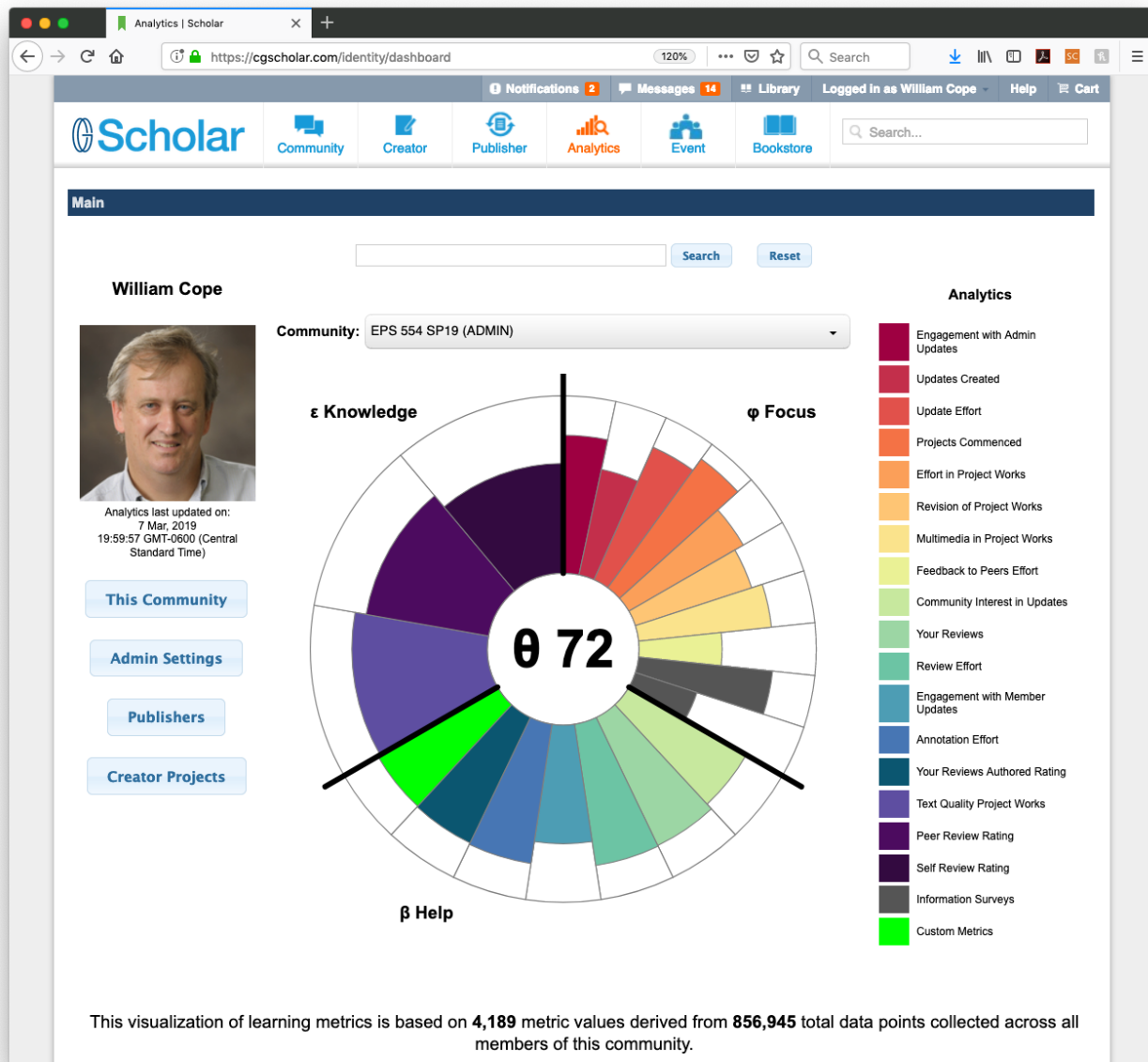


# Tutorial 4.1: Introducing Analytics



## 4.1.1 The Idea of Learning Analytics or Knowledge Community Analytics

In CGScholar, the Analytics app is visualization tool that tracks progress in knowledge and learning communities, for the whole community, as well as for individual members of the community. It is built using cutting edge “big data” and “artificial intelligence” technologies. Every member can see their own progress towards objectives that have been set by admins.

In the context of students learning in a unit of work or a course, the intended outcomes of the Analytics app are:

1. To increase learner responsibility for learning progress and growth of self-efficacy by making learning expectations explicit, along with an always-available data visualization of progress towards meeting these expectations.

2. To support a range of types of continuous formative assessment: item-based assessment; rubric-based reviews (peers, self, teacher); online discussion contributions etc.
3. To support adaptive and personalized instruction, by offering the possibility of re-taking quizzes, revising work, extending contributions to online discussions etc., until the teacher or curriculum designer's objectives are met.
4. To improve on-time meeting of learning objectives with clear time objectives and "focus" credits which indicate the degree of effort so far expended by the student, compared to the degree of effort expected.
5. To encourage via "help" credits, collaborative or peer learning.
6. To support teachers by providing them clear visualizations of student activity, per student, as well as class progress towards meeting intended learning outcomes. It is possible to "drill down" into all the constituent datapoints. Because the basis of the analysis is a very large number of datapoints for every student, at any moment in time during a unit of work, teachers is able to see a detailed progress record for every learner, based on data that was in previously, in a practical sense, largely invisible.
7. To support differentiated instruction, whereby learners can work at their own pace towards curriculum goals.
8. To provide an extensive supporting evidence for summative assessments made by the teacher. This reduces the grading burden for teachers, supporting their judgments with comprehensive learning progress data.

#### **4.1.2 Getting Started in Analytics**

A scholar does not see the Analytics tab in CGScholar until they become a member of a community where the admin has selected that option.

Before a course or unit of work commences, the teacher will have specified:

1. The timeframe for the task.
2. Task expectations.
3. The relative weighting of each task.

The main visualization in Analytics is an "aster plot." An aster is a flower that has flat petals radiating outwards. Each petal of the aster plot displays progress of one metric associated with an individual's activity or ratings received within CGScholar. For example, this may include the number of updates you have posted to the community, or the average word count of your works assigned in Creator.

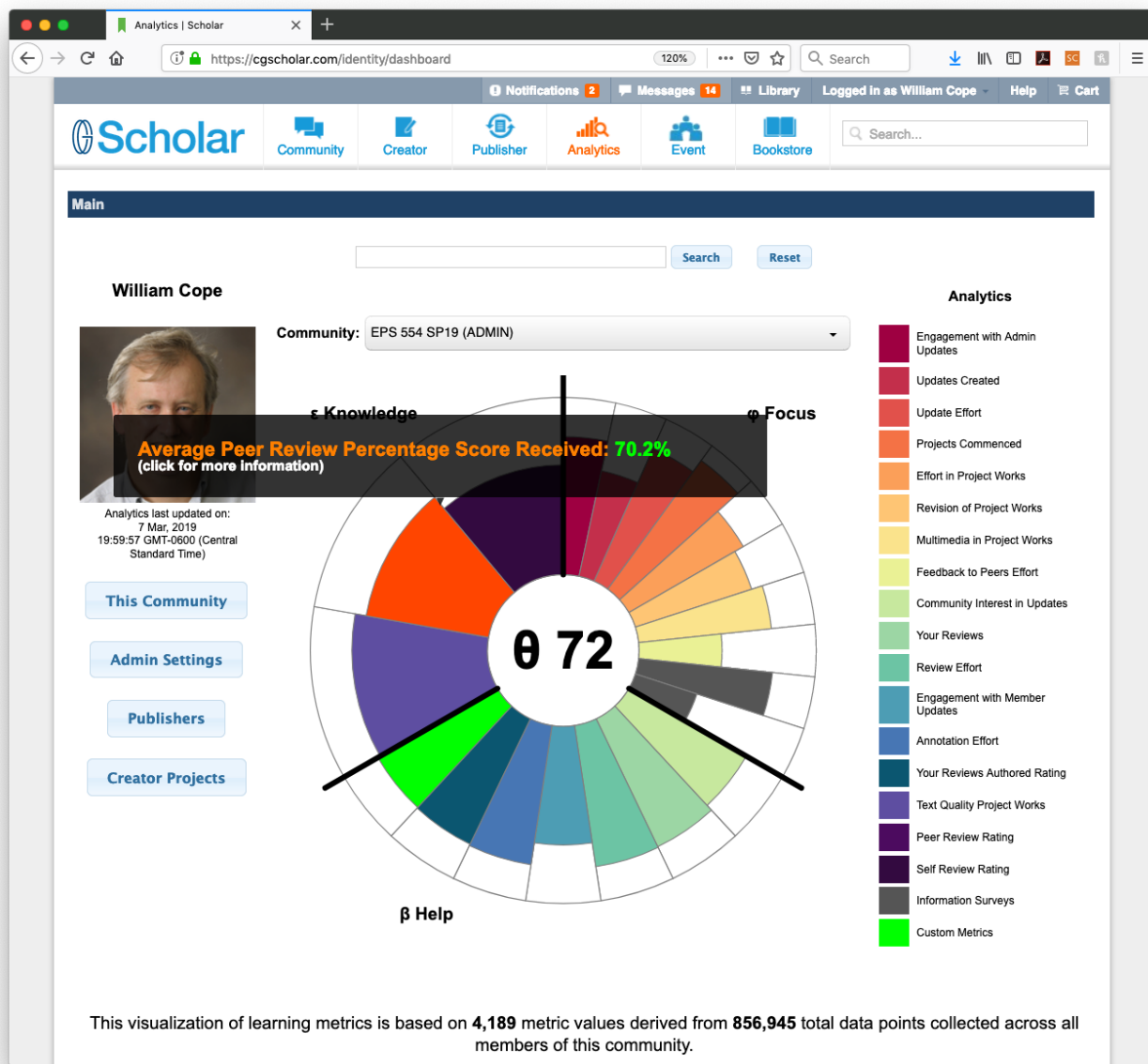
- The admin chooses which metrics to include in the plot, their weight towards the overall score, and the target values. The target value is the metric value that represents a 100% score.
- The metric score is capped at 100%. For example, if the target value for average words per work assigned is 1,000 then a value of 900 average words per work would yield a score of 90%, and a value of 1,300 would yield a score of 100% (scores are capped at

100%).

During the unit of work, admins (e.g. teachers) and members (e.g. students) is able to access ever member's progress visualization, including the capacity to dig deep into areas requiring additional attention by an individual participant. This makes visible deficiencies which might otherwise pass unnoticed.

Data for the Analytics app has been pre-processed, which means that it often a few hours old. Check the time your analytics data was last processed beneath your name and photograph.

### 4.1.3 Interpreting the Aster Plot



- The width of the petal is the weighting given by the teacher to this aspect of the work. The length of the petal is the amount of achievement of the learner to this point.

- $\theta$  is progress towards instructional objectives. 100 learning credits represents achievement of those objectives. We use the positive concept of earning “credits,” to get away from the frequently negative and judgmental notion of a “mark” or a “score.” All members can increase their learning credits and meet learning objectives by doing more work, for instance revising their projects, adding more comments to the class discussions or re-taking knowledge surveys.
- Each petal in the aster plot is active, so clicking on it brings up more detailed information about the data used to generate the conclusion about learning represented by each petal.
- The visualization is divided into three major segments, each labelled by an imperative verb and a symbol representing that variable: “ $\varphi$  Focus” or perseverance measures variables such as time on task and amount of work produced. “ $\epsilon$  Knowledge” measures knowledge via data elements such as quizzes or knowledge surveys and peer review ratings against rubrics. “ $\beta$  Help” measures community contributions and collaborations, such as the extent and quality of comments on others’ posts and peer reviews.