Clarification Q&A for COSC 499 Project 1

Hello Dr. Lawrence,

I have some questions about the design for the CMPS Department Management System (the answers to which I can share with the other teams to hopefully save you some time) which are pretty long-winded but are important to have cleared up.

**Question 1: Format of SEI survey data**

What is the format of the SEI data to be imported? I've heard that an SEI survey is 6 questions on a 5-point scale, but will an SEI survey be imported as an aggregated (e.g. average) result for an instructor and course, or will each student's SEI survey for a course + instructor be imported individually ? In other words, for some professor Prof. McGoo's DATA 311 course in 2023W Term 1, will there be 50 SEI entries or just 1 averaged SEI entry?

I have attached some sample SEI data. There are 6 questions on a 5-point scale. The data is averaged across all students.

**Question 2: Accommodating future performance metrics**

I suppose this is more of a technical question, but luckily our client (you) is something of a database expert. I'm trying to design the database to easily accommodate new performance metrics in the future with minimal effort by the system administrator, and as such the future metrics will have to conform to a certain format(s). I'm thinking that the allowed formats could be both a "survey" format, which is a variable number of questions with numeric answers (just like the SEI data), and a "numeric performance metric" format, which is simply a number—for example a metric named "Rating" which is just a percentage. Normally, it would be preferable to store SEI data in a dedicated "SEI" table in the database, but if the system should be able to accommodate future surveys/metrics, it would probably be better to have a generic "survey" table with a "survey\_type" field than to have a hardcoded SEI table. Do you agree with this?

Also, SEI surveys are (to my knowledge) done in time intervals of 1 academic term, which may be different from future survey metrics, which for example could be done monthly or daily. In this case, generic "survey" table entries should be characterized by a "date" attribute rather than "year", "session" and "term" attributes (or just "course\_id"). Can the format of SEI survey data be accommodated by this? I suppose what matters here is whether SEI results for a course + instructor are 50 individual results from all the students (which will have the same date), or just 1 aggregated result, and if they are the former, must this per-student resolution be maintained or would it be okay to aggregate SEI surveys results for a course + instructor before storing them?

Modeling generic performance metrics is hard. Even modeling the SEI data depends on what exactly is being stored. All data is aggregated across all students in the course – there is no individual per student data.

The simplest model would be to have a metric table like this:

Metric (metricId, metricName, description)

And a MetricCourse table associating a value of a given metric with a given course:

MetricCourse(metricId, courseId, value)

Storing data from SEI could be:

Metric:

1, Question 1 – IM, SEI data question #1 – Interpolated Median

2, Question 2 – IM, SEI data question #2 – Interpolated Median

…

10, Question 1 – Percent Favorable, SEI data question #1 – Percent Favorable

MetricCourse

1, 1, 4.9

2, 1, 4.8

…

10, 1, 0.99

This design allows for storing any number of single value metrics per course. It works okay with SEI data, but note we have lost some info such as the distribution of Strong Agree, etc. unless we also model those as metrics.

Associating metrics with particular courses should be fine for now rather than arbitrary dates.

**Question 3: Expected monthly hours for a service role**

So, there are a known number of expected hours for a given service role and month. I've been unsure as to whether this information is used for benchmarking whether an instructor is meeting their quota, or if it is instead used for the actual logging of instructor hours (either as a starting point or kept as-is). I had been thinking that it is the former, but in a response to another student's email, you said:

*There are hours associated per month for each service role. Example: 2023 Undergrad Advisor – Jan = 10 hours, Feb = 20 hours, etc. The hours per month will vary based on the role and the year.*

*If Jane Smith is undergrad advisor, she receives credit for the hours in that month that she was in the role.*

Does this mean that she is credited for these hours that she is expected to have worked, or the hours in that month that she truly worked (as logged somewhere and imported to the system by a department staff member)? Are "actual" working hours ever actually recorded, and is the system meant for keeping track of this and comparing it to expected hours as a benchmark, or is the system simply meant to keep track of the expected number of hours distributed among instructors? Also, is hours-tracking for both service roles and teaching assignments or just service roles?

The system is not tracking actual hours worked. The expected hours are what the instructor gets credit for the service role. The benchmarking is respect to an expected number of service hours per month. You can determine if an instructor is meeting a benchmarking by calculating the expected number of hours they are performing based on their currently assigned roles.

**Question 3.1 (last one): Benchmark hours**

In the same email quoted above, you also said:

*The benchmarks are by individual instructor. For example:*

*Prof. Jane Smith – 120 hours (for the year)*

*Prof. Jim Smith – 150 hours (for the year)*

*We will not track monthly benchmarks. We will just divide the annual total by 12.*

Where do the benchmarks come from? Are expected hours not the benchmark? It sounds like your response was that benchmarks are per-instructor—i.e. not per service role per instructor, but a total number of hours for an instructor across all of their service roles (and/or teaching assignments). Is this correct?

Benchmark hours is set per instructor but typically will be the same for most. For example, the benchmark hours may be 30 hours per month of service.

The expected hours for each service role is set by the Department Head in consultation with the instructor in that role. The instructor gets credit for the hours regardless of how many hours are actually spent and no time is tracked. For example, if Jane Smith is Undergrad Advisor and in January the expected hours for that role is 20, then they are automatically credited with 20 hours for January. If the benchmark hours for Jane is 30 hours, then hopefully they have one or more other service roles that gets them up to that level.