

# **Lumina Foundation for Education Grantee Interim Narrative Report**

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## **PROGRESS ON GOALS, ACTIVITIES AND TIMELINES**

### **SHORT-TERM OBJECTIVES**

1. Tune the proposed disciplines and develop sets of learning outcomes and competencies at the associate's, bachelor's, and master's levels (or at the GE completion level for GE mathematics).
  - a. Utah Physics Tuning Team. The Physics Team set up subcommittees to consider how to adapt the BS degree Learning Outcomes (LOs) to other degrees, namely the MS degree, AS degree or Two-Year level for transfer, and the Physics Teaching degree. These subcommittees worked primarily by email and produced draft documents that were considered in the full team meetings. The Physics Team also emailed about Talking Points for presentations about Tuning to their departments. While this was of great interest to the team, most of the input came from the chair with a draft PowerPoint document. Assessment was also discussed, especially the differences in assessment needs between two-year programs and BS degree programs. Another discussion concerned simplifying the BS degree LOs. This was also of great interest to the group, although only a few members offered proposals and a few more reacted to these proposals. While the discussion, therefore, did not fully engage some members of the team, all members appeared to accept the resulting ideas.
  - b. Utah History Tuning Team. The History Team had revised the language of the learning outcomes to better reflect active verbs. They decided to postpone any revisions until the American Historical Association (AHA) had made decisions about their overall outcomes. The team expanded the use of rubrics in additional history classes to provide students with a more transparent set of expectations for course exercises and to provide another reminder of the learning outcomes. The team discussed a restructuring of history capstone classes on some campuses, considering whether teaching majors (entering a world of competency expectations defined by the new Utah Core) also need a research capstone experience in addition to or in place of a pedagogical capstone course. The Utah State University History Department continues to fine-tune its pre-major program for history students. Because of the team discussions about this, other universities are considering the addition of a pre-major. Learning outcomes are being added to advising sheets, so students have access to expectations when they begin the programs. The inclusion of professors who are involved with training students to become history teachers has presented some difficulties, because the team members are often in the school of education and are the single faculty members involved in social studies education. However, they have worked to realign the student program with the history department and with the common core standards.

- c. Utah General Education Mathematics Team. The Math Team has developed six learning outcomes. At the institutional level, schools are moving at different speeds in their implementation of the Tuning process and learning outcomes. Some schools are more open to tweaking what they are currently doing to incorporate Tuning. Others are slower as some faculty are skeptical that this may be another fad, but they seem to have made some forward progress. In addition to the learning outcomes, the team has provided examples of how each learning outcome can be addressed in each of the general education courses. The team needs to continue to increase communication and sell the outcomes and assessments to colleagues.
  - d. Utah Elementary Education Tuning Team. The major objective of the elementary education team was to align standards already in place from the Utah State Office of Education (USOE). The Utah Effective Teaching Standards, which are intended for teachers already in the field, were used as a template for the Pre-Service Teacher Learning Outcomes, which are intended for students obtaining a bachelor's degree in elementary education. The learning outcomes provide students with the clarity and direction that they need in order to make successful collegiate and career choices. Tuning universalizes learning outcomes and encourages faculty to be united in their instruction. The work has enabled the participating institutions to discuss how their programs work and align with standards already put in place by the USOE.
  - e. The learning outcomes for each of the four disciplines are found in Appendix A. Agendas and minutes of team meetings are found in Appendix B.
2. Reach consensus among all participating institutions that these are appropriate outcomes.

All four teams reached consensus on the outcomes for their disciplines. The teams worked well together and members supported the suggestions of others. The Math Team had some discussion over the use of technology as some departments do not allow calculators for some courses. However, all agreed that at least some technology was appropriate. Consensus among the discipline departments in the participating institutions still varies. History and physics have made progress with individual departments on reaching consensus on the outcomes and competencies. GE math is difficult because most professors in the Math Departments do not teach GE math, so a way must be found to implement Tuning with adjunct professors and graduate students. In addition, some institutions have many students taking developmental math, while other schools have very few students taking GE math. The Elementary Education team has just completed work on the outcomes, and members feel that they can implement this in their departments with the support of their administrations. This work will continue in the coming year.

3. Incorporate Tuning reference points and discussion of curriculum, pedagogy, and assessment and the DQP in our statewide Faculty Discipline Majors' Meetings.

Although most disciplines held their Majors' Meeting by video conference, the Majors' Meetings for the four Tuning disciplines were held at the Board of Regents Building. The physics meeting was in the morning and the history meeting in the afternoon, and the two groups met together for lunch. The GE math meeting and the elementary education meeting followed the same pattern. Meeting together for lunch allowed for a sharing of ideas that was very helpful. These meetings combined the members of the Tuning teams with other faculty and advisors within the discipline, allowing for sharing the Tuning progress with other department members. In the future, the Tuning disciplines will meet in person in the regular fall Majors' meetings and will have a second Majors' meeting in the spring. Minutes from the meetings are found in Appendix B.

4. Share findings with professional and accrediting organizations.
  - a. Teddi Safman was a panelist discussing Tuning at the State Higher Education Executive Officers Association (SHEEO) meeting in Chicago on August 9, 2012. She was the keynote speaker discussing Tuning and other projects at the Western Interstate Commission for Higher Education (WICHE) Commissioners meeting held in Salt Lake City on November 12, 2012, and she also presented a paper on convergence that explains how multiple projects come together. She participated with Norm Jones and Dan McInerney on a Tuning panel at the Association of American Colleges and Universities (AAC&U) annual conference in Atlanta on January 24, 2013. Teddi will participate on two panels during the MHEC Tuning Symposium in Indianapolis on June 7 and 8, 2013. She reports on Tuning progress monthly to The Utah Council of Education Deans, semi-annually to the Statewide Articulation Committee, and every two months to the Utah System Chief Academic Officers. In addition, because of her knowledge of Tuning, she was invited to serve on the Multistate Collaborative to Advance Learning Outcomes Assessment. Teddi recently wrote a paper on the Credit Hour in which she discussed Tuning and the DQP (Appendix E).
  - b. Bill Evenson presented on "Improving Student Learning through Tuning" at the American Association of Physics Teachers, March 16, 2013. His PowerPoint presentation is found in a separate attachment. He also developed a Power Point presentation on Department Talking Points that he shared with the Physics Tuning Team. Bill met for dinner with representatives of the national education accrediting organizations, TEAC, NCATE, and CAEP. On May 13, 2013, he had a telephone conference with Diana Rigden, executive vice president of TEAC, regarding developments in the transition from NCATE and TEAC to CAEP. Reports on these meetings are found in Appendix C.
  - c. Daniel McInerney has presented at multiple conferences in the United States and abroad. The American Historical Association (AHA) has worked on its own Tuning grant, exploring the study of history in over thirty states and more than 70 campuses. Dan is part of the AHA group providing general guidance to the

organization. Dan and Norm Jones have worked with several institutions in Idaho to encourage Tuning in that state. The list of their presentations is found in Appendix E.

- d. As the Math GE Tuning chairperson, Jonathan Bodrero served as the representative for Utah on the WICHE Passport Initiative. The goal of this project was to improve transfer of GE level courses across state lines. The Utah Tuning work was shared and common ground was found.
  - e. In November of 2012, Cliff Adelman brought three professors from Japan to visit the Utah Tuning project. They had presentations from the Physics and History Team members and the Chief Global Officer at the University of Utah and the History Team member and the e-portfolio Director at Salt Lake Community College. The comment from one of the visitors was, "The reason that Utah has been so successful is that you have selected excellent people for your teams."
5. Clarify relationships of DQPs and Tuning with accreditors and promote DQPs with Tuning as a robust evaluation tool of accreditation.

The Utah Tuning Project has worked within the state to clarify the harmonization of DQPs and Tuning. We have reached out to accrediting organizations, but have not yet succeeded in involving them closely. We believe, however, that the groundwork has been laid to pursue this with accreditors during the next year.

## **DELIVERABLES**

1. Best practices related to implementation of Tuning reference points for history and physics.  
As during the first year of this grant, all of the teams have shared best practices among the team members. The evaluators have noted that this is one of the outcomes that team members have reported as being most positive in their participation in the meetings. The Leadership Team is currently working to develop a web site, [utahtuning@weebly.com](mailto:utahtuning@weebly.com), that will allow for the sharing of best practices to all departments throughout the state.
2. Report of discussions and understanding achieved with NWCCU on Tuning as a foundational methodology for discipline evaluation and assessment.  
The Utah Tuning Project staff will continue to make an effort to meet with the NWCCU staff to share information concerning the value of Tuning to accreditation.
3. Reports on efforts with professional associations.  
See Outcome 4 above.
4. Report of Tuning teams' use of and recommendations for DQPs.  
The Utah Tuning Leadership Team has continued to use the DQP materials to encourage the coordination of Tuning and DQP throughout the state.

5. Deeper and more specific sets of learning outcomes and competencies at associate's, bachelor's, and master's levels for history and physics.  
The revised learning outcomes and competencies are found in Appendix A.
6. Reference points for physics secondary teaching, history, elementary education, and GE mathematics.  
Work continues on these processes.
7. Learning outcomes for elementary education and general education mathematics.  
See Appendix A for learning outcomes.

## **MAJOR CHANGES**

1. While no major changes were made, small changes emerged.
2. The original proposal called for the addition of professors who were involved in preparing secondary educators in history and physics. As reported in last year's interim report, this has been difficult. The physics team currently has one person from Weber State University, one from the University of Utah, and one from Utah State University, each in their physics departments and each responsible for the physics teaching program. Currently, the history team has one person from the University of Utah who is an adjunct in the history department. The history team has a graduate from Utah Valley University who received a history teaching degree and a student from Weber State University.
3. For the GE math team, the intent was to have members who are in the mathematics departments and members who are in departments that use general education mathematics as a foundation. It has proved difficult to find team members from other disciplines. Currently, the team has an economics professor from Utah Valley University and a chemistry professor from Southern Utah University. This is a goal that the GE Math team intends to continue to pursue.
4. The original plan was to have several of the team meetings online, but the teams have felt that they worked better face-to-face, so all meetings this year have been face-to-face with a few members joining online. This has necessitated some changes in the budget. However, the teams have used email to communicate and to make adjustments in the outcomes that are then discussed at the team meetings.
5. Some of the objectives have taken longer than was originally planned, so they will be carried forward into the extension year of the grant.

## **EVALUATION**

1. Randy Davies and David Williams from Brigham Young University were hired to conduct a developmental evaluation of the project. Their report is in Appendix D.
2. Randy and David have attended meetings of the Tuning teams, and their input has been very valuable.

## **COMMUNICATION**

1. All articles and other communications are in Appendix E.
2. An article on the progress of Utah Tuning was published in the IEBC Tuning Newsletter in June 2012.
3. Each fall the Utah General Education Task Force hosts the “What is an Educated Person?” Conference. On October 26, 2012, this conference was held at the Snowbird resort. Paul Gaston gave an excellent presentation discussing both Tuning and the DQP. In the afternoon, while GE disciplines had group meetings, the Tuning teams met together to hear a brief report about the progress of Tuning. Then individual discipline teams held brief meetings to discuss their individual progress. The conference was very successful for all participants.

## **LEARNING**

1. One critical need in implementing Tuning in individual institutions is to have a strong advocate from the team in the department. This has been most effective when the discipline team member at the institution has been the chair of the department. Being the chair gives the team member the focus and the authority necessary to motivate the department to participate. Currently five team members have been or are department chairs, and the effect has been striking. The selection of motivated, enthusiastic team members has been significant.
2. The elementary education team faced a challenge in adapting their outcomes from the national and state standards. They did an excellent job of identifying the critical outcomes for a graduating student and rephrasing the state standards to make them transparent to all stakeholders.
3. One of the provosts suggested that rather than Tune GE Math, the project should have been to Tune all General Education together. While this makes sense, it is a monumental project. Utah State University is beginning to work on this, but it will take considerable time.
4. Tuning is a cultural change, not simply a procedural shift. The project asks us to shift from a teacher-centered to a student-centered approach in the discipline. Higher education needs to focus on the “outcomes” of course work rather than the “inputs.” Most important, the teams are engaged in an initiative that addresses learning more than teaching. None of this is easy to address. All of it goes against the grain of

conventional approaches, and it is not hard to imagine that many will feel uncomfortable or hesitant about the effort.

5. Another Lumina partner, a group called “Public Agenda” in New York City, pointed out that when kicking off a conversation with colleagues about Tuning, you must start where people are, not where you want them to be. Get a clear sense of the mindset of your colleagues, how they view any kind of assessment, what they think is most important and most necessary in the discipline. Rather than assertively declaring an agenda, patiently listen to the understanding colleagues have about our field and the state of higher education.
6. As one listens, do not be surprised to hear complaints, frustration, and hostility. The protests and objections of colleagues can often point to a set of underlying concerns that discipline experts have about the curriculum. In the case of history at Utah State University, an open and frank faculty discussion revealed a shared concern: preparing students poorly for the capstone, senior thesis course. The complaint suggested a starting point for the department’s discussion. If the last course in the curriculum was not working as planned, how could faculty fix it? What should faculty do at the start of the curriculum – and throughout the course work – to help students better succeed? Where were students getting the knowledge, skills, and abilities to work through the senior research project? That discussion helped faculty clarify their larger goals and begin outlining ways to turn “failure” into success. And where did the discussion start? With objections, not support. In other words, recognize the functions of department conflict. The results of this discussion have encouraged other institutions to add a capstone course and follow these guidelines.

## **SUSTAINABILITY**

1. The Utah Tuning Leadership Team met on April 17, 2013 to bring together plans for sustainability of the program. The agenda and minutes for this meeting are in Appendix B.
2. The Tuning process is being implemented in the Majors’ Meetings for the Tuned disciplines. These meetings will be held face-to-face at the Board of Regents Building. In addition to the traditional fall meetings, a second meeting for the Tuning disciplines will be held in the spring. This should allow the Tuning teams to continue to polish the learning outcomes and to work together to implement the outcomes in individual departments. Through the regular Majors’ Meetings, other disciplines will be encouraged to begin the Tuning process. Several disciplines have shown interest in the project.
3. The chairs of each discipline Tuning team will continue to encourage the use of email and phone conversations to communicate suggested changes and best practices.
4. The history department at Utah State University has made major strides in Tuning their discipline and motivating other departments in their college to begin the process. It is now spreading throughout the campus. Utah State University serves as an exemplar to

the other departments throughout the state, and other institutions are following their lead in many areas, particularly history. The Utah State team will continue to encourage and support other institutions.

5. In order to create individual institution Tuning teams, meetings were held at five of these institutions during spring semester of 2013: University of Utah, Utah State University, Weber State University, Utah Valley University, and Salt Lake Community College. Meetings will be held in the remaining institutions in the fall. In addition to members of the Utah Tuning Leadership Team, those in attendance included a representative from the provost's office, Tuning Team members from all four disciplines, chairs, and/or deans. The purpose of the meetings was to encourage Tuning team members and other faculty members to work together to implement Tuning within the disciplines and to help spread it throughout the institution. These teams were encouraged to meet together at least once each semester and support each other in implementing the project. Agendas and minutes from these meetings are in Appendix B.
6. The "What is an Educated Person?" Conference will continue to support the Tuning project and will provide a venue for meetings of the Tuning teams.

#### **FINANCIAL REPORT**

The financial report and audited financial report are found in a separate attachment.



Project Director

May 31, 2013

Date

## APPENDIX A: LEARNING OUTCOMES FOR INDIVIDUAL TUNING DISCIPLINES

## PHYSICS TUNING LEARNING OUTCOMES

### Utah Learning Outcomes for Bachelor's Degrees in Physics

June 3, 2013

#### 1. Physics Knowledge

- Demonstrate understanding of how science and physics work in practice by one or more of the following activities:
  - Give examples of what constitutes convincing evidence for a scientific explanation; analyze the roles of experiment, interpretation of experimental results, and argument in establishing evidence. Define physical cause and effect; suggest how cause-effect relationships can be inferred from experimental data.
  - Explain how experimental evidence can falsify scientific hypotheses and how it can contribute to acceptance of scientific concepts.
  - Categorize the variety of approaches to research in physics; analyze the distinctive roles each approach plays in the development of physical explanations.
  - Distinguish physics from other sciences by explaining the differences in focus on subject matter, kinds of questions, kinds of explanations, and techniques.
  - Explain how science is a community effort and argue both the necessity of scientific cooperation and the advantages and disadvantages of solitary science.
- Identify and relate the major historical threads in the development of physics. Identify major contemporary issues in physics and a range of applications of physics in today's economy.
- Outline and explain major physics concepts: conservation laws, forces (gravity, e&m), fields, Newton's laws, work and energy, optics, thermal and statistical physics, relativity, quantum mechanics.
- Identify key elements in the functioning of a physical system and relate them to the construction of a model.
- Use mathematics correctly to solve physics problems. Demonstrate this understanding by the following activities:
  - Solve correctly algebraic and calculus problems from typical bachelor's degree physics texts.
  - Interpret the meaning of the mathematics that occurs in a particular physics context from typical bachelor's degree physics texts:
    - Explain what physics quantities are represented by the algebraic symbols.

- Explain the physics meaning of multivariable algebra, vector algebra, and calculus.
    - Discuss the context for the equations, i.e. assumptions and simplifications, and explain how the equations would change with different assumptions.
  - Use dimensional analysis to verify physical meaning and check results.
  - Estimate orders of magnitude of physics quantities; estimate orders of magnitude of solutions to physics problems; explain how to identify quickly whether a problem solution or other physics quantity is of reasonable magnitude.
  - Graph related physics quantities in ways that illuminate underlying physical interpretations; interpret graphs from typical bachelor's degree physics texts.
  - Give examples of physics problems with similar mathematics but different physics.
  - Organize a problem from a typical bachelor's degree physics text by identifying the relevant physics principles, identifying relevant vs. irrelevant quantities, and making appropriate diagrams.
  - Organize quantitative information in a problem from a typical bachelor's degree physics text by clearly stepping through the mathematics of the problem solution.
- Build and work with mathematical models by
    - Distinguishing problem solving and modeling, identifying differences and relationships.
    - Modeling an effect from a typical bachelor's degree physics text; identify the most important physics concepts in the phenomena that must be included in the model;
    - Analyzing what one can learn from simple models and what their limitations are;
    - Casting a story problem from a typical bachelor's degree physics text into a mathematical model;
    - Identifying the physics concepts in a given mathematical model;

## 2. Laboratory & Computer Skills

- Demonstrate understanding of the role of computation in physics and appropriate computer skills by the following activities:

- Create a simple computer program to calculate physical effects.
- Demonstrate the use of any of the scientific software packages associated with the usual bachelor's degree curriculum, including the use of a spreadsheet to solve physics problems and the use of computer algebra tools similar to Matlab, Maple or other standard to solve physics problems.
- Explain the major issues of numerical analysis, such as error estimation, in the context of a problem from a typical bachelor's degree physics text or in the context of a computer program related to such a problem.
- Evaluate the quality of laboratory data; explain the importance of such evaluation. For example,
  - carry out error analysis on laboratory data; explain what the errors mean for data interpretation.
  - design a laboratory measurement to answer a physics question on the level of typical bachelor's degree physics texts.
  - analyze the connections between what one measures and how one infers the physics interpretation of the measurements.
  - apply critical analysis of the generation and collection of data to computer experiments.
- Outline ethical laboratory practices and make arguments for their importance. Include ethics of reporting laboratory procedures and results as well as ethical practices in carrying out an experiment and reporting data.
- Follow practices necessary for safety in using undergraduate research or teaching laboratory equipment. Explain these practices to others, including identifying both potential dangers and ethical issues. Evaluate safety practices in a particular undergraduate lab, and if possible, suggest how safety could be improved.

### 3. Research & Communication

Physics is a research discipline that requires the ability both to carry out meaningful research and to communicate the results. Knowledge and skills acquired in courses typically culminate in a capstone project or senior thesis involving both research skills and communication of results depending on broad understanding of physics concepts.

- Demonstrate physics research skills and understanding by one or more of the following activities:
  - Apply physics competencies in a research setting by designing an experiment that involves multiple concepts, interpreting experimental results that involve multiple concepts, suggesting an hypothesis for a physical effect and how to test it, or building a mathematical model that gives a coherent interpretation of a physical effect.

- Explain your role and the roles of your advisors and collaborators in a complex research project, such as envisioned in the previous bullet point. Explain how collaborations work in your physics subfield, both in the ideal and in reality.
- Synthesize physics principles and applications to explain an effect observed in the laboratory or in a thought experiment; i.e. make hypotheses about the physical causes of the effect that has been observed, propose tests of the hypotheses, debug both equipment and ideas that do not work, etc.
- Find information in the physics research or teaching literature on an assigned topic from a typical bachelor's degree physics text.
- Demonstrate the ability to communicate about science by one or more of the following activities:
  - Write essays on physics topics and problem explanations in complete, correctly punctuated sentences that are well organized and clearly express careful arguments.
  - Explain physics concepts clearly in writing both with and without mathematics.
  - Present physics topics clearly to peers and in the more formal setting of local or regional meetings.
  - Impart knowledge of physics understandably to less advanced students in a teaching situation.
  - Present research results clearly and coherently, identifying significant motivations for the work, describing and interpreting the findings, and explaining the significance of the results.
- Outline ethical research practices and explain why they are important. Include ethics of giving credit to prior related work, of coauthorship, of reporting data, and of retaining or destroying data.

## HISTORY TUNING LEARNING OUTCOMES

### HISTORICAL KNOWLEDGE

- I. (Range of historical information)
  - A. Identify the key events which express/define change over time in a particular place or region.
  - B. Identify how change occurs over time
  - C. Explain historical continuity and change
  - D. Describe the influence of political ideologies, economic structures, social organization, cultural perceptions, and natural environments on historical events
  - E. Discuss the ways in which factors such as race, gender, class, ethnicity, region, and religion influence historical narratives

### HISTORICAL THINKING

- II. (Recognize the past-ness of the past)
  - A. Explain how people have existed, acted, and thought in the past
  - B. Explain what influence the past has on the present
- III. (Emphasize the complex nature of past experiences)
  - A. Interpret the complexity and diversity of situations, events, and past mentalities
  - B. Compare eras and regions in order to define enduring issues
- IV. (Emphasis the complex and problematic nature of the historical record)
  - A. Recognize a range of viewpoints
  - B. Compare competing historical narratives
  - C. Challenge arguments of historical inevitability
  - D. Analyze cause-and-effect relationships and multiple causation

### HISTORICAL SKILLS

- V. (Develop skills in critical thinking and reading)
  - A. Evaluate debates among historians
  - B. Differentiate between historical facts and historical interpretations
  - C. Assess the credibility of primary and secondary sources
- VI. (Develop research skills)
  - A. Formulate historical questions
  - B. Obtain historical data from a variety of sources
  - C. Identify gaps in available records
- VII. (Develop the ability to construct reasonable historical arguments)
  - A. Construct a well-organized historical argument
  - B. Support an interpretation with historical evidence from a variety of primary and secondary sources

## GENERAL EDUCATION MATHEMATICS TUNING LEARNING OUTCOMES Spring 2013

A student who has successfully completed any Math GE course will have demonstrated the following proficiencies:

1. Know when and how to apply mathematical knowledge to real world problems.
2. Interpret and critique quantitative information or arguments.
3. Construct quantitative, logical arguments.
4. Understand and use mathematics as a language to communicate.
5. Explore and analyze mathematical concepts, using technology as appropriate.
6. Estimate, reason through, and make sense of mathematical processes and results.

Our goal is to identify the general learning outcomes for math GE courses, illustrate how they may be assessed in each specific math GE course, and give ideas on how to assess them in each. We are not trying to determine curriculum. Rather we are increasing transparency and accountability in higher education by letting students, parents, and other stakeholders know what we do and what we will measure and report.

Please send feedback about these learning outcomes to your institution's Tuning representative or [jonathan.bodrero@snow.edu](mailto:jonathan.bodrero@snow.edu).

### Specific Examples of Ways to Address Learning Outcomes

#### Math 1030

##### #1 Know when and how to apply mathematical knowledge to real world problems.

- Understand and explain the function of the check-digit in barcodes.
- Use a specified voting system to determine the "winner" of an election.
- Solve problems involving interest (simple, compound, continuous), loans, and annuities.
- Solve problems using mathematical models that are linear, quadratic, exponential, or logarithmic. Use logarithms to answer questions of how long it will take a quantity to grow / decay to a specified amount.
- Be able to convert between units or different number bases / systems.

## **#2 Interpret and critique quantitative information or arguments**

- Determine whether a given series of steps constitutes a valid proof of the Pythagorean Theorem.
- Decide whether a given financial scenario will result in a specified interest rate (or APY).

## **#3 Construct quantitative, logical arguments.**

- Prove that  $\sqrt{2}$  (or another irrational number) is irrational.
- Using an appropriate diagram, prove the Pythagorean Theorem.
- Use Venn diagrams to model and solve problems involving sets.
- Show that in the world there are two non-bald people with the same number of hairs on their head. (Use pigeon hole principle.)

## **#4 Understand and use mathematics as a language to communicate.**

- Accurately convert between mathematical notation or expressions and a written or oral narrative.
- Give a correct sentence to describe both absolute and percent change in a given quantity and interpret such statements about change.
- Use function notation and parentheses correctly in solving problems.
- Express answers with appropriate units.

## **#5 Explore and analyze mathematical concepts, using technology as appropriate.**

- Analyze fractals (perimeter, area, dimension) using software or scientific calculators where needed.
- Use a non-graphing scientific calculator to compute the length of time needed to reach a desired amount for a real world (non-contrived) exponential growth/decay problem.
- Compute the standard deviation of a data set of 10 or more values.

## **#6 Estimate, reason through, and make sense of mathematical processes and results.**

- Determine whether a given balance is reasonable for a suitable interest rate and amount of time.
- Decide whether a given response is a reasonable approximation to a real world problem.
- Prove that  $\sqrt{2}$  (or another irrational number) is irrational.

# Math 1040

## #1 Know when and how to apply mathematical knowledge to real world problems.

- Determine an appropriate measure of central tendency (mean, median, mode) and compute it for a given data set.
- Create an accurate visual representation (graph) for a given data set.
- Use z-scores to compute probabilities for normally distributed data or data from sets that can be modeled by the normal distribution.
- Accurately complete a hypothesis test or confidence interval and interpret in real world terms.
- Compute probabilities to determine whether a given event is likely or unlikely. Then use the probabilities to draw a conclusion. For example, is a committee of 8 men and 4 women (with a population of equal men and women) evidence of discrimination?

## #2 Interpret and critique quantitative information or arguments

- Given the data and results from a suitable hypothesis test, determine if a given conclusion is warranted.
- Analyze a suitable study to determine if there may be bias and whether the findings are valid.
- Given a passage with basic statistics (such as from a newspaper story), correctly articulates how those statistics could have been calculated and their potential meaning.

## #3 Construct quantitative, logical arguments.

- Accurately complete a hypothesis test or confidence interval and interpret in real world terms.
- Use graphs, diagrams, and charts to compare data sets and draw correct conclusions.

## #4 Understand and use mathematics as a language to communicate.

- Accurately convert between mathematical notation or expressions and a written or oral narrative.
- Interpret results from a hypothesis test or confidence interval in real world terms.
- Use probabilities to communicate the likelihood of an event (winning the lottery, etc.)

## #5 Explore and analyze mathematical concepts, using technology as appropriate.

- Use technology (TI-8X calculator, Excel, or statistics software) to compute the test statistic or P-value for a hypothesis test.
- Use technology (TI-8X calculator, Excel, or statistics software) to compute a confidence interval.

- Use technology (TI-8X calculator, Excel, or statistics software) to compute a compound binomial probability.

**#6 Estimate, reason through, and make sense of mathematical processes and results.**

- Given a scatterplot of bivariate data, estimate the  $r$ -value (linear correlation coefficient).
- Based on summary statistics or a graph, make an educated guess about the conclusion of a hypothesis test.

## **Math 1050**

**#1 Know when and how to apply mathematical knowledge to real world problems.**

- Solve an exponential growth/decay equation for the desired time by using logarithms.
- Solve logarithmic equations and exclude extraneous solutions.
- Maximize the profit equation given quadratic cost and revenue functions.
- Use series to compute the balance of a compound interest problem.
- Calculate probabilities using combinations or permutations.
- Use linear programming to find an optimal solution to a given problem.

**#2 Interpret and critique quantitative information or arguments**

- Determine whether a given sequence of steps constitutes a valid line of reasoning (such as a proposed proof of a mathematical theorem or solution to a quantitative problem). If not a valid method, is able to explain why not.

**#3 Construct quantitative, logical arguments.**

- Find the maximum or minimum of a quadratic function that models real world data.
- Construct a polynomial given its zeros.
- Simplify and solve quadratic, rational, exponential, and logarithmic equations in a logical, step-by-step fashion.

**#4 Understand and use mathematics as a language to communicate.**

- Accurately convert between mathematical notation or expressions and a written or oral narrative.
- Use function notation and parentheses correctly in solving problems
- Create / Use graphs to describe and explain the behavior of polynomial, exponential, rational, logarithmic, and piecewise equations.
- Convert a system of linear equations to a matrix equation.

**#5 Explore and analyze mathematical concepts, using technology as appropriate.**

- Solve a system of 3 (or more) equations in 3 (or more) unknowns using matrix algebra.

- Explore the effect on the balance of changing the interest rate for a fixed time period.
- Use a scientific calculator to compute the time for an investment to reach a predetermined value.

**#6 Estimate, reason through, and make sense of mathematical processes and results.**

- Use estimation of known logarithmic and exponential values to aid in checking answers of more difficult questions.
- Use college algebra techniques to sketch the graph of a polynomial function.

## **Math 1210**

**#1 Know when and how to apply mathematical knowledge to real world problems.**

- Use derivatives and integrals to solve problems involving position, velocity, and acceleration.
- Solve related rates problems and optimization problems.
- Correctly use an integral to compute the volume or surface area of a solid of revolution.

**#2 Interpret and critique quantitative information or arguments**

- Determine whether a given sequence of steps constitutes a valid line of reasoning (such as a proposed proof of a mathematical theorem or solution to a quantitative problem). If not a valid method, is able to explain why not.
- Use a velocity equation to determine when a particle is moving forward, backward, or is stopped.

**#3 Construct quantitative, logical arguments.**

- Construct valid  $\delta$ - $\epsilon$  arguments for limits.
- Understand requirements for major theorems and use them to draw conclusions (ie a continuous function is positive at one input value and negative at another so the Intermediate Value Theorem guarantees that the function must have been zero at least once in the interval.)
- Given an equation or scenario, apply calculus techniques to determine a desired (local) maximum or minimum. Student can also verify that said point is a (local) maximum or minimum using the First Derivative Test or Second Derivative Test.
- Analyze a table, graph, or function to calculate / approximate average and instantaneous rates of change.
- Given a table, graph, or function, students approximate the area under the curve. For example, given a velocity function, the area under the curve yields position.

**#4 Understand and use mathematics as a language to communicate.**

- Students understand symbols and notation and can use them appropriately. For example, a student completes a limit statement by finding the delta value for any given epsilon.
- Students translate related rates and optimization scenarios into mathematics, use calculus to solve the problem, and then report the answer in real-world terms.

**#5 Explore and analyze mathematical concepts, using technology as appropriate.**

- After finding a tangent line, use a graphing calculator or Computer Algebra System (CAS) to graph the tangent line to a function at the given point.
- Completes chapter projects using Maple (R), Mathematica (R), or Maxima software.

**#6 Estimate, reason through, and make sense of mathematical processes and results.**

- Use knowledge of graphs to estimate the limit of a suitable function.
- Estimate an answer to a problem (such as related rates, optimization, volume of revolution, arc length) and verify that the computed response is reasonably close to the estimate
- Determine whether a possible solution to an optimization problem is feasible.

**EDUCATION ELEMENTARY TUNING TEAM LEARNING OUTCOMES**  
**May 31, 2013**

**Utah Pre-Service Learning Outcomes: A Tuning Project of the Utah System of Higher Education**

Outcome 1: Learner Development

The Teacher:

- a. Creates developmentally appropriate and challenging learning experiences based on students' strengths, interests, and needs.
- b. Collaborates with families, colleagues, and other professionals to promote student growth and development.

Outcome 2: Learning Differences

The Teachers:

- a. Adapts instruction to address each student's learning strengths and needs.
- b. Delivers instruction that provides for different ways of demonstrating learning.
- c. Provides instruction that takes into account the experiences and knowledge of learners.

Outcome 3: Learning Environments

The teacher:

- a. Uses a variety of effective classroom management strategies to maintain a positive learning environment.
- b. Constructs learning experiences that require students to be actively engaged in learning.

Outcome 4: Content Knowledge

The Teacher:

- a. Communicates accurate information and concepts.
- b. Adapts instruction to address students' common misconceptions about subject matter.
- c. Designs instruction based on approved content standards and research.
- d. Provides multiple representations and explanations of concepts. Selects instructional resources that contain accurate content.

Outcome 5: Assessment

The Teacher:

- a. Uses pre-assessments, and formative and summative assessments in a variety of formats that match learning objectives.
- b. Teaches students to identify the elements of quality work. Uses data to assess student learning to plan for differentiated instruction.
- c. Documents student progress and provides specific feedback to students and other stakeholders in a variety of ways.

#### Outcome 6: Instruction Planning

##### The Teacher:

- a. Plans instruction based on state core.
- b. Aligns instruction and assessment with learning goals.
- c. Designs instruction at an appropriate level of cognitive complexity for the learning goal.

#### Outcome 7: Instructional Strategies

##### The Teacher:

- a. Uses a variety of instructional strategies that elicit and build upon students' prior knowledge and experiences.
- b. Instructs learning experiences that require students to use multiple forms of communication.
- c. Systematically includes a variety of perspectives and sources to inform instruction.
- d. Uses technologies appropriate for the learning goal.

#### Outcome 8: Reflection and Continuous Growth

##### The Teacher:

- a. Participates in professional development.
- b. Recognizes and reflects upon own biases in order to become a more effective teacher of all students.
- c. Reflects on instructional effectiveness to improve subsequent teaching practice.
- d. Accepts and uses feedback from multiple sources.

#### Outcome 9: Leadership and Collaboration

##### The Teacher:

- a. Participates as a team member in decision-making processes.
- b. Collaborates with school professionals to meet the needs of learners.

#### Outcome 10: Professional and Ethical Behavior

##### The Teacher:

- a. Adheres to and upholds laws, rules, policies, and directives.
- b. Maintains professional behavior and appearance.

**APPENDIX B: AGENDAS AND MINUTES FROM TUNING TEAM MEETINGS**

## **PHYSICS TEAM**

### **Agenda Physics Majors' Meeting September 7, 2012**

1. Update on assessment of GE Essential Learning Outcomes (ELOs) within your discipline
2. The Degree Qualifications Profile (DQP)
3. Articulating students' knowledge and skills
4. Issues from last year
5. Tuning
6. Department discussions

### **Minutes Physics Majors' Meeting September 7, 2012**

In attendance:

University of Utah: Lynn Higgs, Jeff Hodges, Inese Ivans; Utah State University: Charlie Torre; Weber State University: Colin Inglefield, Adam Johnston; Southern Utah University: James Chisholm; Snow College: Larry Smith; Dixie State College: Samuel Tobler; Utah State University – Eastern: David Kardelis; Utah Valley University: Phil Matheson; Salt Lake Community College: Trina Van Ausdal; Utah System of Higher Education: Teddi Safman, Bill Evenson; Utah State Office of Education: Brad Talbert; Brigham Young University: Ross Spencer; Tuning Evaluator: Randy Davies

#### **Update on Assessment of GE Essential Learning Outcomes (ELO) Within Your Discipline**

- At the University of Utah it is now a university requirement to have institutional objectives and course outcomes. Accreditors do look at this. The University of Utah is putting course objectives on syllabi because there is pressure from the Northwest Commission on Colleges and Universities (NCCU), the regional accrediting agency.
- At Utah State University, assessments are currently nonexistent.
- At Weber State University, all classes are being assessed and they pass or fail students. The faculty needs to know the objectives and then go back to their curriculum to see how they are already assessing.
- At Southern Utah University, a short description is included on all syllabi for courses that contribute to a major. Currently they assess by selecting an exam question and determining if a certain number of students have answered correctly. They are not assessing anything that is not required for the major. The idea is to have exactly the same questions every year. They select questions that are bedrock knowledge, not the most difficult questions. They do more than one questions but it is spread out over all courses in the program. On one test they may only be assessing one item of knowledge, but over all courses in the program, there is a broader test of knowledge and skills.

Grades are still a form of assessing, but they have common exam questions because professors have different grading rubrics.

- At Snow College, they ask if professors are listing specific GE Outcomes on the course syllabus.
- At Utah State University – Eastern, they already test for this information. They just need to be more specific about which course tests a certain objective.
- At Utah Valley University, they assume that every single student is being assessed. Wouldn't it be more reasonable to get a statistical population and have them do a real evaluation—perhaps a writing sample or an interview? A real assessment that tells what the student has learned. One obstacle to this type of assessment would be deciding who would do the evaluation. BYU used to try this type of assessment with their seniors. It was very hard to get the students to take the test seriously because their grade did not depend on the completion of the assessment.
- Every course at Brigham Young University is required to include learning outcomes. The exam questions are linked to the learning outcomes as an assessment. With difficult material, your assessment will always look as if you are doing poorly.

### **Degree Qualification Profile (DQP)**

Teddi gave a handout about this program with what she considers a simplified explanation. Basically it is a tool to show what a degree looks like. It shows the Learning Outcomes and the competencies that each student knows. It means that we expect more depth of knowledge and an understanding of competencies as well as the ability to demonstrate those competencies.

This is not only for specific disciplines but for the entire four years of learning. There is more depth in applied learning. It brings together the skills learned in GE, the depth of applied learning, civic learning and ethics, and applies them to physics.

After a brief review of the handout, discussion followed:

The DQP goes through the levels of AS, BS, and MS and how learning can be “ratcheted up” at each level. There were examples of how emphases could shift from institution to institution depending on their specific roles.

- Utah Valley University again indicated that having a committee assess these skills would be a far better evaluation than having a certain number of students getting the correct answer on an exam question. Quality assessment is a time intensive thing. If there is a set of standard multiple choice questions, we teach to the test.
- Southern Utah University indicated that this would be a superior assessment tool, but they also take into consideration the ability to assess without increasing faculty workload.
- Utah State University indicated that without faculty buy in, you could not assess that way. The system they have is not perfect.
- Weber State University indicated that even more challenging is that reasoning skills might be great, but the answer to the test question may be wrong. They can reason well, but they just don't get it.
- At Brigham Young University every program and course has learning outcomes, but physics can only assess certain outcomes. Unless they do something like a research project, they cannot assess all outcomes. Even then, some outcomes such as ethics are

addressed in other classes and at the end of the degree would be achieved through other courses. They are concerned about the time required from faculty.

- At the end of a student's four years at Southern Utah University, they could have students present and defend a portfolio lab report and have them write up a research project, or give an exit interview. Again this is a lot of extra work.
- In a research and physics class at Utah State University, students are required to do a research project, working closely with a faculty member. That could be tightened up and used as an assessment tool. It would show what they were able to do with everything they learned in their four years. If they cannot do a research project, they have not done their job. They like the capstone approach better than a portfolio. With that a faculty member could give feedback about the program. They like the Southern Utah University capstone approach. Do we test the depth or the breadth?
- Bill Evenson asked if in a capstone project they can assess if they can do things worth doing? Can they tell about skills they have gained in the project?
- The University of Utah asked how does the outside world look at your graduates. What do they achieve in their jobs, professional programs, or PhD programs? If none of them do anything with their bachelor's degrees that is an assessment.

### **Articulating Students' Knowledge and Skills**

It is difficult to help students articulate their knowledge and identify the skills they have obtained.

- At Utah State University, there is a new course evaluation system that has you pick three to five learning outcomes and faculty are scored on what they choose. They remind students all semester what the three outcomes are but not necessarily what students have learned.
- At Southern Utah University they said this method has the faculty choose what they think is important rather than the student choosing what they identify as important. There are issues with students in various majors because physics majors are so different from Social Science majors. In the 2210 class at SUU, the class is asked why they are taking this course. Students are encouraged to look at their major and decide what they intend to get out of it. By the last year, they can articulate. They could have them express this in a written format as part of a project or verbally as an interview. It needs to be motivated and reinforced at the course level.
- SNOW College it is up to the students to decide what they get out of the course. Will students know what they have learned before the end of the course? Freshman and sophomores don't always know.
- Utah State University suggested that students write one paragraph on the Colloquium.
- At the University of Utah, they want students to integrate into the department and see what research they are interested in. They want to give them a feeling of community. In the Astronomy department, they had binders showing previous jobs and what students could do with a degree. They could draw upon existing resources.
- At Utah Valley University, they make students aware of what they are expected to learn. Do advisors know enough to tell them about Physics courses and expectations?
- Bill Evenson noted that good advising helps students to be intentional about their programs.
- At Utah State University, advisors can be trained well and given the information they need to advise well.

- At Southern Utah University, they have started using the student response about their knowledge in evaluations. This is done in conjunction with the college of engineering and it will become campus wide. Before this evaluations were on line, but they are now in class.
- The University of Utah and Utah State University still have their evaluations online. Students get relentless nagging e-mails to complete the evaluations and faculty get e-mails to encourage students to complete evaluations. USU gets about 75% and BYU 90% if you give them two points on the final.
- Weber State University has used the course evaluation information a lot in the tenure and promotion process.

### **Issues from Last Year**

- At the University of Utah, in two years they will implement the change to Physics B. It will ruin the AP program, because they cannot get high school students to take one year and now they want to expand it to two years.
- Utah State University tried to make 1800 an energy course as was agreed upon, but because USU already had another course numbered 1800, Charlie was told he either needed to delete it or not use it for four years. Bill Evenson noted that there are rules in the system about common course numbers. If a course has lower course evaluations, that factors in. If someone got a 5 in high school AP, they probably know enough. This is a problem for pre-med students because med schools will not accept any of the AP courses, especially Chemistry.
- At Southern Utah University, the policy has not officially changed, but they don't get enough with AP credit for it to be a problem.
- Snow College had done some research on AP courses.
- USU did allow for credit hours, but it was not course specific, and it never got into their catalog. Charlie used the merger with College of Eastern Utah to change this, but it never made it to the catalog. He will go back and see that it gets changed in the next catalog.
- Brigham Young University has a big stake in this, because they want people to finish.

### **Tuning**

- Utah State University shared a handout on Learning Objectives modeled on the Brigham Young University version. It was adjusted a little and made fairly generic so it would apply to all schools. They asked if this was close to what the goal is.
- Bill Evenson agreed it could be used as a model.
- Weber State University reported they had not done strategy. For teacher preparation programs, there is an additional accreditation program.
- Southern Utah University examined what students need at the entry level. One thing is a background in mathematics. Currently they require passing grades in the calculus series. They don't require any physics before the 2210 sequence. They questioned whether they want to require a year in high school of PHYS 1010 and asked what they should do beyond their coursework to see if they satisfied the requirements.

### **Department Discussions**

- Charlie gave a brief presentation at the department retreat at Utah State University. Polite apathy is the best way to describe the response. The faculty feel that reforms

come and go. Most of them don't want to be bothered. They just want someone to work it out and then tell them what to do. Having said that, he has seen learning outcomes on some syllabus. On the less cynical side, everyone is okay with making the process more specific and positive. They just don't feel a need to interact at this point. They will go live this semester and Charlie will let the committee know. There will be some interaction about not having certain outcomes, so they will start to care about assessment.

- The math tuning team member at Snow wanted to know what the dean thought. The dean's response was to ask if it has or is going to change curriculum in the classroom. If not, he felt they were wasting their time.
- At Brigham Young University a lot of learning outcomes line up with some courses but not all courses. Curriculum mostly maps into just intellectual content, ethics, and service. Lifelong learning links to something else.

## **Agenda**

### **Utah Physics Tuning Team with Physics Majors' Meeting**

### **September 12, 2012**

- Physics Major's Meeting – Chaired by Charlie Torre
- Announcements: "What Is an Educated Person?" at Snowbird, October 26 with Paul Gaston. Tuning Teams will meet for an hour at the end of this conference.
- Tuning Team Issues
  - Review assignments from May
    - Subcommittees
  - Progress in Departments
  - Assessment – mapping LOs to assessment instruments
- Other business
- Next meeting

## **Minutes**

### **Physics Tuning Team Meeting with Physics Majors' Meeting**

### **September 12, 2012**

#### **Tuning Team Members Present:**

Jim Chisholm (IP Video), Randy Davies (evaluator), Bill Evenson, Jeff Hodges, Inese Ivans, Adam Johnston, David Kardelis, Phil Matheson, Larry Smith, Ross Spencer, Brad Talbert, Sam Tobler, Charlie Torre, Trina Van Ausdal

Bill Evenson chaired the Tuning Team meeting that followed the Major's Meeting.

#### **Announcements**

"What Is an Educated Person?" conference at Snowbird, October 26 with Paul Gaston. Tuning Teams will meet for an hour at the end of this conference.

#### **Major's Meeting**

Charlie Torre chaired the Major's Meeting. They discussed assessment of GE Essential Learning Outcomes (ELOs), Degree Qualifications Profile (DQP), and helping students identify and articulate what they have learned in the discipline. They also reviewed curriculum issues from last year. These issues are relevant to our work in Tuning, and details are included in the Major's Meeting minutes.

## **Review of Tuning Team Subcommittee Assignments**

We reviewed the three subcommittees formed in May to adapt the LOs to levels other than the BS in physics: Associate degree level (Jim – chair, David, Larry, Sam, Trina), Masters degree level (Charlie – chair, Brian, Ross), Bachelor’s degrees in physics teaching (Adam – chair, Brian, Tonya, Brad, Phil).

Jim provided some documents reviewing what is needed at the associate level. He raised the question of how to coordinate associate level requirements with expectations for entry (i.e. what should they have from high school or remedial work before entering a physics track). The Associate level subcommittee will pursue these issues.

Charlie provided a handout on learning objectives modeled on the Brigham Young University version (see byu.edu learning objectives). This looked very helpful for all of our Tuning tasks.

Adam is organizing the work of the teacher education subcommittee by correlating education accreditation with discipline requirements. Each of these subcommittees will continue working and report at our next meeting.

## **Activity in the Departments**

Charlie gave a brief presentation on Tuning at the Utah State University fall department retreat. He described the response as “polite apathy.” Many of the faculty feel that reforms come and go. Most of them don’t want to be bothered. They just want someone to work it out and then tell them what to do. Nevertheless, he has seen learning outcomes on some syllabi. Furthermore, everyone is okay with making outcomes specific, and they are positive about the process, but don’t feel a need to engage in a lot of discussion at this point. Charlie will keep the Tuning team up to date on progress as the university requires more explicit outcomes and assessment.

Larry reported that the math Tuning team member at Snow wanted to know what their dean thought. The dean’s response was to ask, “Has it or is it going to change curriculum or pedagogy in the classroom? If not, you are wasting your time.”

Ross reported that many learning outcomes line up with courses but not all, so some outcomes are assigned to the senior thesis that caps the whole BS degree. Curriculum primarily maps into intellectual content. Ethics, service, and lifelong learning are essentially supplemental to the curriculum and dealt with in other experiences.

## **Next Meeting**

October 26 at Snowbird at the end of the Educated Persons Conference.

**Agenda**  
**Utah Physics Tuning Team at Educated Persons Conference**  
**October 26, 2012**  
**Snowbird**

- Subcommittees
- Progress in Departments
- Assessment – mapping LOs to assessment instruments
- Other business
- Next meeting

**Minutes**  
**Physics Tuning Team Meeting**  
**October 26, 2012**

**Present:** Bill Evenson, Adam Johnston, David Kardelis, Phil Matheson, Brian Saam, Larry Smith, Sam Tobler

Bill Evenson chaired the meeting.

**Progress in the Departments**

Adam reported on the Weber State program review; he is attempting to correlate this with Tuning. Utah Valley University now has a university-wide assessment tool that might contribute to progress on assessment of the discipline learning outcomes. Dixie State College is working on a minor in physics, following the program at Southern Utah University as a model. Brian requested suggestions for talking points to help faculty understand that there is nothing new in the tuned curriculum, but we are trying to make it more efficient and more explicit.

**Assessment**

Team members agreed to work on assessment strategies and share examples. There is interest in developing a database of tools for teaching/learning physics. Perhaps the Utah Tuning web site that is being developed could be a location for this kind of information. We also want to collect institutional and accreditation initiatives from the various institutions and tools for assessing our programs.

**Next Meeting**

Will look at December or January. Bill will send an email to confirm.

**Agenda**  
**Utah Physics Tuning Team**  
**February 25, 2013**

- Reports on Associate Level, Masters Degrees, & Physics Teacher Education
- Plans for Tuning after Lumina Grant Ends
- Information Needed for May 31 Report to Lumina
- Outline of Physics Tuning for Discussions in Departments
- Physics Alumni Survey or Focus Groups?
- Assessment
  - Mapping LOs to assessment instruments
  - Ideas about how Tuning assessments can be designed for use with accreditation
- Other business
- Next meeting

**Minutes**  
**Physics Tuning Team Meeting**  
**February 25, 2013**

**At Board of Regents Office:** Bill Evenson, Janice Gygi, Jeff Hodges, Brian Saam, Trina Van Ausdal, David Williams, Sarah Young

**Participating By IP-Video:** Jim Chisholm, David Kardelis, Phil Matheson, Sam Tobler, Charles Torre, Tonya Triplett

Bill Evenson chaired the meeting.

**Reports on Learning Outcomes (LOs) at the Various Degree Levels and Physics Teacher Education**

**Two-year Level:** Jim Chisholm led a discussion of 2-year LOs, i.e. AA, AS level (although physics associate degrees are not offered) and a physics minor. There was support for a math placement exam for entry into these programs. There was also support to clarify the recommended background in physics and math for entry into the various lower division courses. Sarah Young clarified the public education math requirements. Brian Saam reported that the University of Utah is using a physics diagnostic exam adapted from work at the University of Illinois. They are coordinating the use of this exam and their expectations for the introductory courses with engineering. He will send some information to the team to enable others to consider this pretest. There was considerable interest in review courses for both math and physics, especially

for LDS students returning from two-year missions. Bill will work with the 2-year subcommittee to outline the next steps toward useful LOs at this level.

**BS Level:** Bill circulated the March 28, 2012 LOs again and indicated that he would propose for our next meeting a boiled down version with three major categories as discussed last fall. He will send out levels of sophistication and benchmarks again for easy access.

**MS Level:** Charlie Torre led a discussion on the MS LOs, slightly edited from the BYU version. These are more general than the other set, which was viewed as appropriate for a graduate degree.

**Physics Teacher Education:** Adam Johnston sent out the 2012 NSTA (National Science Teachers Association) Pre-service Science Standards. These were viewed as generally appropriate for our work to define LOs for these programs. Tonya Triplett raised the question of the balance between pedagogy requirements and physics requirements and how that balance affects students preparing to teach. Bill noted that there is enormous variation among institutions in the degree of coordination between subject-matter departments and education departments that affects this balance in a critical way. Tonya also noted that minimum standards are generally too low, and we need to move students away from being able to doing everything at the minimum acceptable level. Jeff Hodges endorsed the inclusion of a safety standard. Sarah reported that safety certification is required for high school teachers. She also asked us to clarify what would be acceptable as “modern physics,” since a physics endorsement requires two semesters of modern physics, but many university courses of that name are only one semester. Team members agreed to compile lists of appropriate modern physics courses at each of their institutions. Sarah also asked that we let her know about summer or late in the day/evening access for modern physics courses.

#### **Plans for Tuning after Lumina Grant Ends**

Bill explained that our Lumina Grant for this round of Tuning ends May 31, with the possibility of spending some remaining funds for a short period after that. Teddi will continue to work with both Majors’ Meetings and Tuning on half time in the Commissioner’s Office. State Tuning leaders and most team members want to continue the work after the grant ends, so Teddi, Bill, and Janice have proposed merging the Tuning effort with the Majors’ Meetings for those disciplines doing Tuning. A second annual Tuning/Majors’ Meeting would be held each year for those disciplines. Further work would continue by email, telephone, and video as necessary.

#### **May 31 Report to Lumina**

Janice reviewed briefly what Lumina wants in our grant report at the end of May. She requested that all team members send her a paragraph about what is happening in your department. Please also send a note about any other Tuning-related activities, on campus or off.

### **Outline of Physics Tuning for Discussions in Departments**

Bill sent out a first draft of a potential discussion with departmental colleagues on Tuning. It was drafted along the lines of “what do departmental colleagues need to know about Tuning in order to move the process forward?” This draft document reviews what Tuning is, how it might help strengthen our degrees, and what it asks of us. Team members were asked to collaborate in bringing this to where it might be useful in departmental discussions. It is not an "elevator speech" of two to three minutes, but is more detailed with the hope that ideas from this (and its eventual revision) could help in several settings as we try to implement the results of Tuning in our departments.

### **Physics Alumni Survey or Focus Groups?**

The question was posed whether we should pursue alumni surveys or focus groups. Charlie noted that how useful these are depends a lot on how recently the alumni have graduated. Several of our physics departments have exit interviews with all graduates. They find that practice to be very useful. Team members were invited to let Bill and Janice know if they want to pursue alumni focus groups further.

### **Assessment**

We discussed briefly that team members need to map LOs to their curriculum and to assessment instruments. Tonya reported that discussions of outcomes for Integrated Physical Sciences at Utah State University led to GE changes. They looked at how current learning depends on the discipline the instructor comes from, and they worked to agree on common outcomes. It became clear that GE expectations needed to be clarified.

Bill also asked the team to consider how we can design Tuning assessments and reports so they will be directly useful for accreditation and other reviews. Jim reported that he has created matrices mapping LOs to courses and mapping assessments for the current accreditation review at SUU. Discipline and course LOs can be tied to the institution’s overall LOs. They also set up a regular program of assessments within courses.

### **Other Business**

Bill reported that more has been posted on the physics page at [utahtuning.weebly.com](http://utahtuning.weebly.com). More is being added each week, and we hope that it will be a useful resource soon.

David Williams had emailed a brief survey about Tuning for team members to fill out. This was followed by discussion in a focus group led by David.

### **Next Meeting**

May, after finals.

## **HISTORY TEAM**

### **Agenda Utah History Tuning Team Meeting June 15, 2012**

1. American Historical Association (AHA) meeting on the Lumina grant – Dan McInerney
2. Relationship between two- and four-year institutions – Marianne McKnight
3. The history teaching degree – Axel Ramirez

### **Minutes Utah History Tuning Team Meeting June 15, 2012**

Present: Bill Evenson, Daniel McInerney, Norm Jones, Marianne McKnight, John Macfarlane, Kathryn MacKay, Susan Neel, Spencer Clark, Chip McLeod, Jon Cox, Lindsay Pennington, Curtis Bostick, George Henry, Isabel Moreira, Karleton Munn, Axel Ramirez, Janice Gygi.

Kathryn MacKay chaired the meeting. Team members began by introducing themselves and telling briefly what was happening in their individual departments. A report from each of the participating team members is found below.

#### **American Historical Association (AHA) Meeting on the Lumina Grant**

Dan McInerney reported on the recent meetings of the American Historical Association (AHA). They have a Lumina grant to develop outcomes for history for their member institutions. AHA set up a group of 66 faculty members across the country to discuss developing outcomes. A core group of six, which includes Dan, had met in December to plan for the larger meeting. For the main meeting, they had 120 applicants and eliminated 60. The group included a broad range of individuals. They spent two days in a hotel conference room and concluded with a final wrap up.

Jim Grossman, Executive Director of AHA, Anne Hyde, a member of the AHA Council from Colorado College, and Patty Limerick, Vice President of AHA, participated. Dan presented a background on Tuning, Lumina Foundation, Bologna, and a discussion of what had been done in Utah. Handouts that Dan distributed to the Utah Tuning Team are attached.

There was a lot of criticism from the participants, and the panel responded and kept discussion open.

The group of six that had met in December developed an outline of a History Discipline Core that was handed to the larger group for discussion.

Representatives from IEBC presented and indicated that a new handbook is being developed. This takes time and can't be done in a year. It is a long discussion that will continue.

The basic premises that AHA advocated were:

1. The process must be faculty led.
2. At no point will the AHA use the term standards.
3. The focus is not on a curriculum. Unique curricula are based on the different nature of institutions, size of departments, and expectations.
4. AHA reassured participants, they were not advocating one fixed way of teaching. History content hardly came up for discussion. The emphasis is on skills
5. There will be no oversight on content, nothing that impinges on academic freedom.

The group included people who would offer strong critiques, some of whom had been working on this for a long time. They encouraged provocative people. Bad behavior was the exception rather than the rule. The leadership group will fly to campuses on the list and give other orientation programs on Tuning.

Dan shared a draft of AHA outcomes with the Utah team, but collected it after the discussion. The discussion centered on the question "Has the document covered what is essential?" (The suggestions were minor.) The groups were slow moving, but they were having a discussion for the first time.

The first step was to choose a competence and determine how to phrase it and how to scale it. The second step was to determine how they would want that competence to be achieved at the various levels.

Dan will send us information as he receives it. The Utah team can make suggestions for reasonable, manageable projects and report back to AHA as a group. For example, you might meet with a group of students and see what they think.

This involves changing academic culture, and it does not happen quickly. The AHA is trying to create a degree that is not an emblem of an institution. Now history departments can trade on the name and reputation of AHA.

Kathryn noted that we might want to get students together to discuss this. We may want to take some pieces and work with small groups.

Dan said that the information will be disseminated in two ways. One way will be regular articles in *Perspectives on History* and sessions in annual conferences, and perhaps sessions at the regional conferences of the AHA. They will also speak with the teaching division of AHA and develop best practice statements or additional pamphlets. The annual meeting should be a gathering of educators as well as researchers and include K-12 participants.

Norm suggested that we should propose a panel discussion for the annual meeting. It could serve as a self-reflective exercise.

It is not necessary for the Utah team to revise their outcomes now. We can wait and see what happens with the AHA outcomes, but it is unlikely that they will differ appreciably from what Utah has done.

Susan said that part of what we are trying to do here is to communicate to another audience, and Norm said that includes the press.

Norm made a point that these fit into accrediting and other department reviews. USU has centered on the vocabulary that came from Tuning. It can be plugged in a lot of ways, including an external review process. They are using Tuning to answer numerous questions.

Dan requested that each team member send him an email with comments. There will be an AHA Tuning page on the website. Now is a time to request to have 20 minutes to discuss Tuning at opening meeting of department.

### **Relationship between Two- and Four-Year Institutions**

Marianne McKnight led a discussion about the relationship between two-year institutions and four-year institutions. What is the difference between an associate's level and a bachelor's level? Students that transfer to do not perform as well in the third year as those that start at the university. Many community college students start college at a different place than those that begin in a university, but they need to end at the same place. The adjunct ratio at SLCC is 50-60%. How can we train adjuncts? Two pieces of information are important to the community colleges. How did students perform in the third year and how did they perform at the end of the degree?

Teddi noted that she is an adjunct at the University of Utah, and they include adjuncts in faculty meetings.

Susan said that she would like to have more information. How different are the students? What are the differences in performance and expectations between two-year and four-year students. What level do students read? What is the disparity? Any data would be helpful.

Marianne reported that SLCC has a large writing component in all of the history courses. They want students to succeed. Students are starting at many different levels and may be below the level of students at four-year institutions. There are very few students who know how to write well.

Susan felt it would be valuable to know what rate the students succeed in one thousand level courses. We need data across two- and four-year institutions. Marianne said that this requires some information from four-year institutions.

At the University of Utah they have the global pathways program for international students. They don't want you to treat them differently, but they may lack the skills of some of the other students.

Norm noted that while it is fairly easy to get the meta-data, students may not transfer in as history majors. We need to look at History 2700 and 2710.

Marianne felt it would be useful to know what the difference is between 1000, 2000, and 3000 level courses.

Isabel noted that certain skills will be required at 3000 level. Students will be doing research. The evaluation system for students will be changing. They need to know what the key questions are and why we are asking them. We need to look at the beginning, middle, and end.

Dan suggested that IDEA may be what they will be using.

Kathryn asked what needs to be done. Marianne said that we need to define what an associate's level means.

Kathryn suggested that we set up a task force, with Marianne as chair.

Karleton suggested beginning at History 2710, since history majors begin with that course.

Susan reiterated that they need to know more about expectations from colleagues. If they don't have to have standard levels, what do they do?

Kathryn noted that the majors' meetings have done this, and Marianne said they need to know what it will look like after they do it.

Susan asked about Canvas. Dan reported he had used it for a smaller, upper division group. Canvas shows you a student's paper on one screen and has a comment box on another screen, but it is hard to use for a large group.

Susan said everyone teaches the course differently. Would it help if there was a rubric that each professor at different institutions used? Then you could determine if a paper demonstrates a certain level of skill.

### **The History Teaching Degree**

Axel Ramirez led the discussion on the history teaching major. He asked what the history teaching majors at each institution do that is different from the history majors. Some noted that the students seeking the teaching history degree do not take the capstone course?

Kathryn said that at Weber they want the history teachers to have a capstone experience and a research experience.

USU has a capstone for teaching majors, but it is focused on teaching and not research. They use high school master teachers to teach the class. The student product is a lesson plan rather than a research paper. Dan noted that at USU they don't have the faculty resources for teaching majors to have a research experience. Spencer said that he wants students to do a practicum with master teachers.

Norm noted that a few years ago at the majors' meeting the group decided that the social studies composite could be used as a minor for history major. Spencer said they are trying to add more high level courses, such as political science, history, and geography, to the degree in teaching history.

At the University of Utah, they only offer a B.A. Students wanting to teach history have to take George's methodology course.

George pointed out that it is very difficult to teach what you don't know. Students struggle with what you should know and what you should be able to do. It is important for the capstone, particularly in common core, to be heavy in research. The idea of pedagogy is difficult. It does not necessarily substitute for strong research methodology and writing skills.

Norm asked if the teaching research methods course is the same as a teaching methodology course. If you need to teach high school students how to do it, you need to be able to do it.

Teddi said that when she met with the College Board, they stressed the absolute necessity of a research component.

Axel noted that the common core document articulates some common learning outcomes for juniors and seniors, and these might work for freshmen and sophomores. They have set a high level for secondary schools. Norm noted that, if common core is working, we may need to rearticulate the beginning college courses.

Dan said that another thing that complicates this is the mission to take the returning students who have not had the common core. George said we should read the common core.

John said that their department has an argument about research. Very few students go on to graduate school and use their research thesis in any practical way. UVU requires a minimum of seven upper division research classes and students have to have a 10- to 20-page research paper in each of these. Axel said that the Praxis exam is the issue. Students need more content if they are to successfully pass.

Lindsay said she had no intention initially of going to graduate school but then she decided to go to graduate school. She didn't have the background for the future that she wanted. She passed the Praxis and appreciated having a lot of content. Axel asked how many students who thought they would be history teachers have then decided to go on to graduate school.

The University of Utah is seeing a lot of history majors coming back and wanting to go into teaching. BYU does not allow their students to return. They asked about the American Studies degree. Is this more beneficial to get licensure?

Curtis said SUU requires a capstone course for history teaching majors. The teaching major is much more prescribed than the history major. There is a difference between the 1000 and 2000 level courses. They have no 3000. The University of Rhode Island has a good website defining this.

Norm suggested looking for student input at the next Phi Alpha Theta regional conference, but it will not be held until next spring.

Kathryn asked for volunteers for a task force on history teaching.

The next meeting of the Utah History Tuning Team will be in conjunction with the majors' meeting.

## **Reports on Progress of History Departments Utah Tuning Project Summer 2012**

### **Report from Marianne McKnight, Salt Lake Community College, Utah History Tuning Team**

Now with regard to what is going on in my department:

Things are progressing at a steady pace. I cannot say that the faculty are ecstatic about assessment, but they are committed to improving our program, preparing our students for the next stage, and working with the 4-year institutions to make sure we do so. They are pleased that I am directing this work on behalf of the department and they are open to what I bring back to them from the Tuning meetings.

During the academic year 2011-2012 we focused on assessing the writing skills of our History students. We developed a rubric that outlined 8 important elements of historical writing and then gathered data from the 1100, 1110, 1500 and 1510 courses. What we found out was not surprising- we have work to do. As a result, this coming year I will focus heavily on training for both full and part time faculty on how to better teach our students the writing skills they need for the discipline. The History Program will be reviewed this next year and we look forward to seeing how Tuning has strengthened our program thus far. I am convinced that it has.

The response from SLC administrators who attended the DQP was very positive! From President Bioteau all the way down to the deans, they were very impressed and enthusiastic about our work. As a result of that conference, I feel that I, as a Tuning team member, have even more institutional support than I had before.

I am looking forward to working with the small sub-committee that volunteered with me last Friday to examine two very important questions: 1) What does an Associates Degree mean?; 2) What kind of data can we collect to tell us how to better prepare our 2 years students for the 4 year experience?.

### **Report from Isabel Moreira, University of Utah, Utah History Tuning Team**

At the department's annual retreat at the end of August we will be proposing the re-introduction of a 3000 level course (probably 3990) that will focus on historical research skills. This will be required of all majors including transferees. This will be a pre-requisite for taking our senior seminar (4990). We are looking into having targeted questions in teaching evaluations for both classes to enable us to monitor professional expectations for the class, and in the case of 4990, an 'outcomes' dimension linked to the experience in 3990. We will work with CTLE (Center for Teaching and Learning Excellence), our teaching evaluations specialists, to include questions about transfer student preparation. We are also being encouraged by CTLE to add a major's exit interview. In all cases, my hope is that the focus will go beyond testing of skills acquisition; it should be seen as a way to help students articulate their skills and accomplishments to themselves and to others.

My hope is that we will get department-wide support for this in August and that we will spend

time this year discussing and refining the project (intellectually, but also in practical terms of staffing). I hope we will be able to implement these changes for the next academic year.

**Report from Jon Cox, Snow College, Utah History Tuning Team**

Snow College is currently in the middle of our preparations for an accreditation visit. As such, the learning outcomes and assessment tools outlined in the Tuning process have been invaluable to our department. We are also working to better implement Canvas in this process, in particular trying to adapt Dan's suggestion about rubrics in Canvas to analyze change over time among students. We have been working with our campus technology office to hopefully implement this for the fall semester. As much of our assessment is in essay form, this type of tool will hopefully allow us to better compile broader data to analyze student progress. We are also working to better understand the capabilities of the analytics tool on Canvas to see if other assessment data could be derived in a similarly helpful manner.

**Report from John Macfarlane, Utah Valley University, Utah History Tuning Team**

Our Department Chair, David Connelly, attended the DQP Conference on April 2nd as well as our Associate Vice-President, Kathie Debenham. David was very positive about the Tuning process and will continue to work toward implementing the Tuning process within the Department.

The History and Political Science Department has instituted several assessment tools:

- Every course now has minimum writing goals, 7-10 pages for 1000 and 2000 level classes, 15-20 pages for 3000 level and 23+ for 4000 level classes.
- Writing samples are collected from various lower and upper division classes to assess writing skills and whether students are making progress.
- The Department is developing minimum requirements for each class.
- Experienced professors are identified as mentors for each class to help other professors and adjunct instructors.

These are some of the projects underway, the discussion of assessment is one of the priorities for the department now.

**Report from Dan McInerney, Utah State University, Utah History Tuning Team**

The Tuning process in the Utah State University History Department continues to expand and develop in new ways. Tuning has informed most discussions of the curriculum and our thinking about the contributions of historical study.

In the very foundations of our department, Tuning's "effects" may be seen in:

- advising material that foregrounds our learning outcomes for courses and the vocabulary of student skills that graduates should take into job interviews
- the redesign of survey courses designed specifically for history majors
- a clear statement of learning outcomes on all course syllabi
- the use of rubrics in a variety of lower- and upper-division courses that concentrate on the key learning outcomes Utah historians have agreed to employ in their departments

-a single rubric for our senior capstone course

In further refinements of our curriculum, Tuning is evident in:

-a pre-major program that guides entering students through a more structured, systematic, and purposeful series of lower-division History *and* General Education courses, all in an effort to provide them with the knowledge, skills, and understanding they will need to succeed in upper-division classes

-a new course on historical research methods, taught by faculty and information specialists from our library, that is designed to precede the capstone class; students demonstrate their ability to scan historical literature; identify and articulate a researchable historical problem; find, synthesize, and analyze the most relevant historical literature related to research problems; and develop a research proposal

-special questions added to course evaluations that concentrate on the learning outcomes announced in each class

-an experimental section of an upper-division class that utilized the “assessment” features of the University’s “Canvas” course management system

-the construction of the department’s external review materials written in 2010

Among the plans for the coming academic year, our Tuning efforts will focus on

-developing a department “matrix” in the Fall of 2012 to “plot out” how and where our courses fulfill the wide range of history learning outcomes

-working with the College of Education and our “master teachers” to develop clear learning outcomes and assessment mechanisms for the *history teaching major*

-History has become the model for the reform of the College of Humanities and Social Sciences, in which all departments are moving toward the creation of a matrix of outcomes built around the College's outcomes

Faculty members who, at first, stood back from initial Tuning experiments, have begun to come forward on their own with dramatic revisions of their classes that concentrate on the “outcomes” of university learning and the principle of ratcheting up expectations for students in the bachelors program. In addition, in the past week, a faculty member (on her own) created a working group within the department to develop a new course (provisionally framed as “How to Think Like a Historian” that is designed to build specific historical skills and understanding *before* students attempt the capstone class. (The suggested class, intended as a requirement early in a major’s coursework, should include address historiography, research skills, and writing exercises.)

On the national level, two members of our department serve on the Lumina Foundation’s “Tuning USA National Advisory Board.” In addition, one of our department members serves on the leadership group of the new Tuning grant between Lumina and the nation’s largest (and most prestigious) professional society, the American Historical Association.

Two representatives from the department attended the DQP conference. The links between Tuning and the DQP that the conference so carefully addressed have not yet been spelled out as *systematically* as possible to department members. But we believe that proposed changes in our College's core curriculum will give a tangible, programmatic form to these ideas in the coming semesters.

**Report from Curtis Bostick, Southern Utah University, Utah History Tuning Team**

The History division of the Department of History, Sociology and Anthropology at Southern Utah University has implemented several new practices in its assessment procedures that bring the division into closer alignment with the assessments developed by the Utah Tuning Project for History. Also, in spring 2012 the History division revised its learning outcomes which are now more congruent with the learning outcomes devised by the Utah Tuning Project. Because of the strictures on the number of outcomes and word numbering, imposed by the University administration, the division could not completely adopt the outcomes formulated by the state Tuning Project committee. Nonetheless, the new outcomes are clearer and measurable, a considerable improvement over previous learning objectives.

In regards to assessment, much refinement and accuracy has been achieved. With the use of student evaluations from the IDEA program, professors can determine more readily if course objectives have been understood by students and realized in their estimations. To the best of this reporter's information, all course syllabi enumerate learning outcomes. Furthermore, for the first time, data has been collected from the evaluation of students' work in selected courses which provides quantifiable evidence that specific learning objectives were taught and achieved by a significant (over 80%) portion of students enrolled in those courses. These courses have grading rubrics that identify learning outcomes and degrees of achievement.

This fall 2012 the capstone course will be evaluated in such a way as to provide clear, measurable data as to the percent of students achieving satisfactory demonstration of stated skills and competencies.

The division of History at SUU has made significant strides towards achieving the high levels of excellence in performance and assessment outlined in the state Tuning Project. Still only a minority of History professors have implemented the practices such as grading rubrics that need to be employed in order to truly quantify students' grasp of skills and competencies. Also, a graduated set of learning outcomes should be devised for the whole curriculum so that students' progress from introductory courses through upper division classes culminating in the capstone course can be accurately measured and adjustment or revisions instituted as needed. Also, practices and outcomes from the Tuning Project have not been specifically incorporated in the faculty evaluation process.

Concerning feedback about the DQP conference held in April 2012, from SUU I know the Associate Provost, Dean of the College of Humanities and Social Sciences, a professor of History

(myself) and a professor in Physics and Mathematics attended. Probably a professor in Elementary Education also attended, but I did not see her. This group of professors from SUU has not met since the conference. For myself, the importance of clearly articulated outcomes was again made apparent but more concrete ideas as how to involve colleges in such a project evades me. This problem probably relates more to my acquisition of better leadership skills and not to the conference presentation.

**Report from Susan Matt, History Department Chair, Weber State University**

Our assessment efforts have been a major focus of the department for the last few years. We underwent a very successful Program Review this past spring. That process helped us organize the results of our assessments and plan for future years. For instance, we now have an assessment schedule for every course for the next 4 years.

We have done the following:

We have revised our mission statement to better reflect our commitment to civic engagement.

We have continued our use of pre and post-tests for the American Institutions course.

We have embedded assessments in History 2700 and 2710 which include student journals and reflections on learning outcomes.

For 1500 and 1510 (the World History Sequence), we are in the process of developing a new form that will measure the course's efficacy in meeting not only departmental goals, but general education ones, as well.

For our upper division classes, we have been doing end-of-semester evaluations on how well these courses meet departmental learning outcomes. For our capstone class, we have created a new assessment form, with a Likert Scale, to evaluate student theses, and gauge how well they demonstrate competency in the discipline. We have created a number of new internships and cooperative work experiences for our students, and require students who engage in these activities to create portfolios.

We continue to use our exit interview for all graduating seniors, and find particularly useful the quantitative section we added to it 5 years ago.

**Agenda**  
**Utah History Majors' Meeting**  
**September 7, 2012**

1. Changes in lower division courses
2. Additions and deletions of common course numbers
3. Update on assessment of GE essential learning outcomes
4. Assessment of upper division learning outcomes
5. Capstone experience for history majors
6. Introduction of the DQP
7. Future business

**Minutes**  
**Utah History Majors' Meeting**  
**September 7, 2012**

In attendance:

University of Utah: George Henry, Carlton Munn, Isabel Moreira; Utah State University: Norm Jones, Spencer Clark, Dan McInerney; Southern Utah University, Curtis Bostick; Snow College: Jon Cox; Dixie State College: Chip McLeod; Utah State University- Eastern: Susan Neal; Utah Valley University: John Macfarlane; Salt Lake Community College: Marianne McKnight, Ted Moore; Brigham Young University: Mark Choate; Utah State Office of Education: Robert Austin; Tuning Project: Janice Gygi, Randy Davies

**Changes in Lower Division Courses**

There have been no changes in lower division courses.

**Additions and Deletions of Common Course Numbers**

Utah Valley University has History 1510g, with the g describing a global requirement. It articulates with History 1510, so nothing has changed.

**Update on Assessment of GE Essential Learning Outcomes**

- Weber State University reported that history and political science are using a civics exam based on the citizenship test in the American Institutions course.
- Salt Lake Community College reported on the ongoing assessment of writing in HIST 1700, 2700, 2710 and 1500 and 1510 courses. The department has learned that most students do not write well; now the conversation is directed toward intervention strategies. Each instructor assesses his or her own course using a common rubric. Further assessment efforts will include faculty who review the writing samples (related to document analysis) in forming their evaluations in terms of the rubric.

**Assessment of Upper-Division Learning Outcomes**

- The University of Utah reported on re-introduction of HIST 3000, which is research and methodologies.

- Utah State University reported on a Gates-funded project to assess the senior capstone project through student self-assessment. The assessment will work with topics suggested by the Institute for the Study of Knowledge Management in Education (<http://www.iskme.org/>) in its discussion on H-Net.
- The discussion of history 3000 asked if the course is an introduction or preparation for upper division courses for the majors. Is the course a prerequisite for the capstone or thesis course?

Marianne asked if a 2000-level course should be developed in preparation for the research methods course at the four-year institutions.

Norm reported that Utah State University's HIST 3000 is being developed as part of the pre-major process. What knowledge and skills, in addition to what is taught in the survey courses, must a student have before being ready to do advanced work in the discipline?

Kathryn said Weber State University is revising HIST 3000 as HIST 4985 in order to suggest to majors that the senior seminar is in two parts.

Isabel reported that the University of Utah is re-instituting HIST 3000. Majors who secure undergraduate research grants are enrolled in a two-semester capstone/thesis sequence.

### **Capstone Experience for History Majors**

John said that Utah Valley University does not require a thesis for teaching majors

Norm reported that Utah State University requires a pedagogy course in addition to what is required in education.

Kathryn said that Weber State University requires teaching majors to complete the 4990 thesis course.

George said if the Utah Core asks that teachers prepare their students to work with primary materials, to research and interpret their sources, do not teaching majors need the experiences in research and interpretation that is the capstone/thesis? Teachers need to be firmly grounded and clear in content, research, and pedagogy. How can we help teaching majors translate their research projects into pedagogy? How might the Utah Core inform our learning outcomes and student experiences in higher education? The writing piece is crucial in this training.

Robert said that this is the sputnik moment in social studies; historic literacy is a distinct skill in the graduation requirement. Students should do history as math students do math. They need to learn to write history. Should we add it to the endorsement requirement? Should a teaching endorsement in history/Social Science include a senior thesis? What should be the literacy standards in social science? What should be the literacy expectations for those graduating from high school career and/or college ready?

Susan asked if we should we also introduce all history majors to basic pedagogy. We should teach the students to talk to the public about history.

Ted said a research internship is being offered through Salt Lake Community College where students do an archival project. This addresses student preparation for upper division. Can this course be articulated for transfer?

George asked if students can they transfer the research method into pedagogy. Can they do document analysis and writing with secondary students?

Robert asked if there is a list of courses for endorsement, how much of the method is being used in these courses.

Ted said that asking them to turn a subject into a class is an excellent exercise.

George said the state core is a “need to know” list not the intellectual framework.

Norm asked Robert for training course for history faculty to help them understand the common core and its needs and preparation.

### **Introduction of the DQP**

The following questions were raised:

- What should a student know at the end of completing lower division work?
- What does taking history classes contribute to the degree and the learning outcomes achieved at graduation? What skills is history responsible for developing in any student? In the major?
- How can we help our students develop a vocabulary about their educational experiences?
- How might internships – more emphasis on experiential learning/on “doing history” – help our majors achieve the learning goals? How might internships at the two-year institutions articulate to 4-year programs?

### **Future Business**

- The History Tuning Team will meet at “What is an Educated Person?” conference.
- Spencer will send out information about the Utah Core.
- The Utah State University College of Humanities and Social Sciences has developed a “Pathways” pamphlet to guide students through general education in preparation for their majoring in certain subjects.
- Learning outcomes for internships are to be circulated.
- Degree profile for history.
- Dan recommends the latest issues of *Perspectives* from AHA with the letter of complaint about Tuning and Jim Grossman’s response.

**Agenda**  
**History Tuning Team Meeting**  
**March 1, 2013**

1. Introductions and reports
2. Report from the American Historical Association Tuning Project
3. Where do we go from here?
4. Final report to the Lumina Foundation

**Minutes**  
**History Tuning Team Meeting**  
**March 1, 2013**

Kathryn MacKay conducted the meeting and began by asking each participant to introduce him/herself and tell what is happening at her/his institution.

**Introductions**

Kathryn MacKay from Weber State University discussed the pathways project and introduced the new student member, Brian Whitney from Weber.

Jon Cox from Snow College said they have a two-member faculty with one adjunct. They are making good progress with the outcomes and have some questions about assessment.

Marianne McKnight from Salt Lake Community College noted that she is working with Isabel Moreira at the University of Utah and Norm Jones at Utah State University to get a handle on the intersection between 2000 and 3000 level courses. She wants to insure that her students have an adequate background when they transfer to four-year schools.

Randy Davies from Brigham Young University is one of the project evaluators.

Dan McInerney is a professor of history and associate department head at Utah State University. They are working to do a more clear examination of outcomes and gather information about where courses provide particular learning outcomes. They also want to get a handle on what will happen in the next two years with more students going on missions for the LDS church. They also want to carefully reflect on what Tuning might mean.

Janice Gygi is the Utah Tuning Project Director.

Teddi Safman is Assistant Commissioner for Academic Affairs at the Utah System of Higher Education.

George Henry is the team member representing history teaching from the University of Utah. He is an adjunct at the University of Utah and teaches at East High School.

Isabel Moreira is chair of history department at the University of Utah. Their methodologies class has been approved and scheduled. Faculty member have been assigned. They want to get the kinks out, and they hope everyone pitches in. Conversations currently are about streamlining the process for preparation for entering the history department. There are major

changes at Utah in the way people are thinking about general education. This is not discipline specific but is part of world they are now living in.

Karleton Munn is the history department advisor at the University of Utah.

Norm Jones has stepped down as department head at Utah State University. They have done an external search and will soon have a new department head.

Chip McLeod said it is a new day at Dixie State University. They now have four faculty members and are having useful conversations and discovering they don't always agree. The faculty is just assembling, and they will offer a BA/BS in history.

John Macfarlane from Utah Valley University said they have done an evaluation of general education courses in history and have instituted a program review. It has been ten years since the history degree was implemented. They have a reviewer who will look at their thesis papers.

Spencer Clark is the team member representing history teaching from Utah State University.

They have realigned the composite major to better fit history major and are refocusing requirements.

Susan Neel from Utah State University Eastern reported that she is working closely with the history department at the main campus of Utah State.

Curtis Bostick from Southern Utah University said that they are incorporating Tuning. They now use the principles but not the entire set of learning outcomes as they are bound by LEAP. All the artifacts are there. The department chair is also working with the upper division courses. Curt said he is impressed with pathways from USU.

### **Report from the American Historical Association (AHA) Tuning Project**

Dan McInerney gave a report on AHA Tuning meeting, which included 60 colleagues in 30 states from a broad range of colleges and universities. Utah is still ahead of our colleagues, and we have already made considerable progress. Checking the web site for the American Historical Association will take you to a document that is an introduction to AHA Tuning project. Dan distributed this document and sent it by email to those who were not in attendance. The AHA suggests that you use this as a guide, keeping in mind the specific mission of your institution. See what parts of this fit with your institution. They are trying to make it as inclusive as possible. Some said it looks like a manifestation of the liberal arts rather than history. Look at core to clearly understand what we should do with it. Are there specific history things that should be done with this? What sets history apart from the humanities in general?

History can make a contribution to civic literacy, intercultural competence, and a diverse and empathetic view. Darla Deardorff at Duke University writes on intercultural competence. This is one way in which history can distinguish itself. What are the distinctive contributions that history makes? The document requires reflection. Think of your mission, faculty, and students. How does this fit your institution? The AHA working group has developed this process as a series of suggestions to campuses. How does the Tuning group want to use the authority of AHA for Tuning? Some thought colleagues need a push and the AHA could provide that. Others thought it might alienate colleagues. This debate is going on at campuses and at AHA. Should AHA suggest "best practices," or be more forceful? They need to have open discussion.

Norm Jones noted that historical knowledge is foundational and fun.

Dan said that some people were put off by the instrumental nature of this process. What have been lost are the joy, fun, and passion of historical study. Somehow we have to inject into this discussion the kind of passion that is not there in an economic discussion of this discipline. They need a clearer statement about what makes the discipline and the passion of it. Dan distributed a handout that describes a project from IEBC. At the meeting, David Marshall from IEBC gave a good presentation on the degree specification profile. This document is a way to crisply and clearly outline the course of study and career outlines. Conciseness is a key; writing it to different audiences is important. For now, we should hold off on the degree specification profile. Dan will work on it and then forward it to everyone. If you can work on this over the spring or summer, the AHA would be grateful. Be thinking of a general audience, such as students and parents, rather than specialists. This would be helpful for our colleagues. Get it in the hands of academic advisors and career advisors. Show students.

Carol Geary Schneider from the Association of American Colleges and University presented news about new employer survey. It is more detailed and is asking questions that have come up since last survey. This is a far more useful survey than the previous one, and it should be available within the next two months.

As we work through this project, watch the vocabulary. Look at knowledge, skills, and abilities that the program develops in students. What kind of language can we help students with as we try to discuss it? In addition to standard presentations, ask student to give presentations as someone interviewing for a job. They should know what skills and competencies have been brought to that project. Think about ways that all of us can try to bring language into conversations with students.

### **Where Do We Go From Here?**

Janice Gygi discussed some options for the Utah Tuning Project as the Lumina Foundation funding comes to an end. Teddi Safman will be on part-time retirement for the next two years. She will host two majors meetings every year for each of the four Tuned disciplines. Teams are encouraged to continue to communicate by email and telephone in between the majors meetings. The important step now is to continue to take the outcomes into departments and use them to inform the curriculum, pedagogy, and assessment. The web site can also be used as a form of communication with syllabi, pedagogy, and assessment ideas being posted. The web site is [tuningutah.weebly.com](http://tuningutah.weebly.com).

### **Final Report to the Lumina Foundation**

Janice Gygi discussed what will be required for the final report to Lumina. These will include:

Discipline learning outcomes

Reports from the focus group held at the meeting

Results from a survey sent to faculty and students

Faculty/Administrator survey <http://www.surveymonkey.com/s/TuningImpactUSA2013>

Student survey <http://www.surveymonkey.com/s/StudentImpactSpring2013>

Please remind your faculty and students to complete this survey. It is very important to us.

Agendas and minutes from History Tuning Team meetings

A paragraph or two concerning what is happening in your department

How is your department doing?

Are students aware and/or involved?

Please send this information to Janice ([jgygi@utahsbr.edu](mailto:jgygi@utahsbr.edu)) by May 1 for inclusion in the May 31 report.

## GENERAL EDUCATION MATHEMATICS TEAM

### Agenda

### General Education Mathematics Tuning Meeting September 7, 2012

1. Announcements
2. Reports from Institutions
3. Discussion of Learning Outcome #6
4. Feedback on Learning Outcomes
5. Addressing Learning Outcomes in Specific GE Classes
6. Utah Core Standards including the Mathematical Practices

### Minutes

### General Education Mathematics Tuning Meeting September 7, 2012

#### In attendance:

Daniel Eves (Southern Utah University Chemistry), Doug Richards (Salt Lake Community College Math), Marty Larkin (Southern Utah University Math), Jonathan Bodrero (Snow College Math), Scott Mortensen (Dixie State College, Math), Janice Gygi (Utah Tuning Team), Liz Herrick (Westminster College Math), Randy Davies (Utah Tuning evaluator), Michelle Larson (Utah State University Physics), Bill Evenson (Utah Tuning Team), Diana Suddreth (Utah State Office of Education Secondary Math Specialist), Keith White (Utah Valley University Developmental Math), Kathy Andrist (Utah Valley University Math), David Williams (Utah Tuning Project Evaluator)

#### Joining by IP Video:

Dan Coster (Utah State University Math by IP)  
Brad Roundy (Utah State University Math Student)  
Lynn Adams (Utah Valley University Economics by IP)

#### Announcements

Jonathan reminded us that the Majors meeting for the Mathematics and Developmental Mathematics Departments is September 27, from 10 until noon. It would be nice for as many of us on the Tuning Committee to attend as possible. The meeting will be at the Regents Office. Tuning can reimburse for mileage.

Jonathan reminded us about the “What is an Educated Person?” Conference on October 26 at Snowbird. We will have a joint Tuning meeting with the other Tuning teams at about 3. We are encouraged to attend and to check with our institutions for travel funds.

### **Reports from Institutions**

Each institution was asked to give a summary report of the Tuning progress at each school.

Note: Written reports are found at the end of the minutes.

Scott distributed a written report of the progress at Dixie State College.

Marty said there had been no progress at Southern Utah University.

Jonathan distributed a written report from Snow College, where they want to maintain local control. The Tuning goals fit in with accreditation and assessment at Snow.

Keith distributed a written report for Utah Valley University. He speaks for the Developmental Math Department but not for the Math Department. The GE classes at UVU are not in the Developmental Math Department.

Lynn and Brad reported for Utah Valley University. The chair of the math department would like more objectives and in more detail. Business is already assessing and quantifying and how they will be testing.

Liz said that Westminster is not really participating in Tuning but wants to be part of the process to stay in line with what is being done.

Amanda Castelos from the University of Utah was excused to attend another meeting.

Doug reported that the math and developmental math departments have just been merged, and they are already doing assessment. A project required in math 1050 has become part of the electronic portfolio.

Scott mentioned that Dixie is considering including their assessments in their electronic portfolio.

Paul Talaga from Weber State University was not able to attend, but his written report was distributed.

Dan distributed the written report from Utah State University. He said he did not get a lot of enthusiasm, because most of the faculty do not teach general education classes and the four faculty who do are new to USU.

Michelle reported that because of the history connection, Utah State University is doing more Tuning than most schools and is now doing this with the entire College of Science. At the administrative level USU is very committed. Norm Jones from history is now working as an administrator; this is how committed they are.

Diana noted that the Utah State Office of Education is very interested in this work and wants to stay in the loop.

Bill said that the September 27 majors' meeting will be a good time to let the departments know what Tuning doing. Another goal is to mesh higher education with K-12 as seamlessly as possible.

Discussion followed regarding the inclusion of reflective papers and solved problems in the e-portfolios at Dixie State College, Salt Lake Community College, and Westminster College. The students are being asked to reflect on their work, to write supporting conclusions, and to connect what they learn in their general education classes with what they are learning in their other classes.

Michelle asked how we could get students to understand what we want them to know after completion of the GE classes. She read an article from Baylor University about activities there, and she will send us the article.

#### **Discussion of Learning Outcome #6**

Over the summer, Diana had sent us comments about Learning Outcome #6: "Estimate to check the reasonableness of an answer." We may want to tighten up this outcome. Discussion followed. It was felt that this was too narrow, and we need a bigger picture. Scott asked, "Is estimation what you do at the first of the problem and reasonableness what you do at the end?"

Could we use the word "validate" instead? We want the students to be able to think about the context of the problem and not just follow procedures. Could we change this outcome to "make sense of an answer in the context of the problem?"

For many students, mathematics does not make sense. On the other hand, applying calculus in physics made physics make sense. In chemistry, applying math to equilibrium problems makes sense of chemistry. Using an intriguing context for a problem can get the students to buy into trying a problem. Could we say "Reason and make sense of mathematics using estimation and validation," or just "reason and make sense of mathematics"?

You can't teach intuition to students, but we would like students to come out of GE classes having some sense of mathematics. Some would be happy if the students stopped and asked

themselves if their solution passes the “smell test.” Maybe they will not exit the GE class able to be intuitive, but they should at least start the process and learn to evaluate the reasonableness of their solutions and have the tools from the GE class to start the process. A main component of the e-portfolio is writing reflectively about what they have done.

Could we replace “answer” with “conclusion?” Keith suggested, “Estimate, reason, and make sense of mathematical processes and results.” Diana mentioned that the Utah State Office of Education has a class “Making Sense of Sense Making” for secondary teachers.

Could we say “reason about?”

We are trying to give them skills and tools. We could assess them through reflective papers. Janice mentioned research done by Dr. Peck and Dr. Jencks (both retired mathematics educators from the University of Utah), which concluded that children entered first grade with mathematical intuition but lost most of that by the end of first grade where they were mostly applying processes. The e-portfolio makes students create projects that get them thinking outside of the box. The new Utah Core with its practice standards should help to develop more intuition and thinking about the concepts and develop more mathematical sense than simply following memorized processes. In Math 2010, when students were encouraged do a problem two different ways, many of them realized that they enjoyed doing it. The students need to make sense of the process, and we need to teach for understanding.

Could this outcome be changed to: “Estimate, reason about, and make sense of both the mathematical processes and the results.” The students need to have a “quiver of arrows,” “a bag of tools.” Hopefully, we can communicate the comments in our discussion with the “bald” learning outcomes.

We talked about at replacing “real world” with “practical” or “authentic” or “contextual” to place more focus on conceptual understanding. We will stay with “real world.” Keith will ask his colleague, who is against contrived problems, what he would say instead of “real world.”

### **Feedback on learning outcomes**

Due to time constraints, we did not address “feedback on learning outcomes” any further than we have already.

### **Addressing learning outcomes in specific GE classes**

Due to time constraints and because we had already heard reports from institutions, we did not take more time to talk about how each school is addressing the general learning outcomes in specific GE classes. However, we were reminded of our assignments that were made at the last meeting for committees to address specific courses. Before our next meeting, we need to discuss this among those of us assigned to specific courses.

[From the May 9, 2012 meeting, the assignments are Math 1030: Amanda C. and Keith W.; Math 1040: Dan C., Liz H., Doug R.; Math 1050: Heather B., Marty L., Scott M., Brad R., Paul T.; Math 1210/1100: Lynn A., Jonathan B., and Steven M. ]

### **Utah Core Standards including the mathematical practices**

Jonathan passed out summary pages of Secondary I, II, and III.

Diana has met with another committee that has developed goals for college readiness. She mentioned the new Utah Core insists that students be placed in specific courses and have deep understanding. Graduation requirements are Secondary I, II, and III but parents can opt out, but the opt out courses that students then take require high level thinking.

Keith asked, "How does higher education differentiate ourselves from secondary education? What experiences are possible in higher education that are not available in secondary?" One thing we have in higher education is learning communities in a major or field of study.

We need to give more thought to the learning outcomes. Janice commented that "We need to already be sharing with our departments, but outcomes will always need to be tweaked." The work we are doing is malleable. Jonathan said that the majors meeting will be a significant place to share what we have done and that it is a "work in progress."

### **Wrapping up**

When do we meet again? What are our objectives? The groups that need to look at the specific classes need to communicate. What is the work that needs to be done? Jonathan will send out the reports he has. Bill and Janice will get with Jonathan and synthesize and get back to us.

Randy asked, "How do we know this is making a difference?"

We don't have enough specific assessment tools. We are not yet ready to implement. Maybe we should set up a Friday afternoon IP meeting.

Marcus from the Lumina Foundation joined us part way through the meeting. Janice introduced him to us before we finished.

After the meeting some suggestions were "reason through" or "reason with" rather "reason about."

## REPORTS FROM INDIVIDUAL INSTITUTIONS

### **Dixie State College (Scott Mortensen)**

Here at Dixie State College, the Tuning process has been well received. The Math Department is open to new ideas and will continue to implement these ideas into the GE classes which are being taught. We are presently going through a major change in the way that Math 1010 is being taught. This will impact the “Gateway” courses, which are essentially the GE courses. As we move along with these changes it will be a great opportunity to rethink what should be in those Gateway courses. We will definitely look at the ideas that come out of the Tuning process for help in improving what is taught and what should be expected upon graduation.

We have had a change in leadership in the department, but I know that Clare Banks (new chair) will be very open to the Tuning process. She is very progressive and open. Our Dean is also 100% behind the process. Our academic vice president, Donna Dillingham-Evans, is one of the people on campus who wants to make change. It is through her leadership than many of these changes are coming about. She, being a former Math chair, understands the need to move forward. Therefore, I feel that Dixie is ready to continue on this process, along with the other changes we are making.

### **Utah Valley University Developmental Math (Keith White)**

UVU’s Developmental Math faculty are well aware of the Tuning process, and have contributed feedback which has helped shape the Learning Outcomes. Tuning has been discussed in multiple department meetings with additional feedback solicited via email. In general, the department is supportive of the Tuning effort as well as the current version of the Learning Outcomes.

Questions remain about the long-term impact of Tuning, in particular how these outcomes will be implemented into the curriculum of existing math courses, as well as how the outcomes will be assessed. As a service department which prepares students for the general education math requirement, developmental math faculty would like to know how these outcomes will impact what is taught in the developmental courses.

Here is a quick summary of the feedback from our last department discussion of the outcomes:

- Is there a different term than “real-world?” They are supportive of ensuring that applications are not contrived, but some wonder if there is another phrase which can convey that.
- The faculty have questions about how to assess fulfillment of the outcomes, and what impact they will eventually have on curriculum.
- There were questions about conceptual understanding vs. skills. Some would like to see conceptual understanding figure more prominently in the outcomes, and worry that the current outcomes might still be too focused on skills.
- Some wonder if outcome #6 is necessary, and others think it’s the most important, so there wasn’t really consensus on that.

### **Snow College (Jonathan Bodrero)**

Here at Snow, we have discussed the Tuning learning outcomes in department meetings, and I have also solicited feedback via email. Although I would have liked more feedback, what I did receive was positive and constructive. I even got feedback from a biology teacher and the English department chair. There is some interest in Tuning as we continue to work through our assessment of courses and programs, particularly for accreditation. When presented with the latest draft of the learning outcomes, math faculty were quite supportive. We are continuing to grow the culture of assessment and improvement at Snow College, and in the math department in particular, and I believe that Tuning will fit nicely with better methods of assessing and documenting our efforts.

I've talked about Tuning with our CAO, Dr. Gary Smith, and he attended the Degree Qualifications Profile meeting in Salt Lake in April. He is very supportive of the learning outcomes but is concerned about retaining local control on how to reach those outcomes. I've tried to reassure him that our objective is to outline the essential learning outcomes and give specific examples of how each of them can be implemented and assessed in the variety of math GE courses. In this way, we get instructors thinking about how to work toward and assess the learning outcomes in their own class(es) while not mandating specific actions or limiting the instructor's flexibility to reach those outcomes in a variety of valid ways.

I've also discussed Tuning with my dean. He is glad to hear that we are discussing learning outcomes, especially across the USHE system and is very supportive of the process. His biggest concern is how to get "buy in" so that this gets implemented across the state and it's not just a bunch of people coming up with good ideas that will never make it to the classroom.

### **Utah Valley University (Kathy Andrist)**

We have discussed the Tuning process for GE Math at our Math Department meetings. I have found that most of our faculty did not understand the process or why we are involved with Tuning. Many thought that Tuning is some outside entity making decisions about content and pedagogy in our courses and forcing us to hold to standards we do not agree upon. I think many are still 'suspicious.' I have tried to convey the message that Tuning is the process of finding agreement across USHE about the student learning outcomes of our GE Math courses. The focus is on the student. We are attempting to define the essential competencies in our courses. I plan to share the College Algebra competencies with our department at our first 'regular' department meeting next week. For other disciplines this process extends to determining basic competencies for all degree levels, AAS, BA or BS and MS.

### **Utah State University (Dan Coster and Michelle Larson)**

1. Department Colleagues: During our recent fall departmental meetings, I provided our math/stat faculty with an extensive summary of the purpose of the Lumina Tuning process for GenEd math, how it works, what its goals are, etc. I also presented the latest

versions of the ELOs our Tuning committee developed last year, along with a brief comparison of these with other ELOs with which we are all familiar. I also explained my understanding of where the Tuning process will go next and directed them to the History and Physics results currently on local websites.

I would describe “buy-in” as satisfactory but muted. The lower enthusiasm I would attribute the 3 things: (i) we are Tuning GenEd math and most of my colleagues are not involved in this level of teaching, so they have little real interest; (ii) our instructors of GenEd math are mostly 3 newly hired lecturers who are not yet fully familiar with the content and objectives of these GenEd math courses, so they are not up-to-speed yet on the issues; and (iii) some saw this as yet another set of “standards” to aim at and we have plenty of those already.

What was better received was the potential for the Tuning process to produce recommendations for identifying and assessing ELOs, meeting expectations and demands of both students and other stakeholders, including parents and potential employers, and to explain the “why, when, and how much” each student must have as a math/stat skills set as they move through a specific major. In addition, the possibility of later Tuning the entire math major was seen as an opportunity to better articulate what we teach and why.

2. The Provost, the Deans of Science and Humanities & Social Sciences, and the General Education Subcommittee of the Educational Policies Committee at Utah State University have been and are enthusiastic supporters of the Tuning effort and its outcomes. In the College of Humanities and Social Sciences, Dean Allen has worked with department heads and faculty to instigate a Tuning-like reformulation of the College’s curricula. Based on this success, a similar effort is beginning in the College of Science in Fall 2012. In 2011, USU’s President, Stan Albrecht, formed a Task Force on the Curriculum which recommended changes in admissions, advising, general education, and the ways in which majors explain their degrees, all of which tie to Tuning. The Curriculum Task Force is interested in the General Education Math Tuning group process, and intends to incorporate their recommendations in this work. USU’s support for Tuning and curricular efforts resulted in the creation of a Director of General Education and Curricular Integration, to facilitate and coordinate cross-campus efforts.
3. Other Departments using GenEd math: I have had limited interaction with other departments in the formal sense, just informal contact with colleagues in the Colleges of Business and “Humanities and Arts” to let some know that Tuning of GenEd math is taking place. So far, none have voiced concerns with our proposed ELOs and overall objectives, but none have stepped up with concrete suggestions to help the Tuning process as it related to students’ math skills needed in their disciplines.

### **Weber State University (Paul Talaga)**

About two years ago the university curriculum committee set up a General Education Assessment and improvement Subcommittee. One of their charges was to author Learning Outcomes for the QL (quantitative literacy), general education requirement. They began with the QL learning outcomes that the Board of Regents had adopted some years ago. Eventually these were approved by the Faculty Senate. They are:

*Objective 1:* Interpret mathematical models such as formulas, graphs, tables, and schematics, and draw inferences from them.

*Objective 2:* Represent mathematical information symbolically, visually, numerically, and verbally.

*Objective 3:* Use arithmetical, algebraic, geometric, and statistical methods to solve problems.

*Objective 4:* Estimate and check answers to mathematical problems in order to determine reasonableness, identify alternatives, and select optimal results.

*Objective 5:* Recognize that mathematical and statistical methods have limits.

During Fall of 2011, all the QL courses underwent renewal. The Math Department was required to submit a document for each course justifying that the course did address each of the QL *Objectives*. The courses were discussed and approved by the university curriculum committee and later passed by the Faculty Senate.

During the spring semester of 2012 the department performed an assessment of the QL courses. The finals for all the QL courses offered that semester included a common question for each of the learning outcomes. That data has been compiled and will be disseminated in the near future.

#### **Math Tuning**

As a result of the internal activities at WSU the Math Department and other concerned faculty across the university have been quite involved in the discussions of Learning Outcomes. These activities have overshadowed/supplanted the activities of the Math Tuning Team to a certain extent. I informed the math department members and many other concerned faculty and the Dean of the College of Science about the team's draft list of learning outcomes. There were only 3 responses to my emails.

During the fall of 2011 there was a meeting to inform the Deans and the Provost about the Tuning activities in the various areas. Faculty involved in the Tuning of History, Physics, Education and Math attended. The Provost attended, but none of the Deans attended. We had some worthwhile discussions.

My feeling is that administrations are mainly concerned with the number of graduates produced. Increasing the analytic abilities and critical thinking is secondary. QL requirements are keeping many students from graduating.

**Agenda**  
**Mathematics Majors' Meeting**  
**September 27, 2012**

1. Changes in lower division courses
2. Common core number changes
3. Learning outcomes and assessment
4. Degree Qualifications Profile (DQP)
5. Other business

**Minutes**  
**Mathematics Majors' Meeting**  
**September 27, 2012**

**In attendance**

University of Utah: Kelly MacArthur, Angie Gardiner, Nick Korevaar; Utah State University (USU): Michelle Larson, Dan Coster, Julie Hartley, Linda Skabelund, Melanie Nelson; Utah State University - Regional Campuses and Distance Education (USU-RCDE): Eric Rowley; Utah State University Eastern (USU-E): Melanie Nelson, Henry Zwick; Weber State University (WSU): Paul Talaga, Afshin Ghoreushi, Kristin Hadley, Kathryn VanWagoner, Dixie Blackinton; Southern Utah University (SUU): Seth Armstrong, Marty Larkin; Snow College: Jonathan Bodrero; Dixie State College: Scott Mortensen, Michele Poast, Clare Banks; Utah Valley University (UVU): David Fearnley, K.D. Taylor, Max Aeschbacher, Kathy Andrist, Brad Roundy, Keith White, Christine Walker; Salt Lake Community College (SLCC): Evelyn O'Dell. Todd Riggs, Suzanne Mozdu, Candace Wignall; Brigham Young University (BYU): Steve McKay, David Williams; Western Governors University (WGU): Kristen Spencer, David Francis; Utah State Office of Education (USOE): Diana Suddreth; Utah System of Higher Education (USHE): Teddi Safman, Janice Gygi

**Changes in lower division courses**

David Fearnley proposed developing an 8 credit MATH 1010/1050 combined course taken in one semester. The class would accept people who can pass 990. Afshin suggested perhaps UVU should consider combining 1010 and 1030. David said that would not work at UVU as 85% of students take 1050. What about developing a prerequisite for 1030/1040 that would serve students who switch majors before taking one of those classes and the prerequisite will prepare students also for 1050?

UVU would also like to introduce a pre-1030/1040 course to take the place of 1010. The objective would be to give an algebra-intensive experience. SUU once offered a 1020 class that was easier than 1010 as a precursor to 1030 or 1040, but had problems when students changed

majors and tried to use the 1020 as a prereq for 1050. Regent policy reads, “two years of high school Algebra.” UVU is hoping that offering a pre-1030/1040 course will meet Regent policy. Other institutions trying this sequence have seen a 60% pass rate versus the current 30% pass rate through the Developmental Math track. We haven’t discussed this, but students changing majors should not get college credit for both 1020 and 1010. At Weber Developmental Math is interested in exploring this idea. If there is interest across the state, we should consider developing a uniform class that transfers. UVU will strongly recommend that students planning on going into higher level Math or science classes should NOT take 1020. This 1020 class will be of value to students in majors that require 1040 as the terminal Math class.

All students need General Education science to graduate. Are there enough General Education science classes that will accept 1030 or 1040 as a prerequisite? The question for Regent policy is whether the system wants to allow students to get a degree from a USHE institution without knowing the concepts in 1010. There is wide span in students’ ability to know how to learn. Students starting 1030 after taking 1010 were given the 1010 final; 31 out of 33 students scored 60% or below. SLCC is hesitant to erode the standards. The 1020 that SUU offered was available to students such as theater majors. USOE observed this is a structural change without a content change. There have been several USHE committees where participants have suggested 1010 should be completely redesigned.

Weber is feeling pressure from the Lieutenant Governor’s office to embrace *Complete College America* goals to get students through college faster. This may not be academically sound. Snow college is putting together 2250 for mechanical engineers ONLY (in lieu of 2260 and 2280). SUU offers 2250 as does SLCC, UU, and Weber.

University of Utah is starting a 1310/1320 engineering enhanced series that goes beyond 1210/1220. These are 4 credit hour courses that have a weekly lab for a fifth hour and cover more engineering concepts. Some of the labs are problem sessions; others are more in-depth exploration of a math engineering topic. Does this tie into anything after Calculus? There will be a 4-class sequences, calculus through multi-variant through multivariable and vector calculus. Students transferring or changing majors will be okay as the sequence will be considered advanced over 1210/1220. Will transfer students have to take more math? The University of Utah added 1080. SLCC added 1080. This is Dixie’s 1065. They are working on renumbering.

UVU has developed a 3310 Discrete Math class. SLCC has added MATH 1100 for business majors. BUS 1100 will still articulate. MATH 1100 does articulate to USHE institutions. SLCC has also created 2200, discrete mathematics, with a prereq of 2020. SLCC is also looking at its classes below 1010. Last year SLCC started MATH 1, 2, and 3 to prepare students for 1010, SLCC’s answer to emporium math.

SLCC asked if there is a cut off score for Accuplacer where students are not allowed into developmental math, and the answer was no. Weber does not have a class below 0950 and is wondering if all low scoring students should be placed into this class. UVU has a class below 0950 and the numbers are growing. SLCC offers 0900, which is similar to UVU's 0920.

### **Common Core Number changes**

There were none.

### **Learning Outcomes and Assessment**

The University of Utah is not going to use technology (eg, calculators) in 1010 and 1050. They changed the language from "use of technology" to "expose students to technology." Also there is a difference between what and how we are teaching and the skills that students are able to apply at the end of a math class.

Weber noted they don't see mental math and technology as difference ends of a continuum. UVU students in 1010 and 1050 are not generally exposed to technology. There is some advantage to having some outcomes that are extremely vague: "Be able to explore and analyze mathematical concepts using appropriate tools."

One of the questions raised by Tuning, is what are the competencies that students are expected to have after completing a course. If a student transfers, what can a receiving institution expect?

Are the Tuning statements supposed to replace the language in the 1995 Regent Quantitative Literacy (QL) Final Report (see list below) on QL expected outcomes?

1. Interpret mathematical models such as formulas, graphs, tables, and schematics, and draw inferences from them.
2. Represent mathematical information symbolically, visually, numerically, and verbally.
3. Use arithmetical, algebraic, geometric and statistical methods to solve problems.
4. Estimate and check answers to mathematical problems in order to determine reasonableness, identify alternatives, and select optimal results.
5. Recognize that mathematical and statistical methods have limits.
6. Understand basic concepts describing time-varying systems, and how prediction follows from the formulation of basic laws of change, both analytically and numerically.

### **Degree Qualifications Profile (DQP)**

The DQP is a tool that helps to develop a transparent view of what students are learning in a degree, year by year, and their competencies over a four-year period.

### **Other Business**

At BYU Idaho, FD MAT 108 does not have an algebra prereq. For the University of Utah, quantitative literacy (QL) credit for transfer would have to have certain algebra content and 108 does not. So they do not transfer the class as 1030. Is this a terminal class? BYU does not teach 1010; its lowest course is 1050. BYU offers MATH 102 to prep for 1050. What is the student population for this course? BYU Idaho does not enforce prereqs so knowing the prereq does no good. The FD MAT 108 class has less than an 80% overlap to UVU 1030. USU said this seems to be a mixture of 1030 and 1040. They would call that would call that QL, with a prerequisite roughly equating to 0990. They would award QL requirement but would not transfer credit to 1030 or 1040. SLCC has two levels of QR, and 108 falls more into the QS role. They might waive the QS requirement, but not the QL, which is the same response as USU. Weber does not accept as QL because of the prerequisite. UVU does not accept it as a QL class, but will accept it as elective credit. SUU had not seen the class. SUU does not count a course unless it has a MATH course designator. BYUI MAT 108 uses the same textbook as UVU MATH 1030 but does not cover the same scope of material. Does anyone accept BYUI MATH 102 for QL? No one has seen this class. Jonathan will gather syllabi for 108 and 102 for evaluation by the committee.

What are the teacher qualification requirements for the concurrent enrollment courses for MATH 1050? UVU requires an MS in Math or MathEd or Level 4 Math Endorsement but the institution will write exams and assign the grades. SUU requires the same as UVU. USU does the same as UVU and provides at least the final exam. No more than 30% of the grade can be determined by homework. USU oversees the final grades before submitting. SLCC has required a MS, but with TICE, SLCC will accept a Level 4. Weber noted that there two issues: the qualifications of the teacher and the standards of the quality of the course. Most institutions are already giving the common department final; however, different institutions score the exam or allow the adjunct to score. What about the model for the AP exam? There is no requirement for the teacher; the requirement is for the AP exam. It would be nice if we address the concurrent enrollment reality and deal with it as a system.

NOTE: high school students completing a math class in one semester may have 6 to 8 hours per week compared to a college student's 4 hours.

All students in Utah are in the new state core except for 8<sup>th</sup> and 11<sup>th</sup> grade. Most 8<sup>th</sup> graders are in the core. Several large districts have delayed the 10<sup>th</sup> grade core for one year. USHE faculty have supported USOE in stating the new curriculum will prepare students for college Math. The Legislature gave \$500,000 for a vendor to offer a voluntary online college readiness math assessment. The committee suggested a 40 to 50 item assessment with branching logic that would return a slightly easier problem if a student missed an answer. The committee also recommended a more comprehensive assessment. Should there be a set of standards that USOE and USHE recognize as the state standards? Would faculty be willing to participate on the comprehensive assessment committee? The following people volunteered: David Fearnley, Kathryn VanWagoner, Kelly MacArthur, Michelle Poast, Max Aeschbacher, David Wright, and USU will find someone.

Weber is revamping its Math Education classes. The University of Utah has revamped 4010 and 4015, then 4020. USHE should convene a committee to explore a three-semester Math Education sequence from pedagogy and content perspectives for 2010 and 2020 as well as upper division sequences.

Jonathan requested all institutions that have not done so to review and return corrections and comments on the MATH 1050 matrix. Also, add a column to the 1050 and 1010 matrix to record how these concepts align to USOE math curriculum.

**Agenda**  
**General Education Mathematics Tuning Meeting**  
**October 26, 2012**

1. Report on sharing the Math GE Tuning Outcomes at Mathematics /Developmental Math Majors' meeting
2. Discussion of feedback on technology learning outcome
3. Report on Passport project through WICHE (Western Interstate Commission on Higher Education)
4. Review and add to ways we already address/assess learning outcomes in GE courses
5. Encourage further sharing of Tuning Outcomes with colleagues and administrators
6. Discuss how Tuning Outcomes fit with the Utah Core Standards (CCSS)

**Minutes**  
**General Education Mathematics Tuning Meeting**  
**October 26, 2012**

In attendance:

Jonathan Bodrero, Scott Mortensen, Daniel Eves, Keith White, Dan Coster, Paul Gaston.

This meeting was in conjunction with the "What is an Educated Person" Conference. Initially, all four Tuning discipline teams (Math, Physics, History, El. Education) met together, Janice reported on the Tuning grant. It appears we won't be funded for another round. The teams discussed what this means for the Tuning teams and considered options to continue Tuning after grant funding runs out. We will probably use majors meetings to help keep Tuning momentum.

**Report on sharing the Math GE Tuning outcomes at the mathematics/developmental mathematics Majors' meeting**

Jonathan reported on sharing the Math GE Tuning outcomes at the math/dev math majors' meeting in September. Many people were good with the ideas, but some resistance was encountered, especially with the technology learning outcome. There are still teachers that are "chalk-and-talk" and do not feel calculators are appropriate in the college algebra classroom. UVU has a no calculator policy for Math 1050: College Algebra.

Another concern was raised that the given learning outcomes could apply to math classes from elementary school through college. We are working on specific examples of how each learning outcome applies in each of the Math GE level courses to better clarify outcomes and level of proficiency.

### **Discussion of feedback on technology learning outcome**

The team discusses the technology learning outcome. We have tried to mitigate concerns by including “as appropriate” in the outcome but still are getting resistance. Paul Gaston notes that in the current draft of the outcomes, the technology outcome seems to be more of a process or a way to get there, and the other outcomes are more of a destination.

### **Report on Passport project through WICHE (Western Interstate Commission on Higher Education)**

Jonathan reported on his work with the WICHE Passport project. This is a Tuning-like project across five western states. In the October meeting in Boulder, Colorado, the group identified common learning outcomes for math GE courses across the five states. They developed a draft of outcomes and Jonathan read them.

### **Proposed Quantitative Literacy/Reasoning Outcomes**

All of these learning outcomes presuppose a level of competency beyond the Common Core State Standards for Mathematics.

1. Demonstrate mastery of arithmetic, algebraic, geometric and statistical computational skills.
2. Express quantitative information symbolically, graphically, and in writing.
3. Select and use appropriate numeric, symbolic, graphical and statistical reasoning to interpret, analyze and critique information or arguments presented by others (student as listener).
4. Recognize, evaluate, and use quantitative information, quantitative reasoning and technology to support a position or argument (student as presenter).
5. Design and follow a multi-step mathematical process through to a logical conclusion and critically evaluate the reasonableness of the result.
6. Create, analyze and apply appropriate quantitative models to solve and interpreting solutions to quantitative theoretical and real-world problems.
7. Interpret solutions to quantitative theoretical and real-world problems.

### **Review and add to ways we already address/assess learning outcomes in GE courses**

Jonathan encouraged team members to continue to gather specific examples of how the learning outcomes can be or are already addressed in each of the GE-level math courses.

### **Encourage further sharing of Tuning Outcomes with colleagues and administrators**

Jonathan asked the team members to please continue to share the learning outcomes with colleagues, department chairs, and other administrators. We want to help increase buy-in and end up with a better document.

Ran out of time to discuss how Tuning outcomes fit with CCSS.

**Agenda**  
**Utah General Education Mathematics Tuning Team Meeting**  
**February 15, 2013**

1. Review Learning Outcomes and give further feedback (especially on technology outcome)
2. Discuss feedback on specific examples of learning outcomes in GE courses
3. Information request for May 31 Lumina report
4. Other items from committee members
5. Focus group with David and Randy

**Minutes**  
**Utah General Education Mathematics Tuning Team Meeting**  
**February 15, 2013**

**In attendance**

Jonathan Bodrero, Snow College Math, Daniel Eves, Southern Utah University Chemistry, Scott Mortensen, Dixie State College Math, Janice Gygi ,Utah Tuning Team, Liz Herrick, Westminster College Math, Randy Davies, Utah Tuning evaluator, Diana Suddreth, Utah State Office of Education, Secondary Math Specialist, Keith White, Utah Valley University Developmental Math, David Williams, Utah Tuning evaluator, Amanda Cangelosi, University of Utah Math, Paul Talaga, Weber State University, Math, Steve McKay, Brigham Young University Math

Participating through IP video conferencing:

Marty Larkin, Southern Utah University Math, Kathy Andrist, Utah Valley University Math, Dan Coster, Utah State University Math

Excused : Doug Richards, Salt Lake Community College Math

**Review Learning Outcomes and give further feedback (especially on technology outcome)**

Learning outcome #5: Use technology to explore and analyze mathematical concepts, as appropriate. An alternative was suggested: Be able to explore and analyze mathematical concepts using appropriate tools. The second statement feels like we are backing away from technology. Some will argue there is too much technology. We need a happy medium. We are focusing primarily on 1030, 1040, and 1050.

UVU allows calculators in 1030 and 1040 but not 1050. They have a “no calculator policy” in Math 1050. These students will be using technology in their studies, and we should give them a level of skill in technology in these classes, but technology is not necessarily calculators. Technology can be a powerful tool to enhance the understanding of the concepts. If this is a minimum outcome and we have technology required to be used in classes, then UVU has problem in Math 1050. The Math Department has been split but the majority still supports the “no calculator” policy that has been in place for 12 years and is not likely to change. BYU also

has a “no calculator” policy. Other courses, particularly in science, would like the students to be able to use technology in class (i.e., calculators) for graphing and analyzing data. Hopefully, students are being assessed in classes where they are experiencing authentic learning that will include using technology.

These minimum competencies also apply to a calculus class since we have some students using calculus to satisfy their math GE requirements. Students only need to take one of these courses so each course needs to satisfy these outcomes.

Dixie State uses My Mathlab in all their classes. How do we balance what the Tuning Committee suggests and what the schools choose to do? Each school can adapt the outcomes but these are what we are expecting. The concern is also for transfer students. We are not going to get everyone to change their rules to fit this. Technology does not necessarily mean calculators but also includes spreadsheets like Excel, computer algebra systems like Maple, and other software like My Mathlab.

Keith proposed that we change Learning Outcome #5 to: Explore and analyze mathematical concepts using technology as appropriate. Jonathan asked if we all accepted this change. As no one objected, the change was accepted.

#### **Discuss feedback on specific examples of learning outcomes in GE courses**

Jonathan then asked us to share any feedback we have from our colleagues regarding the outcomes. Several schools already had similar outcomes as required for accreditation reviews and other assessments. Schools that did not have existing outcomes have appreciated the Tuning outcomes. Most faculty are okay with the outcomes. Jonathan mentioned that he recently presented a seminar to his department where he talked about the Tuning outcomes and the Utah Core for K-12. He challenged the rest of us to share this information and to get input from our departments.

Outcome # 6 is: Estimate, reason through, and make sense of both the mathematical processes and the results.

A suggestion was made to change it to: Estimate, reason through, and make sense of mathematical processes and results.

The team agreed to the change. We are encouraged to share these outcomes with our colleagues and to get feedback from them to share with the Tuning team.

#### **Information request for May 31 Lumina report**

The interim report to the Lumina Foundation is due in May. By May 31, Janice needs the following information:

1. The outcomes we have created.
2. A survey of our department faculty, which should be distributed and completed by mid-March.

3. Agendas and minutes from meetings.
4. Feedback from departments. A report of what is happening in our departments.
  - a. The American Historical Association (AHA) has become involved with the history Tuning project.
  - b. What about the students? Are they aware of what they need to know?

Janice will send the link to the electronic survey. The Lumina survey should go to whoever teaches these courses, including adjunct faculty and graduate students but not including concurrent enrollment teachers, who are probably not aware of the project. Those who teach Math 1030, 1040, 1050, or 1210 should complete the survey. It should also be completed by deans, provosts, department chairs, and students. Janice said the purpose of the survey is for Lumina to learn what individuals know about the Tuning program, the outcomes, and the process through which the committee has been working these last two years. Randy reported that the survey appears to have both a faculty and a student link and a filter for questions based who is answering the survey. The survey is four pages so should take about 10-15 minutes to complete.

Diana mentioned that parents are pushing concurrent enrollment. There is a movement for students to skip taking Secondary III and go to Math 1050 and 1060 instead. She suggests that the USHE institutions may want to list Secondary III as a prerequisite to some of their courses.

#### **Other items from committee members**

Marty has created a draft spreadsheet aligning the new Utah Mathematics Core with Math 1010 and 1050. Marty will check with others to see if this is ready to be shared to get input from the other USHE institutions. She did not show the spreadsheet to the Tuning Committee. Marty explained that she tried to align the new Utah Math Core with the Math 1050 concepts as listed on the spreadsheet created a couple of years ago on which the USHE institutions had indicated the concepts taught in their respective 1050 courses, but this was not satisfactory. Instead, she started with the Utah Math Core standards and then determined whether or not they were taught in Math 1010 or Math 1050. This process yielded a better correspondence between the Utah Math Core courses Secondary I, II, and III with Math 1010 and Math 1050.

Diana and Marty mentioned that the topics in the traditional Algebra I, Geometry, and Algebra II sequence have been rearranged but are all in Secondary I, II, and III, and statistics is now included. The spreadsheet does not include the eight teaching practices, just the concepts. Marty's concern is that the students taught with the eight practices will enter the college classes with very different expectations about instruction than those students taught in the more traditional methods. The impact remains to be seen.

Janice announced that Teddi Safman is semi-retired. Because Lumina funding is running out, Teddi plans to have two majors' meetings each year for the disciplines involved in the Tuning project.

We discussed dates for the next meeting. April 5 was suggested, and Jonathan will follow up and set a firm date later.

**Focus group with David and Randy**

Randy passed out a questionnaire, which he will send it to those who were doing the video conferencing. Lumina wants to know if Tuning is going to work. Was this a successful endeavor for you? Do you feel the goals were met? Results of the focus group are found in the evaluators' report.

## **Agenda**

### **Utah General Education Mathematics Tuning Team Meeting**

### **April 18, 2013**

1. Further feedback on the student learning outcomes
2. Feedback on ways we can/should address outcomes in the GE level math courses
3. Discussion on how we need to adapt to students coming in from the new Utah Core Standards
4. Items from committee members
5. Next steps for Tuning GE Math

## **Minutes**

### **Utah General Education Mathematics Tuning Team Meeting**

### **April 18, 2013**

#### **In attendance**

Lynn Adams, Utah Valley University Economics, Kathy Andrist, Utah Valley University Math, Jonathan Bodrero, Snow College Math, Dan Coster, Utah State University Math, Janice Gygi, Utah Tuning Team, Marty Larkin, Southern Utah University Math, Steve McKay, Brigham Young University, Math, Scott Mortensen, Dixie State University Math, Teddi Safman, Utah System of Higher Education, Keith White, Utah Valley University Developmental Math

#### **Further feedback on the student learning outcomes**

At BYU, the faculty member who oversees a particular course is responsible for writing the course goals. The goals are printed on the syllabus and are reviewed several times during the course. Faculty who come and go might be a little more resistant to listing goals on the syllabus.

Faculty at USU appreciated the generalizations. We now need to answer how these goals can be addressed in each course. A document from the University of Utah was shared with the team. It included a comment from someone that said “The board of regents will force the president will force the dean of the graduate school will force the departments will the force the faculty to include learning outcomes as a part of their syllabi.” Teddi said that she wanted to make it clear that the Board of Regents does not “force” items since they have no authority to do so. Janice reported that she had attended a meeting yesterday with the Utah Tuning Leadership team. One of the people in that meeting said we need to sell the goals in our departments. Just handing the goals to people is not adequate. We need to articulate why these goals and emphasizing them is important.

We want to extend the high school standards and the practice standards from the Common Core to the higher education institutions. A problem is that the students are not getting all the

background that they need. We need to build on the knowledge they bring with them. However, it is more complicated than that. Other subjects are not cumulative like math is. College math courses require competence in the subject. The sequencing of concepts in math makes it one of the few subjects to require people to remember previous skills in doing math. The nature of math skills is part of the problem. This is why students should take math every year in high school.

Most institutions have had very little feedback on the Tuning goals except when time has been spent talking about them during department meetings. The faculty at BYU liked all the outcomes, but the department is very much against using calculators in the classroom. The faculty have evolved, but that decision has not. Concern was expressed about interpreting “technology” just as calculators. We need to be careful not to define technology too narrowly. It is likely that those who do not use calculators in the classroom also do not use much technology at all. This may partly be a generational issue. There is a huge difference between the scientific type calculator and the algebraic manipulator calculator. The issue with technology is how you use it. Faculty are concerned because the calculators are used on problems that students should be able to think about and should have a sense of the appropriate numbers. The calculator is undercutting the number sense. The challenges are specific to the teacher. Students see the teachers do things without a calculator. The teachers should teach the properties. We gain a lot through technology. Faculty should not have a particular form of technology imposed upon them.

UVU reported that a Math 1040 instructor said the Tuning objectives matched the objectives he already had on his syllabus.

#### **Feedback on ways we can/should address outcomes in the GE level math courses**

The team discussed the feedback from Snow College. Dan offered to send his file on Math 1040 that has learning outcomes.

Jonathan is also working on the Passport Project where five states are working to provide a common set of general education outcomes. He has a final draft of work done there. Teddi made copies and gave them to those attending in Salt Lake.

Jonathan reminded us that we need to sell this. One selling point for the Tuning outcomes is that their implementation will help with accreditation. Scott mentioned that accreditation is why Dixie put the learning outcomes in their syllabi.

#### **Discussion on how we need to adapt to students coming in from the new Utah Core Standards**

We will need to adapt to the new Utah Common Core Standards. Professors who have taught using chalk and talk will need to adapt. The students will be coming to higher education having worked on higher level tasks and having been more involved in lectures. Students have always had to adapt. The lecture model is under attack from many fronts. This pressure comes around

every 10-15 years, but the technology piece of this is bigger than it ever was. Across the country, the “get your hands dirty” and get away from lecture is a national conversation. Steve mentioned that the author Steven Krantz has written about this push. The class session consisting of “50 minutes of lecture and then leaving” is not going to stay around long. When we have 200 students in a lecture class, it is difficult engage students in much discussion during class time. Lynn mentioned that some sections are being split into two “hybrid” sections. Students are also rebelling against group work as they are tired of it. Jonathan suggested that we try to include more discussion during class time when possible.

### **Items from committee members**

Diana Suddreth was not present but had sent some issues for discussion.

What can we improve to help the developmental students have a better success rate? Concern was expressed that with students leaving on LDS missions right out of high school, we may have a great deal of degradation in their mathematical skills when they return. It is really difficult and scary for developmental students to enter college needing to take four semester of math.

UVU is trying an 8-hour pilot class, which Kathy is teaching this semester. A big problem is that many of the students do not have the study skills nor do they know how to go home and do homework, so they don’t remember what they learned in class. This type of instruction has been tried many times. How does Tuning dovetail on this? All some department chairs care about is how well the Math 1050 students do when they subsequently take calculus. Math 1050 is not a stand-alone GE class. Enrollment in statistics classes has ballooned.

The Business degree at BYU now requires two statistics classes. Students need logarithms and matrices. Math is not dying in the business areas but it is getting “dumbed down.” Our students in America cannot do math, but jobs are requiring more math.

Diana sent word that students must have completed all three secondary math courses (I, II, and III) before they are allowed to enroll in a concurrent enrollment class. This prerequisite is a requirement for students applying for the regents scholarships.

### **Next steps for Tuning GE Math**

Jonathan asked “What are the next steps for Tuning?” The money from the Lumina grant is almost gone, but we will continue to meet. We will have at least two meetings on Tuning, which will be held as semiannual majors’ meeting, and we will continue to work electronically. We appreciate your input. We will meet during the Majors meetings. The “What is an Educated Person?” Conference will be held in October and members of the Tuning team are encouraged to attend that.

Team members were encouraged to continue to implement Tuning in their institutions. Bill Evenson and Janice Gygi plan to visit Dixie, SUU, BYU, and Snow in the fall. Previous meetings have been held at the University of Utah, USU, Weber, UVU, and SLCC. The team members, the

chairs, and a provost's representative will meet, and Bill who will give them an overview of the Tuning and its expectations. The meeting will also include reports from the discipline team members.

Jonathan encouraged team members to think about how the tuning can be incorporated in the GE classes and to spread the word in their departments.

## **ELEMENTARY EDUCATION TEAM**

### **Agenda**

#### **Elementary Education Majors' Meeting**

**September 27, 2012**

1. Changes or additions to common courses
2. Essential Learning Outcomes (ELOs) and assessment
3. Report on Tuning
4. Common Core Curriculum
5. Other issues

### **Minutes**

#### **Elementary Education Majors' Meeting**

**September 27, 2012**

#### **In attendance:**

Rob O'Neil, Utah; Dee Caldwell, Utah; Sylvia Read, USU; Barbara DeBoer, USU; Denise Taylor, USU; Becky Morgan, USU; Darcie Peterson, USU; Amy Brown, USU; Fran Butler, Weber; Pene Stewart, Weber; Jack Mayhew, Weber; Marty Larkin, SUU; Bart Reynolds, SUU; Margie Anderson, Snow; Richard Squire, Snow; Sandy Peterson, Dixie; Anne Mackiewicz, USU-E; Tabitha Hudgins, UVU; Stan Harward, UVU; Lois Oestreich, SLCC; Dale Smith, SLCC; Emily Lyman, WGU; Teddi Safman, USHE; Janice Gygi, USHE; David Smith, USOE

#### **Changes or additions to common courses**

The generic course title for Ethnic Studies was changed to Ethnic/Multicultural Studies. The generic course title for Foundations of Education was changed to Introduction to Education. All institutions reviewed the course grid and submitted course additions and changes. Weber reported that math education is through the math department; at Weber math and methods are mixed; they pull together math education and math faculty for teaching methods.

Additional Articulation Question: Is there any chance that USU will go back to Math 2010 and 2020, instead of STAT 1040 and Math 2020? All other institutions use Math 2010 and 2020. Sylvia Read will follow up on this question and report to the questioning Institution.

#### **Essential Learning Outcomes (ELOs) and Assessment**

Many of the ELOs are addressed in current course curriculum content, but are not necessarily being assessed. Most of the outcomes should also have been addressed in general education. It would be expected that students would come into the program having been exposed to most of

these. Faculty should then support, reinforce, and assess the outcomes. Tuning addresses this. The ELOs are what is expected of every student graduation, but each discipline has additional learning outcomes.

In addition, many existing programs address many of the same learning outcomes, INTASC, Praxis, TEAC, Utah Effective Teaching Standards, and Utah Common Core Curriculum. Sylvia Read from USU offered to draft a grid with the LEAP Essential Learning Outcomes and identify similarities with existing programs. Everyone would need to review and comment.

The ELOs should be in the catalog with grids for learning objectives. Westminster College is doing this. Dee reported that at the University of Utah they are just beginning to incorporate the ELOs. Utah is evaluating all GE program changes; every department is expected to produce learning outcomes aligned with global ELOs; faculty members are expected to do this work in their courses.

### **Report on Tuning**

Dee Caldwell is the new chair of the Utah Elementary Education Tuning Team. She reported that the Utah Effective Teaching Standards are designed for experienced teachers. The Tuning team is considering what a novice teacher must be able to do and is working to make these outcomes measurable. What does a great teacher look like? How can we prepare them to teach? By the end of the school year, the team will have learning outcomes and competencies expected of a graduate with a degree in elementary education. It was noted that the Utah Effective Teaching Standards is a revision of the NTASC standards.

It is important to articulate what students are learning. Dee reported that she tells the students what she is doing and explains what the point of the learning is including the intended objectives. At Western Governors University they test at the beginning, middle, and end of a course, so competency is tested. Dixie is concerned about learning across courses. It is important to understand the objectives and talk about the bigger concept of how it all fits together, grouping it all into larger concepts. Anne commented that they had to connect the dots and to determine what principals will want their teachers to know. At Westminster they consider how to integrate technology into assessment process. They have incoming freshmen begin an e-portfolio following New Teacher Assessment and Support Consortium (NTASC) standards to make sure that courses align with those. They leave it to students to select a focus for the assignment. What are the artifact and the standard? What does it mean, and what is next? It is an ongoing process, and they can access the e-portfolio. BYU is connecting across courses; faculty must know fully what language students use and look for ways to connect with them in the process. SUU is doing mock interviews of parents and principals.

Janice said that transparency is important. Students need to know what they are learning and what the outcomes they need to achieve are. Snow reported they use small groups for students to demonstrate to each other. It is very basic; they hear it and practice and can assess own

work. They know what skills they will need and will have at transfer to a four-year institution and in their profession.

Dee said students need knowledge of child development. They need to have a realistic idea of what an elementary teacher actually does and a critical eye on what can be better. They usually get child development in lower division courses. This is reinforced in lesson plans, including a pre-assessment lesson plan and their senior project. In undergraduate education students learn to articulate knowledge and skills. They will gain the ability to talk and give a rationale of what they are doing. This creates a common lexicon. At BYU students must be generalists concerning content knowledge. They need the ability to bring knowledge to bear not only in teaching but in how they talk about education. They use this to find holes in the programs as well, which is a good thing. An exit survey is a checklist for students to determine if they can actually do the work of teaching.

Dale Smith reported that SLCC has a college readiness course. Weber has a university success course that is coded under education. SUU also has such a course, engagement experience. The class at Weber has grown to 18 sections. The goal is to teach how to be a successful student. Snow has the essential study skills class, and anyone can take it. USU-E students must take their course. The course at SLCC has 1300 seats, and others offer it as well. SLCC found that those who took the course were more likely to be retained to graduation.

Weber is looking at e-portfolios. The University of Utah has all e-portfolio; students must have an artifact and a rationale. SLCC said the e-portfolio shows connections. Funding is scarce at SLCC, but students can go to e-portfolio web page and type in e-portfolio for tutorial. Both Weebly and Google are good sources.

### **Common Core Curriculum**

Are people altering curriculum to meet the common core? Utah is using common core lesson plans, and that is easier than expected. The problem is that the site teachers are not wanting to do one more thing. Utah is pleased that students are getting better every week at making lesson plans.

USU is also using lesson plans. Math Common Core standards are being required this year for sixth grade. The State Board requires implementation by 2014. All districts and charter schools are invited to the common core academy. Another one is scheduled next summer. It mostly covers math, but literacy is also included in the content areas.

It was noted that special education departments had not been invited to the state trainings or Majors' Meetings. In fact, the special education faculty are included on the elementary education list.

**Other Issues**

What methods do institutions use to accept people in the program, particularly in writing?

- CAAP scores and grades from general education writing courses are used at Weber.
- ACT scores are used at USU, and a 20 composite and 19 in each section is required. Those scores are not currently used for cutting off students. Many expressed that a cutoff grade in a general education writing course should be at least a B.
- Students work together with the writing center at SLCC
- Utah offers a workshop on writing.

Hopefully the common core will eventually help in adequately preparing students in writing.

The legislature needs to be aware of class sizes in high school English classes. Teachers cannot provide help and support for large classes.

**Agenda**  
**Utah Elementary Education Tuning Team Meeting**  
**November 30, 2012**

1. Review
2. Discussion of Tuning
3. Report on survey of principals
4. Utah Tuning web site
5. Strategies and applications

**Minutes**  
**Utah Elementary Education Tuning Team Meeting**  
**November 30, 2012**

**In attendance**

Bill Evenson, Janice Gygi, Dee Caldwell, Emily Lyman, Sandy Peterson, Teddi Safman, Tamara Moore, Lois Oestreich, Shirley Dawson, Sharlene Kiuahara, David Williams

**Review**

The Educated Person's Conference at Snowbird was discussed and the group refocused on the basic idea of the tuning process, which is what do our graduates know, understand and are able to do upon graduation?

**Discussion of Tuning**

The ELED outcomes grid from BYU was discussed and put into a chart on the white board.

We started with five domains:

1. knowledge of students
2. application of subject matter
3. management of students
4. assessment and evaluation
5. professionalism

From Dixie State we added:

1. Diversity
2. Effective pedagogy
3. Subject Matter
4. Environment
5. Reflection
6. Teaching Dispositions

How can we combine these factors? These are an overarching six to seven domains that represent knowledge of individual students and their learning environments. Is this too big and what does it really mean. Does diversity fit under this? Many domains overlap. A Venn diagram or perhaps a web would be helpful here. Tamara will work on this.

### **Report of Survey of Principals**

David Smith's meeting with the principals generated a list of ideas of what principals really want in a graduate. His report was discussed.

### **Summary of Responses from Elementary Education Principals Reported by David Smith**

Principals were asked to report 5 to 7 outcomes they expect of graduates with a bachelor's degree in elementary education. The graduates should have the following skills and abilities:

**Classroom management** was listed by eight principals. This included having the ability to **engage students** and use a variety of positive strategies to facilitate student engagement.

**Assessment** was listed by six principals. This included interpreting the data and using it to **guide learning** and instruction.

**Instructional planning** and **instructional strategies** were listed by six principals, including having **intentionality** and **clear objectives** for student learning, and **making connections**.

**Being collaborative** and a **team player** were listed by five principals, including helping and learning from others.

**Differentiated curriculum** was listed by three principals. This included **understanding student differences** in learning styles and having **high expectations** for student achievement.

**Content knowledge** was listed by three principals.

**Flexibility** and **adaptability** were listed by three principals, including making improvements.

Desire for **lifelong learning** was listed by three principals.

**Effective communication skills** were listed by two principals, including letting students know what they are going to learn and why, and keeping parents, colleagues, and students informed of relevant information about the class.

**Having vision** was listed by one principal.

**Strong whole group Tier 1 instruction** was listed by one principal.

Pedagogy and classroom management are evident, and this is what principals want. Where does differentiation fit in the web?

### **Utah Tuning Web Site**

The Utah Tuning website ([www.utahtuning.weebly.com](http://www.utahtuning.weebly.com)) was discussed. Team members are encouraged to send in documents and ideas to the site.

### **Strategies and Applications**

Strategies and applications of the strategies belong in every category. Technology should not be a separate idea but integrated throughout, to enhance learning. Assessment can drive instruction and teachers must be able to communicate results.

**Agenda**  
**Elementary Education Tuning Meeting**  
**January 25, 2013**

1. Discussion of Venn Diagram
2. Future of Tuning
3. Utah Effective Teaching Standards
4. Planning for next meeting

**Minutes**  
**Elementary Education Tuning Meeting**  
**January 25, 2013**

**In attendance**

Janice Gygi, Dee Caldwell, Sandy Petersen, Tamara Moore, Lois Oestreich, Sharlene Kiuvara, David Williams, Sylvia Read, Peggy Wittwer, Janet Young

**Discussion of Venn Diagram**

A Venn diagram had been created based on the last team meeting. It represents overarching themes and ideas. The team felt that tables were too linear. The question arose as to whether or not this was too difficult to decipher. It is to be used to think about the issues but is not for public discussion. Dee asked whether or not we need to add anything. A PowerPoint presentation was created to be used in adapting the Utah Effective Teaching Standards. It was intended for the team, not for public use.

**Future of Tuning**

Sharlene indicated that the faculty at Westminster wanted to know who would be funding the implementation of Tuning. Janice replied that the Lumina Foundation had funded the initial phase of the product, but it needs to be intrinsically motivated in schools. There is no funding for implementation in the departments. Tuning needs to be used as a tool in the institutions. It is intended to be helpful, not to be imposed. It should not require additional funding. After this year, there will be collaboration at Majors Meetings.

Another concern is that people are worried about who is behind this. The agenda is not to tell people what to do, but to improve the quality of higher education. The history Tuning team is looking toward interstate collaboration to make school-to-school transfers and consistency easier. We are trying to consolidate reports and data, which should be a plus for people required reports such as accreditation. Are these going to satisfy TEAC? Bill and Janice have

talked with administrators of TEAC, NCATE, and CAEP and they are excited to see the outcomes of the work. It needs to be faculty-driven; schools may interpret the outcomes differently.

### **Utah Effective Teaching Standards**

The team began with Standard 6, Instructional Planning. The team was reminded that they were trying to match to pre-service teacher expectations and taking out things that don't work for that.

- a. Objective A: "Plan instruction based on state core." – No changes
  - b. Objective B: "Individually and collaboratively selects and creates learning experiences that are appropriate for reaching content standards, relevant to learners, and based on principles of effective instruction." The team elected to remove "selects," so that this can be assessed before student teaching. It is important for it to be relevant to the learner.
  - c. "Creates or adapts learning experiences/instruction based on learner needs." The team considered omitting Objective A as well, but they want to make sure that they are still emphasizing the State Core. They didn't want to combine too many things into one section of the rubric.
  - d. Objective C: "Differentiates instruction for individuals and groups of students by choosing appropriate strategies and accommodations, resources, materials, sequencing, technical tools, and demonstrations of learning." This seemed unnecessary as it had been combined with Objective B.
  - e. Objective D: "Creates opportunities for students to generate and evaluate new ideas, seek inventive solutions to problems, and create original work." A suggested change was to "Designs instruction that requires students to use complex thinking skills."
  - f. Objective E: "Integrates cross-disciplinary skills into instructions to purposefully engage learners in applying content knowledge." The team felt this was a nice goal, but graduates may not have achieved this yet. A suggested change was "Designs cross-disciplinary learning experiences." This is a lofty goal, but it might be a piece that cannot claim be expected of graduating students. They liked the idea of "designing," even though students might not be able to implement.
2. Standard 7: Instructional Strategies
- a. "Understands and practices a range of developmentally, culturally, and linguistically appropriate instructional strategies." A suggested change was "Employs a range of instructional strategies to meet the needs of diverse learners and groups of learners."
  - b. "Uses appropriate strategies and resources." This was removed and combined with A.
  - c. "Analyzes student errors and misconceptions in order to redirect, focus, and deepen learning." A suggested change was "Analyzes student learning and responds to errors and misconceptions."

- d. "Uses a variety of instructional strategies to support and expand learners' communication skills." A suggested change was "Constructs learning experiences that require students to use multiple forms of communication."
  - e. "Provides multiple opportunities for students to develop higher-order and metacognitive skills." A suggested change was "Uses a variety of strategies to engage students in metacognitive thinking."
  - f. "Provides opportunities for students to understand, question, and analyze information from multiple and diverse sources and perspectives to answer questions and solve real-world problems. A suggested change was "Systematically includes a variety perspectives and sources to inform instruction." It was noted that the common core really looks at primary sources, and multiple viewpoints instead of just white middle-class.
  - g. "Supports content and skill development by using multiple media and technology resources, and knows how to evaluate these resources for quality, accuracy, and effectiveness." This could include using the SmartBoard as more than a glorified overhead projector. Teachers need to differentiate the use as a presentation tool and the use as an engagement tool. A suggested change was "Judiciously uses various technologies to support content and skill development."
  - h. "Uses a variety of questioning strategies to promote engagement and learning." The team felt this had been covered adequately.
3. Standard 8: Reflection and Continuous Growth
- a. "Independently and in collaboration with colleagues, uses a variety of data to evaluate the outcomes of teaching and learning and to reflect on and adapt planning and practice." A suggested change was "Effectively uses data to inform instruction." It was noted that they cannot assess students on collaboration with teachers.
  - b. "Actively seeks professional, community, and technological learning experiences within and outside the school, as supports for reflection and problem-solving." A suggested change was "Actively seeks opportunities for professional development."
  - c. "Recognizes and reflects on personal and professional biases and accesses resource to deepen understanding of differences to build stronger relationships and create more relevant learning experiences." The point of this is to own your personal biases and work against them, to understand that my perspective isn't the only perspective. A suggested change was "Accesses resources that support the development of a broader understanding of differences to counterbalance own personal and professional biases."
  - d. "Actively investigates and considers new ideas that improve teaching and learning and draws on current education policy and research as sources of reflection." A suggested change was "Actively investigates and incorporates current research and policy."

- e. “Develops a professional learning plan based on individual needs and the needs of learners, schools, and educational communities.” This was omitted.
4. Standard 9: Leadership and Collaboration
- a. “Prepares for and participates actively as a team member in decision-making processes and building a shared culture that affects the school and larger educational community.” A suggested change was “Participates actively as a team-member in decision-making processes.”
  - b. “Participates actively as part of the learning community, sharing responsibility for decision-making and accountability for each student’s learning, and giving and receiving feedback.”
  - c. “Advocates for the learners, the school, the community, and the profession.” A suggested change was “Advocates for all students.”
  - d. “Works with other school professionals to plan and jointly facilitate learning to meet diverse needs of learners.” It was felt that this encompassed B, C, and D. The suggested change was “Actively seeks opportunities to collaborate with other school professionals in meeting the needs of learners.”
  - e. “Engages in professional learning to enhance” This was omitted as it was redundant to Standard 8, Objective B.
5. Standard 10: Professional and Ethical Behavior
- a. “Is responsible for compliance with federal and state laws, State Board of Education administrative rules, state assessment policies, local board policies, and supervisory directives.” A suggested change was “Adheres to and upholds laws, rules, policies, and directives.”
  - b. “Is responsible for compliance with all requirements of State Board of Education Rule R277-530 at all levels of teacher development.” A suggested change was “Maintains professional demeanor and appearance.”

### **Planning for the Next Meeting**

Dee asked, “What else do we need to do? What are we missing?” For the next meeting, she asked the team to read all of the standards, as revised to see if there are any redundancies. Choose the ten key issues. Select two or three main ideas under each standard. This endeavor is different from the other Tuning teams, because elementary education is a licensing community. Making sure that our objectives match the Utah Teaching Standards makes us proactive to get accredited by the State Board.

The next meeting will be Friday, 22 February from 2:00 until 4:00.

**Agenda**  
**Elementary Education Majors' Meeting**  
**February 22, 2013**

1. Review PowerPoint via email
2. Discuss integration of faculty notes and institutional outcomes
3. Focus Groups
4. Other questions/concerns

**Minutes**  
**Elementary Education Majors' Meeting**  
**February 22, 2013**

**In attendance**

Janice Gygi, Dee Caldwell, Sandy Petersen, Tamara Moore, Sharlene Kiuahara, David Williams, Sylvia Read, Shirley Dawson, Emily Lyman, Sue Womack

**Review PowerPoint via email**

Note: The Utah Effective Teaching Standards were put on a PowerPoint that was distributed before the meeting to all team members. It included the changes made at the previous meetings. The changes were similar to those made in the minutes from January 25. The final outcomes are found in Appendix A.

SLCC had a few grammar issues with the document. Also, they two-year program that prepares students for transfer to a four-year institution so their mission is different from the other institutions on the committee.

**Discuss integration of faculty notes and institutional outcomes**

Standards 1 to 4 were discussed, condensed, and revised into more user friendly language. The team's ultimate goal is to decide on the two or three main ideas under each standard.

**Focus groups**

David Williams interviewed the team as part of a focus group to determine the efficacy of the Tuning Process. Results of the focus group are found in the evaluation report.

**Agenda**  
**Utah Elementary Education Tuning Team Meeting**  
**April 3, 2013**

1. Announcements
2. Utah State Office of Education (USOE) overview - David Smith
3. Review PowerPoint and revise standards 6-10
4. Other questions/concerns

**Minutes**  
**Utah Elementary Education Tuning Team Meeting**  
**April 3, 2013**

**In attendance**

Janice Gygi, Dee Caldwell, Greg Benson, Kristen Hadley, Sharlene Kiuahara, Lois Oestreich, Sylvia Read, Shirley Dawson, Emily Lyman, Peggy Wittwer, Sue Womack, Janet Young, David Smith, Teddi Safman

**Announcements**

Janice discussed the stipend process and reminded the team that the funding will end in May. Greg Benson was introduced to the group. He will be taking over Teddi's responsibilities at the Board of Regents as Teddi begins her gradual retirement.

**Utah State Office of Education (USOE) overview**

David Smith from the USOE spoke about the state teaching standards that apply to teacher candidates and the specific math pedagogies that are effective when teaching. The USOE is looking at student performance and growth for teacher evaluations. The Utah Comprehensive Assessment System (UCAS) will be used to assess electronic portfolios. David also explained the elementary math endorsement classes offered by the USOE. It is a comprehensive math instructional model. It is also part of the Common Core Academy 6 for the summer.

**Review PowerPoint and revise standards 6-10**

Note: The Utah Effective Teaching Standards were put on a PowerPoint that was distributed before the meeting to all team members. It included the changes made at the previous meetings. The changes were similar to those made in the minutes from January 25. The final outcomes are found in Appendix A.

The next meeting is scheduled for Monday, May 6, 10:00-12:00, at the Board of Regents Building.

**Agenda**  
**Elementary Education Majors' Meeting**  
**May 6, 2013**

1. Announcements
2. Review PowerPoint sent via email.
3. Next steps for the Tuning Process.
4. Other questions/concerns

**Minutes**  
**Elementary Education Majors' Meeting**  
**May 6, 2013**

**Announcements**

Stipends are forthcoming. They have been held up because of confusion over how to pay team members from the University of Utah.

**Review Power Point sent via email**

Note: The Utah Effective Teaching Standards were put on a PowerPoint that was distributed before the meeting to all team members. It included the changes made at the previous meetings. The changes were similar to those made in the minutes from January 25. The final outcomes are found in Appendix A.

The team discussed the title of the PowerPoint: "Utah Standards for Effective Pre-Service Teacher." One suggestion was "Utah Tuning Effective Pre-Service Teacher Standards." The team discussed whether "Tuning" needs to be in the title. Another concern was that these were "Learning Outcomes." The final selection was "Utah Pre-Service Teacher Learning Outcomes: A Tuning Project of the Utah System of Higher Education."

The team went through all ten standards and made small changes.

**Next Steps for the Tuning Process**

The team agreed that the outcomes were ready for distribution and implementation. They felt that they would have more faculty support if the outcomes were given to administrators by the office of the commissioner. Teddi and Janice agreed to do this as Teddi meets regularly with the deans of the Schools of Education.

## **UTAH TUNING LEADERSHIP TEAM**

### **Agenda**

#### **Utah Tuning Leadership Team Meeting**

**April 17, 2013**

1. Final report to Lumina including individual reports from team members
2. Plans and budget for next year
  - a. Coordinating messages and activities
  - b. Educated Persons Conference
  - c. Majors' meetings
3. Evaluator report
  - a. History student focus groups
  - b. Future plans
  - c. Usefulness of focus groups
4. Report on Tuning team meetings at individual institutions
5. USA Inaugural Tuning Symposium
6. Other issues

### **Minutes**

#### **Utah Tuning Leadership Team Meeting**

**April 17, 2013**

In attendance:

Gregory Benson, Assistant Commissioner for Higher Education

Teddi Safman, Assistant Commissioner for Higher Education

Bill Evenson, Consultant, Utah Tuning Project

Norm Jones, Consultant, Utah Tuning Project

David Williams, Evaluator, Utah Tuning Project

Randy Davies, Evaluator, Utah Tuning Project

Charles Torre, Chair, Utah Physics Tuning Team

Kathryn MacKay, Chair, Utah History Tuning Team

Dee Caldwell, Chair, Utah Elementary Education Tuning Team

Jonathan Bodrero, Chair, Utah General Education Mathematics Tuning Team

Janice Gygi, Director, Utah Tuning Project

Daniel McInerney, Consultant, Utah Tuning Project – joining by telephone

**Interim Report.**

Janice told the team that approximately \$75,000 was left in the current budget. Marcus Kolb has indicated that a no-cost extension of the grant can be obtained, allowing another year to complete the work. Because of this, the report that is due on May 31 will be an Interim report rather than a final report. Janice distributed copies of the form for the report.

Janice requested that the team members provide the following materials, which should be either in Word or Excel:

- A brief report of each team's progress using the questions asked on the form
- Agendas for team meetings
- Minutes from team meetings
- Learning outcomes for the discipline
- A report on Utah's involvement with the American Historical Association's (AHA) Tuning grant
- Descriptions and/or PowerPoint copies of presentations to outside groups
- Copies, abstracts, or links to any articles published about Tuning
- Other relevant committee participation
  - Credit hour
  - Passport
  - Quality Collaboratives
  - Convergence
  - Degree Qualifications Profile
  - Convergence of all projects with Tuning
- Plans for the future
  - Proposed activities with no-cost extension
  - Proposed activities as funding decreases and disappears

**Future Plans for Utah Tuning.**

Janice indicated that we need to think about how we want to budget the money for the no-cost extension. Charlie noted that we need to know what we are planning to do in the next year before we can do a budget. Currently, plans for the next year include:

- One regular majors' meeting at the Board of Regents in the fall for each of the Tuning disciplines
- A second majors' meeting at the Board of Regents in the spring for each of the Tuning disciplines
- Visits with institutional teams where meetings have not yet been held: Dixie State University, Southern Utah University, Snow College, and Brigham Young University
- A strong presence in the Educated Persons Conference on October 18

### **Tuning USA Inaugural Symposium.**

Team members reported some confusion about the symposium. Dan said he had received a schedule of speakers, but it was not clear when or what he was expected to present. The symposium will be held June 7 and 8 at the Sheraton Indianapolis City Centre. The following team members will be presenting or participating on panels:

- Teddi Safman
- Norm Jones
- Dan McInerney
- Randy Davies
- Dee Caldwell
- Jonathan Bodrero

Janice Gygi will attend the symposium. Bill Evenson, Charles Torre, Kathryn McKay, and David Williams will not be able to attend.

### **Other Presentations.**

Dan reported that he has been asked by Courtney Brown to present at a conference in St. Louis in late May. He and Norm are also working with educators in Idaho where they are considering Tuning, DQP, and LEAP. They have presented to a statewide meeting of educators as well as to individual institutions. Dan also reported that the April issue of the AHA monthly newsletter has a twelve-page article on Tuning.

### **Future Plans from Lumina.**

Lumina has not yet released their strategic plans for the future. However, Dan reported that, in his talks with Lumina personnel, he believes that they want to connect the projects they have been funding, such as the quality collaborative, Tuning, and DQP. Lumina wants to improve communication among all of the different initiatives. They are looking at a metropolitan strategy and want to connect all the dotted lines. Dan said he hopes that what Utah is doing will be helpful to Lumina.

### **Westminster College.**

Dee reported that Sharlene Kiuahara, the Westminster representative on the Elementary Education Tuning Team will be teaching at the University of Utah next year, which means a new representative will have to be appointed. Janice said that she had lunch recently with Mary Jane Chase, a dean at Westminster. Janice's impression was that at Westminster they pride themselves on being unique and they are suspicious of any project that will make them look like everyone else. However, Mary Jane is interested in Tuning and would like to participate on the history team when she returns from her sabbatical after the next school year.

### **The "What is an Education Person?" Conference.**

The Educated Persons conference is sponsored by the General Education (GE) Task Force. Many of the speakers in past years have discussed Tuning. Teddi said that she and Norm, who is chair

of the GE Task Force, had thought that Judith Ramaley, an expert on DQP and Tuning, would be a good choice to be the keynote speaker. The GE Task Force is responsible for this conference, and they will meet on April 29 to make plans. Dan said that David Marshall had given an excellent presentation at the AHA annual meeting in February. Dan sent the Power Point from that presentation to the team. The team discussed asking David to give a presentation at the Educated Persons conference. Norm said it would be good to have Tuning teams come to the meeting, and they could have a speaker talk about what Tuning has achieved. A panel might also be a good alternative.

### **Tuning Additional Disciplines.**

Kathryn asked if we have considered using the Tuning leaders as champions for other disciplines. The obvious format might be the majors' meetings, where a team chair or another team member might attend the meeting of a different discipline to share their enthusiasm for Tuning. One major value of Tuning is the faculty discussion that it emphasizes; it rewards faculty discussions. Often faculty feel they have no impact. One of the roles of team leaders may be to motivate other disciplines. For example, there may be a natural affinity between history and political science. The leadership team agreed that this was an excellent idea. Some members said they always talk about Tuning, and other faculty are interested. Norm said the emphasis should be on asking how it fits with the rest of the institution. It would work in certain departments at USU, such as health science and biology. The art department is interested. Others would be more difficult. It would require careful selection.

Kathryn said we need two sets of strategies; what works at institutional arena and what works at the arena of the discipline. Using institutional faculty centers could be valuable. We should be thoughtful both at institutional level and at the discipline level. We should develop aids, such as Power Point presentations, that team members could use. Norm said that GE Tuning is working well at USU. They have pretty robust statements about what this should contain. The model is applicable in that case. Kathryn noted that the GE idea fits into the Educated Persons Conference. We have to commit for a longer time. We need to also look at the two-year institutions and ask at what level they are entering the major. Teddi commented that community colleges do have a stake in the major.

Bill said that the physics team has a kind of rudimentary outline of what you can use to talk with department about what Tuning is. Bill has written an excellent paper about Tuning using examples from Tuning. He also has a good Power Point. He will send these to the leadership team.

Teddi noted that one of the purposes of the Educated Persons conference is to present different ways of thinking about these things and getting those who have not been participating interested in it. Dan said that he could see the relevance at his own institution. They are telling people it is important to answer these questions; it is in their own self interest.

Norm suggested examining the pathways concept from the Complete College America (CCA)

project. He noted that not all groups want a pre-major. Some believe that majors need to determine what preparation is necessary to succeed in a major. Dan said that CCA was looking at the relationship with the common core and secondary education. It is important to give a clear idea of expectations. Teddi noted that the Tuning of GE math and elementary education fit into this. Dee said that she is incorporating the common core into her methods classes in elementary education.

Randy said that the big issue with Tuning is educating the faculty. They need to know why to do it, what it is, and how it will benefit them. This seems to be a big problem. Teddi said we have been telling them at the majors meetings. The core competencies have been adopted across the state. Everyone wants teachers to have skills, and while standardization is a bad thing, collaboration is a good thing. Dee said that districts want a certain outcome, but how we get there is unique to each institution.

Norm asked about the possibility of Tuning the math degree as an extension of what we are now doing, and Bill and Jonathan agreed that it might work. Teddi said they are looking at writing across the curriculum, math across the curriculum, and critical thinking across the curriculum. She said they are finding it harder to assess the math than the critical thinking. They are trying to assess learning according to the value rubrics, but it is difficult to collect data. This may be due to the invented nature of a lot of quantitative material.

Bill reported that the physics team developed an outline of the increasing levels of sophistication that they expect students to go through as they work on degrees. Part of the difference between developmental math and math is the levels of sophistication.

#### **Future meetings.**

Janice said it is important that we are all on the same page and are presenting the same message. We need to have meetings often enough so that we are clear about what we are doing as we are working together. Kathryn said we need to have shared resources and to be thinking about the role of the leadership team as facilitators. We should be using the same kind of materials and should be sharing our experiences.

Bills said that meetings in the individual institutions should also be planned. If the institution teams can meet once a semester, they can share across disciplines. Kathryn said that the faculty training programs, such as the Teaching and Learning Forum at Weber State, could provide another area to share strategies at the institutional level. Norm indicated that this type of activity is very low overhead, and if it can be institutionalized, it can continue.

Teddi noted that it is necessary to have buy-in from Greg and new commissioner if the work is to continue.

Kathryn said that it is important that the work include K through 12. Weber State has a new

Olene Walker Institute, and education is the focus of the first student research project, which should tie to Utah's 2020 Plan for Higher Education. She suggested that we need to connect with statewide initiatives, which will strengthen our initiative. Teddi said that processes at the Utah State Office of Education are slow. Kathryn said that we need to put resources into people at higher education and at all levels, an idea that is not always shared by the legislature.

### **Evaluator Report.**

Randy reported that he and David have observed the team meetings and have conducted focus groups at the end of the meetings. They sat in on visits at universities and attended the Phi Alpha Theta conference at USU, where they did focus groups with students.

They identified a number of things. They did focus groups toward the beginning of the process and toward the end. Team members understand more now about what they are doing. They value meeting together. At the UVU meeting there was still a lack of understanding, and one person, who is not on a team, wanted to know what Tuning is. This will require an ongoing educational process for people, so they know that this is what Tuning is; this is why it is important; this is what it is not. For the four teams, the evaluators saw a change in the understanding and the perceived value. The team members reported that the most important value was the communication across the institutions.

Bill said there are two effects. People want to do their own thing, but they also want validation and to know that it resonates with the rest of the people in the state. Randy reported that some said they were already doing that and others asked how this is different. We have just done something similar. The message has to get out to others, and they need to see the connection between Tuning and accreditation.

Kathryn said there was a lot of pushback in AHA. People felt it was not acknowledging what they have already done. There is a need to build, validate, and appreciate what they have already done. It is very helpful to have support at the national professional level in the discipline. It is an ongoing process. In the initial discussions of the Utah Tuning team in history, they looked at what AHA had been doing. Bill said physics looked at what they did with physics in Europe, which was more general than in America regarding both learning outcomes and assessment. Each group has different challenges. Elementary Education has many standards and multiple stakeholders. The beauty of Tuning is that it works discipline by discipline.

Randy said that the elementary education team spent the last year working to identify the outcomes for pre-service teachers. Dee said she is working with teachers who have been teaching for twenty years to determine what they can reasonably expect first year teachers to do. They now all have a good common goal for what want graduates to do.

Randy said math has a huge challenge, because they are not considering a degree program. They had to be quite basic. They did a good job of getting the outcomes down. The biggest

challenge is getting information from the disciplines that use GE math. Physics is deeper into assessment and their degrees of sophistication. The struggle with assessment is the concern over the standardization issue. The challenge for the next step is to spiral up on content.

The history team is concerned, because they felt their outcomes were set, and now they may have to adapt them to the AHA outcomes. Some institutions, such as USU, are ahead of others. Some are still struggling. Getting it back into the department is a challenge. It is good at the team levels. Some team members are just getting ready to take it into the departments.

Randy noted that each discipline and each institution needs a champion and an organizer. The teams and departments have to see it as valuable, and they also have to have the power to do it. Bill said that, at UVU, Phil Matheson said that since he became department chair he has had the ability, power, and focus to implement Tuning in his department. He is now addressing the issues, because he has the vehicle to implement them. Randy said over the next few years the teams should have validity because they have experts.

Randy reported that the student focus groups were really fun. They conducted one group with USU students and two groups with students from different schools. They did not see a difference among the groups. These were elite students, who were at USU to present their research. They loved their history programs and thought they had been valuable in promoting careers. They knew there were learning outcomes but were not familiar with the language of Tuning.

Norm said that in addition to historical knowledge students need skills in research, argumentation, writing, and understanding how things inform what we do. How are these communicated to students? They figure them out by themselves in the 300 level courses. They had no clue until halfway through their programs. In part this is because first level courses are so generic and all sorts of students take them, including those that have no idea what is going on. Teddi asked if the faculty are articulating the learning objectives to the students. Norm responded that students do not know what Tuning is.

Randy said that students understand the issues, but don't know the Tuning language. The history students reported that the one capstone project included everything and that's where they finally understood it. It takes time to learn. Just because the faculty have gone through the project does not mean the students have grasped it. Team members still have resistance at the department level. Lumina is asking how they can measure the results, but we are not there yet, and it is going to be the hardest part going forward. Randy said that this project requires changing the culture in the department so faculty think in terms of learning instead of teaching. This is the essence of Tuning. Teddi noted that this takes time. Randy said that Lumina wants empirical evidence about whether this is working.

### **Future Evaluation.**

Randy asked what would be a valuable role for David and him in the next year. David suggested that they help to design an evaluation system so that as we build the new majors' meeting approach, we could build an evaluation system into it. David said they could continue to get feedback from as many different sources as possible, students, faculty, and employers, and monitor it across time to see if there is an increase in how well everyone believes that they are implementing the learning outcomes. Right now we cannot say that the students are getting the learning outcomes. If we do this for five years, we may find results. We could make evaluation a part of the program. A discipline major could form a team. Randy said that we need champions and organizers who will lead this.

Randy said we are interested in the whole process of evaluation, which is meant to show the problem areas. We are going to have to get over the problems. We have to get over issue of standardization, of buy in. There is not one evaluation that is going to work for every institution. We need to consider how to incorporate the evaluation process into each institution, and we need to continue this forever.

Jonathan asked if we could get the surveys that were done in the team focus groups to use for students and team members. Norm said the one external agency that we have a relationship with is the Board of Regents. Where do we stand in the common conversation in the system? That could be helpful to us. Charlie said that having the outcomes will help with accreditation. This should help to motivate the faculty to participate. We could encourage this type of conversation as part of the accreditation process. Institutionalizing it could encourage the maintenance of the process. Majors' meetings are good places to review the conversation.

Dee said this is a good start, but people at the majors meetings are already invested in this. Departments are not as invested. The rest of faculty do not have the same involvement. This is a great thing to do it at majors meetings, but we need to go another step into the department. David asked, if they knew someone from USU would be coming to observe and see how they are doing, would that help? Dee said that they all care about different things. David asked what would be a step that would work. Dee said in her department, faculty will do something if you say they have to. They have to have head of department say this is what we are doing.

Charlie said we have to have buy-in. The faculty will participate enough to get by, but there is no culture change. Randy said that change happens, but he asked if it is always good.

Teddi noted that since the LDS church has changed the age at which students can go on missions for the church, there will be a problem of remediation for returned missionaries, who, for example, may not have had a math class for three or four years. Norm asked if there is a cheap and easy way to catch the returned missionaries up. What do we want them to know?

Jonathan said that students enter the math classes at different levels. The Accuplacer test can

be used to place students in the correct classes. He suggested designing a flowchart to track general progress. Teddi noted that developmental math has been combined with math in the majors' meetings.

Bill said we could have the evaluators team up with a couple of departments and work with the team members from those departments to determine what works and what doesn't work and to embed the results of Tuning in departmental work in curriculum, pedagogy, and assessment. Charlie said that the faculty care about outcomes and assessment but not about Tuning. Assessment should be tied to the learning outcomes.

Randy said that evaluators don't tell people what to do. They see what is working and provide other eyes on the process. Charlie asked what are some things departments might try. Randy said that portfolios are the trend but not the solution. What you choose to put into the portfolio is what is important. With technology, you can now use the internet and videos in e-portfolios. Randy said he could help teams or departments find assessment tools. He said it is too early for focus groups with students, and David said it would be possible to do department faculty focus groups.

The teams need to be thinking about where we are now and what we need to do now.

## **INDIVIDUAL INSTITUTION TEAMS**

### **Agenda** **Utah State University Tuning Team Meeting** **Friday, March 22, 2013**

1. Brief review of Tuning
2. The future of Tuning in Utah
3. Report of progress in the four disciplinary teams
4. Comments from project evaluators
5. Open questions and discussion

### **Minutes** **Utah State University Tuning Team Meeting** **March 22, 2013**

In attendance:

Norm Jones, Director, Provost's Office

Dan McInerney, History Tuning Team

Spencer Clark, History Tuning Team

Sylvia Read, Elementary Education Tuning Team

Martha Deaver, Department Head of the School of Teacher Education and Leadership

Janis Boettinger, Vice Provost

Jan Sojka, Department Head, Physics Department

Charles Torre, Physics Tuning Team

Richard Cutler, Department Head, Mathematics and Statistics Department

Dan Coster, General Education Mathematics Team

Teddi Safman, Assistant Commissioner, Utah System of Higher Education

Bill Evenson, Consultant on Utah Tuning Project

Janice Gygi, Director, Utah Tuning Project

David Williams, Evaluator, Utah Tuning Project

Randy Davies, Evaluator, Utah Tuning Project

#### **Review of Tuning.**

Bill Evenson introduced the Tuning goals. Tuning defines what students should know, understand, and be able to do after they receive a degree in a discipline. The outcomes are being defined at the associate, bachelor, and master degree levels. Tuning is faculty driven; the faculty define the discipline. The Utah Tuning teams include members from all public institutions as well as Brigham Young University and Westminster College. We want to shift the emphasis

from faculty input to student outcomes.

This project is based on the European effort on Tuning. All departments should be singing in the same key but not in unison, because every institution has its own context, its own curriculum, pedagogy, and assessment. The focus is more on student learning than on teaching. Hopefully the results can be put into a format that can be used with accreditors and reviewers.

The expectations for the departments are that they will use learning outcomes developed by the Tuning teams and then coordinate their courses, learning experiences, and assessment practices to align with these learning outcomes. They should make expectations explicit to all stakeholders so that students, employers, and others will know what to expect of graduates in a particular discipline.

### **Future of Tuning in Utah.**

The Lumina Tuning grant is coming to end. We hope this will not be the end of the Tuning process, but the focus will change somewhat. Teddi has organized majors meetings for the past fifteen years. We will now have the Tuning disciplines meet face-to-face twice a year. Additional interaction by telephone, email, and IP video will be encouraged. In addition, we are organizing groups at each of the campuses. This is the Utah State Tuning team. If this campus team will meet, members can support the work of all Tuned disciplines on campus. USU has made more progress than many of the other institutions in the state, and we hope that they will continue to coordinate and expand these principles. We also hope this USU team will see this as an opportunity to help teams in other institutions in the state.

### **Progress Reports.**

Dan McInerney discussed the three-year grant that the American Historical Association (AHA) has received from the Lumina Foundation. This national group is taking on Tuning for their discipline. The Utah Tuning team based their outcomes on previous AHA standards, and now Utah is serving as a guide for the AHA in several ways. The Tuning process focuses on standards but not standardization. Achievement of competencies has to rest on specific needs of department. The AHA never uses the word standards. They all recognize that Tuning serves a useful function for accountability, assessment, and accreditation. For historians, the Tuning project has developed a set of common learning outcomes. The USU department requires learning outcomes on all syllabi. They have also developed a pre-major for history and hope that the information will help students make more informed choices about classes. They are currently working to create a simple matrix of which history courses cover which outcomes.

Dan noted that many areas of the world are now doing Tuning. Information is available on the internet, and it is interesting to see what the disciplines in other countries have developed.

Janice noted that the USU history department web site has samples of syllabi, rubrics, and other helpful information.

Spencer Clark is involved with training teachers of history. He reported he has had a hard time with the faculty because he is the only faculty member in his department involved in social studies education. He has realigned the student program to align with the history department and with the common core standards

Sylvia Read was formerly the chair of the Elementary Education team and has continued to work on the team. Elementary education has used the InTASK standards since 2004, and the team began with the Utah effective teaching standards, developed more recently. The team has been going through them to change from an emphasis on new and practicing teachers to skills needed by students studying teaching. Standards need to be understood by students, parents, other stakeholders. The team is still working to refine these standards. Education departments have been aligning curriculum with the state standards all along, so this is a revision more than wholesale change. Once they have the learning outcomes streamlined and revised, they can start adopting them, putting them in syllabi, and using them for a template in a portfolio. Sylvia reported she is cautious about changing the rubric as often as she used to as it is confusing to returning students. Next they want to add midway assessments. They have clear advising sheets and want to add outcomes to the sheets as the history department has done. The Elementary Education team needs outcomes that go all the way through from pre-elementary education majors through the program. The most valuable part of participating in the Tuning project has been just to know how much everyone is on the same page including Western Governors University. She is waiting to see where it is going before presenting it to the department. She feels confident that it will be easy to implement.

Sylvia reported that her department has discussed the top five outcomes and agree with them. When the final set of outcomes is complete, there will not be any surprises, but they will have a streamlined version that they can use for pre-service teachers.

Janice said that she had appreciated all that Sylvia had done as chair of the elementary education team.

Dan Coster reported that his team is trying to get through the Tuning of general education math and not the major. Anything that had a quantitative literacy label qualified for that, including the standard general education math courses up to the first calculus class. The team spent the first year defining general learning outcomes, and they have developed a fairly good set of learning outcomes. They looked at outcomes from national organizations and other sources. All approach general education math differently; schools that offer developmental math are different from those that do not. They are now looking at how the outcomes are offered in different courses. They are also looking at assessment. One question here is what quantitative skills are needed in other university courses. Colleagues in the mathematics department know a little, but most do not teach general education math. Most who do teach it are new lecturers. The department has had a committee working on content realignment and will be able to see if

that is working. It is difficult because there is not one set of outcomes that all other disciplines need to know. However, they have developed some good outcomes.

Richard Cutler noted that, in addition to what quantitative skills are used for other majors, it is also important to examine what skills are needed by anyone with a degree, including skills such as evaluating information and graphs in newspapers.

Martha Deaver noted that elementary education now requires the Praxis test for entrance to the program, but only 54% of the students can pass the math section, because they need to have had math 2020 to pass that part of the test. They are reevaluating this requirement.

Janice noted that some on the math team had wanted an outcome that said students would appreciate the beauty of math, and she had thought that was a bit past what they could expect. Sylvia said she thought it would be good if students could be less fearful of math.

Charlie Torre said that physics degrees are well defined to the physicists. The basic layout is the same throughout the world, and it happened by itself as there are no accrediting agencies. Degrees are structured by content rather than outcomes, but everyone relates quickly to them. The faculty looks at the Tuning outcomes and says that they already knew this. However, there is value in making the implicit explicit, and Charlie said it has been useful to talk to colleagues throughout the state. The current outcomes are somewhat unwieldy. Charlie is working on a mapping of outcomes to courses, and he has discovered that it had already been done. However, the previous mapping is more content based. He is changing from content to outcomes, and he will make mapping available on the web site to accreditors, students, and other colleagues. It may be something new, but it is no major "Aha." They are making it more precise and are articulating what they have done. Now they need interesting assessment strategies. Physics assessment requires a lot of reading of a lot of student writing in order to analyze hours of work. The physics department already had a capstone course. Physics is ordered in a vertical fashion so upper level courses are assessors of lower level courses. Charlie noted that there is value in this work, but to many of his faculty members it is doing the obvious.

Bill Evenson noted that the physics team articulated 11 levels of sophistication and gave examples of each level. While faculty members know this and do it, it has not previously been made explicit to students.

Norm noted that the history faculty always knew what they were doing, but it was never made explicit until Tuning.

Jan Sojka said that they are not changing the culture and not changing what the students do. They need tools for assessment and a better handle on what students need.

Janice said that it is exciting to see that things are moving forward with other disciplines besides the initial four, especially at USU. Continuing to share is essential.

Randy Davies noted that if this is to work, faculty have to be willing to say if students haven't mastered these outcomes, they don't get the degree. This is hard to do.

Norm Jones said this is a hard thing, but it is happening in the history department now. They are asking for competence in the senior capstone course. It is hard to say they are not competent, no matter how many hours they have spent on the work. We have to talk about what to do when they are incompetent.

Sylvia said that in talking with colleagues in other states, she feels they think about things in terms of a seat-time check list. Faculty members tend to look at how hard students have worked rather than what skills they have acquired.

Norm noted that the trend is to move away from conversations about grades to conversations about competence.

Sylvia said that rubrics are a double edged sword and need to be more than just checklists.

Janice thanked the group for their attendance and for the work they are doing. She encouraged them to continue to meet and to assist one another in continuing Tuning at USU.

**Weber State University Tuning Team Meeting**  
**Weber State University**  
**Tuesday, April 2, 2013**

1. Brief review of Tuning
2. The future of Tuning in Utah
3. Report of progress in the four disciplinary teams
4. Comments from project evaluators
5. Open questions and discussion

**Minutes**

**Weber State University Tuning Team Meeting**  
**April 2, 2013**

**In attendance**

Paul Talaga, Chair, Department of Mathematics, Utah General Education Mathematics Team Member

Susan Matt, Chair, Department of History

Kristin Hadley, next Chair, Department of Teacher Education, Utah Elementary Education Team Member

Frank Harrold, Dean, College of Social and Behavioral Sciences

Colin Inglefield, Chair, Department of Physics

Ryan Thomas, Associate Provost and Dean of Undergraduate Studies

David Matty, Dean, College of Science

Kathryn MacKay, Chair, Utah History Tuning Team

Brian Whitney, Student Member, Utah History Tuning Team

David Williams, Evaluator, Utah Tuning Project

Janice Gygi, Director, Utah Tuning Project

Bill Evenson, Consultant, Utah Tuning Project

Janice Gygi indicated that the purpose of the meeting was to share information about the progress that is being made in Tuning at Weber State University. She asked Bill Evenson to give a brief summary of the Tuning project.

**Brief Review of Tuning**

Bill said that Tuning is a process by which we have faculty and students from many institutions jointly define what a student must know, understand, and be able to do at the two-year level, bachelor's level, and master's level. It is faculty driven; the faculty define their discipline. The Utah Tuning project includes all eight public institutions of higher education plus Brigham Young University and Westminster College. The point of the project is to try to shift the focus from

faculty inputs to student outcomes. We are interested in what students are learning rather than how many credits students have or how long they sit in class. The name "Tuning" comes from the European Bologna project. The disciplines in all schools are learning to sing in the same key but not in unison. It is not a standardized program. The teams agree on outcomes, but assessment, curriculum, and pedagogy are all individual institutional issues. Each institution has its own context and expertise. Faculty need to pay attention to the needs of students, employers, and other stake holders. Long term, the project is furthering a cultural change to focus on student learning. This should contribute to writing reports for accreditors about what students are learning and how it is been assessed. We are trying to develop formats that can be used for any review, and we are working with accreditors to help further that. We want the faculty to correlate the curriculum and assessment with the learning outcomes. It is important to make this all explicit so students know what they can expect of their education and employers know what they can expect of graduates. Bill distributed a copy of a paper that he wrote that explains Tuning, using physics Tuning as an example.

### **The Future of Tuning in Utah**

The Utah Tuning project began in 2008 with a contact from Lumina Foundation. Bill directed the first grant, and Janice directed the second grant, which will be completed later this year. It is important to consider what will happen after the project is no longer funded. The discipline teams would like to continue with what they have started. Teddi Safman will be responsible for the Tuning project at the state level. In the fall, Tuning will be an important issue in the majors' meetings for the four Tuned disciplines, and there will be a second majors' meeting for them later in the school year. The teams will also use other means to communicate, including telephone and internet. We hope that the multi-discipline team on campus will meet to share with each other and to consider how to carry on this important project in the future. The discipline team members are committed and enthusiastic.

Janice said that, though there has been a small stipend for team members, she has not felt that was the motivation for participating. The group meeting today should become the Weber State University Tuning team and share progress with each other. At Utah State University, they are expanding Tuning into additional disciplines, and this might be something for the Weber team to consider.

### **Reports of Progress**

Kathryn MacKay reported that the American Historical Association (AHA) received a Lumina grant to continue the process of Tuning, which has given the history team an advantage. Utah has had a leading role in the AHA project. The support of the professional association is encouraging historians to be thoughtful about what they offer students. The Weber history department is embracing the idea of the faculty getting together to explore what students should be able to do. They offer a range of history classes that coordinate with science, math, and other disciplines. History has a challenge in thinking how their program connects with other disciplines. History is not a vertical discipline. They recently went through a departmental review

and looked at the learning outcomes in terms of their own department. Susan Matt has embraced the project and used it in the review. The dean has been very supportive of trying to adapt the model developed at Utah State University. USU has a pathways project that has outlined how general education contributes to department interests. They are using advisors to help with this and are encouraging students to take classes that are supportive of the eventual degree. This is an ongoing process. The history Tuning team has had reports about the progress being made at the AHA.

Susan reported that the history department mixed Tuning with their program review. They haven't always distinguished between the two but have used the outcomes to track which classes offered the relevant skills. This was useful in starting the report. Accreditation and other review processes have spun out of that. They have used student exit interviews modeled on the USU questionnaire, and have used pre- and post-tests in their assessment.

Brian Whitney has recently joined the history Tuning team. He felt that they had a good meeting where he was introduced to some of the literature that came from the professional organization. Janice commented that it has been helpful to have the national organization support Tuning while stressing that it is not standardization.

Paul Talaga said that at Weber State the curriculum committee has been involved with outcomes for quantitative reasoning and literacy for some time, before Tuning was introduced. Their outcomes were established and adopted, and the department had discussed that and also had members on the committee. They have used the outcomes, put questions on tests across all quantitative reasoning courses, and have collected data to see if students were getting the learning outcomes. This has been a useful tool in trying to get everyone together. Because of their program review, they more recently moved up into higher areas of mathematics and have developed outcomes for their courses. In mathematics, it is fairly easy to establish outcomes, because there are well defined skills and competencies that students should have.

Bill noted that this team has focused on general education mathematics requirements and has had to grapple with what all the courses, independent of their disciplinary focus, should offer. They are concerned with what skills and knowledge we expect of students to indicate they have quantitative literacy. The team has determined six or seven outcomes that are essential for people to reach.

Paul said that the Weber outcomes are very similar to the Tuning outcomes.

Janice said that the team is exploring what mathematics skills a student needs to enter another discipline as well as what mathematics skills an educated person needs regardless of their major.

Brian said he has been taking the logic course that has been offered for humanities students to

fulfill the quantitative reasoning requirement. He indicated that this is the last semester it is being offered, and he feels it has been useful in teaching symbolic logic and other skills. He asked why it is being discontinued.

Colin Inglefield participated in the discussions that led to the decision to drop this course from general education credit. He indicated that it is a good course, but it does not fit the requirement for quantitative literacy. If that course is something that history and humanities value, they need to find another place for it in the curriculum. The quantitative literacy course needs mathematics.

Kristin Hadley noted that the state's standard of what a quantitative literacy course includes has been changed to say that it must include mathematics.

Ryan Thomas said that from a practical point of view quantitative literacy courses have to meet the state requirements in order to be transferable to other institutions.

Kathryn commented that this shows how important transparency is to students. Too often we don't let students know the goals and reasoning behind this type of decision. Tuning is meant to clarify what the goals are, why they matter, and what needs to be done to achieve the goals.

Colin Inglefield reported on the progress of the Department of Physics. Adam Johnston has served on the physics Tuning committee, but he had a conflict this afternoon. Colin said the department has just gone through a major revision of their curriculum, which was informed in part by going through Tuning. Physics is structured vertically, more than history. They are trying to make sure that students are learning something at one level that is reinforced at subsequent levels. They have a core plus electives and have defined options for various directions that a physics degree can take. The Tuning outcomes are very generic.

Bill noted that the vertical structure in the physics curriculum is only set by convention. For example, they teach classical mechanics before electricity and magnetism. The curriculum could be approached in a different order or even organized on other principles like particles versus fields. What we do now is the same all over the world, but is dictated by convention not intrinsic to the discipline. As students progress through the curriculum, they should progress through levels of sophistication. It helps that most departments across the country follow the same conventional curriculum arrangement, but the discipline itself doesn't require this.

Susan said that in history they don't have courses that build on one another, but they do ask students to fine tune writing skills over the courses and to improve analytical skills as well.

Frank Harrold noted that these skills are taught within the context of the discipline and wondered if there should be specific courses to build the skills. They are currently taught in each class, so we are continually reinventing the wheel and wasting time. Students are bored by

being taught something that they already had in several other courses. Should a class on these skills be taught so it could be used by all the disciplines?

Colin said that an example of this is the technical writing class, which is providing skills that are useful. Accessing literature is also included.

Kristin said that education has a course in reading the literature, finding sources, and writing in APA style.

Frank asked if there is a more effective way to do this. We ought to be looking at introducing a skill, emphasizing it, and reinforcing it.

Susan said that history has a senior thesis at the end of the program. They are introducing a one- or two-credit course at the beginning when students are declaring their major.

Kathryn noted that this has been an interesting topic at the Tuning team meetings. What the University of Utah does shapes what the other schools choose to do. They have had the argument about having one statistics class for all disciplines versus having statistics tailored to each discipline.

Ryan said that a specific general education course for each discipline is not economical. Interdisciplinarity is something everyone relates to. In some ways it goes to Colin's point. Generic becomes difficult to measure. We want to come together and identify shared interests and also measure these in meaningful ways.

Janice noted that receiving a degree in history does not mean the student will be employed as a historian. Skills need to be usable in multiple areas.

Kristin said she is coming late to the Tuning project. A couple of years ago the department started on a large scale self study that led to some shifts and changes. They will have a TEAC accreditation visit soon. They have to evaluate what they have done, but they have some flexibility in setting new standards and planning assessment.

Janice said that elementary education has to deal with many sets of standards. The Utah team has been using the Utah Effective Teaching Standards, which are written for practicing teachers. The team is modifying the standards so they are more applicable to pre-service education and are more transparent to students and other stakeholders.

Bill noted that we have had several good contacts with TEAC and NCATE leaders. We feel it is best to try to coordinate this with them. TEAC thought this project was important because they had not had enough focus on elementary education.

### **Open Questions and Discussion**

Ryan said that some of the structure will disappear with the grant. What is the structure for the continuing progress? It is not clear how we can move to other disciplines. An institution can Tune to themselves, but the expectation is to Tune a discipline across institutions.

Bill said that several disciplines have expressed an interest in Tuning. Teddi will help arrange some discussion for disciplines that are interested, and this may be accomplished through the majors' meetings. They could also look to their colleagues in other disciplines within the institution. Janice said that she thought majors' meetings and ongoing electronic communication would be the way to go for now.

Ryan is confident about skills of this group but would be reluctant to have another discipline begin without state support.

Susan asked, now that we have statewide learning objectives, what differentiates Tuning from other reviews and how do we avoid redundancy.

Bill said that expectations differ across disciplines. We are trying to have discussions with accrediting organizations and have had one discussion with Northwest. Lumina has made good progress with other regional accrediting organizations. We are examining how we can all work together to satisfy accreditors, institutions, and other reviewers.

Ryan said it would be good to have a process where each department provides information at the end of the year. If we are to continue, it would be very helpful to have useful dialogue at the state level and to have some sense for what others are doing. Majors meetings are not necessarily adequate. Janice reported that a web site is being developed as a way to share best practices. The URL is [utahtuning.weebly.com](http://utahtuning.weebly.com).

Kathryn stated that another useful vehicle for sharing is the "What is an Educated Person" Conference. There is a rich discussion of Tuning and that conference has become a very important annual event that institutions have embraced as a way to send teams for this discussion.

Adam Johnston, a member of the physics Tuning team, arrived at the end of the meeting. He has been involved for two years, especially with the teaching of physics at the secondary level, which has been an addition to physics Tuning.

### **Comments from Project Evaluators**

David Williams commented that he thought the Lumina Foundation would be pleased with Weber's efforts to continue the project when funding ends.

**Agenda**  
**Salt Lake Community College Tuning Team Meeting**  
**Thursday, April 4, 2013**

1. Brief review of Tuning
2. The future of Tuning in Utah
3. Report of progress in the four disciplinary teams
4. Comments from project evaluators
5. Open questions and discussion

**Minutes**  
**Salt Lake Community College Tuning Team Meeting**  
**April 4, 2013**

**In attendance**

Chris Picard, Provost of Academic Affairs

Doug Richards, General Education Mathematics Tuning Team

Lois Oestreich, Elementary Education Tuning Team

Marianne McKnight, History Tuning Team

Trina Van Ausdal, Physics Tuning Team

Candace Wignall, Developmental Mathematics

Dale Smith, Associate Dean of Education, Family and Human Studies, and Social Work

Peter Iles, Associate Dean of Science, Mathematics, and Engineering

Teddi Safman, Assistant Commissioner, Utah System of Higher Education

Janice Gygi, Director, Utah Tuning Project

Bill Evenson, Consultant, Utah Tuning Project

David Williams, Evaluator, Utah Tuning Project

Janice Gygi said that the purpose of the meeting was to share what everyone is doing with Tuning and to share ideas.

**Review of Tuning.**

Bill Evenson introduced the Tuning goals. The faculty and students work together to define what a student should know, understand, and be able to do to earn a degree in a discipline. We have added the subdiscipline of general education mathematics. The process is faculty driven; the faculty define the discipline. Tuning is a multi-institutional project that includes all eight of the public institutions in the state plus Brigham Young University and Westminster College. They represent all types of schools, including two-year colleges, teaching universities, and research institutions. With consistent learning outcomes, students can transfer seamlessly among the institutions. Tuning seeks to focus on student learning rather than faculty teaching. It focuses on

what students can do rather than the classes they have taken or seat time. Discipline by discipline, we learn to sing in the same key but not in unison. We develop standards but not standardization as each institution is unique with its own context, including its own curriculum, pedagogy, and assessment. The teams do not agree on how to assess but do try to share ideas on how to assess what students can do. The teams interact with students, alumni, and employers to see what is important. In the long run, we are looking toward a cultural change to sharpen focus on what students are learning. We are focusing assessment on learning outcomes and are trying to interact with accreditors and other reviewers, such as state office of education. We hope to develop a format that can be used for any review that we need to do. As the teams put together learning outcomes, each department should make sure learning outcomes are appropriate for them, and then align curriculum with learning outcomes, align assessment with learning outcomes, and make it all transparent so that students know what to expect from their education and employers know what they can expect from graduates.

Bill distributed a paper that he has written about Tuning physics and suggested that it could be used as a reference. In addition, the Lumina Foundation put together a team to develop the Degree Qualifications Profile. Copies of this are available.

#### **The future of Tuning in Utah.**

Bill reported that Utah started the Tuning Project in 2008 with a grant from the Lumina Foundation for Education. A second Tuning grant was obtained in 2011. The official date for the end of the grant is May 31, but there is a little money left. We are now planning how to continue Tuning after the funding is gone. Many team members have felt that it is worthwhile. Previously, the discipline groups have met once a year at the majors' meetings in addition to the special Tuning meetings. Teddi will organize a second majors' meeting each year for the Tuned disciplines. She will also encourage ongoing communication. Now we are organizing interdisciplinary groups on each campus to share ideas and encouragement. We are hoping that these groups will be effective in continuing Tuning. Utah State University has made a lot of progress and is bringing in other disciplines. They are willing to help other campuses. Hopefully the Salt Lake Community College Tuning team will find ways to get together once or twice a year.

Janice noted that at Weber State University a question was asked about how a single institution could Tune a new discipline when the point is to Tune disciplines across institutions. This can probably be accomplished through majors' meetings, but there is value in an individual institution developing learning outcomes and making them transparent to the students.

#### **Progress Reports.**

Marianne McKnight said that she has been on the Utah history Tuning team since 2009. The state team is defining learning outcomes for the bachelor's degree, and Marianne is now chairing the team that is looking at what an associate's degree in history should include. She has solicited syllabi for 2000 level courses across the state and will now begin an analysis of 3000

and 4000 level courses to see what is happening in those. This is most helpful to the community college. They have to be sure students are ready for transfer. Marianne is working with the history chairs of the universities to see what the transfer students need to know. The committee is looking at both how well students are doing in their third year and how well they think they are prepared for transfer. This will take a while but should not require funding. Marianne said the faculty would like to see more discussion of this in the majors' meetings, and Teddi Safman indicated that this is being done.

Janice noted that the Utah Tuning Project hosted three visitors from Japan in November and brought them to the Salt Lake Community College campus for presentations from Marianne McKnight and David Huber. The visitors commented that the reason Utah Tuning has been so successful is because we have chosen such excellent team members to work on the project.

Trina Van Ausdal said that she has brought the learning outcomes back to her colleagues. They have mapped the courses to indicate where the Learning outcomes are being covered. In areas where they have not been meeting the goals, they have tried to decide how to add them. They are looking for better assessment.

Peter Iles said he liked the paper Bill distributed. From his point of view, you can rely on physicists for physics. The chemists at SLCC are using the issues but not the Tuning language. There is different language in other science disciplines, too. Very few students actually major in physics, and most physics majors go into engineering. About 40% of University of Utah graduates had some courses at SLCC, and he has some anecdotal evidence about how well the students are doing when they transfer. In science things are reasonably well Tuned, but they are definitely looking for assessment processes. They have not surveyed their students, but they get feedback from the University of Utah that their students are doing well. They need a way to get data about the students.

Trina said that she has talked to people at the University of Utah to see how students are doing. The report is that the students are doing really well. It is important to have information about departments in other institutions.

Teddi indicated that some data is available now. You can get the grades, which are a proxy for how well students are doing, but we know that we need to have data on performance on the learning outcomes.

Bill suggested that we need to specify the questions well enough that the institutional research personnel can answer from the data that they have.

Janice noted for the history team that the American Historical Association (AHA) has had a Lumina grant to pursue Tuning across states. Dan McInerney from Utah State University has been involved with the AHA team that is working on this project. It has been very important to

have a national organization supporting what we have been doing. Not all of the disciplines have a national organization that is positioned to do that. Marianne said the AHA wants to avoid standardization of processes, even though they support the idea of outcomes and objectives. They do not use the word “standards.”

Doug Richards said that the nice thing for the mathematics department is how well activities within their own department correlate with what Tuning is doing. They are already doing a lot of the things. The GE math Tuning assignment is different because they are just looking at general education outcomes. They want to know what students can do after completing MATH 1030, 1040, 1050, or 1060. The whole college is looking at quantitative literacy. They have focused on the committees that already existed. From the general education committee, they came up with six learning outcomes that would be expected for anyone completing general education quantitative literacy. These are pretty close to the Tuning outcomes, as close as they are going to get, so this is already happening in the mathematics department. The Tuning team did not have a problem coming to agreement. There was some discussion about technology because of the use of calculators. As a department, they have used signature assignments for assessment in MATH 1060. Students have to do a variety of assignments. It is not about just using a calculator. They have to use technology to prepare a document, including such skills as online graphing and the math features of technology. They have to use correct mathematical symbols. From the signature assignment, they can find where students have demonstrated competencies. The statistics signature project requires them to do the same kinds of things. Faculty is probably not totally aware of the Tuning input, and they sometimes have resistance when they think something is being pushed on them from outside. Working inside the general education committee was important. They are now going across the college to assess quantitative literacy in all disciplines.

Janice noted that the skills from general education mathematics are needed in many different disciplines. In addition we are looking at what mathematics skills an educated person needs to function in the world.

Candace Wignall said that developmental education has not formally made a list of outcomes, but they are constantly upgrading, so that the students can go seamlessly into the college mathematics department.

Bill noted that making the implicit explicit is one of the main purposes of Tuning. Faculty members often know what is happening, but they need to make it explicit.

Doug said he is seeing this. Students are entering with the skills. Developmental mathematics and college mathematics have recently merged, so things will continue to improve. Having common department meetings helps.

Lois Oestreich reported that the elementary education Tuning team spent the last two years

methodically going through the Utah teaching standards to revise them so that they work for pre-service as well as practicing teachers. Her department is working with the University of Utah, which is their one transfer partner, to determine what students should be able to do when they transfer. They are looking globally at all education courses to be sure that they fit with each other, and that students have purposefully met all ten outcomes. The elementary education Tuning team will meet once more in May and then look at their courses to be sure they are meeting all ten standards.

Teddi reported that Weber state has put forth a proposal for a pre-education associate's degree. All of the education deans like the idea. It makes for even stronger articulation, so it appears they will be moving down that path. It is good to have learning outcomes and competencies across institutions.

Bill said we have had good discussions with TEAC and NCATE, which will become CAEP, the accrediting agencies for education. They have had some interest. We want Tuning to work in multiple arenas.

Dale Smith said that, in addition to serving on the Tuning team, Lois is also the chair of the college's assessment team. She comes to department meetings and gently guides the faculty. They have learning outcomes outlined for each course and for the program as well. He is hopeful that Tuning will work well in several of their programs. They are encouraging other groups to follow the same process. The learning enhancement faculty came from developmental education but are now in the education department. They made a list of learning outcomes for a course before they ever looked at a textbook. Because Lois has led the way, social work and family and human studies are doing something similar.

### **Open questions and discussion**

Chris Picard said he has seen problems in statewide curriculum programs. There is a disparity in learning outcomes for essentially the same courses. He asked how we can leverage the Tuning effort so we have common outcomes to enhance transfer across institutions.

Teddi noted that majors' meetings have concentrated on competencies that could be achieved in different ways, without worrying about the means. The programs may be different, but they need common competencies.

Marianne said they have course descriptions, but they don't necessarily say what is there and what is not there. They do not have to have identical language for defining learning outcomes, but at majors meetings, they need to talk about what a specific course means at different institutions and what is essential to have the experiences transfer from institution to institution. Students think they are transferring things that they are not.

Teddi said the key is to have the people at the majors' meetings agree on learning outcomes,

even with different pedagogies and perhaps different content to get to these goals.

Chris noted that different pedagogies can get you to the same goal. If we are looking at clear pathways, learning outcomes have to be the same. If they are not identical, they should at least be close.

Teddi said at SLCC they have identified signature assignments. They can disagree about content in the course, but can agree about outcomes. These should be in the syllabi and should show students how they are going to get there.

Chris said that this conversation illustrates the problem. He is using the term content differently than Teddi. He agreed the content in the classroom or the substantive knowledge can vary, but the learning outcomes should not.

Marianne said that both knowledge and skills need to be addressed.

Teddi said we need to make sure the pathways are identified, even though students may change their majors indefinitely.

Chris said that he just came from a meeting in San Francisco discussing the common core at K-12. We need to have a clear pathway from SLCC to the University of Utah, but also from the public schools to SLCC.

Teddi noted that we involved elementary education and general education mathematics in Tuning so that they would address common core issues, too.

Bill said that we have also involved people from the Utah State Office of Education in all of the Tuning teams in order to further the continuity.

#### **Comments from project evaluators**

David Williams said he has been impressed with evaluation that is being done by meeting in these groups, using evaluation in a developmental way. This is a plus for how the program is going.

**Agenda**  
**Utah Valley University Tuning Team Meeting**  
**Wednesday, April 10, 2013**

1. Brief review of Tuning
2. The future of Tuning in Utah
3. Report of progress in the four disciplinary teams
4. Comments from project evaluators
5. Open questions and discussion

**Minutes**  
**Utah Valley University Tuning Team Meeting**  
**April 10, 2013**

**In Attendance:**

Ian Wilson, Vice President of Academic Affairs

Kathy Andrist, Member, Utah General Education Mathematics Tuning Team

Lynn Adams, Member, Utah General Education Mathematics Tuning Team

Keith White, Member, Utah General Education Mathematics Tuning Team

John Macfarlane, Member, Utah History Tuning Team

Sue Womack, Member, Utah Elementary Education Tuning Team

Phil Matheson, Member, Utah Physics Tuning Team, and Chair, Department of Physics

Joseph Hwang, Future Chair, Department of Mathematics

David McArthur, Chair, Department of Management

Janice Gygi, Director, Utah Tuning Project

Bill Evenson, Consultant, Utah Tuning Project

Randy Davies, Evaluator, Utah Tuning Project

Janice Gygi explained that the purpose of the meeting was to have the Tuning team members from Utah Valley University report on the progress of Tuning in their discipline teams and in their UVU department.

**Review of Tuning.**

Bill Evenson said that Tuning is a process by which faculty and students define what a student should know, understand, and be able to do at the two-year, bachelor's and master's levels. The process is faculty driven; the faculty define the discipline. It is multi-institutional with all eight schools in the Utah System of Higher Education (USHE) plus Brigham Young University and Westminster College. It includes community colleges, four-year schools, regional universities, and research institutions. The hope is to shift the focus from faculty inputs to student outcomes, and examine what the students are learning. We want to make the implicit explicit for students

and other stakeholders. Tuning comes from the Bologna Process in Europe. We are all singing in the same key but not in unison. Every institution has its own context and will have its own curriculum, pedagogy, and assessment. We want to pay attention to the views of alumni, students, and employers, as well as faculty. We develop learning outcomes but do not standardize. The hope is to further a cultural change that concentrates on what students are learning or not learning and why. We can then report to accreditors and other reviewers on what students have learned and how it has been assessed. Departments then need to coordinate learning outcomes with their own curriculum, pedagogy, and assessment. It is also important to make expectations explicit to students. They need to know what they will be expected to do by the time they complete a degree or transfer. It also allows employers to know what they can expect from graduates in a particular discipline.

### **Future of Tuning in Utah.**

Utah obtained a grant from the Lumina Foundation for Education to begin Tuning in 2009. A second grant will continue until the end of May. Although there is a little money left, we now need to determine how the work will continue when we no longer have funding. We want to connect it closely to the majors' meetings. The disciplines involved in Tuning will have a second majors' meeting for each of the Tuning teams. The chair of each Tuning team will continue to promote interactions among the team members. We are also having meetings on all campuses, so people involved in Tuning can have support across campus. We are hoping that meetings of the campus teams can continue in a way that promotes expansion of the Tuning process. All of our Tuned disciplines have multiple reports and reviews that need to be submitted. We are working with accrediting organizations to format the results of the Tuning teams so that one set of reports can be used for all reviews. We have had good interaction with national accrediting agencies from education. We have had less interaction with the Northwest Commission on Colleges and Universities, but Lumina has had good results working with some of the other regional accreditors, and we hope to work with Northwest in the future.

### **Progress Reports.**

Kathy Andrist reported that the general education mathematics team has adopted a set of outcomes. They have been soliciting input from all USHE schools as to the extent that these outcomes are being adopted in the different schools. Kathy has printed the outcomes and distributed them to faculty of the Department of Mathematics. One of the outcomes concerns the use of technology, and the department is concerned about the use of calculators in some of the math classes. It may be possible use computers for technology. Other than that, it appears that the outcomes coordinate well with what the department wants.

Janice noted that this issue was discussed at Salt Lake Community College. They expect students to submit an e-portfolio with a major mathematics project that includes the use of technology for graphs and other analysis. This may be an approach that the UVU department can consider.

Keith White is in the Developmental Math Department. He indicated that his department has

talked about the outcomes. They do not have a lot of control over what is in the courses, so they talk about the outcomes in a general sense but cannot talk about them in the specific sense. They do not have the opportunity to delve into them particularly well. For example, one of the outcomes is that students work with real world problems. In Keith's department they do not deal with real world problems. They never deal with anything that cannot be solved in less than eight steps. They are mainly focused on procedures. They are working on skills and procedures rather than working on the logical thinking concepts represented in the learning outcomes. Math is more conceptual than what they teach in their department.

Phil Matheson said that the physics team resolved this by developing levels of sophistication, which you then build upon. In developmental math they are not doing sophisticated reasoning. It is primarily arithmetic, but it will build to the higher level skills.

Janice explained that the math Tuning team had included professors from other disciplines, because they wanted to know what skills the other disciplines required of students who had completed general education math. Lynn Adams has been on the committee as a representative of the discipline of economics.

Lynn said that in the business courses, they are building on what the math faculty are teaching, but they have found that the skills are perishable. They have identified specific topics that they insure are repeated at least six times. Not all the learning outcomes are completed in the first year. They need to be repeated over two years in various courses. They are integrating this into their syllabi, and they build on them. He said he heard a professor complaining that the first week was always spent repeating statistics. Lynn thinks this is not a bad idea as students do forget. It is not bad to present them over and over again. The faculty needs to be teaching again what students have already been taught, so the entire curriculum is integrated. Students should have it over and over again until they get it. Lynn said he thinks the need for this may change when the state starts requiring math all the way through high school.

Bill reported he served on the committee that considered requiring high school students to complete four years of math, and the recommendation was treated respectfully but not passed by the State Board due to concerns about practicality. He noted that we have had a staff member from the Utah Office of Education on each of the Tuning teams, so we can coordinate our work with that of public education. Bill distributed a paper that he wrote explaining Tuning, using physics as an example. He also said he had copies of the Degree Qualifications Profile (DQP) book for anyone who did not yet have one.

Janice explained that the DQP is a Lumina project that has a broader perspective than Tuning. A DQP is an indication of what students should have accomplished when they receive any degree. It is an umbrella concept that includes all disciplines as well as those that have been Tuned.

John Macfarlane reported that the history Tuning team has been working for a number of years. They have developed core learning outcomes that include such items as historical knowledge and historical research. Utah State University has created steps for implementing the outcomes. There has mostly been agreement among team members from all the different institutions. At the department level, when Cat Brown was the chair, she developed some good ideas to help students. This included writing requirements at various levels. They would gather writing samples to assess the quality of writing in each class. They are beginning a self study of the department and are gathering information from History 1700, the general education course, from introductory courses for history majors. This indicates the floor of what students should be learning in those classes. The intention is not to constrain professors but to provide a basic idea of what students should be learning. Professors can teach in different ways, using different content. They will be having an outside reviewer assess the senior papers. The department is talking more about assessment and asking what value is added and what students should know.

Janice noted that the American Historical Association (AHA) has received a Tuning grant from the Lumina Foundation. They have a team with faculty members from multiple states that is developing learning outcomes that should be consistent. The Utah history Tuning team will adapt their outcomes to coordinate with the AHA outcomes, and the AHA has been considering the work of the Utah team in developing the national outcomes.

### **Open questions and discussion**

David McArthur asked if there was a difference between Tuning and accreditation. He questioned the need for Tuning when there is already accreditation. He was concerned that it was trying to subvert what was already in place. In the School of Business, they have had many discussions about learning outcomes and metrics that reflected the fine line between what is convenient and what is possible, between what can be done and what should be done.

Janice explained that hopefully Tuning is a foundation for all accreditations and reviews, not just for one institution but for all those with similar programs. Tuning should provide transparency so that students will know what to expect from a program and so that employers will understand what a student graduating with a degree in a discipline knows, understands, and is able to do.

Bill said he hopes Tuning furthers a cultural shift so that education focuses much more on what students learn than what faculty teach. In the past we have looked at credits that students have acquired and seat time rather than learning. He said that the purpose is to make the implicit explicit.

Phil noted that we already have the vehicle, and now we are optimizing the performance of the vehicle. Tuning is an iterative process. In identifying outcomes, have they been communicated to the students?

Keith said there has been a lot of chatter about competency based education. The Tuning teams are trying to nail down the competencies.

Phil reported that, in physics, they have a number of teachers who are already heavily engaged in doing outcomes assessment. For him, Tuning is about fine tuning the program and communicating learning outcomes to the students. They will check at the end of the semester to determine where they want to go. In order to Tune the program, they have to Tune themselves. In the fall, the department will go through the curriculum course by course to determine what each course is intended to accomplish. They will ask how each person teaches the course and what do they intend to do. They will take the step of having each professor see what works with other courses. They already have written lists of what is in the syllabus. Phil believes that it is a misguided idea that assessment has to be an objective measure. That may be wrong. They have been neglecting subjective measures. They give an exit interview, and the subjective comments have been very valuable. He is giving a weekly quiz asking how well students think that lecture topics of the week matched the intended learning outcomes. It might take a few minutes, but then you have a very useful subjective assessment of how you have done with the outcomes. He feels they are doing a reasonable job. The department has been made aware of state's efforts, and it is now up to them to begin to Tune, to sit down and be cohesive. Phil said that being the chair gives him ability to put this into effect.

Janice said that Sue Womack came to UVU from Weber State University. She served on the elementary education Tuning team as the Weber State representative and has continued to serve on the team since she came to UVU. She replaced Mike Patch, the previous team member, who is now department chair.

Sue said that the first response of the team was that this is what they were already doing. Students are being licensed by the state, but one of the benefits of Tuning is that the language makes the outcomes more explicit. It helps define what the standards mean, what they look like, what we want students to know, understand, and be able to do. The first year the team wandered. Then they took the Utah Effective Teaching Standards and worked to develop a shared understanding of what they mean in a pre-service context. The Effective Teaching Standards were meant for practicing teachers rather than graduating students. At UVU, the School of Education has had an interesting year. There has been a search for a new dean, and the associate dean left, so it has been a big scramble. The department has not talked a lot about what happened previously. They are now looking at determining the learning outcomes for each of their courses and determining assessments and key assignments. They are gathering data, putting it on spreadsheets, and taking a look at it so the right things are spiraled through the curriculum, and they are not missing key points. The state team still needs to consider the two-year degree programs and how they fit into this.

Janice noted that Weber State University has suggested developing a pre-education major, and the education deans across the state are supportive of this idea.

Joseph Hwang said that he was new to the idea of Tuning and was glad to have had the opportunity to join in the discussion as he will soon be the department chair.

Ian Wilson said progress in Tuning is being made at UVU.

David asked what will happen next, and Janice replied that the UVU Tuning team should meet to continue to support each other and share ideas.

**Agenda**  
**University of Utah Tuning Team Meeting**  
**Monday, April 22, 2013**

1. Brief review of Tuning
2. The future of Tuning in Utah
3. Report of progress in the four disciplinary teams
4. Comments from project evaluators
5. Open questions and discussion

**Minutes**  
**University of Utah Tuning Team Meeting**  
**April 22, 2013**

**In attendance:**

Michael Hardman, Interim Senior Vice President, Academic Affairs

Martha Bradley, Associate Vice President, Academic Affairs

Sabine Klahr, Deputy Chief Global Officer

Isabel Moreira, Utah History Tuning Team, Chair, Department of History

Brian Saam, Utah Physics Tuning Team

Amanda Cangelosi, General Education Mathematics Team

Teddi Safman, Assistant Commissioner, Utah System of Higher Education

Janice Gygi, Director, Utah Tuning Project

Bill Evenson, Consultant, Utah Tuning Project

David Williams, Evaluator, Utah Tuning Project

**Review of Tuning.**

Bill Evenson noted that most of the participants have encountered Tuning, but he gave a brief overview to insure that we would all be talking about the same thing. Tuning is a faculty project with student input. We are Tuning at the two-year, bachelor's, and master's levels. Faculty define the discipline. This is a multi-institutional project that includes all eight public institutions plus Brigham Young University and Westminster College. The trend in education is to move away from counting seat time and credits to assessing what the students are actually learning. We are making implicit expectations explicit, so students know what to expect from their programs. Tuning began in Europe, but the United States has developed its own version. Discipline by discipline, we are singing in the same key but not in unison. We are generating outcomes without standardization. The teams agree on outcomes, while individual institutions select their own curriculum, pedagogy, and assessment. Each department should focus assessment on their required learning outcomes. We are working with accrediting agencies and other reviewers to try to put the outcomes into a format that will be consistent with the needs

of all reviewers. The faculty should correlate the outcomes with their own curriculum, pedagogy, and assessment. It is also important to make learning outcomes explicit and transparent for students, employers, and other stakeholders.

### **Future of Tuning in Utah.**

Since 2009, Tuning has been supported in Utah by a grant from the Lumina Foundation for Education. Our current grant is ending on May 31. We will have a little money for the next few months, but the money is running out. We are examining how we can continue without a lot of extra cost. We are asking the Tuning disciplines to meet face to face at the majors' meeting in the fall and in a second meeting in the spring. We will also support the attendance of Tuning team members at the "What is an Educated Person?" Conference in the fall. This offers an opportunity for teams to meet and discuss progress. Chairs of the discipline Tuning teams will keep the discussion going between the meetings using email and telephone. The four disciplines involved so far still have a lot to do, and most would like to continue to work on the project. We are asking the Tuning team on each campus to meet twice a year to support each other and share ideas. The institution Tuning team will include the members of the Utah discipline Tuning teams, the chairs of the Tuning discipline departments, representatives from the office of the Vice President for Academic Affairs, and others who are interested in the project. We hope to continue to make progress with these teams.

Michael Hardman asked what expectations Lumina has for the project. Bill replied that Lumina hopes that we will find a way to sustain Tuning within the system. Our view is that there will not be a lot of resources. We think we are far enough along that faculty have understood what is important. Teddi Safman reported that we will be having a conference call with Lumina personnel next month. She believes they want to scale up in a way that uses Tuning and also has a regional presence. It will take time before practices are implemented.

Bill distributed copies of his paper that uses the experience of the physics team as an example of the Tuning process. We can also provide copies of the Degree Qualifications Profile (DQP) booklet.

Janice Gygi said that in some ways the majors' meetings address the same agenda as Tuning, so we are hoping to build on what has begun there. She also reported that educators from Japan had visited the University of Utah in November. Brian Saam and Isabel Moreira gave excellent presentations. Sabine Klahr was also very helpful in discussing international programs. The visitors said they thought the reason Utah had been so successful was because we were working with such good people.

### **Progress Reports.**

Isabel Moreira said she has been introducing Tuning into the history department. The faculty has a lot of anxiety about assessment and about standardization. The learning curve was to convince faculty that this is something that is valuable and something that they want to do. She

has been taking a few concrete steps and talking generally. They have a sheet of the learning outcomes and ask the faculty to put them on the syllabi. It is helpful that the university is now requiring outcomes on syllabi for all courses. At the 3000 level, the history department has reintroduced a methodologies course called "Becoming a Historian." This is a required class for all majors and transfer students. The class focuses on history as a discipline and stresses historical skills. They are linking it with the capstone course for the major, so they assess the skills at the 4000 level class. Isabel has been involved in conversations with Salt Lake Community College (SLCC). The faculty at SLCC want to be sure that their students are prepared to compete in the history classes when they transfer to the University of Utah. The history faculty at the University of Utah are listening now when Tuning and related issues come up, but it has been "touch and go" up to this point. The area that still needs work is student involvement. It is especially important to get graduate students involved as they do a lot of teaching. Isabel said she has seen the value of Tuning, because it is faculty driven and is respectful of the discipline. It was generated out of their own conversations. One of the things she likes is that students can come out of the process able to articulate what they have learned to employers and others. The advisors have also been involved. Karleton Munn has gone to Educated Persons Conference as well as attending team meetings. In history, they have had an enormous boost because the American Historical Association (AHA) has become involved and has a Lumina grant to develop learning outcomes for the entire discipline. Isabel showed a recent copy of *Perspectives on History*, the AHA publication. This edition was entirely devoted to Tuning.

Janice noted that people from Utah have been involved in the AHA Tuning project. She also noted that it is helpful when the Tuning team member is chair of the department as it allows them to focus on integrating Tuning results into departmental practices.

Brian Saam said that he feels as though the physics department started out strong but is falling behind a little. They need to reenergize the faculty. They are adding astronomy in the department, with Ines Ivans working to develop the degree. They are now discussing how they should structure the department for different types of students. Tuning is a great way to have outcomes-based discussions. He thinks that the faculty, especially young faculty, are responsive to this discussion about what students can do with their degree. They have over 200 majors, but the students have different needs and choose different tracks accordingly. Brian reported that faculty love "assessment" but have no interest in connecting it to anything. Everyone has the idea that we should test and give exams and have students do problems. The faculty are all interested in teaching students to be little "us's." If the student is going in another path, we have to establish outcomes that make sense for them. Brian is pleased to see that there is pressure from the university to use outcomes. He tells the faculty, you can make the rules, or you can let the administration make the rules. Faculty can see how outcomes assessment is related to accreditation. Tuning is a uniform, comprehensive way to do this. We all know we want the degree to be worth something, but we haven't advanced far enough to see where this is going. The faculty have a perfect opportunity to adopt Tuning ideas. Ines had the idea of having an astronomy major that is not designed for astronomers. It is a serious major with

serious quantitative analysis, and it is a way to train good scientists and to teach students to think like scientists. The department wants the majors and think they can hook them with astronomy. The chance of incorporating astronomy in a job is small, but it is a vehicle for developing scientists. It is a tribute to information being the lowest form of knowledge. The important thing is the competencies.

Janice noted that there are many different hiring paths for all these disciplines. Graduates have to be prepared to do things other than work in their selected discipline.

Amanda Cangelosi said that she loves the Tuning philosophy but struggles with the math Tuning team, because they are talking about general education math classes, which are courses that math majors don't even take. GE math stops at first year calculus. She has trouble seeing how this is in line with the larger Tuning vision. The team has developed six learning outcomes that are vague and apply to general education courses. Faculty at the University of Utah have reacted anywhere from, "This is ridiculous," to "This is what have we been doing all along," to "Yes, these are great." Amanda said she is not sure this is useful.

Bill said that the goal for general education math is to clarify what students need to know, understand, and be able to do to be certified as passing the math GE requirement.

Janice said there are two concerns for general education math. One is to determine which learning outcomes students need to enter various majors that need quantitative reasoning. We have an economist and a chemist on the team to help determine what those majors would need. Second, for many majors, this is the only math they will have. They need skills to function in the everyday world, for example, to be able to read quantitative arguments in the newspaper and understand them. We purposely did not go into the math major, but that is something that we may consider in the future. Tuning isn't intended to develop something entirely new but is to clarify the outcomes for the students. It should make the outcomes more explicit and transparent.

Isabel said that one of the history outcomes is "construct a reasoned argument," which is a history learning outcome that is obvious but has not been clarified.

### **Open questions and discussion**

Mike said there is a fundamental flaw in isolating general education disciplines. We need to Tune all of general education. It is important to have outcomes. This is driven by accreditation, which is driven by program improvement. Accreditation is about improving the program, while Tuning is about helping students focus on what they need to accomplish in their degree programs. We need both. We need a system that is oriented to learning outcomes. At the University of Utah, they are wondering how to establish an office of accreditation that is focused on student learning rather than on the process. He questioned the notion of each of the disciplines establishing their own learning outcomes at a time when we need integration, not

silos. This is not the ultimate goal of undergraduate education. We need to see how disciplines interface.

Teddi said that the DQP picks up on this and has a coherent, interdisciplinary approach. The DQP should help students articulate what they are learning from one discipline and apply it to other disciplines. Now we have to measure the outcomes and aggregate the learning. Students need to be able to see where they are falling short. That is where accreditation is going. Competencies should build on each other, but we have to be careful about competency-based direct assessment because of the danger of trivializing the competencies when they are divided into discrete assessment pieces.

Mike noted that now the only currency is a transcript, and all it tells us is which classes a student took. Now we have to be able to measure and aggregate what they are learning and use this for program improvement. For accreditation, we need to see where we are falling short. As we look at Tuning, and where we are going with learning outcomes, it is not about credit hours but about learning outcomes.

Teddi said that there is discussion about moving from credit hours. The direction is much more toward the conceptualization of learning than the course that you take.

Janice noted that USU is looking at Tuning all of general education. Norm Jones is now in the provost's office and will be working on Tuning and general education. Salt Lake Community College also started with general education to develop their learning outcomes and now they are comparing the outcomes from the general education committee with the outcomes from the GE math Tuning team and are finding them to be almost identical.

Sabine said that the project in Europe had to do with transparency across different countries and ways to transfer across Europe. It was based on mobility of people so Europe could be seen as one higher education zone. In Utah, we should be able to move seamlessly across schools or change majors without having to take extra courses. The Japanese visitors wanted to look at having students fit seamlessly into study abroad, so they could take classes there and transfer here.

Dee Caldwell, who is the chair of the Utah elementary education team, could not attend the meeting today. Janice reported that elementary education already has multiple standards, so their challenge was to simplify them. The team used the Utah Effective Teaching Standards as their basis. These were developed for practicing teachers, and the team realized that new graduates could not be expected to meet the same standards. They are revising the standards to meet the needs of pre-service teachers. They are also working to make them transparent to students, parents, and other stakeholders. As with all the teams, this process is making it easier to talk with others across institutions about common issues.

Janice said that she sees excitement among the history faculties. It has been good for them to have a chance to work with each other.

**Comments from project evaluators**

David Williams reported that they are using developmental evaluation. Each team is doing something different. The evaluators are trying to provide feedback to them about what is happening and trying to help each group improve their process and meet their goals.

Janice noted that using the learning outcomes as the coin of the realm means that sometimes students won't be able to go on if they can't demonstrate that they have attained the outcomes. She expressed the hope that the University of Utah team will meet together a few times a year to share ideas and encourage each other.

APPENDIX C: REPORT ON DISCUSSIONS WITH TEAC AND NCATE

## **Dinner with TEAC, NCATE, and CAEP Representatives**

January 22, 2013

Orem, Utah (in connection with their review of UVU)

### Organizations:

TEAC – Teacher Education Accreditation Council

NCATE – National Council for Accreditation of Teacher Education

CAEP – Council for the Accreditation of Educator Preparation (being formed from the merger of NCATE and TEAC)

### Participants:

Mark LaCelle-Peterson, President of TEAC, Vice President of CAEP

Diana W. Rigden, Executive Vice President of TEAC and CAEP

Robert Wiggins, Accreditor from Oakland University, Michigan

Monique Lynch, Representative of NCATE

Aaron Popham, Representative of BYU assisting with the accreditation visit

William Evenson, Utah Tuning Project representative

We had a very friendly discussion in which the accreditors were eager to learn about progress in Tuning elementary education in Utah. Mark asked me to explain Tuning, both the process and our current status, to bring the group up to date. I explained what we are trying to accomplish, the range of participation in the elementary education team, and the current status of agreeing on learning outcomes (LOs) applicable to pre-service teachers and consistent with state and national standards and requirements. We are trying to drill down so that all institutions in the state develop common understanding of the LOs, while maintaining the freedom to accomplish these according to their own context and needs. I noted the interesting observation early in the process that different institutions sometimes had different understandings of particular expectations for teachers. The Tuning process is clarifying what the standards mean, without specifying curriculum or pedagogy. I expressed the hope that a good draft of the LOs and a report of the status of Utah's elementary education Tuning could be available to share with the accreditors by mid-2013.

William Evenson

### **Telephone Discussion**

On May 13, 2013 Bill Evenson talked with Diana Rigden, executive vice president of TEAC, regarding developments in the transition from NCATE and TEAC to CAEP. He explained that Utah education deans are concerned that the draft CAEP standards are inappropriately prescriptive. They shared the hope that Utah Elementary Education Tuning might provide a productive model for the development of the accreditation standards, but no specific work has yet been undertaken in that direction.

## APPENDIX D: EVALUATOR REPORT

# Utah Tuning 2 Project

## Interim Evaluation Report

August 2012 – May 2013

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**Prepared by**

**Randall Davies, Ph.D.**

**David Williams, Ph.D.**

**External Evaluators**

May 2013

Brigham Young University

150 MCKB

Provo, UT, 84602

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# INTRODUCTION

This report documents evaluation activities from August 2012 to May 2013 for the Utah Tuning 2 Project funded by the Lumina Foundation. The purpose for this evaluation was to provide developmental evaluation consultation and formative evaluation assistance to key stakeholders (i.e., the Utah Tuning Leadership Team and discipline specific Tuning team members) in their efforts to adapt and improve the project. This evaluation report is provided in support of the Utah Tuning 2 Project's requirement to evaluate the project.

## PROJECT BACKGROUND

This project is intended to improve student learning by embedding Tuning and Tuning reference points within the academic culture and practices of those working at institutions of higher education in Utah. In essence, the project endeavors to facilitate a systemic change at institutions of higher education by clearly articulating a common set of expectations for what students should know, understand, and be able to do upon completing a specific degree or set of learning experiences. The stated purpose of this initiative is to improve the quality of higher education by establishing transparent and fully assessable learning outcomes and competencies for degrees, discipline by discipline. The Tuning 2 project was designed to work in conjunction with other existing programs, including the Degree Qualifications Profiles initiative and Utah's Faculty Discipline Majors' Meetings. The long-term objective of the Utah Tuning 2 project is that all disciplines will be tuned, and every student graduating with a degree in a tuned discipline will demonstrate mastery of all learning outcomes and competencies that the team has determined to be critical for work in that discipline.

## PROJECT ACTIVITIES AND COMPONENTS

The central activity of this project revolves around Tuning teams. There are four such teams currently in operation in Utah: physics, history, elementary education, and general education mathematics. This project continues a pilot project of the Tuning process for physics and history. The physics and history teams have been Tuning for over almost four years now; however, several team members representing the various institutions have only recently joined the team, either replacing prior team members or representing institutions new to the Tuning process. The Tuning 2 project expands efforts to the areas of elementary education and general education mathematics (GE Math). These two teams began meeting in September of 2011. As stated earlier, the purpose of these teams is to establish fully assessable transparent learning outcomes and competencies for each degree or discipline in terms of what students should know, understand, and be able to do upon completing a

specific degree (or set of learning experiences in the case of GE Math). General education mathematics and elementary education were added to accommodate the Common Core State Standards adopted by the Utah State Board of Education (K-12). Each team member is to represent their institution as a liaison and advocate for the Tuning process back in their department. At each institution the four departments or groups at that institution form what the Tuning Leadership Team calls the institution's Tuning team.

The Utah Tuning Leadership Team consists of five principle members and the external evaluators. The main function of this state coordinating committee is to facilitate the success of Tuning teams. The Utah Tuning Leadership Team for the Tuning 2 project meets regularly to discuss the progress of each team, plan next steps, and provide professional development opportunities aligned with the project goals (e.g., the Educated Persons and the Degree Qualification Profiles conferences). For some meetings the chairs of the discipline teams are included.

## EVALUATION ACTIVITIES

The external evaluators for this project provided evaluation support using a developmental evaluation approach (Patton, 2011). Developmental evaluation centers on situational sensitivity, responsiveness, and adaptation. It is particularly suited to this project given the socially complex nature of the initiative and the fact that participants expect to continually adapt and revise the program and outcomes to meet the changing needs and purposes of specific degrees. In this role the evaluators serve as participating members of the Utah Tuning Leadership Team. An important purpose for this evaluation was to provide consultation and evaluation expertise to key stakeholders (i.e., the Utah Tuning Leadership Team and discipline Tuning team members) in their efforts to accomplish their Tuning goals.

The role of the evaluators is primarily one of consultation but is also to provide targeted data collection and analysis. Evaluation activities included observing (and at times participating in) Tuning meetings and conferences, conducting surveys, interviews, and focus groups, as well as counseling with the coordinating group. This was done to better understand what is currently happening, how it affects the Tuning process, and what to do next.

During the past year evaluators have attended all Tuning meetings and activities, conducted focus groups with each of the Tuning teams, conducted interviews and focus groups with students enrolled in or graduated from a History degree, and attended Tuning meetings at most participating institutions with each institution's Tuning

group. This was done to clarify understanding of the Tuning process, perceptions of the teams' progress, and any challenges and concerns they may have encountered while participating in the Tuning process.

## SUMMARY OF EVALUATION FINDINGS

The contextual analysis below provides a summary of observations and feedback about this project. These descriptions are based on team meeting observations and interviews with participating team members and students. These results have been shared with the coordinating group and Tuning team leaders informally and through written summaries of results. The following section provides a summary of evaluation findings and discussions in terms of each group's current status, issues affecting the Tuning process, and suggestions for what to do next.

### CURRENT STATUS

Tuning often means something different to individual people depending on their role, length of involvement, and the context within which they perform their job. Each Tuning team experiences a unique set of conditions in which they function. The following summary provides a description of each Tuning team separately, then a summary of overall progress and challenges.

*GE MATH TUNING.* The GE math Tuning team finds itself in a unique situation in that this group does not represent a specific degree, but rather provides specific service courses for various degrees and disciplines. Thus GE Math does not have a particular employer for its students but rather a variety of clients who rely on GE math courses to prepare students to succeed in their degree or discipline. In addition, many students completing Math GE requirements take only one or two math classes. They are not required to take a common set of courses. At first this was a substantial challenge for the group as they grappled with which learning outcomes would be appropriate for all potential students. They seem to have overcome this difficulty through extensive discussion, although team members still recognize this as an issue they need to consider continually. The group has established a set of six learning outcomes for GE math, which they feel will serve them well. They have begun exploring the alignment of specific courses with these core learning outcomes. Several team members have expressed concerns or questions about what they can do next. Specific concerns included: how to

implement changes, gain buy-in from their various departments and the client departments they serve with their math courses, and how to assess specific learning outcomes given the volume of content expected to be covered in each course. Several team members felt it might be extremely difficult to change specific courses (or department policies) to align better with the learning outcomes they have established.

*ELEMENTARY EDUCATION TUNING.* The Elementary Education Tuning group has made good progress on two fronts. They are much more aware of the Tuning process, what it is and what is expected of them. They are also making progress on establishing learning outcomes that focus directly on pre-service teachers rather than practicing teachers. Unlike any of the other groups, this group has a clearly defined target employer group (i.e., elementary schools), with clearly established accreditation and licensure standards to which they must align their Tuning efforts (e.g., the Utah Effective Teaching Standards). Early efforts in defining agreed on learning objectives focused expectations on what might best be described as “classroom ready” outcomes. Current revisions have focused more on what pre-service teachers must know, understand and be able to do. They are still working on this and have expressed the concern that they might need to spend considerably more time on the development of these outcomes.

The greatest challenge many team members expressed was the belief that they already have standards, which their departments strive to adhere to, and feel their colleagues will not see the need for Tuning. Several team members felt the focus on pre-service teachers might help attenuate this concern and the link to accreditation might be seen as a benefit, but not necessarily another set of standards. And while some have indicated they have made minor changes to what they do in the classroom, most feel they are already doing a good job of articulating appropriate learning expectations to and training prospective teachers. The idea was also expressed that having a consistent set of expectations across the state was a good thing but at times individuals worried that each institution needed/wanted to be unique.

*PHYSICS TUNING.* The physics team has developed a comprehensive list of outcomes they feel students would need upon graduating with a physics degree. They have also been working at delineating these outcomes in terms of associates, bachelors, and graduate degrees; what they call levels of sophistication. They continue to grapple with implementation issues, especially the issue of assessment. Many of the objectives are cognitive outcomes, but a few would require performance assessments (e.g., laboratory skills). Being able to identify those students who have the basic required competencies, as well as those who excel, was often mentioned as a concern. Most participants also indicated that although they now have a set of learning outcomes they agree on as a team, not much has changed at individual institutions with their colleagues there. Many felt their faculty already knew what they expected of their students; but team members thought that Tuning might help them understand the need to make their learning outcomes explicit for students and others.

*HISTORY TUNING.* The history group is probably one of the most advanced teams in terms of implementing Tuning at the various institutions. Still, many of them indicated institutionalizing change is a gradual process. Even those at schools who have officially embraced the effort have expressed the need to continually educate, encourage, and demonstrate how Tuning might be beneficial. Several individuals have suggested they do not use the Tuning label as it is not intuitive to faculty and students and in some cases using the term Tuning is actually seen as a detriment to their efforts to promote the initiative. Team members indicated they talk about Tuning in terms of an instructional focus, what is to be learned and what knowledge and skills students should gain to improve their ability to be employed. The group has also discussed the need to identify where in the curriculum specific learning objectives will be addressed as well as identifying objectives by level, similar to what physics is doing. While they have established a set of student learning outcomes for their degrees, their national organization (the American Historical Association) has continued its efforts to address the Tuning agenda at a national level. It seems that the national organization is now grappling with many of the same issues the Utah Tuning teams have had to address. One specific challenge History departments face in Tuning is the desire to have a consistent set of learning outcomes while maintaining the autonomy of individual institutions and avoiding the contentious topic of forced standardization (and standards in general).

*HISTORY DEGREE STUDENTS.* A major addition to the evaluation this year was the inclusion of alumni interviews/surveys and student focus groups. This was done for History students only. Twenty seven alumni completed an online survey or participated in a phone interview. Twenty nine students provided information about their degree in a series of focus group sessions. The students came from a variety of schools across the state while attending the Phi Alpha Theta Regional History Conference held at Utah State University. They were all History majors and many were presenting their research at the conference, so they were not necessarily representative of all students the history programs of universities in Utah serve.

With few exceptions, most of the students and alumni thought fondly of the time they spent completing their History degree. Any dissatisfaction with the degree tended to be focused on employment potential and need for better career counseling early in the degree. The results summarized here focus on their comments associated with learning outcomes since that is the focus of Tuning.

None of the students knew about or could intuitively guess what Tuning was. This was not unexpected, as faculty all along indicated they avoided talking to students about Tuning specifically. Although students indicated the learning outcomes for each course were usually provided in the course syllabus, they also said they rarely read them. Most students indicated they figured out what the learning outcomes for the degree were on their own. This usually happened when they were in upper level courses. Students indicated they learned about the degree outcomes through discussions with faculty, writing assignments they completed, and projects

they worked on. Students tended to describe the degree's learning outcomes in general terms, similar to the three broad categories of learning outcomes provided by the History Tuning team. Although some students indicated historical knowledge was an objective in lower level courses, they most often indicated that the learning outcomes for the degree included historical thinking (e.g., recognizing the existence of a broad range of interpretations and viewpoints) and research skills (e.g., critical thinking, finding resources, writing, forming an argument).

## CLAIMS, CONCERNS, AND ISSUES

Tuning is a socially complex process. There is often low agreement on the specifics of what learning outcomes and competencies should be and how to complete the task of Tuning, given the diverse settings and contexts in which Tuning takes place. An oft used term when referring to the Tuning process is “muddling.” Based on the ongoing Developmental Evaluation all participants have joined the two evaluation consultants in conducting as part of the process, the following claims, concerns, and issues have been raised by Tuning teams across all four disciplines as they have muddled through this complex process.

*CLAIMS REGARDING THE VALUE OF TUNING.* Several participants made claims about the value of Tuning in addition to those articulated in the official purposes. These include: (1) the benefit of meeting with colleagues from other institutions to network and discuss common interests and issues; (2) the perceived benefit of personal learning; and (3) the fact that Tuning is aligned with and useful for meeting accreditation requirements. Even when participants indicate they do not feel much will come of the initiative, they often suggest the Tuning meetings have been a tremendous benefit to them personally in terms of collaborating with others in their discipline.

*CONCERNS REGARDING STANDARDIZATION.* This particular issue has been a challenge for all teams. Initial impressions of and resistance to the Tuning process are often based on misunderstandings of Tuning goals regarding standardization. Even once individuals are educated in the purposes and benefits of Tuning, a consistently mentioned concern is that Tuning may be a subtle form of standardization. Reactions vary though; most team members subscribe to the official statement of the project, which suggest that establishing standards and expectations for degree completion does not mean institutions must standardize the way they provide services or assess students. Still, some participants talk about Tuning as a way to align all the participating institutions and faculty with the same learning objectives as a kind of standardization. In this sense they extoll the benefits of having consistency between programs to ensure quality and transferability of students between programs. This is compounded somewhat by the Faculty Discipline Majors' Meetings where issues of course

credit transferability are considered, although standardization is not. In History departments and at the national level, the issue of standardization, and even the use of the term “standards,” has become a controversial topic.

*CONCERNS REGARDING ASSESSMENT.* A continuing concern all groups have mentioned often in meetings is that of assessment; specifically, they acknowledge that some important outcomes and expectations are extremely difficult to measure. This makes it difficult to guarantee that students graduating from a program will have all the important dispositions and abilities Tuning members hope they would have. In addition, the best way to assess students on degree specific outcomes varies by program. For example, appropriate methods for assessing students in Elementary Education (e.g., portfolios with lesson plans, video evidence of effective teaching, and results from standardized assessments like the Praxis exams) are not likely to work as well for Physics students given the nature of their expected learning outcomes (i.e., cognitive knowledge and understanding, along with competency in laboratory research methods and skills).

*ISSUE REGARDING DEPARTMENT FEEDBACK.* A common issue mentioned by almost all participants focused on getting department feedback and buy-in. The extent to which team members take information back to and obtain faculty input from their home departments varies greatly between institutions. In addition the size of the institutions makes for different challenges. There seems to be a general perception that faculty in individual departments are slow to provide feedback. And in some instances they are resistant to or express some apathy regarding this endeavor. This often is noted in conjunction with the feeling that departments are already doing certain aspects of Tuning or that there are several other related initiatives that have the same purposes (often related to accreditation). This issue was most prominent with the elementary education group but was also expressed by some members of each team.

## CHALLENGES TO ADDRESS DURING NEXT STEPS

While each of the Tuning teams is at a different place in their Tuning efforts, the most pressing issue members of each team faces is getting feedback and buy-in from their colleagues and administration back in their departments and universities. Each of the Tuning teams has additional issues and concerns they are addressing as well.

*GE MATH TUNING.* In addition to getting input from the various clients they serve with GE math across their institutions, this team has started to discuss ways to implement and assess the learning outcomes they identify for specific GE math courses. The biggest challenge they face is making these types of systemic changes at their individual institutions.

*ELEMENTARY EDUCATION TUNING.* While this group has made good progress in identifying and aligning their list of essential learning outcomes with state standards, they have also focused their objectives at the pre-service level. Implementing these outcomes may be a challenge for this group given the general perception that they are already doing many of these things. Some team members indicated they would likely see more progress once they integrate the learning outcomes into their assessment systems. Others suggest they may not be able to make specific changes but that the learning objectives they have identified are already a part of their assessment practices. The set of learning outcomes however are considered to be a way to better communicate with stakeholders what they are doing.

*HISTORY TUNING.* The greatest unknown for the history Tuning groups seems to be the pending alignment of their outcomes with whatever their national association (AHA) comes up with for essential learning outcomes. As an ongoing effort, they continue educating faculty and administration about the benefits of Tuning as well as finding ways to better communicating to students what the degree learning outcomes are.

*PHYSICS TUNING.* The physics Tuning team has a set of learning outcomes. They have begun adapting the learning outcomes to communicate levels of sophistication. For many of the participants their biggest challenge is addressing the assessment issue.

## CONCLUSION

Overall, this initiative is well organized and in compliance with all the specified aspects of the grant. The Utah Tuning Leadership Team functions well together and actively seeks to facilitate the success of each of the Utah Tuning teams. The specific teams meet regularly and each is making progress toward their goals. While each group has specific issues they are dealing with, the main issue all participants face is collaborating fully with and thereby getting adequate input, feedback and buy-in from their department colleagues. A major concern of the leadership team is how to maintain the progress they have made and provide a sustainable venue for the Tuning process to continue once the Tuning grant has ended. The need to provide a sustainable venue for the Tuning process to continue is a concern the leadership team is currently dealing with.

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## APPENDIX E: COMMUNICATIONS



## Strengthening Student Learning Through “Tuning”

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### *Abstract*

*Physics faculty in the Utah System of Higher Education have engaged in “Tuning” physics in the state institutions of higher education since 2009. This paper explains Tuning, describes how it can strengthen student learning, and reports some of the experience of Tuning physics in Utah. It argues that this process is directed toward a culture change in academic departments, giving primary focus to what students learn rather than to what faculty teach or to other faculty and institutional inputs.*

*Key words: Tuning, Bologna Process, physics, learning outcomes*

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### **Introduction**

Beginning in the fall of 2008, the Utah System of Higher Education began work with Lumina Foundation to implement a US version of “Tuning,” a process of quality improvement for academic disciplines that had been developed in Europe (1-5). Tuning was a faculty initiative in Europe, what some have called “the antidote to Bologna” (6) because it was developed to maintain faculty control of the disciplines in the face of the centralized direction established by European education ministers through

the Bologna Declaration and related agreements. In this article, I emphasize the ongoing work in Utah to Tune physics.

Lumina Foundation sought to understand how some Bologna participating countries were able to increase their production of post-secondary degrees, while US degree production was stagnant near 40%. The Foundation believed that, of the many initiatives tied to Bologna, Tuning contained the most promising ideas for improving student learning in the context of

US higher education. As processes to improve higher education quality, Tuning and Degree Qualifications Profiles (7) are faculty and institution driven. They respect institutional autonomy. They respond to the differences of institutional contexts. They give attention to all stakeholders: faculty, students, alumni, employers, K-12 teachers who prepare students for college, institutional administrators, advisors, librarians, policy makers, and any others, while leaving faculty in charge of their discipline, clearly recognizing the faculty as the experts on what students need to know, understand, and be able to do to develop professionally in the discipline. Other Bologna initiatives that involve structural changes in higher education, such as the European Credit Transfer and Accumulation System (ECTS), the diploma supplement, and the realignment of degrees, would be more difficult to adapt to the US context.

### ***Tuning USA***

Utah undertook a pilot project in Tuning, beginning with the disciplines of physics and history. In parallel with Utah's work, Indiana Tuned history, and Indiana and Minnesota Tuned other disciplines in the exploratory work in 2009-2010. There are now projects in several other states as well as multi-state projects and a US-wide effort in history that is led by the American Historical Association.

Tuning is faculty devised, driven, scoped, managed, developed and owned. This has been fully true in the Utah Tuning projects. Tuning appears to have global appeal. There are now fairly mature Tuning projects in Latin America, Australia, Russia, India, and China, with exploratory projects elsewhere. Standardization is inconsistent with Tuning; Tuning brings faculty together to build clear common reference points in a discipline, but every institution brings its students to accomplish the learning outcomes in its own way. Neither curriculum nor pedagogy nor assessment is prescribed by Tuning, only outcomes. I think of Tuning as learning to sing in the same key but not in unison, discipline by discipline.

The focus in Tuning is on student learning: what does a student need to know, understand, and be able to do to qualify for a bachelor's degree in the discipline? Furthermore, what does a student need to know, understand, and be able to do at the transfer point from community colleges to a bachelor's program, whether or not they are actually moving to a new institution? What does a student need to know, understand, and be able to do to qualify for a master's degree? How do the competencies and learning outcomes ratchet up from entry to midpoint (or associate's degree) to bachelor's degree to master's degree? (Taking these questions to the doctoral level seems less meaningful, at least in physics, since doctoral degrees are essentially research degrees.) Tuning is "making the implicit explicit" (8) as regards the knowledge, understanding and skills required for a degree in the discipline.

Closely connected to Tuning is the "ratchet principle" (1). Not only do the faculty define competencies and learning outcomes for degrees in the discipline, but also they define expectations for accomplishment that are ratcheted up from the associate's to the bachelor's to the master's levels. In this process, faculty develop a shared language for competencies and learning outcomes, making degree expectations transparent. They extend that transparency to students and eventually to all higher education stakeholders.

Part of the object of Tuning is to shift the focus of faculty, departments, institutions, systems, professional associations, and accrediting organizations from what is taught to what students learn. There is conscious attention to a needed culture shift within higher education. Furthermore, Tuning aims to make student learning expectations transparent to other stakeholders, as mentioned above. Finally, Tuning emphasizes the need to assess student accomplishment of the degree-level learning outcomes before granting a degree in the discipline.

With these goals for student learning, quality assurance, accountability, and transparency, it should be clear that Tuning is an on-going process, not a discrete project. We can only speak of a Tuning

project in the sense of an initiative to set the process in motion. We cannot think of a discipline as “having been Tuned,” because the competencies and learning outcomes, as well as the other elements discussed below, like degree profiles and employment maps, will be revisited again and again in an ongoing focus on student learning tied to evolution of the discipline.

### ***Utah’s preparation for Tuning***

The process of Tuning must be collaborative among the faculty on the team. In Utah, we included representatives from each Tuning discipline from all nine (now eight) state institutions: two research universities, four comprehensive state or regional universities, and three community colleges. Since the pilot project, we have also included representatives from private institutions in the state. The work of these discipline teams was greatly aided by more than a decade of serious collaborative faculty work in Utah that was facilitated by the Office of the Commissioner of Higher Education under the leadership of Assistant Commissioner for Academic Affairs, Phyllis ‘Teddi’ Safman, PhD.

As far back as 1997 Safman began faculty-driven meetings on transfer articulation which evolved into annual “Majors’ Meetings” that now include faculty representatives of 38 academic disciplines. These groups coordinate transfer articulation policies and have considered learning outcomes for general education requirements in the areas of mathematics, writing, life sciences, social sciences, humanities, and fine arts. They have brought faculty groups from different institutions and educational sectors (community colleges to research universities) together to address common concerns, thereby opening lines of communication between institutions and sectors, establishing trust, and developing respect. These faculty groups in the Tuning disciplines formed the basis for our Tuning teams, so they started their work knowing and respecting one another. In 1993 Utah formed a faculty general education task force, now recognized by the System as the Regents’ General Education Task Force. The relationships developed in the work of the Task Force also contributed

significantly to the ability of the Tuning Teams to move quickly into meaningful discussion of the disciplines being Tuned. Finally, since 1999 the Task Force has held an annual conference on “What Is an Educated Person?” that is open to faculty, administrators, and interested policy makers or members of the public. This conference introduced Utah participants to European reforms connected with the Bologna Process and to the work of the Association of American Colleges and Universities (AAC&U) in producing Essential Learning Outcomes (ELOs) for higher education (9). The ELOs provided a natural springboard to the Tuning process.

### ***Tuning physics in Utah***

As should be clear from above, Tuning is carried out primarily by the faculty in the discipline. In addition, we have included student representatives on the Tuning teams. Students who have sufficient confidence to be heard at a table of engaged faculty members make an invaluable contribution to reforms aimed at strengthening student learning because they provide a reality check about what the students’ actual experience in the degree program is and can be. While faculty may have an idealized view of what actually happens in classrooms and laboratories, students can express what the developing learner of the discipline experiences in practice.

The work of the Tuning teams began with in-depth discussion of their discipline by the teams of faculty and students: How do we define what it is that students need to qualify for a degree in the central discipline? What competencies are essential that are taught in other departments (general competencies)? What discipline-specific competencies are essential? Several sessions of discussion were required before teams took ownership of the process. They needed to understand the process and how their work related to prior efforts to define learning outcomes and establish requirements. They needed to understand that Tuning is not standardization. They needed to understand that administrators who may have facilitated the establishment of the Tuning teams did not have

**Table 1. Categories of Physics Competencies**

Understanding the nature of science and the nature of physics
Mathematical and problem-solving skills
Physics concepts
Laboratory skills
Scientific communication skills
Computational and information access skills
Research skills

*Discipline-specific competencies for physics degrees.*

preconceived outcomes, but that the outcomes of this work were the responsibility of the faculty/student teams themselves. Once the teams reached that understanding of the process, they agreed rather quickly on common sets of general and discipline-specific competencies that are central to the discipline. Physics faculty clearly understand what it means to be a physicist, even though that understanding may typically not be explicit or available beyond the faculty.

Examples of general competencies that were deemed important for physics degrees include oral and written communication, abstract thinking, analysis and

synthesis, reasoned decision-making, and the capacity to learn and update learning. Discipline-specific competencies were defined in seven categories, as shown in Table 1. (For more detail see Utah's reports to Lumina Foundation (10).) With these competencies, the team defined learning outcomes at the associate's, bachelor's, and master's levels. Even though there is not an associate's degree in physics, this common transfer point from two-year to four-year institutions is important to define carefully, both for coordination among institutions and for clear and transparent communication of expectations to students.

We note again that agreement among the institutions on competencies and learning outcomes does not prescribe how different institutions bring their students to achieve the learning outcomes. Every institution has its own strengths and weaknesses, context, and demographics, all of which play into specific emphases of curriculum, pedagogy, and assessment practices. Team members from different institutions eagerly exchanged ideas with their colleagues, adapting and taking back to their own departments those ideas that fit their own situations.

**Table 2. Example Physics Benchmarks**

Associate's degree level	<ul style="list-style-type: none"> <li>• Identify the physical principles that underlie a problem from the introductory physics curriculum</li> <li>• Identify the relevant physical laws and know their names, e.g., Coulomb's law or Gauss's law</li> <li>• Know the definitions of important terms or symbols in the relevant physical laws</li> <li>• Express the meaning of the relevant physical laws or principles in words</li> <li>• Draw appropriate schematic diagrams showing relationships among the elements of the problem</li> <li>• etc.</li> </ul>
Bachelors' degree level	<ul style="list-style-type: none"> <li>• Do everything on the associate's degree list, but for more sophisticated problems in the bachelor's curriculum. In addition, the bachelor's-level student should be able to:</li> <li>• Suggest experimental tests of the validity of the model embodied in the problem as the student has set it up</li> <li>• Specialize general formulas for specific problems</li> <li>• Set up problems in more complicated geometries, e.g., two- and three- dimensional problems or curvilinear coordinates</li> <li>• Estimate the order of magnitude of expected results for problems involving multiple physical concepts</li> <li>• etc.</li> </ul>
Master's degree level	<ul style="list-style-type: none"> <li>• Do everything on the bachelor's-level student list, but for the still more sophisticated problems in the master's curriculum. In addition, the master's-level student should be able to:</li> <li>• Set up problems combining several subfields of physics, e.g., mechanics and electricity and magnetism</li> <li>• Teach problem organization and solving effectively to associate's- and bachelor's-level students</li> <li>• Incorporate advanced mathematics (e.g., complex analysis, group theory) into problem solving</li> <li>• etc.</li> </ul>

*Benchmarks using examples to define the level of expectation for a student's ability to organize a physical problem.*

**Table 3. Survey of Technical Employers**

<b>Top Five Priorities of Technical Employers</b>	<b>Bottom Four Priorities</b>
Able to work in a team	Shows awareness of equal opportunities and gender issues
Oral and written communication	Appreciation of and respect for ethnic, cultural and other diversity
Able to identify, pose and resolve problems	Social responsibility and civic awareness
Determination and perseverance in tasks and responsibilities	Commitment to environmental conservation
Able to plan and manage time	

*Top five and bottom four priorities of technical employers surveyed about what they look for when considering hiring a physics graduate.*

**Table 4. Employer Focus Group Responses**

<b>Top Five Skills Desired by Physics Employer Focus Group</b>	<b>Other Recommendations of This Focus Group</b>
able to solve problems and open to new ideas and learning	Physics majors should have an applied statistics course that prepares them to work with data in the industry.
have a foundation of physics fundamentals and know how the physical world works	Physics graduates need to be better at knowing how to work with other disciplines, and they need to have better technical writing skills.
have the ability to work with others	More internships are needed as part of physics education, providing more practical skills. Senior projects and/or capstone courses that provide services for real firms were strongly recommended, and could substitute when internship opportunities are limited.
keep excellent records and use practical instrumentation	
salesmanship (the ability to sell their ideas to others in the firm)	

*Responses of physics employers in a focus group about expectations for physics graduates.*

It was difficult to understand how to communicate levels of expectation that ratchet up from the associate’s level to bachelor’s to master’s. Therefore, the physics team developed a hierarchy of sophistication describing progress in learning and understanding physics (10). This hierarchy ranged in 11 steps from “ability to identify physical laws by name and to provide definitions of important terms related to the physical laws” to “ability to teach effectively and see where common pitfalls in understanding occur.” Then the physics team prepared examples to serve as benchmarks at each level for each of the discipline-specific learning outcomes. Table 2 exhibits the benchmark example for showing the ability to organize a physical problem.

Other important elements of the process include consultations with a wide range of stakeholders, including other faculty members not on the Tuning team, students, alumni, employers, academic advisors, librarians, K-12 teachers, college administrators, and policy makers. These consultations do not dictate the programs defined by the faculty, but they give insight and keep the team grounded in the realities of their larger context. We surveyed some stakeholder groups about priorities for and quality of preparation in general competencies. The survey results were, unfortunately, not particularly rich in insight because the pre-conceived questions turned out not to line up well with the respondents’ main concerns, concerns that often became explicit only with the kind of discussion one engages in a focus group. In contrast to surveys, focus groups with students and employers and group or individual discussions with faculty colleagues not on the team were very productive consultations. See Tables 3 and 4 for examples of the results of consultations with physics employers.

Each team also mapped the employability of their graduates, often with the help of alumni surveys and surveys from professional organizations. They drafted “degree profiles,” making use of the learning outcomes and describing what each institution does to help students achieve those outcomes, emphasizing institution-specific strengths of the programs. All of these elements of Tuning give snapshots in time, emphasizing the need to work through from competencies to learning outcomes, consultations, employment maps, and degree profiles repeatedly in an ongoing process of strengthening and updating the program. Perhaps the most important outcome of the process has been the shift of focus from teaching and classroom time to student learning. This, too, is an ongoing process, amounting to a culture change in most departments.

### ***Faculty response to Physics Tuning***

The faculty who have been involved in Tuning physics have progressed from skepticism to interest to enthusiasm. Initially, they were skeptical because of unfamiliar terminology, an unfamiliar process, doubts about faculty autonomy since they knew the Bologna Process was a project of the European Ministries of Education, and doubts about whether Tuning would lead to standardization. However, as they understood the process, accepted that Tuning is not standardization, and appreciated that the Utah System of Higher Education organizers and Lumina Foundation actually empowered the faculty team to define their own discipline and find a productive path through the process, faculty team members generated greater interest in the process and were eager to learn how Tuning could help strengthen student learning. This enthusiasm grew out of seeing the work of the Tuning team shift focus from faculty inputs to student learning. Both faculty members and the Utah System leaders were enthusiastic about the growth of discussions about student learning across different institutions and education sectors and the development of meaningful relationships among faculty members from various institutions and sectors who were now sharing experiences and ideas. They also saw great value in giving greater attention through Tuning to general competencies required by our students, even though these are taught in other departments.

### ***What Tuning adds***

What does Tuning add to the quality equation for higher education, or, what is missed if we do not Tune our disciplines? First, the process itself is valuable by facilitating, or even requiring, discussions about student learning across institutions and sectors and by establishing meaningful relationships among faculty members across those boundaries. Tuning creates space for innovation by reducing the importance of credit hours and acknowledging that learning is about outcomes, not courses. It adds transparency and accountability to our disciplines by making implicit expectations explicit, and by giving clear outcomes to be assessed before granting degrees. This work is led by the faculty and provides a defense against accountability imposed from outside the institution. Tuning enlarges the focus of the faculty by giving attention to general competencies as well as discipline-specific competencies. Tuning consultations involve

employers, alumni, and academic advisors as well as faculty and students in thinking about what student learning is represented by discipline degrees. It also facilitates the transfer of credit and degrees through the added transparency that is introduced and thereby aligns expectations across education sectors. In principle, it could help in the validation of non-traditional learning for credit toward a degree. Through consultations with employers and policy makers, Tuning supports a better match between the needs of the labor market and higher education.

## ***Challenges***

While Tuning has been generally well accepted and achieved relative success in Utah, serious challenges remain. First, it is not simple to scale up the Tuning process either geographically or to a broader set of disciplines. This is because of the need for a whole system of related activities that work together to produce learning outcomes, expected levels of student performance, consultations with faculty outside the Tuning team and with other stakeholders, employment maps, and discipline degree profiles for each institution. Tuning requires a commitment to frequent faculty meetings and a change in faculty culture to focus on student learning first, so that all resources are directed to that primary goal. In Utah, physics team members are still working to encourage their departmental colleagues in this process; some departments have accepted Tuning outcomes and insights more fully than others. To be sure, the process of cultural change associated with implementing the Tuning process will require considerable time.

## ***Tuning and US higher education***

US higher education is built around faculty and institutional autonomy, values that the Tuning process respects. Tuning involves general education, transfer articulation, and continually greater accountability through regional and professional accreditation. Tuning supports general education through inclusion of general competencies within the discipline expectations, and facilitates transfer articulation by connections made between institutions in different education sectors. It supports accountability by making expectations explicit and by requiring assessment of degree-level learning outcomes. Therefore, Tuning has potential both to strengthen student learning in US higher education and to fortify social support for US higher education through increased transparency and accountability. The way Tuning prompts and induces faculty to make their expectations explicit, while reexamining these expectations, can benefit any discipline, just as it has been shown to effectively strengthen physics programs in Utah.

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## **Competing interests**

The author declares that he has no competing interests.

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The paper can be found at [http://synesisjournal.com/vol3\\_t/Evenson\\_2012\\_T18-24.pdf](http://synesisjournal.com/vol3_t/Evenson_2012_T18-24.pdf).

Note: The American Physical Society continues to be interested in Utah's physics Tuning work. There was a nice report on Utah's Tuning project in *Physics Today*, an American Institute of Physics publication that reaches a wide audience. Since then, the American Physical Society Committee on Education has continued to follow the work. There is a strong tradition in physics to avoid discipline-level accreditation, so it is not clear where the physics organizations might choose to follow Tuning in the future.

*Working Draft (May 8, 2013*  
Credit Hour as a Proxy for Learning  
By Phyllis 'Teddi' Safman

The Carnegie Foundation for the Advancement of Teaching is discussing the future of the credit hour and will have its work completed and circulated for comment sometime in 2014. The usefulness of the credit hour is addressed in both Amy Laitinen's article, "Cracking the credit hour," and in Carol Geary Schneider's article, "Is it time to kill the credit hour?" The credit hour began as a payment method for faculty pensions, and over time evolved into segments of learning that designated degree completion within academic disciplines. Essentially, the Carnegie unit evolved as a way to organize and measure seat time and credential completion.

Neither the credit hour nor the assignment of a letter grade upon completion of a course can tell us much about what students have learned. The credit hour, a proxy for learning and still the coin of the higher education realm, cannot tell us exactly what students know and are able to demonstrate as a function of learning. Letter grades tell us nothing about integrated and complex learning, nor the rigor expected in a course or program; instead, letter grades provide only a comparison that represents some assumed level of mastery.

Nationally, conversations among higher education academic officers are focused on competencies and designated levels of mastery expected of each student at different points in their education. These competencies are expected to build upon one another, resulting in more sophisticated and complex levels of demonstrated learning. Some institutions, such as Utah State University and Southern New Hampshire University, and a national organization, the American Historical Association, are working towards coherent sets of competencies that move students to the next level of learning. Tuning and the Degree Qualifications Profile also assist faculty in this effort.

\*Tuning is a process in which faculty collaborate to develop successively sophisticated learning outcomes as students progress through the study of a discipline or professional field, marked by more demanding competencies along a continuum of credentials (associates, bachelors, and masters). The Degree Qualifications Profile (DQP) is a tool that captures the entire undergraduate experience across a continuum from an associate's degree through the master's level, including general education, electives, internships, etc. The DQP is a visual representation of learning outcomes and competencies that are both coherent and complex. Because the DQP is a visual representation of expected learning outcomes and competencies, parents, students, policy makers, and employers will actually see what students must know, understand, and be able to do to earn a degree; in addition, the DQP demonstrates what graduates know and are able to do not only as future employees but also as contributing citizens involved in their communities. High impact practices in assessment of learning - practices that fully engage students such as e-portfolio development, research papers, group projects, etc. - not only demonstrate explicit levels of mastery, but provide continuous student learning through formative and summative assessments. Successively sophisticated work prepares students for the next level of learning as they move through their chosen disciplines. Thus, the DQP clearly defines what we can expect of a

person who earns an associate's, baccalaureate or master's degree instead of providing a definition based on the number of required credit hours.

What do learning outcomes, competencies, and high impact practices imply for the credit hour? The work cited above is experimental; it concentrates on student learning and how as faculty we intentionally develop coherence and depth of learning in our curricula. Does the credit hour help us? Not so much, as it only defines the amount of time we have to do our work but not the substance of the work. Are we as a complex educational enterprise able to switch from artificial limits of time to a competency-centered paradigm, one that includes all of student learning - general education, discipline content learning, extracurricular learning, etc.? Not yet, although we have Tuning that makes faculty more intentional in aligning their class work with discipline-specific competencies and learning outcomes and the DQP which potentially demonstrates visually what students are learning and expected to learn and do throughout their undergraduate education.

Time as an element of learning should not be disregarded. Many students need time in the classroom to fully learn concepts through repetition and interactions with other students and faculty. Repetition can occur by nesting concepts in a variety of paradigms and examples. Classroom time as workspaces for learning can be found in projects such as the Interstate Passport, an initiative facilitated by the Western Interstate Commission for Higher Education (WICHE) in which faculty from five participating states collaborated to identify learning outcomes, competencies and methods of assessment for lower-division work in written communication, quantitative literacy and oral communication. The Passport project will enable students to transfer this block of learning outcomes/courses seamlessly, without having to repeat the courses, among the participating institutions in the five pilot states. The Quality Collaboratives project, sponsored by the Association of American Colleges and Universities, and funded by the Lumina Foundation for Education, partners community colleges and universities to identify learning outcomes based on the AAC&U Essential Learning Outcomes (ELOs), competencies and assessments using Value Rubrics and the DQP. The ELOs form the foundation for the Passport and Tuning as well. All three projects depend upon faculty collaboration to identify learning outcomes, competencies, and assessment within the credit hour and class time needed by students to succeed in the courses identified for each project.

Perhaps, the task ahead is to embrace a competency-centered paradigm of learning which fully engages students, is faculty driven, visually represented through the DQP , and intentional as faculty identify learning outcomes, successively more complex competencies, and appropriate assessments. Currently, we have the credit hour that segments rather than informs our work. As Schneider reflected, there is no other mechanism of apportioned time at this juncture. We would be better served by capturing the richness and entirety of all student learning through a competency-centered paradigm. For now, the credit hour remains the coin of our realm. We look to the Carnegie Foundation for the Advancement of Teaching to energize the discussion and offer insights to move beyond the current proxy for learning.

\*My thanks to Judith Ramaley whose suggestions for this working draft and thorough understanding of our work guide its improvement, not only for practitioners, but for our students.

## Presentations by Norman L. Jones

### **ACTIVITIES IN 2012-13 CONNECTED TO THE USE AND DISSEMINATION OF THE TUNING PROCESS.**

#### **Utah State University**

Chairperson, Presidential Task Force on Curriculum. (March 1, 2011 - Present).

Reform the undergraduate curriculum of USU applying Tuning and DQP principles.

Chairperson, General Education Subcommittee of the Educational Policies Committee (EPC).

(2004 - Present). Advise the EPC on Gen Ed policies; provide oversight for all general education activities at USU. Arrange course scheduling and compensation.

Gen Ed works.

Appointed Director of General Education and Curricular Integration in the Office of the Vice President for Academic Affairs and Provost, 2012-. A new position charged with using the Tuning Process to integrate general education and the majors.

#### **Utah System of Higher Education**

Chairperson, Utah Regents' General Education Task Force. (2004 - Present).

Advise Regents and CAO's on general education policy, articulation, and assessment.

Given Utah national prominence in the efforts to create more fully integrated educational outcomes for college students.

Convener of the annual conference of Utah faculty, "What is an Educated Person?". Tuning has been introduced to Utah faculty in these meetings thanks to speakers such as Holly McKiernan.

#### **Professional/Public Service**

Carnegie Foundation for the Advancement of Learning, Washington, DC, USA. (February 19, 2013 - Present).

Revisiting the Carnegie Unit Advisory Group. Invited to join because of my article on Tuning.

American Association of Colleges and Universities Quality Collaboratives Project, Washington, DC, USA. (November 25, 2011 - Present).

To participate in the design of the AACU/Lumina project on transfer and articulation of competencies; to oversee the participation of Utah in the Project via the Uof U and SLCC.

Lumina Foundation/Hewlett Packard/Institute for Evidence Based Change-Board Member, Indianapolis, Indiana, USA. (June 29, 2011 - Present).  
Advise on assessment of the Tuning USA project in the US.

American Association of Colleges and Universities. (January 2009 - Present).  
Plan publication initiatives.  
Oversight of the journal *Liberal Education*

### *Consultations*

Utah Valley University, Program Review of the History degree, April, 2013. (Included discussions on how to applying the tuned outcomes to the UVU degree.)

Dixie State College, consultant on the creation of a "Tuned" BA/BS in History, 2012.

Daniel McInerney and Norman Jones worked with Dawn Stubbs, a doctoral student at Dominican University, who is studying USU's History Department's Tuning activities and their effects on the curriculum.

Norman Jones and Daniel McInerney worked with Derek Rodriguez who runs "The Understanding Library Impacts Project" out of UNC Chapel Hill. He studied the impact of tuned outcomes on the information literacy of History students taking the History senior seminars taught at USU.

<https://sites.uliproject.com/SiteG/uli.php?requestType=about&discipline=History&term=FA2012&course=ALL>

### *Workshops*

College of Southern Idaho and College of Western Idaho, Workshop on trends in General Education assessment for deans and department heads, Twin Falls, Idaho, April 19, 2013.

University of Idaho, Workshop for faculty and administrators on national trends in general education and degree assessment, Moscow, Idaho, Feb. 27, 2013.

Idaho State Board of Education, Workshop on Tuning, the Degree Qualification Profile, Quality Collaboratives, and other higher education reforms for representatives of all schools in the Idaho system of Higher Education, Boise, Idaho, Nov. 1, 2012.

### *Articles*

Jones, N. L. (2012). "Tuning" the Disciplines. <http://www.aacu.org/liberaleducation/le-fa12/jones.cfm>

### *Grants Submitted*

Jones, Norman Leslie, "Degree Qualification Profile Goes to School," Sponsored by Lumina Foundation, Private, \$1,750,000.00. Under consideration.

### *Presentations*

Jones, N.L., "Paths Into and Through the Curriculum," College of Southern Idaho, April 19, 2013.

Flanagan, C. (Presenter Only), Jones, N. L. (Presenter Only), Peebles, J. A. (Presenter Only), "Oh Yes They Can: How students can play a designer role in the creation of new (and better!) College experiences", Student Success and the Quality Agenda conference, Association of American Colleges and Universities, Miami, Florida. April 4, 2013 - April 6, 2013. Peer-reviewed/refereed

Jones, N. L., "Globalizing the tuned major: local issues", Association for International Education Administrators, New Orleans, LA. February 24, 2013. Invited

Jones, N. L., "Tuning into the Degree Qualification Profile", Association of American Colleges and Universities Annual Conference, Atlanta, GA. January 24, 2013. Invited

## **Presentations by Daniel J. McInerney**

### **INVITED PRESENTATIONS, 2012-2013:**

College of Southern Idaho, Executive Vice-President & Chief Academic Officer's Workshop, "The Big Picture: National Discussions on Academic Reform, Assessment, and Accountability," April 19, 2013, Twin Falls, ID.

University of Idaho, Vice Provost for Academic Affairs Workshop, "Creating 21st-Century Degrees: Program Assessment at the University of Idaho," February 26, 2013, Moscow, ID.

Association of International Education Administrators, Re-imagining Higher Education in a Global Context, "Tuning on the Ground: Approaches Within the U.S.A.," February 19, 2013, New Orleans, LA.

American Historical Association, Tuning Project National Meeting, "Tuning and General Education," February 16, 2013, Washington, DC.

Association of American Colleges & Universities, 2013 Annual Meeting, "The Quest for Quality: The Future is Now," January 24, 2013, Atlanta, GA.

American Historical Association, 127th Annual Meeting, "The American Historical Association 'Tuning' Project," January 5, 2013, New Orleans, LA.

European Commission on Education and Culture, International Conference: Tuning in the World, New Degree Profiles for New Societies, "Tuning Reference Points and Meta Profiles throughout the World: History in the U.S.," November 21, 2012, Brussels, Belgium.

Association for the Study of Higher Education, 31st Annual Conference, "But What Will They Do With a Degree in (X)? Faculty 'Tuning' the Disciplines in the U.S. Context," November 17, 2012, Las Vegas, NV.

Office of the Idaho State Board of Education, Complete College Idaho Conference "Completing Quality Degrees: Idaho's Post-Secondary Agenda," Nov. 1, 2012.

Houston Community College, "The Tuning USA in Post-Secondary Education, October 12, 2012, Houston, TX.

American Historical Association, Tuning Project National Meeting, "Tuning 101: A Global Project, A National Discussion, and Our Local Measures," June 9, 2012, Washington, D.C.

**ARTICLE**

**“ACCOUNTING 101’: HOW DISCIPLINES CAN ANSWER THE ‘SO WHAT?’ QUESTION ABOUT THEIR WORK AND THEIR CONTRIBUTIONS TO HIGHER EDUCATION,” *WSSA NEWS, NEWSLETTER OF THE WESTERN SOCIAL SCIENCE ASSOCIATION*, 44 (SPRING 2012): 6-7).**

*INVITED PARTICIPATION: PEDAGOGY*

**INSTITUTE FOR THE STUDY OF KNOWLEDGE MANAGEMENT IN EDUCATION, INVITED TO PARTICIPATE IN “PROTOTYPE DESIGN COLLAB,” SOUTH SAN FRANCISCO, CA, JULY 16-17, 2012.**