

Enterprise Reporting -- APEX

This Quick Reference Guide documents Oracle Application Express (APEX) as it relates to Enterprise Reporting (ER). This is not an exhaustive APEX documentation guide, but merely how to work with APEX within the ER context.

- Accessing APEX
- Creating New Report
- Configuring Report
- Using Query Builder
- Using SQL Workshop
- Using Application Builder
- Exporting ER Report
- · Importing ER Report

Navigation: https://{instance}.powerschool.com:8443/ords/

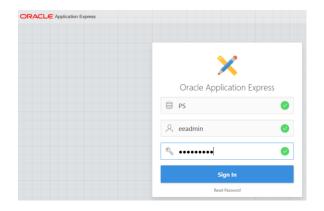
Accessing APEX

Oracle APEX is a different environment/tool. To access it, follow the following steps:

- 1. Enter https://{instance}.powerschool.com:8443/ords/ into the address bar. See Figure 1. Oracle Login dialog.
- 2. Enter Workspace name as PS
- 3. Enter APEX Username
- 4. Enter APEX Password
- 5. Click Sign In

Note:

- You should open a new window in your browser when working with Oracle APEX.
 Some functionality, specifically running your page to test the report requires you to be logged into PowerSchool (within the same browser).
- Page name in Oracle APEX translates to ER Report Name in PowerSchool.
- First time you enter APEX, you will have to change password. See Figure 2, Reset Password dialog.
- Must have email set in PowerSchool to see Reset Password on the Oracle Login dialog. See PS QRD ER SECURITY for more information.



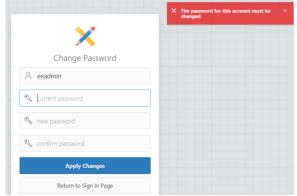


Figure 1. Oracle Login dialog

Figure 2. Reset Password Dialog

Creating New Report

The best way to create a new report is to copy an existing report, either a sample PowerSchool report or an existing customized report. Therefore, before creating a new report, know exactly what you need in the report and how it maps to existing reports.

After accessing APEX, the steps to create a report are:

- **1.** Click on **Application Builder** tab or icon
- 2. Click on Application 100 PowerSchool Enterprise
 Reporting
- 3. Click on any page (i.e. 101 Login Page)
- 4. Click button (See Figure 3. Plus Context Menu)
- 5. Click Page as Copy (See Figure 4. Copy Page Options)
- 6. To copy a PowerSchool sample report (i.e. Student Demographics) click Page in another application. To copy a customized report, leave the default of Page in this application

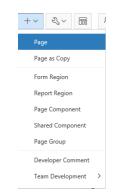


Figure 3. Plus Context Menu



Figure 4. Copy Page Options

- 7. Click Next > (see Figure 5: Copy Page Options)
- 8. Select 200 PowerSchool
 Enterprise Reporting for
 Copy from Application
- Select the report to copy (i.e.
 2 Student Demographic) for Copy from Page
- 10. Set Copy To New Page
 Number to new page number.
 This must be unique. Careful thought process should go into determining your page number ranges to make maintenance simpler.
- 11. Set **New Page Name** to the name of the ER Report you want. Remember Page Name equates to ER Report name.
- 12. Leave other fields as defaults
- 13. Click Next > (see Figure 6. Navigation Menu)
- 14. Click Next > (see Figure 7. Templates). Not used within confines of ER
- **15.** Click **Next** > (see **Figure 8. Confirm**). This is informational only.
- **16.** Click **Finish** to Confirm

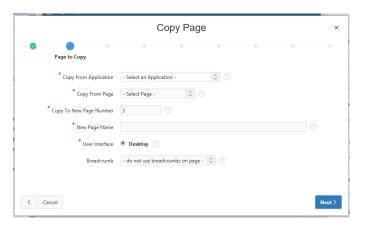


Figure 5. Page to Copy



Figure 6. Navigation Menu

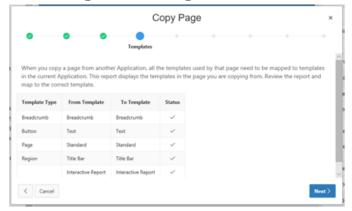


Figure 7. Templates

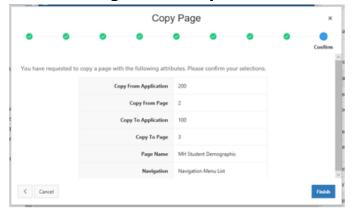


Figure 8. Confirm

- 17. Change Name and Title in the Identification section to your ER Report Name (see Figure 9. Page Builder Page)
- 18. Click on Content Body:
 Region Header (i.e. Student
 Demographic) (see Figure 10.
 Page Builder Report).
- 19. Change **Title** to your ER Report name. This is not required but makes things simpler.
- 20. Click under Source: SQL Query (see Figure 11. Page Builder Code Editor)
- 21. Either edit SQL Query, paste new SQL Query, or type new SQL Query into box
- **22.** Click \bigcirc to Validate
- 23. Click OK
- **24.** Click **Save** to save your changes
- to run a test on the report. Must be logged into PS for this feature to work correctly.

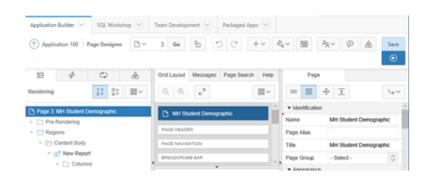


Figure 9. Page Builder Page



Figure 10. Page Builder Report



Figure 11. Page Builder Code Editor

Note:

Properties on the right of Page Designer are context sensitive to what is highlighted in the first column.

Warning: Poor SQL will have a huge impact on PowerSchool performance.

Configuring Report

Oracle APEX is very configurable with many properties to set. Some of the customizations are not applicable within the ER context. Outside of Name and Title (reference above), the

page properties fall into this category. Attribute and Column properties will be discussed below.

Interactive reports bring a lot of that flexibility to the end user. Most of the features in the interactive reports (the basis for ER) exist for the end user to have feature rich reports that they can customize and save for their benefit. See **Figure 12. Sample ER Report**.

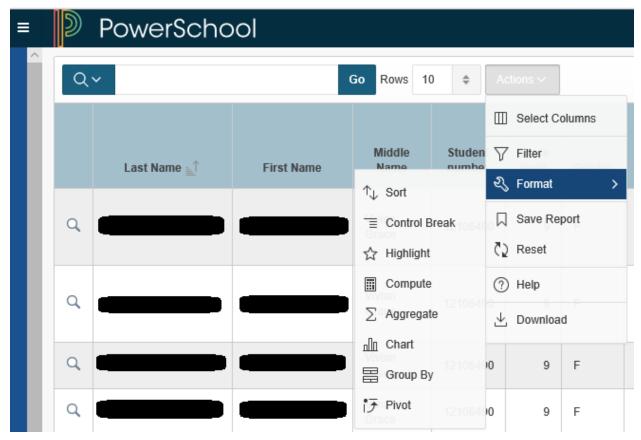


Figure 12. Sample ER Report

Sometimes, however, you may want to remove some of that flexibility from a report. Listed below are the major ways you can configure a report (or conversely, limit how a user can configure). We will discuss most of the properties and mention when you may want to override standard behavior.

Attributes

The attributes section provides a way to configure across all columns in a report (see **Figure 13**. **Attributes Overview**). It also, allows certain report wide features to be turned on or off. See Oracle Application Express Application Builder User's Guide for Oracle Database 12c for more information on any of the attributes below. This document is intended to show how ER works with APEX Interactive Reports, but not to document full APEX Interactive Reports functionality.

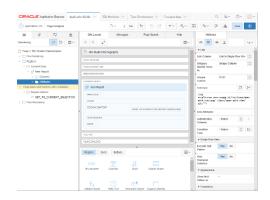


Figure 13. Attributes Overview

Link

Link Column

Link to Single Row View Allows users to view data

on row by selecting an icon.

Link to Custom Target Not applicable to ER

Exclude Link Column Can only see report, no

single row view available.

Uniquely Identify Rows by

ROWID Use internal ID to control

active record.

Unique Column Use column from query to

control active Record.

Only applicable if **Link Column** set to **Link to Single Row Value**.

Unique Column

The field in your query that is unique. Typically, DCID of main table in your select. In the Student Demographic Query, the STUDENT'S DCID is the unique column. This is only applicable when **Uniquely Identify Rows by** is set to **Unique Column**.

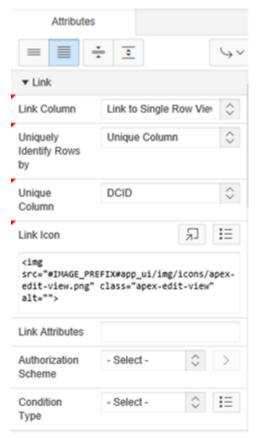


Figure 14: Link Attributes

Link Icon

The icon to show on the left of the record to go to the single row view. Only applicable with **Link Column** set to **Link to Single Row Value**.

Link Attributes

Not applicable with ER

Authorization Scheme

Used to limit who can see the role by authorizations built by APEX. Current authorizations are:

- Select -
- Can Create PS Interactive Public Reports
- User still logged into PowerSchool
- Must Not Be Public User
- {Not Can Create PS Interactive Public Reports}
- {Not User still logged into PowerSchool}

Can set this at either page, interactive report, or column level. Typically done at page, but flexible to restrict access at each level.

Condition Type

Typically, not implemented in ER. Allows ability to hide the interactive report if some condition is not met. By selecting a value, more attributes will appear to be set.

Single Row Value

Defaults settings on single row report (if set with **Link Column**). User can change these values on the Single Row view.

Exclude Null Values

Defaults whether to hide null values from the single row report.

Only Displayed Columns

Defaults whether to display all available columns from the report or only displayed columns

Appearance

Show Null as

Gives the ability to display null (empty) fields with a different character—defaults to hyphen.

Pagination

Type

Noi	ne		No pagination, all records show on
			page.
_	-	V 1 V 67	01 1:1

Row Ranges X to Y of Z Shows which records are displayed plus

how many pages.

Row Ranges X to Y Shows which records

are displayed

Display Position

Bottom – Left	Determines where to show the pagination. Only applicable if Type is not set to None .
Bottom - Right	
Top – Left	
Top – Right	
Top and Bottom – Left	
Top and Bottom - Right	

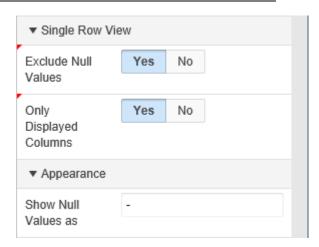


Figure 15. Single Row View



Figure 16. Pagination

Messages

When No Data Found

Message to display when no records found for report.

When More Data Found

Message to display when too many records found for report.

Search Bar

Each attribute in Search Bar can be hidden. Set **Yes** to see component, **No** to hide.

Include Search Bar

Search Field

Finder Drop Down

Reports Select List

Rows Per Page Selector

Search Button Label

Label used for Search-defaults to Go

Maximum Rows Per Page

How many rows are allowed per page.

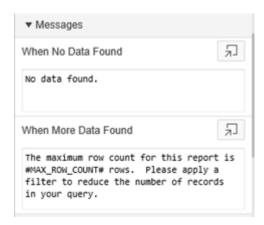


Figure 17. Messages

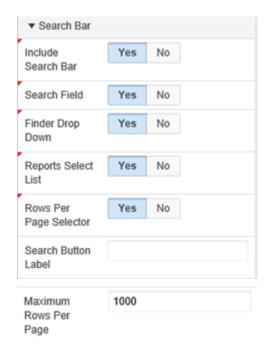


Figure 18. Search Bar

Action Menu

Each attribute in the Action Menu can be hidden. Set **Yes** to see menu, **No** to hide.

Include Actions Menu

Filter

Select Columns

Rows Per Page

Sort

Control Break

Highlight

Compute

Aggregate

Chart

Group By

Pivot

Flashback

Save Report

Save Public Report

Save Public Report Authorization

Which role(s) can see the Save Public Report when it is enabled.

Reset

Help

Subscription

Download



Figure 19. Action Menu

Download

Download Formats

Shows available download formats.

CSV Separator

When CSV is a valid download, what to delimit records by (i.e., {comma}).

CSV Enclosed By

What to put around fields when CSV (i.e. "{double quotes}).

Filename

Default filename to use for the downloaded file.

Heading

Fixed To

None

Region

Page

Icon View

Enabled

See Oracle Documentation—not standard ER

Detail View

Enabled

See Oracle Documentation—not standard ER



Figure 20. Download

Advanced

Region Alias

See Oracle Documentation—not standard ER

Maximum Row Count

The maximum number of rows that can be retrieved. Beware, the query must finish in less than a minute or PowerSchool will not allow it to run.

Report ID Item

See Oracle Documentation—not standard ER

Email From Address

If sending emails from reports, what account should it come from.

Attributes

Description

Commenting on the purpose of the region.

Audit Information

Changed By

Who made the last change.

Changed On

When the last change was made.

Columns

Column level properties allow a specific column to be configured.

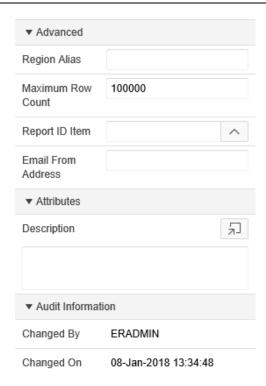


Figure 21. Advanced

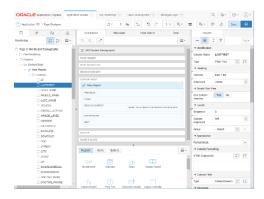


Figure 22. Columns

Identification

Column Name

The name of the column (from the SQL Query). Column names must be unique. Use alias within query if you have the same name more than once.

Type

Plain Text

Plain Text (based on List of Values)

Link

Display Image

Download BLOB

Percent Graph

Remove HTML

Hidden Column

Heading

Heading

What you want displayed for the heading

Alignment

Left

Center

Right

How you want the heading aligned.

Single Row Value

Use Column Heading

Provides mechanism to provide alternate label on Single Row View for this column.

Layout

Sequence

The order the column appears in the report.

Column Alignment

How the column is aligned. See Heading for valid values.

Group

Not applicable to ER

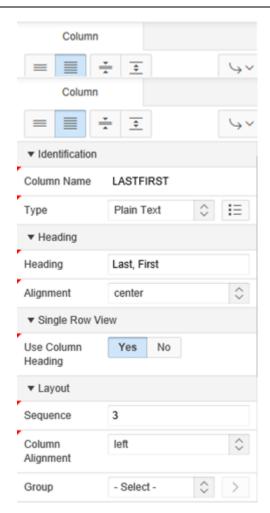


Figure 23. Identification

Appearance

Format Mask

Can be used to format dates or numbers.

Column Formatting

HTML Expression

Advanced method to format a column. See Oracle APEX documentation to use.

Column Filter

Type

Advanced method to filter a column. See Oracle APEX documentation to use.

Enable Users To

Each component of a column can be hidden. Set **Yes** to see menu, **No** to hide.

Hide

Sort

Filter

Highlight

Control Break

Aggregate

Compute

Chart

Group By

Pivot

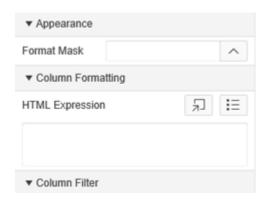


Figure 24. Appearance



Figure 25. Enable Users To

Condition

Advanced method to hide a column. In ER, Type is typically set to **PL/SQL Expression** with CAS_GET_FIELD_SECURITY ('LASTFIRST', STUDENTS', :P101_CURRENT_USERID, :P101_CURRENT_SCHOOLID)

With column name as first parameter and table name as the second. Note: Column name must be name of column on the table. This function implements Field Level Security.

Security

Authorization Scheme

See Attribute Authorization Scheme. This is the way to implement for a single column. This would be rare.

Escape Special Characters

Determines whether HTML shows escaped or as HTML.

Using Query Builder

The Query Builder is a graphical SQL tool. Instead of typing in a SQL query, this tool will help the user build the query. To use the tool, start at a Code Editor – SQL Query Window. See **Figure 28. Code Editor – SQL Query**.

From a Code Editor – SQL Query dialog, Click

. If a complicated query (including sample report queries) exists in the editor, you will receive a warning as seen in **Figure 29**. **Code Editor Warning**.



Figure 26. Condition

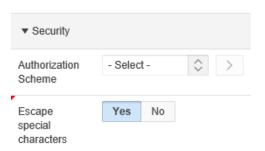


Figure 27. Security



Figure 28. Code Editor – SQL Query

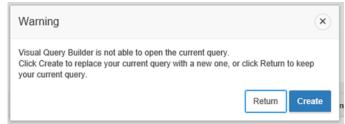


Figure 29. Code Editor Warning

Click Create to continue to the Query Builder to create a blank SQL Query canvas (see Figure 30. SQL Query Canvas).

The left pane contains the list of views within the **PS_APEX** schema to pull from. To limit the views displayed, you can enter part of the table name in the search box above the tables. The upper right pane contains the graphical canvas for the query. The lower right pane contains the columns that will show up in the final query.

When you select **STUDENTS** from the view list, the graphical canvas will show the STUDENTS table (see **Figure 31. Graphical Query**). To add columns to the query, simple check on the checkbox to the left of the column name. Notice the icon next to the column shows the data type. After checking columns to add, the lower right pane will show the columns selected (see **Figure 32. Columns**).

You can restrict data (add a where clause) by adding a Condition to a column. You can also order the data by putting numbers (i.e. 1,2,3, etc.) in the Sort Order text boxes. To add additional tables in, you select the second table from the left pane and it will show on the upper right pane (see **Figure 33. Join**). To join the tables, click the area to the right of the column type in the first table to join

(**STUDENTS.SCHOOLID** in the example below). Then click the area to the right of the column type in the second table for the column you wish to join on. A line will now connect the two tables.

To exit the Query Builder without saving changes, click **Cancel**. To test your query, click **Run**. To save your query to the report, click **Return**.

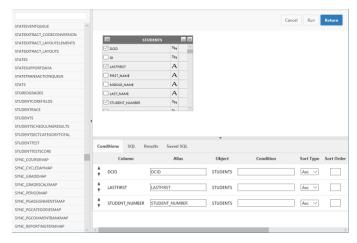


Figure 32. Columns

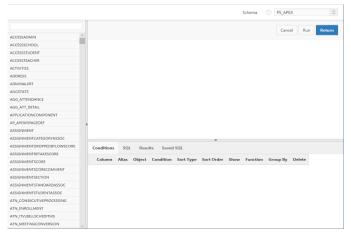


Figure 30. SQL Query Canvas

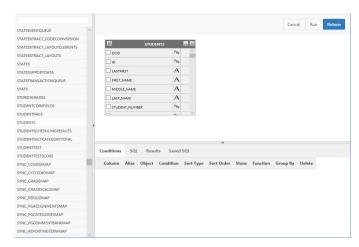


Figure 31. Graphical Query

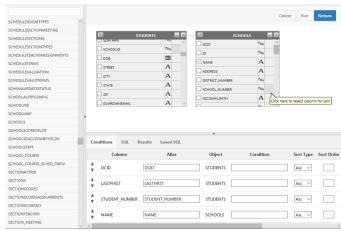


Figure 33. Join

Note:

The **PS_APEX** views are pointing to the **PS** tables and views. This is done to insulate the tables from unwanted data manipulation. You can safely think of the views as tables if it makes more sense to you.

Using SQL Workshop

SQL Workshop provides the ability to query the database and fine tune SQL Queries before you start to create a report. The APEX start page can be seen in **Figure 34. APEX Start Page**.

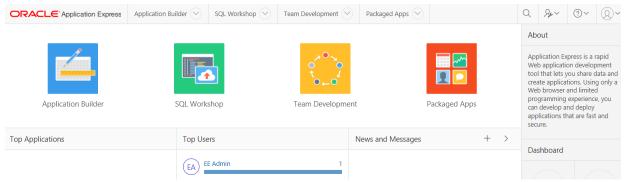


Figure 34. APEX Start Page

You access SQL Workshop by either clicking on the **SQL Workshop** tab or icon which will display the SQL Workshop home page. In the context of ER, only **Object Browser** and **SQL Commands** sections are relevant.

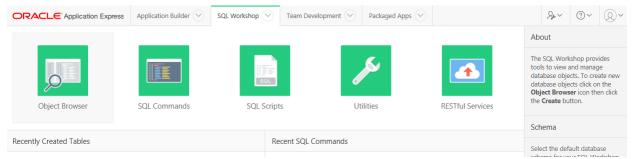


Figure 35. SQL Workshop

We will first go to the Object Browser (see **Figure 36. Object Browser**). This will give us the ability to look at the data without understanding or writing any SQL.

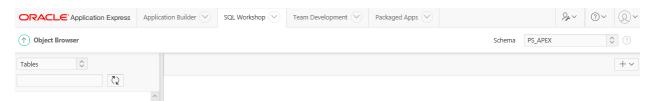


Figure 36: Object Browser

The problem with looking for the tables in the **Object Browser** in **PS_APEX** Schema is that you will not find them. The PS_APEX views are pointing to the **PS** tables and views. This is done to insulate the tables from unwanted data manipulation. You can safely think of the views as tables if it makes more sense to you, but you must Select **Views** instead of **Tables** in the select box. After you select **Views**, you will see a list like Figure 37. Object Browser **– Views** on the right. This list contains all the tables and views you have access to with ER. When you click on a table (i.e. STUDENTS - See Figure 38. Object **Browser - View** below. The structure of the object is shown. To see the data, click on the Data tab (see Figure 39. Object Browser - Data).



Figure 38. Object Browser - View

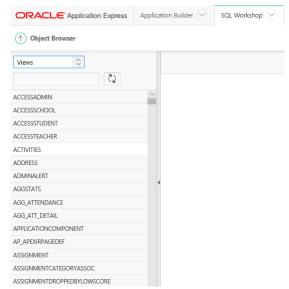


Figure 37. Object Browser - Views



Figure 39. Object Browser - Data

If you would rather test a SQL Query, you can use **SQL Commands** (see **Figure 40. SQL Commands**).

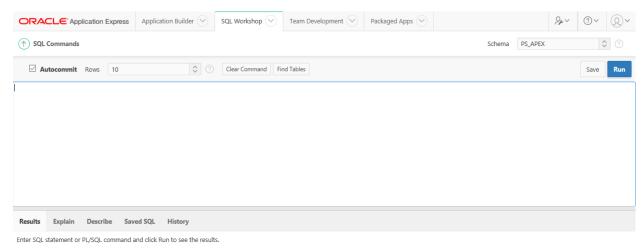


Figure 40. SQL Commands

We will review the different parts of the screen before going through an example. The first piece that is relevant to ER is the **Rows** dropdown box. This is the number of rows that will be returned by the query. You may notice it defaults to 10 which isn't very much. This is done to save work on the system when proving your queries run. You may have to increase the number of rows or download the data (will discuss in the example) to prove your query

is exactly what you want. The accesses APEX help. **Clear Command** will clear the top pane, so you can start over. **Find Tables** can be used to find tables without having to type in the table name. **Save** will save the query so you can use it later. To access a previously stored query, click **Saved SQL**. **Run** will execute the SQL in the command pane. After a query is ran, the data will appear in the **Results** pane. **Explain** is used to tune your SQL Query. Note this requires some in-depth SQL knowledge to use correctly. You can reference SQL queries you have ran before on the **History** tab.

In our example, we will put query "select first_name, grade_level, enroll_staus from students" in the command pane (see **Figure 41. SQL Commands Query**). Clicking Run will produce **Figure 42. SQL Commands – Results**.

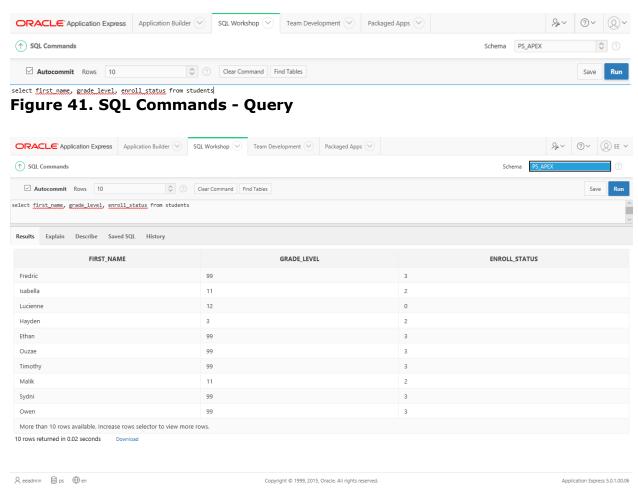


Figure 42. SQL Commands - Results

You will notice that the query only returns the number of rows from the **Rows** dropdown. To see more rows, you must increase the **Rows** dropdown or click on **Download**. This will give you the data with very little formatting.

Using Application Builder

Application Builder provides the ability to create Interactive Reports that become ER Reports. The APEX start page can be seen above in **Figure 34. APEX Start Page**. When you click on the **Application Builder** tab or icon, you will see the Application Builder home

page (see **Figure 43. Application Builder Home**). The only three options you will need from this page are the two applications (100 and 200).

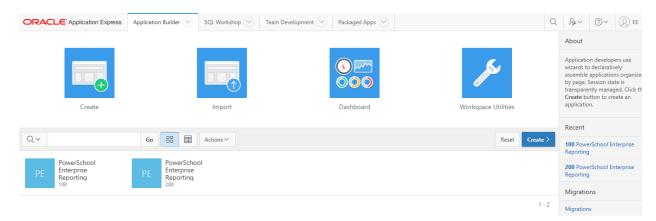


Figure 43. Application Builder Home

We will work through these in reverse order. The PowerSchool sample Reports our found in the 200 Application PowerSchool Enterprise Reporting. By clicking on **200** icon, you will be directed to Application 200 (see **Figure 44. Application 200**).

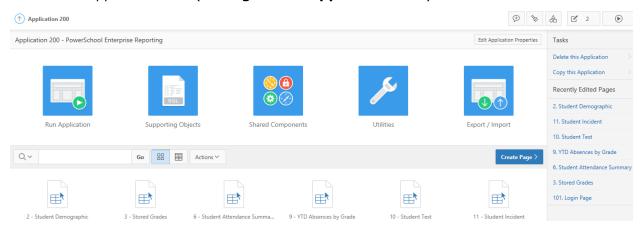


Figure 44. Application 200

Each sample report (along with login page) is listed with a page number in front. The page number matters only in the fact it must be unique with the application. For your sanity, it is a good idea to keep like page numbers/reports together preferably ten apart (i.e. 10, 20, 30, etc.) so you can add reports later in the same general proximity. By clicking on a page, you will open the Page Designer. **Figure 45. Student Demographic Page Designer** shows what appears when you click 2 – Student Demographic. The Page Designer is complex because it is the main development environment for APEX. For ER, we only use the Interactive Reports component which reduces the complexity. The inner vertical pane is not used for ER. The left pane we only need to focus on the section under **Content Body** that has the report, Report's **Columns** and **Attributes**. The report is discussed in **Creating New Report** and the latter two are discussed in **Configuring Report**. The right pane is context based on what you select in the left pane so those are discussed in **Creating New Report** and **Configuring Report** also.

Application 200 gives you a great place to view existing reports, but do not save here. By selecting the report under **Content Body**, you can look at **Source SQL Query** to see how the report was built (see **Figure 46. Student Demographic Report**).

PS QRD ER APEX

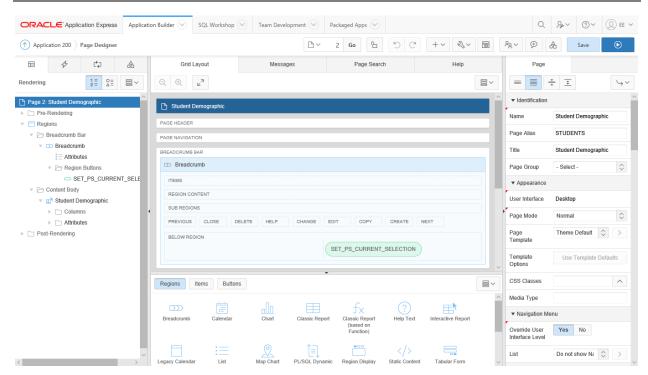


Figure 45. Student Demographic Page Designer

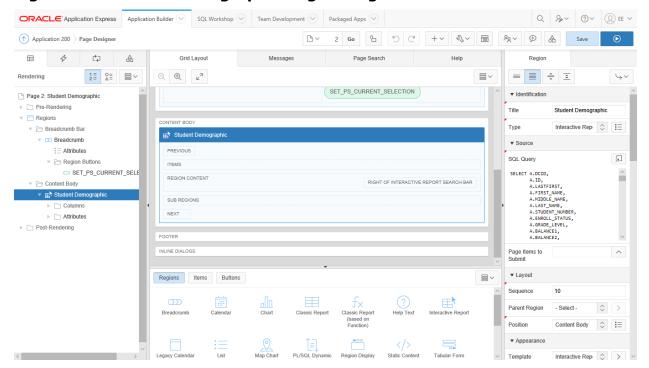


Figure 46. Student Demographic Report

To make you own ER Reports or see others that have been created, you go to Application **100**. You can follow the **Creating New Report** guide to build you own report. To back up your report, see Exporting ER Report.

The Import option allows you to install a report built in APEX (either from someone else or you as a backup). See **Importing ER Report** for more information.

Exporting ER Report

The two main reasons to export an ER Report are backing up the report and having it as an installable file to import later. PowerSchool does not back up the ER application or reports. It is a wise idea to export periodically (nightly, weekly, on-release, etc.) as your requirements dictate.

To export an ER Report:

- 1. Start at the Page Designer page for you report
- 2. Click to bring up the Utilities submenu (see **Figure 47. Utility Submenu**)
- 3. Click Export
- 4. Click Export Page
- 5. Click Save



Figure 47. Utility Submenu

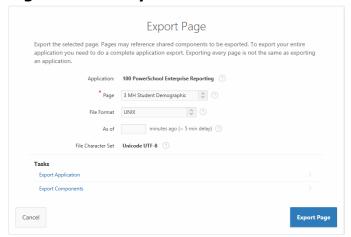


Figure 48. Export Dialog

Note:

It is a great idea to save file name in a way to reduce confusion (i.e. add date and put in report name). By default, the file will be f100_pagen.sql where n is the page number of the report.

Importing ER Report

Whenever you want to install a page from backup or someone else, you would import the report from a file.

Warning: You can only import a page to the page number it was exported as. Therefore, if you export a file and reimport that file it will overwrite the existing page. To keep both pages, you will have to copy the page within APEX to a new page (using **Page as Copy** seen in **Creating New Report**).

To import an ER Report:

- 1. Start at Application Builder Home Page
- 2. Click Application Builder
- 3. Click application 100
- 4. Click Export / Import (see Figure 49. Export Import Dialog)
- 5. Click Import (see Figure 50. Import)
- 6. Click Browse... (see Figure 51. Browse)
- 7. Select export file, then click **Open** (see **Figure 52. File Import Confirmation**)
- 8. Click Next > (see Figure 53. Install Page)
- 9. Click Next > (see Figure 54. Confirm File Replace)
- 10. Click Install Page (see Figure 55. Page Installed)
- 11. If you are replacing your page from a backup, then click **Replace Page**. Otherwise, click **Cancel** because you will overwrite your page.
- 12. You can do any of the three options depending upon what your need is.

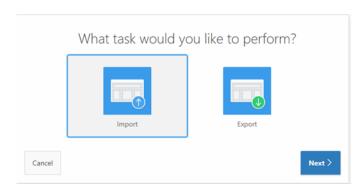


Figure 49: Export Import Dialog

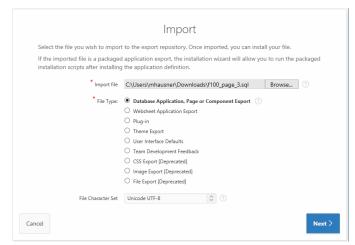


Figure 50. Import

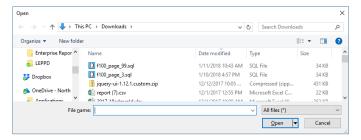
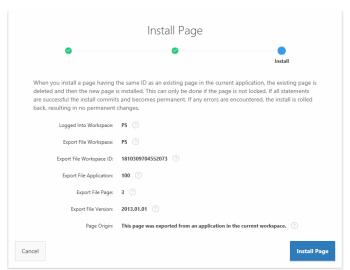


Figure 51. Browse



Figure 52. File Import Confirmation

PS QRD ER APEX



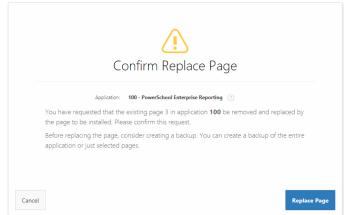


Figure 54. Confirm Replace Page

Figure 53. Install Page

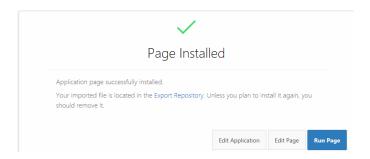


Figure 55. Page Installed

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