**Price Chair Teaching Improvement Grant Proposal**

**September 30, 2003**

# Renaissance Learning: Beyond Technical Expertise

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**Beginning 1/1/2004 for 12 months**
**Amount Requested: $4,000**

## The Idea

A "Renaissance" man or woman can be characterized by a balanced life, well-rounded interests, and a facility in both arts and sciences. Such integration and balance can be difficult to attain amidst higher education's culture of specialization, fragmentation, and compartmentalization. Moreover, accelerating change cannot be managed by any single discipline of technical expertise. Multidisciplinary approaches can provide the synergy and spark the creativity required to develop workable solutions to the increasingly complex problems of today's society. Students and faculty must learn to understand and respect their colleagues who study other disciplines, and value the contribution those studies may have on their own work.

Anecdotal evidence indicates that many students in engineering or technology-based majors (e.g., the ACSM program) think that any time spent on non-technical subjects is not beneficial to their future careers. The principal investigator (PI) has assigned essays inviting students to reflect on their attitudes toward OSU's General Education Curriculum (GEC). Fewer than half expressed an appreciation for the value of the GEC component of their education, especially the arts and humanities. Likewise, OSU's College of Engineering annual alumni survey includes questions about the importance of and ability/preparation gained at OSU in a variety of areas including math, chemistry, physics, and humanities. Every year, humanities is ranked the lowest in both categories: importance and ability/preparation.

This proposal is intended to provide the opportunity for both the PI and students in the Department of Food, Agricultural, and Biological Engineering (FABE) to explore Renaissance learning. The primary methods proposed are twofold: weekly assigned essays on Da Vincian Renaissance principles and a departmental poetry contest.

Leonardo Da Vinci (1452-1519) has been described as an "anatomist, architect, botanist, city planner, costume and stage designer, chef, humorist, engineer, equestrian, inventor, geographer, geologist, mathematician, painter, philosopher, physicist, and raconteur" (Gelb, 1998, p. xii). He was both an artist and an engineer, known for his paintings (e.g., *Mona Lisa*, *The Last Supper*) as well as his inventions (e.g., flying machine, helicopter, parachute, three-speed gear shift, hydraulic jack, canal locks). The seven Da Vincian Renaissance principles as defined by Gelb (1998, p. 9) are:

- *Curiosità:* an insatiably curious approach to life and an unrelenting quest for continuous learning
- *Dimostrazione*: a commitment to test knowledge through experience, persistence, and a willingness to learn from mistakes
- *Sensazione:* the continual refinement of the senses, especially sight, as the means to enliven experience
- *Sfumato:* a willingness to embrace ambiguity, paradox, and uncertainty
- *Arte/Scienza:* the development of the balance between science and art, logic and imagination
- *Corporalita:* the cultivation of grace, ambidexterity, fitness, and poise
- *Connessione:* a recognition of and appreciation for the interconnectedness of all things and phenomena; systems thinking.

The skills that express these principles can be enhanced through study, experimentation, and reflection. The discipline of regular essay writing can be an effective way to improve student communication skills and to lead students to a fuller understanding of their own potential and a recognition of the importance of humanities in their lives.

Michigan State University (MSU) has, for the past three years, hosted an annual poetry contest within the college of engineering (Gunn, 2003). The goals were to initiate more focus on communication skills, to showcase the students' creativity, and to encourage students to write for enjoyment. Initial resistance both within and without the college was gradually broken down as students embraced the contest and exceeded expectations with the quality of their creative work. Gunn (2003) wrote,

> "Students were not only interested in submitting work but experiencing what others had written… It was especially interesting to see students reading those works that were deemed winners in the contest when they were displayed in the lobby… Some students were even heard to ask other students 'to quiet down so they could truly enjoy the reading.' Poetry had become something that was not the property of those liberal education majors on the other side of campus. Poetry was part of engineering as much as math and science. The depth of understanding and ability to present ideas improved." (p. 5)

## Plan of Action

**Weekly essays:** As a component of regularly assigned homework, the PI currently uses weekly essays to give students the opportunity to reflect on various technical topics in the course content and on education in general. Student essays are graded for completeness, grammatical skills, and the students' ability to express themselves in writing. The students' communication skills are improved through the process of initial draft submission, grading, revision, and resubmission. As a component of this proposed project, the PI will develop and assign new essays that explore the seven Da Vincian

Renaissance principles and, hopefully, expand students' appreciation for the interconnectedness of all aspects of their college education, especially the arts and humanities.

**OSU Faculty and TA Development (FTAD) consultation**: The PI will initially meet with FTAD personnel to discuss evaluation approaches and the project in general. This will allow the project to benefit from the expertise of that office, and will help the PI initiate contact with potential collaborators in OSU's College of Humanities.

**Visits to other schools:** The PI will travel to MSU to observe their engineering poetry contest which is held during Engineering Week, a time when all colleges of engineering showcase the work of their students and faculty. Arrangements will be made to meet with Dr. Craig Gunn, who developed and organizes MSU's annual poetry contest. The PI also proposes to visit faculty at Louisiana State University (Dr. Marybeth Lima) who are incorporating the seven Da Vincian Renaissance principles in a freshman engineering course offered during the spring semester in the Department of Biological and Agricultural Engineering. Both visits will provide an excellent professional development opportunity for the faculty involved, and will help inform the implementation of Renaissance assignments and poetry contests at OSU.

**Poetry Contest:** With the help of a student assistant, the PI will organize and publicize the departmental poetry contest. Posters, banners, and e-mails will be used to invite student participation from the department's two undergraduate programs: Food, Agricultural, and Biological Engineering (FABE), and Agricultural and Construction Systems Management (ACSM). The contest will also be open to departmental alumni, graduate students, faculty, and staff. Three judges will be recruited from OSU's Department of English or other departments based on FTAD recommendations. The contest will be held during spring quarter. Winners will be announced at the departmental awards banquet in May. Two categories will be awarded. Depending on the number and distribution of entries, the categories may be students vs. non-students or technical subjects vs. non-technical. Prizes in both categories will include rosette ribbons (1$^{st}$ through 6$^{th}$place), participant ribbons (all entries), and cash awards ($50 to 1$^{st}$ place, $25 to 2$^{nd}$ place, and $10 to 3$^{rd}$ place). Winning entries will be posted on two bulletin board easels with their appropriate ribbons in the hallway of the Agricultural Engineering Building through finals week.

**Evaluation of results:** During summer quarter, the PI will evaluate the overall results of the project and make future plans. Some options might be to expand the contest to include art and poetry and/or to develop a manuscript for submission to a journal.

**Education conference:** Results of the first year will be presented at the 2004 annual conference of the American Society for Engineering Education (ASEE), to be held in Salt Lake City, UT. The PI will plan to present at a session sponsored by the Biological and Agricultural Engineering Division. For increased professional development in the area of connecting engineering with humanities, the PI will plan to attend as many sessions as possible which are sponsored by the Liberal Education Division of ASEE.

**Final Report:** At the close of the project, a final report summarizing the results will be submitted to the college.

## Courses and Teaching Skills

The assignment, grading, revision, and re-grading of essays on Da Vincian Renaissance principles will enhance student learning in the following courses:

- Modeling and Design of Biological Systems (FABE 625)
- Environmental Controls for Agricultural Structures (FABE 645)
- Design of Waste Management Systems (FABE 650)
- Pollution Control and Waste Utilization (ACSM 550, Co-taught with Dr. Karen Mancl)

Should teaching assignments change, the PI plans to incorporate these essay homeworks into whatever courses are assigned.

The poetry contest will provide an opportunity to enhance the educational experience of all students currently enrolled in the department's two undergraduate programs: Food, Agricultural, and Biological Engineering (FABE), and Agricultural and Construction Systems Management (ACSM). The contest will also be open to departmental alumni, graduate students, faculty, and staff.

Teaching skills that will be enhanced by this proposed project include many of the seven Da Vincian Renaissance principles (especially *Curiosità*, *Arte/Scienza*, and *Connessione*), allowing the instructor to grow while the students are being challenged to do likewise.

## Timeline

| | 2004 | | | |
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| **TASK** | **Winter** | **Spring** | **Summer** | **Autumn** |
| Submit abstract for ASEE conference | X | | | |
| Meet with FTAD to discuss evaluation approaches | X | X | | |
| Visit other schools for ideas (MSU, LSU) | X | X | | |
| Assign weekly essays in class | X | X | | X |
| Organize and publicize poetry contest | X | X | | |
| Hold contest | | X | | |
| Announce winners at the departmental banquet, post winning entries in hall | | X | | |
| Evaluation of project results, future planning | | | X | |
| Present results at ASEE | | | X | |
| Final Report | | | | X |

## Budget

The requested $4,000 will support the following:

- Poetry contest expenses including honoraria for judges ($300), ribbons ($80), and cash prizes for winning entries in two categories ($170)
- Materials and supplies including easels with bulletin boards to display winning entries ($300)
- Travel expenses to MSU, LSU, and the annual meeting of the American Society for Engineering Education ($2150 total)
- Student wages ($1000) to assist with organizing and running the poetry contest

## References

Gelb, Michael J. 1998. *How to Think Like Leonardo da Vinci*, Dell Publishing, Random House: NY. 321 p.

Gunn, Craig J. 2003. Engineers as Poets: The need for poetry contests in colleges of engineering. *2002 ASEE Annual Conference Proceedings*, American Society for Engineering Education. June 24, 2003

## Signatures

**Principal Investigator** **Date**

**Department Chair** **Date**