



Red Deer Public Schools: Chromebooks for Secured Written Exams

Adapted and Modified from the work of Buffalo
Trail (Vonglaxay Saysana) and Chinook's Edge (Myles Doupe) School Divisions

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UPDATES (April 14 2022):

- Added power thesaurus to approved extensions (APPROVAL FROM AB ED)
- List of printers as bookmark
- Updated list of GAM commands to transfer ownership of documents (backup) to repository account, remove share permissions, delete Drive contents & trash and then execute a password reset
- Google has released a new admin feature for pushing keyboard (languages) based on OU

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STEP 1: Create Exam OU and User Settings

- **Create an OU for exam users.**
- **Device Management->Chrome Management->User Settings**
 - Select the OU where your Exam Users are held from the left panel.
 - Wallpaper > Upload Wallpaper > Use Secure Exam.jpg
 - Avatar > Upload Avatar > Use Secure Exam Avatar.jpg
 - Allowed Types of Apps > uncheck all but Extension
 - Force-installed Apps and Extensions > [Google Docs](#),, and [Hide Google Docs Research](#), [Power Thesaurus](#) Google dictionary extension stopped working
[Accent Grid](#), [Dictionary, Thesaurus & Reference](#)
 - Allow or Block All Apps and Extensions - Block all apps and extensions except the ones I allow
 - Allowed Apps and Extensions > Google Docs, Hide Google Docs Research, Google Dictionary, Power Thesaurus
 - Password Manager > Never allow use of password manager
 - Screen Lock > Never automatically lock screen on idle
 - Incognito Mode > Disallow incognito mode
 - Home Button > Always show Home button
 - Homepage > Homepage is always the Homepage URL, set below
 - <https://docs.google.com/document/d/1FOFVh5oWt7mvTKrheIUgjG0kFoyFrMfWPpHE9xEmPw8/copy>
 - Pages to Load on Startup
 - <https://docs.google.com/document/d/1FOFVh5oWt7mvTKrheIUgjG0kFoyFrMfWPpHE9xEmPw8/copy>
 - Screenshot > Disable Screenshot
 - Cast> Do not allow users to cast
 - Pop-ups > Allow all pop-ups

- Blocked URLst:
 - *
 - <https://docs.google.com/picker/>
 - <https://docs.google.com/a/rdpsd.ab.ca/picker>
 - <https://docs.google.com/spreadsheets/d>
 - <https://docs.google.com/presentation/d>
 - <https://docs.google.com/drawings/d>
 - <https://docs.google.com/a/rdpsd.ab.ca/presentation/>
 - <https://docs.google.com/a/rdpsd.ab.ca/drawings/>
 - <https://docs.google.com/a/rdpsd.ab.ca/spreadsheets/>
 - <https://docs.google.com/a/rdpsd.ab.ca/forms/d/>
 - <https://docs.google.com/forms/d/>
 - <https://accounts.google.com/logout>
 - <https://accounts.google.com/AddSession>
 - <https://accounts.google.com/AccountChooser>
 - <https://accounts.google.com/SignOutOptions>
 - <https://workspace.google.com/>
 - <https://translate.google.com/>
 -
- Must blacklist these specifically even though * is blocked.
- Blocked URL Exceptions
 - <chrome-untrusted://print/>
 - [Chrome://settings/languages](chrome://settings/languages)
 - <chrome://print>
 - <https://drive.google.com/>
 - <https://drive.google.com/drive/>
 - <https://drive.google.com/drive/my-drive>
 - <https://docs.google.com/a/rdpsd.ab.ca>
 - <https://docs.google.com/document/u/0/>
 - <https://goo.gl/zWFc0Z>
 - goo.gl/zWFc0Z
 - <https://docs.google.com/document/d>
 - <https://drive.google.com/drive/shared-with-me>
 - <https://content.googleapis.com/>
 - <https://apis.google.com>
 - [Chrome://settings-frame/languages](chrome://settings-frame/languages)
 - <https://google.com/static>
 - <https://googleusercontent.com>
 - <https://www.thefreedictionary.com/>
 - <https://www.freethesaurus.com/>
 - <https://accounts.google.com>
 - <https://docs.google.com/accounts>

- Managed Bookmarks
 - <https://drive.google.com/drive/my-drive> [Name: **Exam Recovery**]
- Bookmark Bar > Enable Bookmark Bar
- Bookmark Editing > disable bookmark editing
- Google Translate > Never offer translation
- Developer Tools > Never allow use of built-in developer tools
- Form Auto-fill > Never auto-fill forms
- DNS Pre-fetching > Never pre-fetch DNS
- Multiple Sign-In Access > Block multiple sign-in access for users
- Search Suggest > Never allow users to use Search Suggest
- External Storage Devices > Disallow external storage devices
- Audio Output > Disable audio output

STEP 2: Create Exam Template

We created an exam template that has the ID#, current page and total pages in the footer, and is double-spaced formatted. If you create your own template, you simply need to replace the “edit” at the end of the document address with “copy” to force a copy on a new user. Here is our example (feel free to modify and use):

<https://docs.google.com/document/d/1FOFVh5oWt7mvTKrhelUGjG0kFoyFrMfWPeHE9xEmPw8/copy>

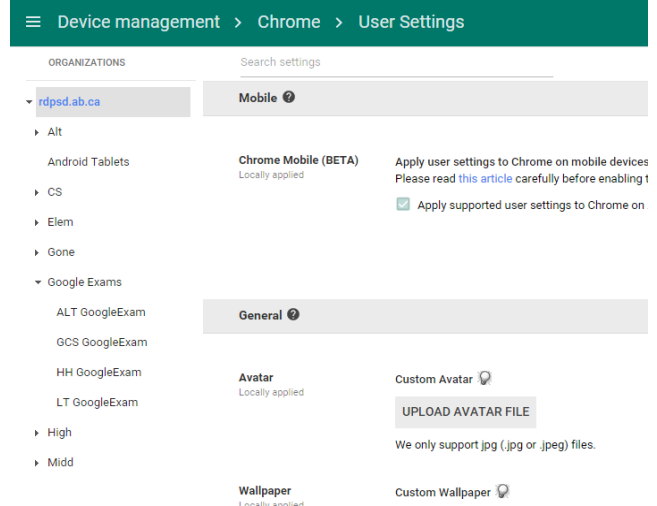
**This link needs to be added in the user settings as the homepage and pages to load on startup. The added bookmark (exam recovery) allows the student access to the Drive if the device fails, loses power, etc. We have also added a second bookmark for the printing document which is listed in the printing section of this document.



Copy document

Would you like to make a copy of RDPsD Diploma Template (2015-2016)?

[Make a copy](#)



STEP 3: Create Exam Users and Apply to Exam OU

We created a new OU for all exam user accounts (Google Exams) and then separated them by school. We created the exam accounts and using naming protocols that identified the school and that it is an exam account (i.e., ltchsexam001(at)rdpsd.ab.ca for Lindsay Thurber, hhhsexam001(at)rdpsd.ab.ca for Hunting Hills, etc) and then associated them with the appropriate OU's. Next we created Google spreadsheets for each school with the appropriate usernames and passwords. Teachers will be responsible for cutting these up and giving each kid the username and password at the beginning of the exam (similar to Quest A+).

STEP 4: Set Up Native Printing

We now use native printing by chromebook OU IPP queues

STEP 5: Set up GAM to backup exams, delete all files and trash & reset passwords nightly

Please contact [glen.scharf\(at\)rdpsd.ab.ca](mailto:glen.scharf(at)rdpsd.ab.ca) if you are experiencing issues or need help with your GAM commands.

UPDATE:

New GAM commands. Please note we are using GAM Advanced X ([GAMADV-X](#)). We ran this last night against our 2500 exam accounts and it finished in 33min. Advantages of this version of GAM include: output file with any errors or failures, speed, not having to recreate accounts daily and the repository account is not getting "spammed" with transfer emails.

```
gam redirect stdout Transfer.out multiprocess redirect stderr stdout csv "RDPSD Exam  
Accounts MASTER - RDPSDgam.csv" gam user ~Email transfer drive  
google.exam.repository@rdpsd.ab.ca targetuserfoldername "#user#"
```

```
gam redirect stdout ChangePW.out multiprocess redirect stderr stdout csv "RDPSD Exam  
Accounts MASTER - RDPSDgam.csv" gam update user ~Email password ~PW
```

```
gam redirect stdout EmptyTrash.out multiprocess redirect stderr stdout csv "RDPSD Exam  
Accounts MASTER - RDPSDgam.csv" gam user ~Email empty drivetrash
```

Special thanks to Ross Scroggs for GAMADV-X and his assistance in setting this up

for us.

Please note that this is the solution RDPDS is using but may not be right for your environment. If you have a different solution, please share it below.

Foothills School Division

We do the same process @ Foothills - we run GAM wrapped in PowerShell to pull the exam documents out and convert them to Word and then run a purge on the exam folders.

Wild Rose School Division

WRSD does a similar process. We use GAM in a scheduled task to back up all GDocs from our exam accounts (in MS format) to a share in Azure. All GDocs are then purged (including trash). This process happens automatically, daily. All exam accounts are able to be re-used without IT intervention. Here are the commands to do this:

GAM command to copy all GDocs:

```
gam.exe ou_and_children exam.wrsd.ca show filelist id | gam csv - gam user  
~Owner get drivefile id ~id format microsoft targetfolder  
F:\exam-backup\%DATE:~10,4%\%DATE:~4,2%\%DATE:~7,2%\~~Owner~~
```

The above command will create a directory structure on the drive F: that will look like: exam-backup/<year>/<month>/<day>/GAFFEUserName. Our schools assign specific exam accounts to specific students, so we're able to determine which student was on which account per exam per day, in case something needs to be found.

GAM command to purge:

```
gam.exe ou_and_children exam.wrsd.ca show filelist id | gam csv - gam user  
~Owner delete drivefile ~id purge
```

This will purge the Google Drive files for ALL users under the specified OU. Replace "exam.wrsd.ca" with whatever is appropriate for you. This command will recursively parse user accounts.

GAM command to delete everything from trash for all users in OU structure:

```
gam.exe print users Email query orgUnitPath="/exam.wrsd.ca"/ gam csv - gam user  
~primaryEmail empty drivetrash
```

Again, replace “exam.wrsd.ca” with whatever’s appropriate for your environment.

Our thought process:

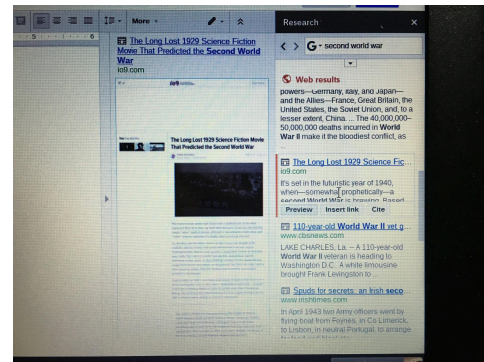
First off, our schools use these exam accounts on a regular basis - not just for provincial assessments. So we needed to find a solution that could be used by our teachers daily, and would not require constant updates, PW resets, changes, etc. That’s where [GAM](#) comes in.

To be compliant with Ab Ed’s new directive to backup all provincial assessments for AT LEAST 30 days, we needed to find an efficient solution that did not require the students to do anything.

Known Vulnerabilities/Security Concerns

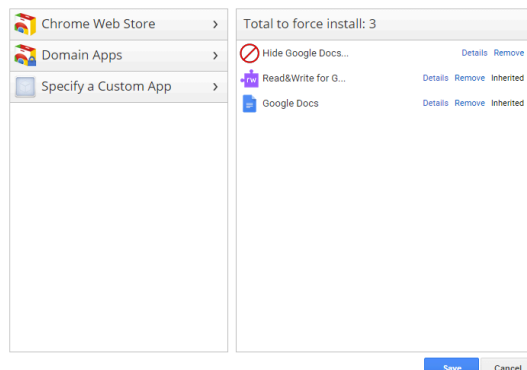
Research Tool

Myles Doupe of Chinook’s Edge School Division has created and published a Chrome Extension that “hides” the research pane - in both Google Docs and Google Slides. **Essentially the extension covers the research pane area so this also means the define menu will also be covered (and inaccessible).** We are recommending installing the Google dictionary extension to address this issue.



Force-installed Apps and Extensions

The selected apps and extensions will be automatically installed.



The [Hide Google Docs Research extension](#) has been published publicly but we are still very much in the testing stage. I would encourage anyone who uses it to give feedback in this document.

I have tested the extension and installed it via the admin console in the following two ways. The first is by searching through the Chrome Web Store option (top left) but I have also had very good success using the Specific Custom App link (bottom left). If you choose the Specific App option

(which I'm currently recommending) use the following credentials:

ID: fnifdkggkcjiaahokngjoajgpboaaobj

URL: <https://chrome.google.com/webstore/detail/hide-research/fnifdkggkcjiaahokngjoajgpboaaobj>

Publish to Web

We have not found a way to remove this option. However, I do not see this as a serious concern because even if the students were publishing their exam to the web, they would have to find a way to distribute the link and theoretically no one should have internet access, or a device on their persons that would allow for that sharing. And running the GAM command would automatically delete the documents so there would not be a document to access after the fact.

Sharing to the Exam Accounts

Currently there is no way to limit users from receiving internally shared files. This means a student could share a Google Doc with the exam account(s) and it would appear in Shared with Me.

Two thoughts of this issue:

1. Any shared file would be associated with the student account meaning you would instantly be able to track the file and know who shared it. Sharing from external domains has been deactivated.
2. Exam proctors/supervisors would need to check the shared folder before, during and after the exam. As the exam logins/user accounts would be not be known to the students until the moment of the exam, the only conceivable way to cheat would be to share the doc with all of the exam accounts. Proctors/administrators could easily login to multiple exam accounts at random to see if anything had been shared.

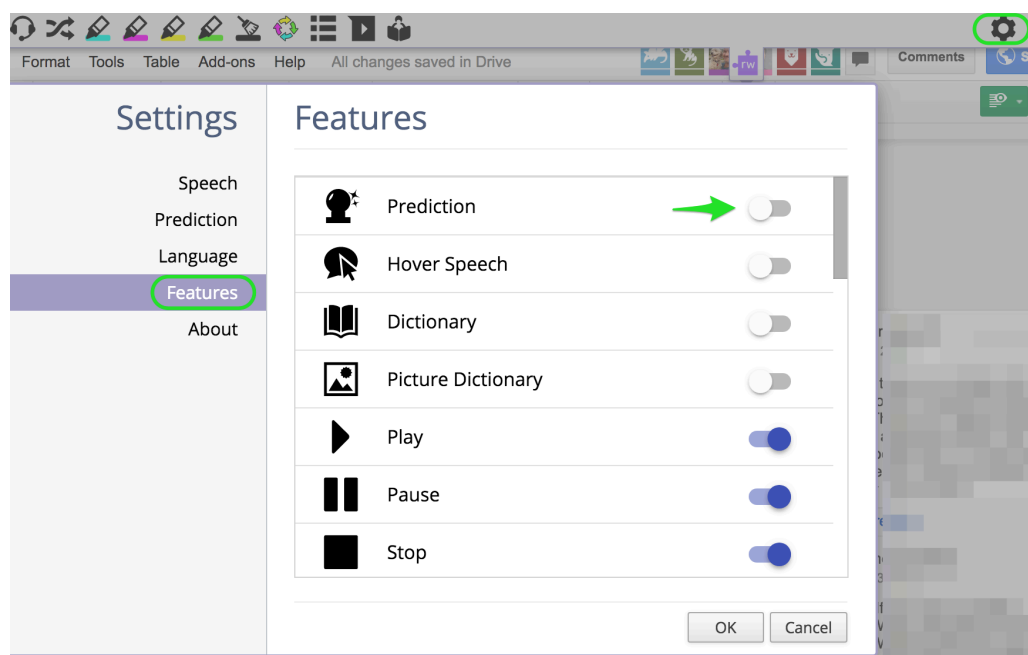
Read and Write for Google

New Feature Switcher: <https://support.texthelp.com/help/feature-switching>

Works great, you just have to upload the .json file for every OU. Here's a link to one that only allows the play, pause and stop button.

https://docs.google.com/document/d/11iKnYjMGmqnErLrm-CJkV_UA_sKz8GtLy0jpWyluKW0/e/dit?usp=sharing

Read and Write is a fantastic assistive technology that allows students to convert text to audio and vice versa. It DOES NOT however, gives admins the ability to remove certain functions (word predictability, etc) unless the [FEATURE SWITCH APP](#) is installed.



Implementation nightmares of R&W - As Robert Barrett (right) has alluded to, R&W must be authenticated the first time it is pushed to the account. This means you must remove the exam accounts from the secured OU, open each account and manually approve the “install”. Once they are approved you would move them back into the secured exam OU.

To solve this issue we created a number of accommodation exam accounts that are not deleted daily (only the passwords are reset) and the supervisors of those accommodations are required to check the drives (before and after the exam) and ensure that all exam materials have been properly deleted. This means you only need to authenticate RW once.

ALSO: **The Screenshot Reader function does not work with the above exam settings.**

Autocorrect Features

We have received lots of questions regarding the Autocorrect feature. The Spell Check feature in Google Docs is allowed by Alberta Education (Aug 2015) - (Rules and Procedures, pg.5, #2). <https://education.alberta.ca/media/1477310/06-ach-gib-2015-16-using-calculators-computers.pdf>

The underline spelling feature is allowed so long as it does not automatically correct the spelling (which it does not by default in Google Docs). The autocorrect feature only autocorrects words that have been placed into the dictionary by the user. Since these are exam accounts, this is not a concern and is compliant to the directives of AB ED. Example below:

This is an example of the autocorrect feature in Google documents.

MP3's for Accommodated Writers

Principals download the MP3's provided by Alberta Education. They upload them into a secure Google account and share the MP3's with a select number of exam accounts that have been identified for accommodated students. Here is a quick YouTube video on how RDPSD is managing them: <https://goo.gl/38ZM1J>

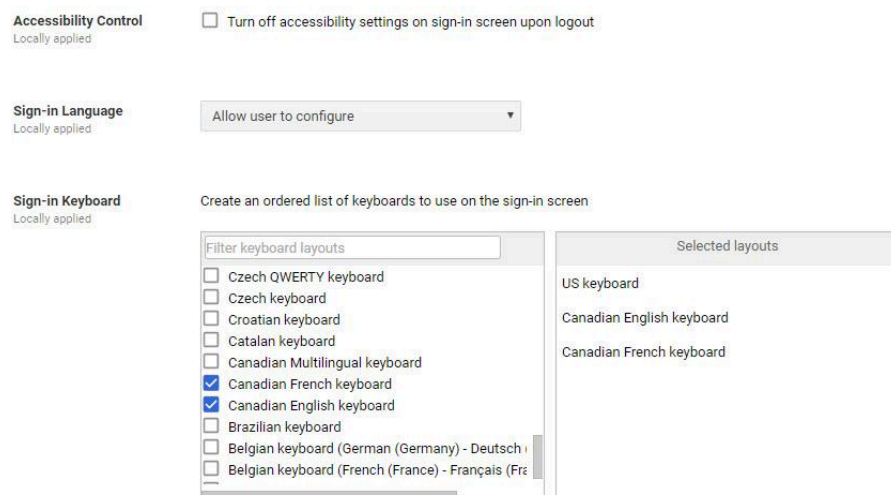
French Writers considerations

If your students need to write their exam in French, it is recommended that you select a number of Chromebooks from your fleet and make French the default keyboard on those devices. Then, on

the day of the assessment those devices should be used by the students writing in French.

Currently there is no way to push out a keyboard language from the Admin Console and for a number of security considerations we are not

recommending allowing students access to the Chromebook Settings.



UPDATE: SEE RIGHT

Google has pushed out a new admin feature that allows admins to push out keyboards by OU. Can be found under Device Management - Device Settings.

We are also experimenting with French USB keyboards. Will let you know how they work...

Other Solutions and Documentation from other Jurisdictions

Wolf Creek - <https://goo.gl/GshS1F>

Parkland - <https://goo.gl/s7wUZ2>

Other Suggestions

1. The proctor could be assigned resetting passwords to a specific OU. When a student is completed the proctor resets their password. They only have rights to the accounts they are monitoring for the exam. This could be done when a student has completed the exam. This ensures not signing in after they hand in the exam and leave. It's not important for the proctor to remember the password they changed it to as admin or themselves would be able to go reset it if there was a need. **This one is likely best only to be used in a testing domain as you likely don't want them to have free access since it is domain base reporting.** Another thing that is possible is (Not OU base.) But the proctor could have access to Reports. Reports is domain base so is likely best in a testing domain. They could then monitor drive activity with the different filters that can be used in drive such as "user Sharing Permissions changed."