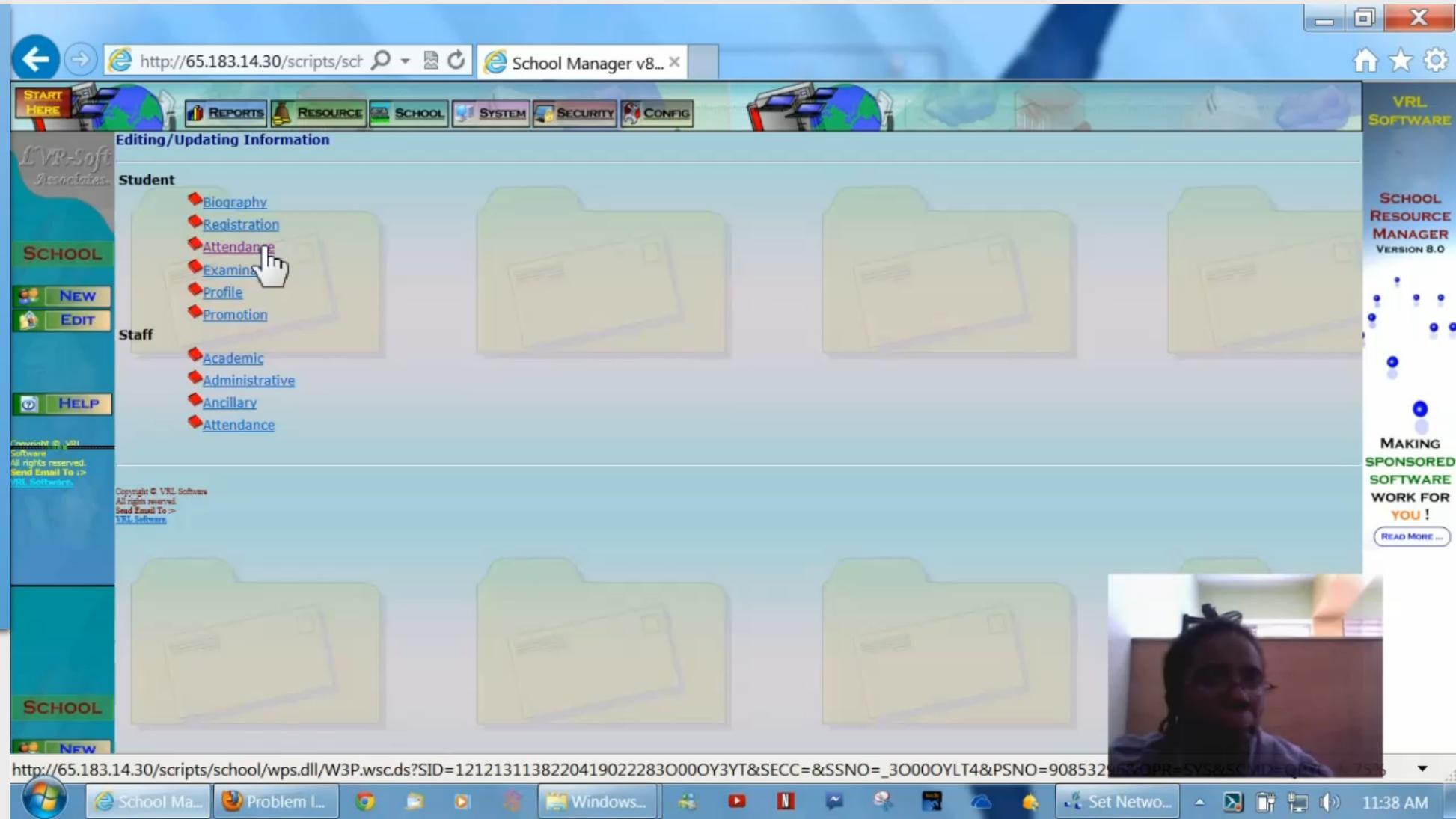
Key to Pre-defined Notes

1. A very keen student who has maintained a high standard of performance.
2. A hardworking and capable student.
3. Quality of work has improved.
4. Tries but finds subject difficult.
5. Works accurately with due attention to detail.
6. Has a good grasp of facts but unable to express them effectively.
7. Capable student but poorly organized.
8. Usually works well but has difficulty with examination.
9. Shows very little interest in the subject.
10. Needs to submit all assignments.
11. Much too talkative and easily distracted.
12. Can do better, does little work.
13. Needs to read more widely.
14. Too often absent from class.
15. With greater application, the standard of work should improve.
16. Practical skills well developed.
17. School-based assessment not completed.
18. Need to work harder
19. Interview with parents
20. A dependable and eager student who takes pride in her work.
21. Disruptive in class.
22. Unable to participate/sit exam due to medical reasons.
23. Does not wear the appropriate P.E. uniform
24. Does not participate in practical classes.

Video: P4, Task 1

1. You are a form teacher.
 - a. From the main screen, please mark the register for the class you are responsible for.
 - b. A student came late for class yesterday; please update the register entry for that student.

N.B. Audio muted due to background noise.

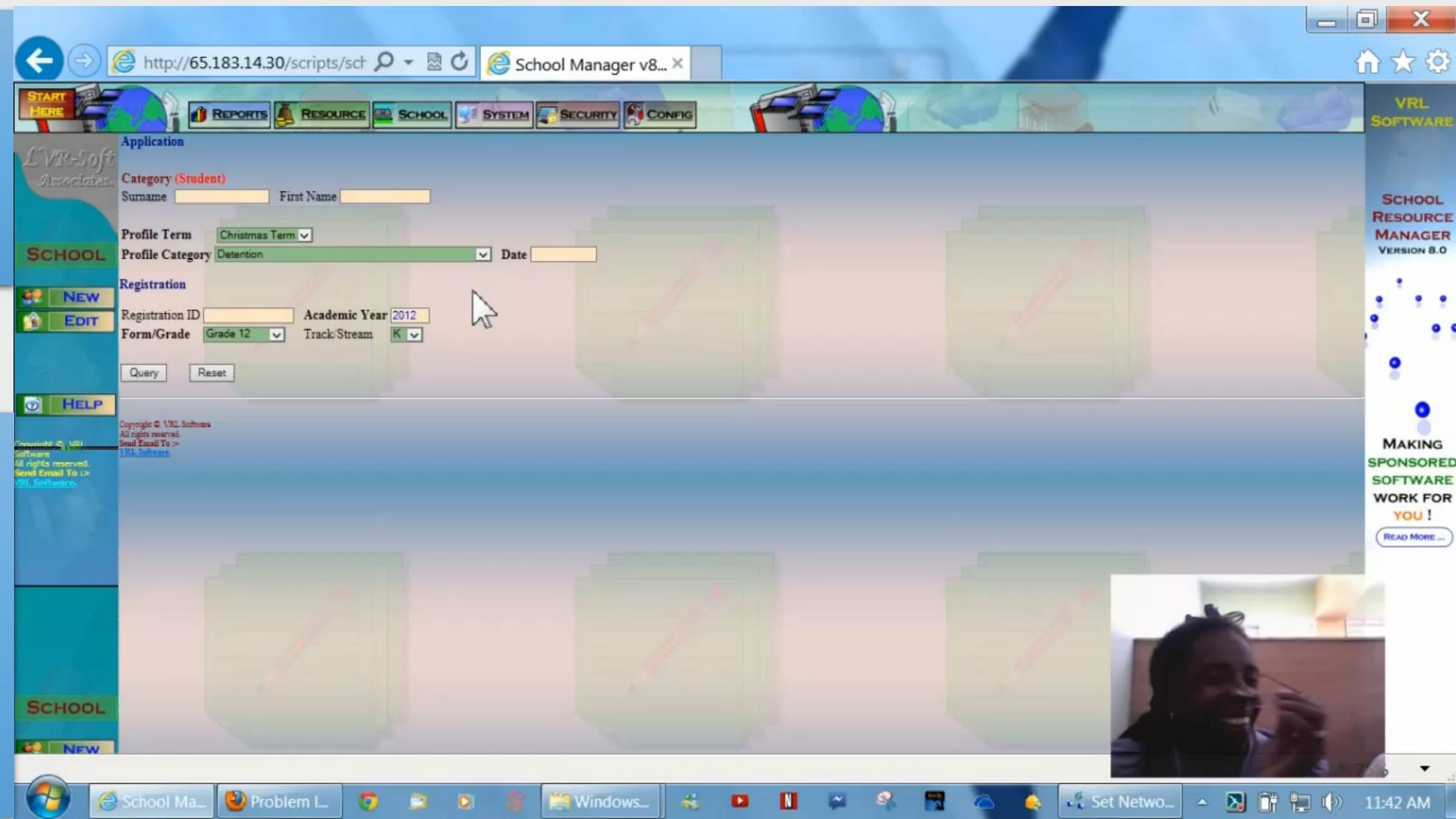


Video: P4, Task 2

2. A student was rude to you in this morning's homeroom session; please record this incident, and give the student a detention.

There seemed to be no straightforward way to do this. P4 explained there is some kind of bug whereby these detentions are not being displayed.

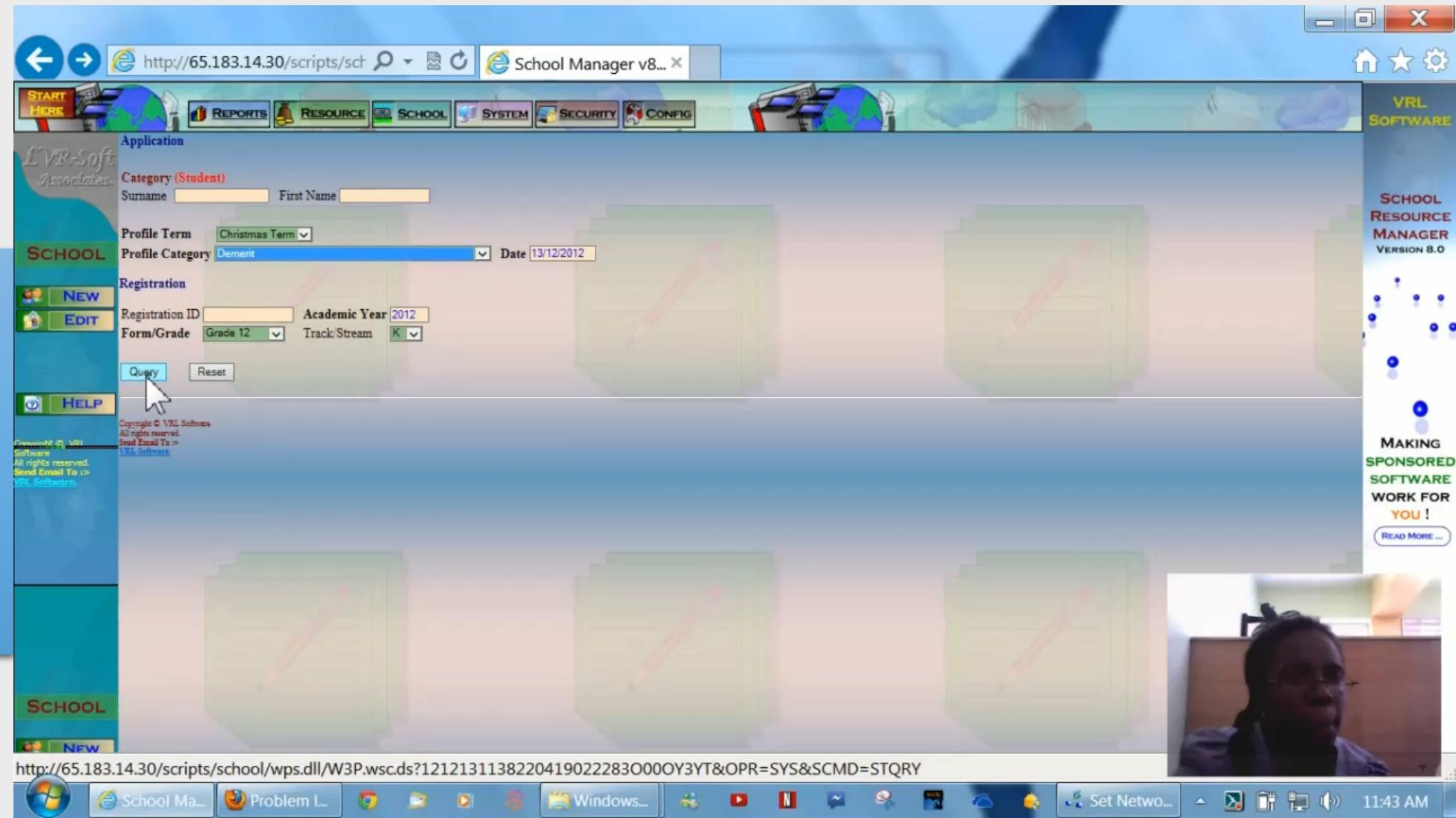
N.B. Audio muted due to background noise.



Video: P4, Task 3

3. A student has red highlights in her hair, which is against the rules for high school students, please assign her a demerit.

N.B. Audio muted due to background noise.



Video: P4, Task 6a

6. Students have just completed their mid-semester exams, and you are required to record their grades.
- Please enter grades for a class that you teach multiple streams.

N.B. Audio muted due to background noise.

