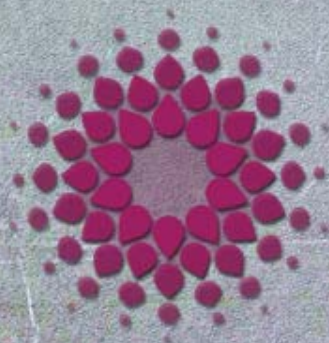# Improving the User-friendliness of AAT through a Staged Evaluation

aat | Academic Analytics Tool

Academic Analytics Tool-AAT

The Academic Analytics Tool (AAT) allows educators without technical expertise to extract and analyse data from learning management systems to foster responsive analysis and improvement of online courses

why aat?

Online education is growing at a tremendous pace

Educators need timely, ongoing access to information about how students interact with online courses and learning materials

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why aat?

Learning Management Systems (LMSs) store large volumes of data about how students interact with online resources

Educators need tools to extract LMS data to analyze student behavior and the suitability of teaching strategies and course designs

why aat?

Current tools to access LMS data require high technical skill, or are too limited in scope

Learning analysts call for data extraction tools specifically designed for educators and learning designers

aat is usable

Our tool builds complex queries using a

wizard interface

anyone can use

aat is unlimited

AAT BUILDS QUERIES
WITHOUT LIMITS
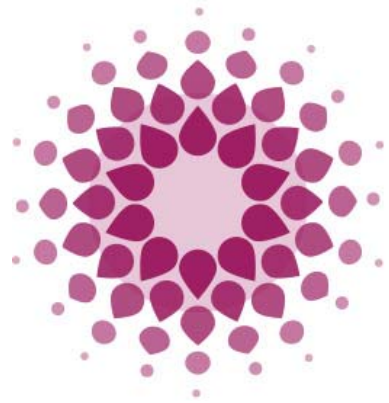
ALL DATA IN THE LMS IS
ACCESSIBLE

aat design

*AAT uses a **customized ontology** to express database entities in terms meaningful to users without technical backgrounds*

analysis

dataset

PROJECT

CONCEPTS

aat|ontology

pattern *clone* lms

CHAIN attributes

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aat is unbound

AAT aims to work with any LMS or database:

TEMPLATES

make it portable

aat design

AAT *templates* direct *the tool* to the correct database tables and columns for any LMS

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improving usability

The latest stage of AAT development aims to improve the **user-friendliness** of the tool

improving aat

A staged qualitative evaluation on the first version of the tool focussed on AAT's user-friendliness.

improving aat

Evaluation was in two phases:
- a demo explained AAT's aim and functions
- hands-on exercises ranged from simple to complex and a solution manual helped users assess their success

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improving aat

researchers collected

After each phase

and analysed

user feedback

15

improving aat
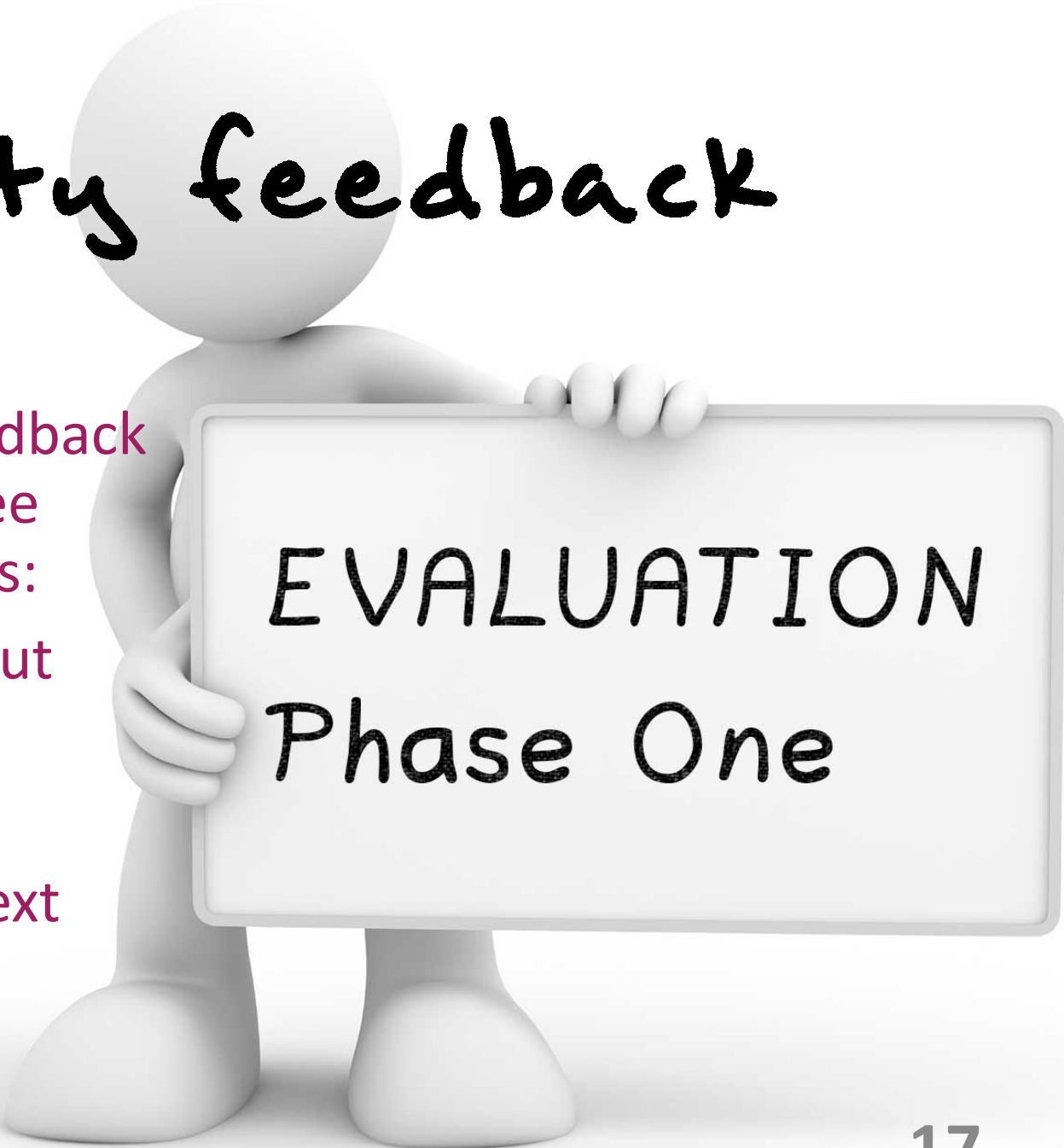
the next AAT revision
incorporated
FEEDBACK and
IDEAS
from users

usability feedback

STAGE ONE feedback focused on three interface factors:

- interface layout
- Concept presentation
- lack of help text

EVALUATION
Phase One

usability feedback

FEEDBACK

Users commented on general user interface aspects, noting that button positioning was unintuitive, as was the sequence of columns in the result pane.

They also suggested SQL queries should be hidden by default.

RESPONSE

AAT's user interface has been significantly improved to ensure a consistent design on all pages. SQL view can be toggled on and off.

EVALUATION
Phase One

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usability feedback

FEEDBACK

Users felt the presentation of Concepts in the Pattern creation process was confusing, and offered four recommendations for improvement.

RESPONSE

The presentation of concepts has been revised based on the feedback.

EVALUATION
Phase One

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usability feedback

FEEDBACK

Users asked for contextual help to make AAT's functions easier to understand.

They also suggested tweaking AAT's ontology to use more intuitive terms.

RESPONSE

We added help text to a side panel on every page, and tool tips to many buttons and selectors.

We renamed some steps so they are easier to understand (e.g., "profile" is now "project")

EVALUATION
Phase One
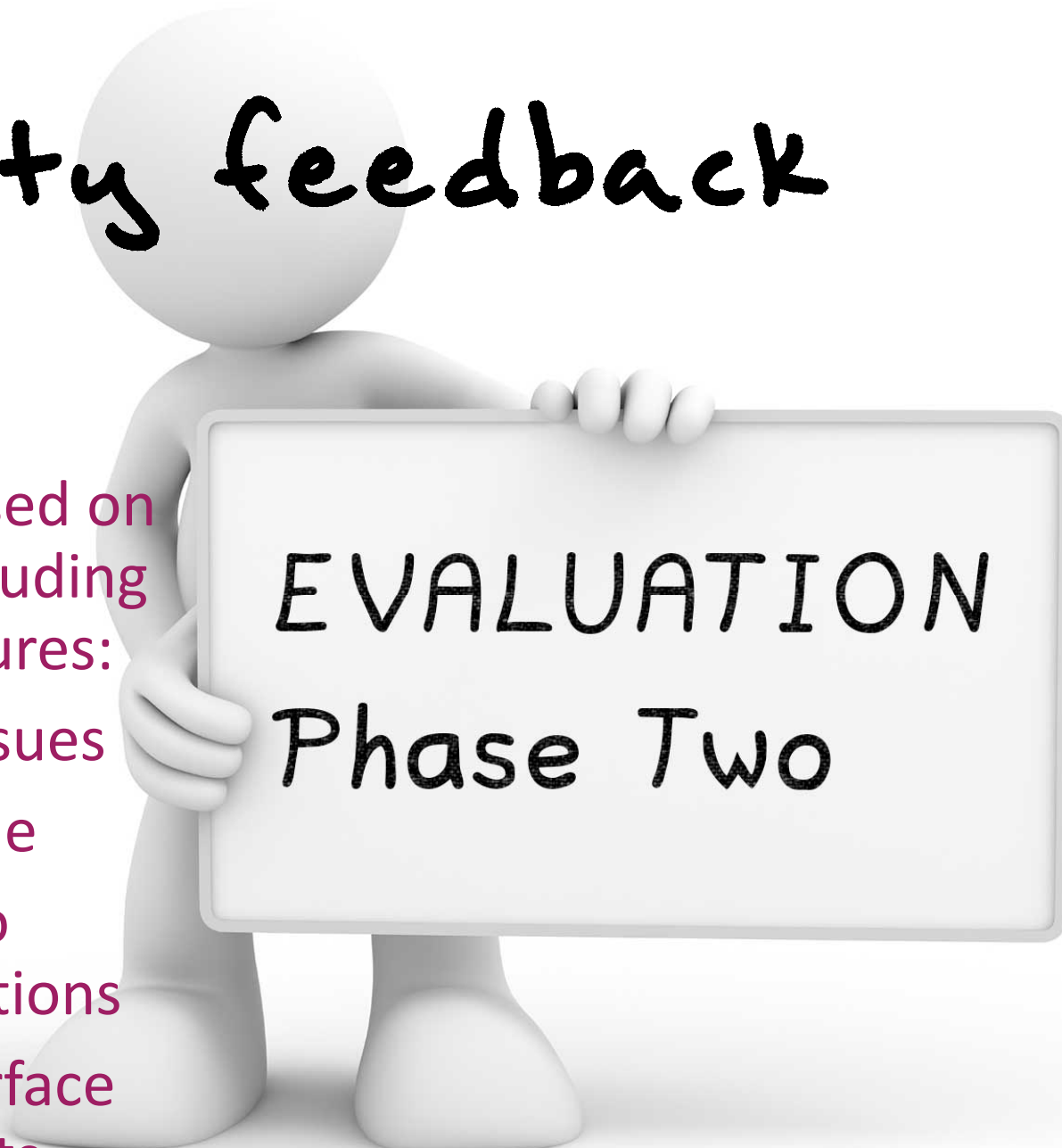
usability feedback

STAGE TWO
feedback focused on four topics including advanced features:

- navigation issues
- the user guide
- extensions to existing functions
- DataSet interface improvements

EVALUATION
Phase Two

usability feedback

FEEDBACK

After our first usability update users felt pages were looking too similar and were easily confused and they critiqued the user guide and made suggestions for improvement.

RESPONSE

We have simplified some of the steps and numbered all of the pages to make it more clear where users are in the process. The User Guide has been completely updated and sample exercises are available for training sessions

EVALUATION
Phase Two
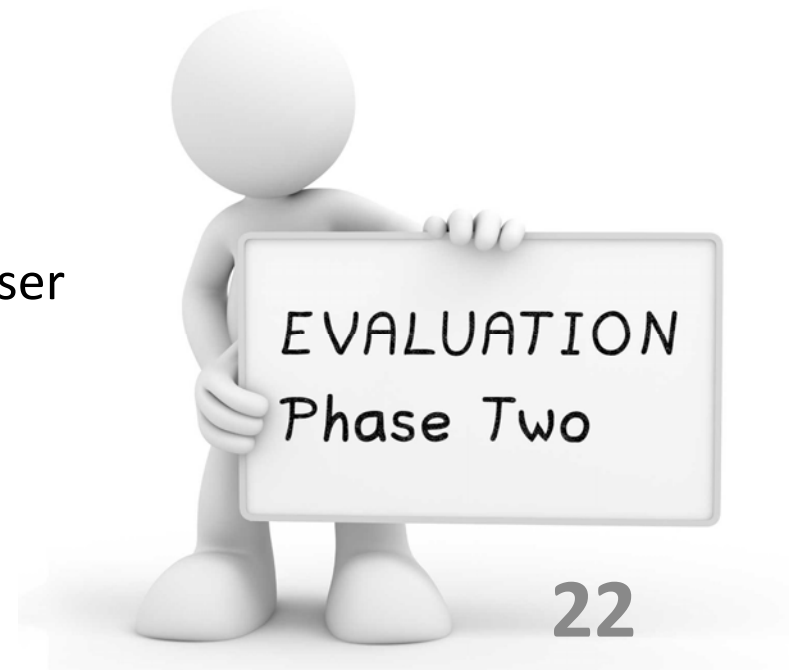
usability feedback

FEEDBACK

Users made six suggestions for extensions to AAT's functionality including providing visualizations of the results, and default patterns for new users to start with.

RESPONSE

AAT is nearly readiness for a full launch; new functions will be developed as we move into the next stage of revisions.

EVALUATION
Phase Two

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usability feedback

FEEDBACK

Users made five suggestions for improvement of the DataSet interface to make selection easier with very long lists of courses.

RESPONSE

We modified the interface to sort all courses alphabetically, rather than grouping by database, and added functionality to batch-select courses.
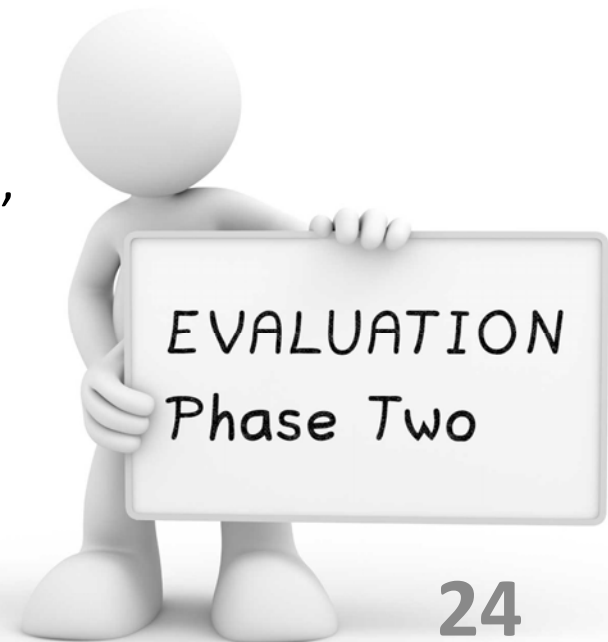
EVALUATION
Phase Two

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AAT screenshot previews

Project manager

The Project Manager provides access to saved Projects and is the starting point for all AAT explorations.

Project creation

A new Project begins with a name and a description.

LMS selection

A single LMS must be chosen for each project. If a given institution has more than one LMS in use, they can all be linked through AAT.

DataSet creation

Next, a DataSet (list of courses) is built from among those available in the chosen LMS. Batch-selection options make it quick to choose a range of courses from the same subject area.

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Pattern builder (a)

Help

Here, you can choose the concepts that will make up the base of your pattern. Concepts are all of the individual tables, or types of information, collected in the LMS system.

Later steps in the pattern creation process will allow you to perform additional processing on the Concepts, including math functions, filters, and comparisons.

Back to Patterns list
Back to wizard Home

Pattern Step A: Choosing Concepts

What concepts are you interested in?
.... ☐ Centre Administrator
.... ☐ Helpdesk
.... ☐ Learning Service Tutorial
.... ☐ Library
.... ☐ Non-editing Tutor
☑ Course
☐ Resource
.... ☐ Wiki
.... ☐ Book
.... ☐ Book Chapter
☑ Quiz
.... ☐ Question

Patterns define the tables (Concepts) and columns (Attributes) for each investigation. Concepts are given names meaningful to educators.

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Pattern builder (b)

This page lists all of the Attributes for your chosen Concepts. They are grouped by Concept. If you find the wording of an Attribute to be unclear, hover your mouse over the help icon to the left and if there is an alternate description, it will pop up.

Attributes are the most specific type of data that you can select for your pattern, though as you progress through the wizard you will have opportunities to further refine your data output by applying Limits or performing Analyses.

Back to Patterns list

Back to choose Concepts

Pattern Step B: Choosing Attributes

What Concept Attributes are you interested in?

- ❓ ☐ user first access
- ❓ ☑ user id
- ❓ ☐ user id
- ❓ ☐ user last access
- ❓ ☐ user last login
- ❓ ☐ user msn
- ❓ ☐ user phone1
- ❓ ☐ user phone2
- ❓ ☐ user skype
- ❓ ☐ user timezone
- ❓ ☐ user yahoo
- ❓ ☐ username

Continue to set Limits

Sample Results

user_id	course_name
224	Psychology 345: The Psychology of Women (Rev. C3)
224	Psychology 345: The Psychology of Women (Rev. C3)
224	Psychology 345: The Psychology of Women (Rev. C3)
224	Psychology 345: The Psychology of Women (Rev. C3)

Attributes include a wide range of information stored in table cells. To help users understand the information they are selecting, a sample results window displays a few examples of each selected column.

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Pattern builder (c)

As a final step, a Pattern can be given Limits – functions that filter data for more precise results.

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Pattern manager

After completing a Pattern, users return to the Pattern Manager where they can access additional functions (e.g., analytical functions) or select a Pattern to view details and results.

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Project details

now Pattern or run additional functions (such as Chaining or an Analysis), or you can return to the Project list to select or create an entirely new Project.

Selecting Run Project will generate your final output and provide you with links to export or view the results in HTML, XML, or CSV format.

Info about Profile "PSYC quiz compliance"

Here is a summary of the information included in the profile you just created: **PSYC quiz compliance**. You can go back to the Project Manager (home page) to see all of your Projects, or you can run the active pattern for that Project right away.

Profile Info
- Data Source Name   PSYC quiz compliance
- Data Source Description   Testing how many PSYC students are taking optional quizzes

LMS Info
- Active LMS   Moodle 2.2

DataSet(s) Info

- **Data Set No. 1**
  - Data Set Name   All PSYC
  - Description   All PSYC
  - Data Set Courses   PSYC 210
                         PSYC 290
                         305, PSY
                         315 (A3),
                         333, PSY
                         (C5), PSY
                         (C4), PSY
                         (C7), PSY
                         PSYC 393
                         401 (C3),
                         (C4), PSY
                         PSYC 450
                         PSYC 460
                         (Rev. C7)
                         476 (Rev
                         (C5), PSY
                         (Rev. C4)

Full details of each Project are available for viewing to remind users of their selections and for the convenience of other users accessing public Patterns.

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Project manager

Pattern SQL Statement(s):

```
Array
(
    [119] => SELECT mdl_user.id AS user_id, mdl_course.fullname AS course_name, mdl_quiz.attempts AS
quiz_attempts, mdl_quiz.id AS quiz_id, mdl_course.id AS course_id FROM mdl_
distinct userid, roleid, contextid from mdl_role_assignments) as mdl_role_a
WHERE  mdl_role_assignments.roleid in (13,14,2,15,17,5,27,9,23,24,3,4,7,10,
mdl_role_assignments.userid = mdl_user.id AND mdl_role_assignments.roleid =
mdl_role_assignments.contextid = mdl_context.id AND  mdl_course.id = mdl_co
mdl_quiz.course = mdl_course.id AND mdl_course.id IN (85, 25, 59, 129, 2, 8
55, 79, 125, 6, 72, 99, 26, 49, 126, 133, 75, 56, 5, 37, 33, 94, 89, 30, 58
77, 86, 38, 44, 40, 102, 51, 104, 69, 21, 61, 8, 10, 66, 127, 54, 78, 65,
62, 70, 71, 100) AND ( mdl_quiz.attempts > 1)

    [118] => SELECT mdl_user.id AS user_id, mdl_course.fullname AS course_n
quiz_attempts, mdl_quiz.id AS quiz_id, mdl_course.id AS course_id FROM mdl
distinct userid, roleid, contextid from mdl_role_assignments) as mdl_role_a
WHERE  mdl_role_assignments.roleid in (13,14,2,15,17,5,27,9,23,24,3,4,7,10,
mdl_role_assignments.userid = mdl_user.id AND mdl_role_assignments.roleid =
mdl_role_assignments.contextid = mdl_context.id AND  mdl_course.id = mdl_co
mdl_quiz.course = mdl_course.id AND mdl_course.id IN (3, 93, 142, 4) AND (

)
```

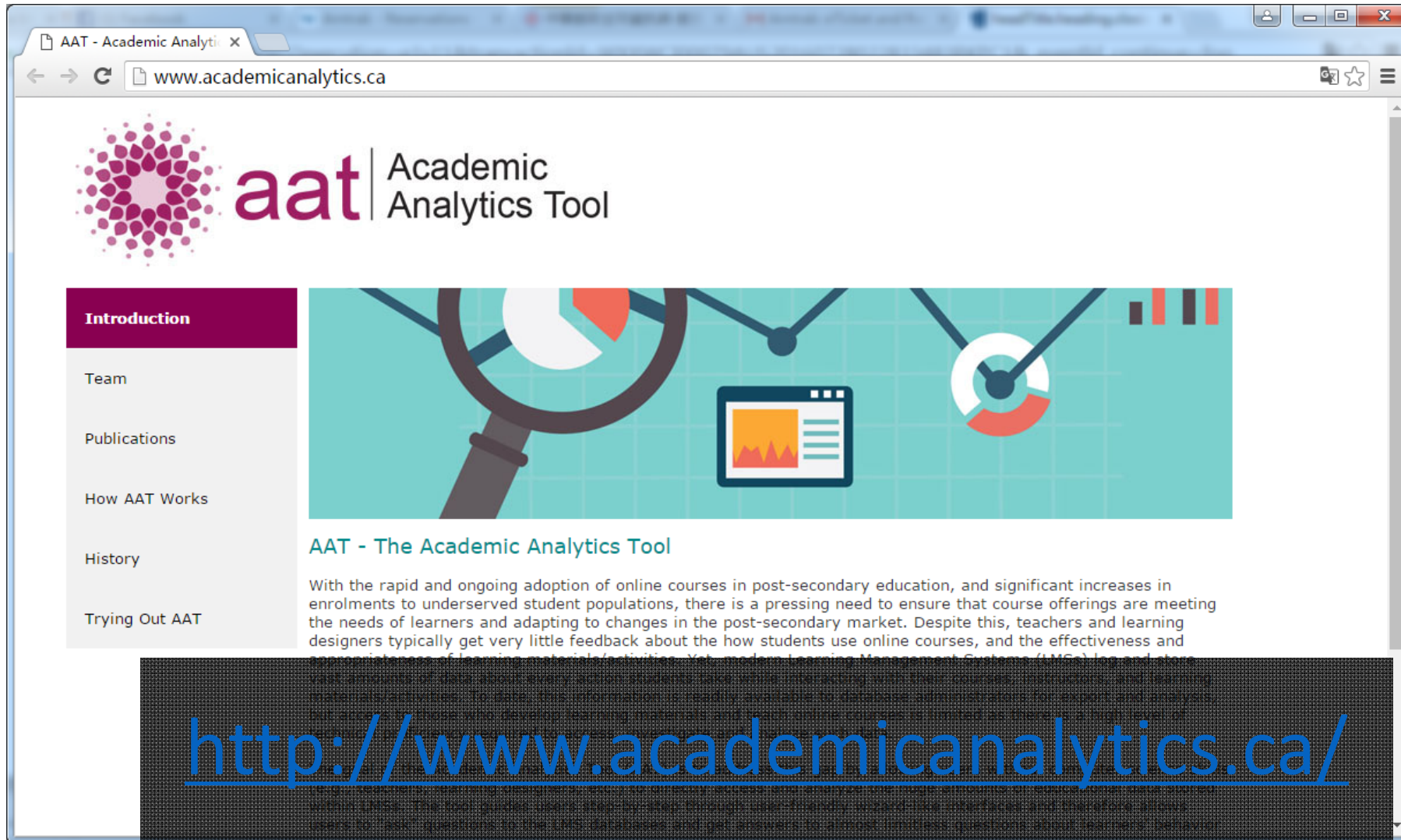Full Results for Pattern2 "PSYC quiz compliance".

Show [10 ▼] entries

user_id ▲	course_name	quiz_attempts
3	Psychology 290: General Psychology (C6)	2
3	Psychology 290: General Psychology (C6)	2
3	Psychology 290: General Psychology (C6)	2

The results of a Project can be output to HTML, XML or PDF table format, or they can be viewed in a live table on screen with options for simple filtering and sorting. The output screen also shows the SQL statement.
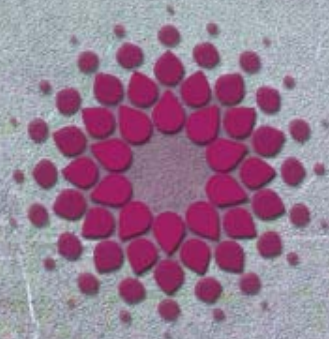
More information of AAT

http://www.academicanalytics.ca/

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-- END --

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