

Resume'

Bruce F. Lindgren

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Goals and Objectives

- Supporting environmental stewardship, economic development and workforce development through community involvement, organization development and adult education.
- Supporting small businesses, school districts, local governments, and non-profit organizations through technical writing, research, project management, marketing support, instructional design and grant development.
- Energizing and enabling the appropriate use of digital technology in communities and education.
- Creating unique solutions to the educational bottlenecks impeding learning success by seeking leadership opportunities to influence reform efforts in education that link learning enterprises to economic development.
- Expanding and sharing my knowledge and enthusiasm for biological sciences, economic development and education.

Affiliations and Activities (selected current and recent past)

- B.Lindgren CONSULTING, Principal & Owner
- Bayfield County Economic Development Corporation, Past President
- Bayfield County Lake Forum, Secretary
- IDEA Consortium LLC, Founder & Developer
- Inland Sea Society, Director
- Lake Superior Binational Forum, United States Delegation Chair
- Lakeshore Institute, Advisor
- LongRun Project, Manager and Advisor
- Northwest Wisconsin Workforce Investment Board, Member
- Raindrop Garden Gallery, Co-owner
- Wisconsin Rustic Roads Board, Member
- Wisconsin Stewardship Network, NW Region Coordinator

Formal Education

Degrees Earned

- B.S. 1963. Mankato State College*. An undergraduate degree included preparation for secondary teaching certification. Major: Biology Minor: Chemistry
- M.S. 1966. Mankato State College*. Department of Biological Sciences emphasizing research and science education.

* Now: Minnesota State University - Mankato

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Short courses

- NSF Chautauqua course in Molecular Biology at San Francisco State University
- Radiation Biology at University of Wisconsin - River Falls
- FORTRAN programming at Mankato State
- Non-profit Administration – University of Wisconsin-Superior

Professional Experience

Teaching Positions

- Instructor in Biology Normandale Community College 1969-1997
- Instructor in Biology Mankato State College 1965-1969
- Teaching Assistantship at Mankato State College 1963-1965

Commercial Photography

- Business owner and principal photographer 1979-1986.

Consulting

- B.Lindgren CONSULTING. 1997- Present.

Accomplishments (neither chronological nor ranked)

- Re-designed the course, Contemporary Biology, to include multimedia lectures and leading-edge laboratory experiences for non-major students emphasizing the methods of research scientists. Integrated analog and digital media. Wrote two course manuals and developed instructional media to support student laboratory activity.
- Initiated Audio-Tutorial instruction for an introductory biology course. Audio-tutorial instruction used audio tapes that integrated laboratory experiences, lectures and a custom published study guide to provide a self-paced learning environment for biology students.
- Designed courses in Human Anatomy, Human Physiology, Microbiology, Pathobiology, Embryology & Histology and Head & Neck Anatomy. These courses were initially structured for a Dental Hygiene program at Normandale College. The Anatomy, Physiology and Microbiology courses were later re-designed; first to accommodate allied health program students including nursing, physician assistant, radiological technician, dietetic technician and others; then more recently to provide transfer-level college credit.
- Wrote comprehensive instructional objectives for a Human Anatomy course designed for allied health programs. At the time this was done in the summer of 1970 it arguably represented the first such effort anywhere and was followed by the integration of

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instructional objectives as a pedagogical strategy in many leading undergraduate anatomy textbooks.

- Designed BioMAPP. To meet the diverse needs of students in a variety of allied health programs at Normandale College, a core set of experiences was designed as minicourses for all students. The instructional core was supplemented with program-related minicourses. Students were also provided opportunities to make choices about topics they wished to study. Instructional Objectives for Minicourses in Anatomy, Physiology and Pathobiology were compiled into a manual and published. Each minicourse included instructional objectives, study guide, audio-tutorial taped instructions, individualized formative evaluations and summative evaluation.
- Designed the Biology Learning Center at Normandale Community College. This 6500 square foot facility provides open, self-paced laboratory experiences for students in 7-10 courses each quarter. A major construction project recently provided the Biology faculty an opportunity to affirm their commitment to this still innovative approach to biology education.
- Designed and worked closely with the development of a Computer Generated Testing system - A Pascal program running on a VAX minicomputer generated random test questions from a large test item bank enabling students to complete 22 course units at their own pace. The program provided record-keeping database functions enabling faculty to track student progress efficiently.
- Produced over a dozen Instructional Videos enabling students to complete complex laboratory procedures in an open laboratory setting. Topics of these videos included: Lymphocyte Culture for Karyotype Analysis (3 parts), Gel Electrophoresis of Nucleic Acids, Handling *Drosophila* for Genetics Experiments, Cell Culture Techniques, Replica Plating Technique, Culture and Observation of Protista, General Microbiological Procedures, Use of the Cryostat Microtome, Small Animal Dissection, Uses of Laboratory Instruments, Isolation of a Bacterial Mutant, and Use of the Microscope.
- Installed a system for digital video capture and printing of microscope images. Using a combination of image capture software, Adobe Photoshop, and NIH Image software together with an inexpensive DeskJet printer we were able to reduce film costs in the biology department by over \$2,000 per year while retaining instructional values of hands-on student participation and enabling students to record many more images for their studies and reports.
- Designed a Biology Laboratory Kiosk with which students would have timely access to audio/video instruction for introduction and completion of complex laboratory procedures. Although a prototype was never completed due to an abandoned remodeling

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project and fiscal constraints at Normandale, the design generated considerable excitement. Intended to support students working at a 'wet' bench, the design anticipated use of both voice command and touch-screen technology to activate computer controlled analog and digital video/audio to provide 'just-in-time' instruction for laboratory protocol. Our goal was that students would never have to wait for an answer to a "What do I do now?" question or hesitate, for a variety of reasons, to ask when they really should ask.

- Increased student writing in courses I taught. I served on the evaluation team for Minnesota Community College Bush Grant "Writing Across the Curriculum". As part of this effort I participated in several WAC conferences and personally introduced expanded writing experiences into courses I taught. The evaluation protocol used 'holistic grading' and achieved remarkable inter-rater reliability. Based on this experience I was able to design assignments generating more and better writing while decreasing the time requirements and increasing consistency for grading of the assignments.
- Expanded and focused emphasis on teaching scientific methodology and critical thinking. I served on the evaluation team for Minnesota Community College Bush Grant "Teaching for Thinking". This evaluation included a unique Interview Evaluation. As a member of the team I participated in the early developmental work designing the biology portion of the interview and writing an initial draft of a "Compendium of Critical Thinking Terms" Although I had used personal interview evaluations and practical evaluations with my students for many years, the Interview Project provided both discipline and structure supporting better focused instruction for thinking processes and evaluation of student's problem solving skills.
- Provided critical leadership for a faculty effort to create high technology classrooms at Normandale Community College. Ten classrooms were opened in 1985 that provided faculty with access to rear-screen slide projection, multisynch video and computer images and stereophonic sound.
- Stimulated many other Normandale faculty to pursue technology-based teaching. As an early adopter of technology, I motivated many Normandale faculty through presenting workshops and inviting faculty visits to my lectures.
- Served on the Minnesota State Colleges and Universities (MnSCU) Electronic Academy Council. Contributed to development of a Request for Proposals and participated in the proposal review team.
- Participated in the design of the Trafton Science Center at Minnesota State University - Mankato

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Leadership (please note the list of current activities above)

- President three terms, member of Executive Committee, Chair of numerous Governance Committees -- Normandale Community College Faculty Association
- Board of Directors, Finance Coordinator for Minnesota Community College Faculty Association
- Vice President and Board Member -- Minnesota Commercial Industrial Photographers Association
- Chair for Electronic Education Workgroup, MnSCU Strategic Plan.

Grants Received

- Instructional Incentives (1985) – to develop a laserdisk tutorial for small animal dissection.
- Instructional Incentives (1994) – to develop a series of exercises centered around Human Genome model organisms: *Drosophila melanogaster*, *Caenorhabditis elegans*, and the zebrafish.
- US Department of Energy (1985) – to obtain an ultramicrotome for use in electron microscopy.
- Eisenhower, US Dept. of Education (1995-96) – to present a workshop for elementary teachers. Classroom uses of plants with emphasis on teaching science methods.
- MnSCU Electronic Academy (1997) – to fast-track development of four test-bed courses for multimode delivery.

Independent Studies

- AIDS
- Cancer
- Computer & Information Science
- Human Genetics and the Human Genome Project
- Instructional Design
- MultiMedia Design and Development
- Psychoneuroimmunology
- Virology
- Business Management & Marketing Communications

Unique Skills

- Electron microscopy (SEM)
- Cell and Tissue Culture Methods
- Histological Technique & Cytochemistry
- Time-lapse cinematography
- Macro (close-up) photography
- Portrait photography emphasizing the uniqueness of lighting and character portrayal
- Photomicrography. Photography and videography through the microscope

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Computer Skills

- Work or have worked with Macintosh, MS-DOS based, Windows and Unix and Linux platforms.
- *MultiMedia Authoring & Animation* -- Macromedia Director, Hypercard, Authorware, Extreme 3D, SoundEdit Pro, Audacity
- *Presentation software* -- MicroSoft PowerPoint, Adobe Persuasion, Open Office Impress
- WEB design -- Dreamweaver, Hand-coding of HTML, CSS & PHP.
- CAD software -- MiniCAD, KeyCAD
- *Photo Modification & Illustration* -- Adobe Photoshop, Adobe Illustrator, Fireworks, Freenad, Denba Canvas
- *Digital Video* -- Adobe Premiere, Media 100
- *Productivity software* -- MS Word, MS Excel, MS Project, Open Office
- *Database* -- dBase II, FileMaker Pro 3.0, MS Access, MySQL

Courses Taught

- Biology of AIDS (one quarter)
- Biology of Women (one quarter)
- Contemporary Biology (major effort over 28 years)
- Embryology & Histology (two years)
- Environmental Biology (two quarters)
- Environmental Microbiology (one quarter)
- General Cytology (laboratory design and instruction at Mankato State)
- General Microbiology (major effort over 28 years)
- Head and Neck Anatomy (once yearly from 1970-1978)
- Hematology (one quarter)
- Heredity & Society (once yearly between 1974-1979)
- Histological Technique (1966-1969 at Mankato State)
- Human Anatomy (major effort from 1969-1987)
- Human Biology (two quarters)
- Human Physiology (once yearly from 1967-1972)
- Pathobiology (twice yearly from 1979-1984)

Workshop Presentations

- HyperCard
- Authorware
- Macromedia Director
- PowerPoint
- Open Sources

Professional Organizations (past & current)

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- National Association of Biology Teachers
- American Society for Microbiology
- American Association for the Advancement of Science
- Minnesota Commercial Industrial Photographers Association
- Minnesota Community College Faculty Association
- Minnesota Education Association
- National Education Association
- Society for Conservation Biology

Relevant Publications

- Becker, Wayne and Bruce Lindgren. ***BioMAPP: BioInstructional Objectives for Minicourses in Anatomy, Physiology and Pathobiology***. 4th Edition. Burgess. 1978.
- Lindgren, Bruce. ***After Three-billion Years: Exploring Contemporary Biology***. 5th Edition. Burgess. 1993.
- Lindgren, Bruce, Kimberly Glassman and James Erickson. ***Life: The Fantastic Frontier***. 2nd Edition. Burgess. 1995.

Community Involvement (past & current)

- Bayfield County Economic Development Board of Directors, Past - President, Chair of the Education Committee
- Wisconsin Stewardship Network, NW Hub Coordinator
- Inland Sea Society, Member Board of Directors
- LongRun Project. Principal Organizer (Ashland area computer recycling initiative.)
- Bayfield County Lakes Forum, Board member
- Bloomington Aquatic Club -- Fund raising, meet official, announcer, and general cheerleader (daughter Erika was team captain and state tournament participant)
- Boy Scouts of America -- Various positions ranging from scout dad (son Brent received Eagle Award 1987) to Conservation Director at Many Point Scout Reservation
- National Ski Patrol System -- Assistant Regional Director, Testing and Training Chair and Patrol Leader.
- American Red Cross -- First Aid Instructor
- Support for political candidates ranging from small monetary donations to chairing campaign committees.
- Town of Clover, Chairman
- Herbster Business Association, Founder
- Bayfield County Land Use Plan Committee, Member

References

Available on request.